

Studies in Systems, Decision and Control 66

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# Recent Trends in Social Systems: Quantitative Theories and Quantitative Models

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Antonio Maturo · Šárka Hošková-Mayerová  
Daniela-Tatiana Soitu · Janusz Kacprzyk  
Editors

# Recent Trends in Social Systems: Quantitative Theories and Quantitative Models

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# Preface

This volume is the result of a scientific collaboration, in the field of social systems, among experts from “Alexandru Ioan Cuza” University of Iași (Romania), “G. d’Annunzio” University of Chieti-Pescara (Italy), “University of Defence” of Brno (Czech Republic), and “Pablo de Olavide” University of Sevilla (Spain). Following a postmodern approach, the authors provide theoretical perspectives and practical models regarding both social and economic systems. Qualitative and quantitative approaches are used by the authors, according to their expertises and interests. The heterogeneity of the contributions developed in this volume reflects the variety and complexity of social phenomena; thus, the topics deal with tools for the interpretation of socio-economic systems, potential strategies for social planning, and contextual analyses for decisions and control. The book is divided into four parts: recent trends in social decisions, recent trends in social systems and control, trends in quantitative theories and models, and finally, integrative theories and models.

The first part deals with the recent trends in social decisions and their driving forces.

From a socio-anthropological perspective, religious beliefs and superstitions can influence people’s behaviour. The study of Nicu Gavriluță is based upon two pieces of sociological research carried out by the Romanian Institute for Assessment and Strategy. This study intends to show and interpret the contemporary beliefs of the Romanians about the meaning of life and death. The primary focus of the article is the beliefs of the Romanian people in 2013 concerning the importance of the church in their personal life and the answers that the Church gives to certain social issues: infidelity, the third world, racial discrimination, ecology, religious tolerance, abortion, nuclear disarmament, euthanasia, unemployment, or homosexuality. The last part of this study analyses contemporary superstitions in the Romanian social mindset, particularly centred on witchcraft and fortune telling.

Mihaela Rădoi and Adrian Lupu investigate the perception of institutional trust in the health system, starting from the study of Hardin and Fukuyama, where societies are divided into high-trust and low-trust societies. The article draws attention to the significant difficulties in defining and measuring the levels of trust;

indeed, trust has only recently begun to be measured and analysed in the health sector, and almost, no empirical investigation has been conducted in developing countries. In this study, the authors have used PubMed database and the health-related reports of the European commission.

In the paper of Gabriele Tomei, it is highlighted the link between the current direction of migration flows in Italy and the post-Fordism globalization that pushes an increasing number of highly qualified youths to leave the country in order to insert themselves in other European knowledge economies. Using Foucault's theoretical analysis of biopolitic, the author argues that the new highly qualified emigration flows from Italy during the recent economic crisis have been influenced by means of keywords that convinced people to comply with the rationale of economic calculation.

Romeo Asiminei focuses on two directions of analysis: the political asset and the electoral asset of Romanian diaspora in the context of post-communist presidential elections. The political asset is understood as political participation. The electoral asset is understood as the distribution of votes to the electoral competitors. In this context, the paper explores a series of variables and raises different hypothetical questions: "Is the diaspora vote a competent one?" and "What is the impact of the votes cast from abroad on the election outcomes?"

The paper of Valentina Savini deals with the relationship between microcredit and quality of life. She intends to analyse the quality of life as an indicator of the access to the credit of the "non-bankable", i.e. those who do not possess the minimum requirements to apply for a bank loan. The object is the relationship between the presence of microcredit programmes on a given territory and the social impact that these programmes have in terms of purchase or achievement of a self-autonomy by the individual, as well as the achievement or recovery of a full member status of the community, that was unreachable due to poverty conditions or was previously undermined.

The contribution of Šárka Hošková-Mayerová and Radovan Potůček deals with the qualitative and quantitative evaluation of the entrance draft tests of mathematics for aspirants for the bachelor and master study on the Faculty of Military Technology of the University of Defence. These tests have been organized by the Department of Mathematics and Physics since 2010. The paper gives information about the history and contents of these draft tests, about the rate attained by the aspirants for the study, and about the rate of single type of test examples and analyses these from the qualitative and quantitative point of view in the period of the last five years.

The work of Vincenzo Corsi has been put in evidence the fact that social planning is founded on theoretical and methodological importance in the field of applied sociology. In applied sociology, concepts, theories, models, and patterns of explanation are used for the study of social phenomena. The methods of social research are designed to identify, describe, and explain the social needs of individuals, groups, and communities. In particular, the methods of analysis of social needs and building models of local welfare in Italy are described.

The contribution of Barbara Ferri deals with some orientations for impact analysis within the process of urban regeneration, based on the guidelines of the European Structural Funds 2014–2020 aiming at regional development policies which are more focused on desired results and place-based approach. The paper underlines the need to strengthen the connections between urban/territorial planning and decision support systems. In particular, starting with a review of the concept of social sustainability, the paper outlines some of the main indicators existing in recent European studies for urban regeneration, so to identify the impacts of the interventions and defining suitable decision-making processes to guide policies.

The strategic voting across families of various electoral systems is often depicted as “settling for lesser evil” in order to prevent the worst outcome of elections. Roman Chytilék and Michal Tóth experimentally explored the degree of strategic voting (as compared to non-voting) framed in situations with (non-compulsory) costly voting where voters face outcomes with positive and negative pay-offs and/or with solely negative pay-offs.

In the second part, the analyses move from individual to the socio-public sphere, underlying recent trends in social systems and control.

Sabrina Speranza highlights the links between social communication and public values, showing how their relationships are physiological when they retain their identity and function independent; they are pathological when they claim for submission and exploit and corrupt by using power or money. Recent laws are not helping innovation, but consolidating old rents. Spaces between information and communication skills are increasingly blurred. Social communication is not a sector of activities, and it is a value choice based on an extended, interdependent ethical awareness of all social system. Finally, she concludes that social system is guaranteed by the truth of information and by ethical value choices of communications.

Cristina Gavriliuță analyses three scenarios for the academic study of religion in the modern context. She shows that regardless of the manner of approaching the religious element, there are sufficient reasons to believe that the academic study of religion has a “use value”. Although no spectacular mutations would be obtained at cognitive and behavioural level, the simple religious familiarity and knowledge of the religious field allows a more profound approach of reality. She concludes that the academic study of religion could offer young people the chance to discover, know, and respect other person’s values.

Marius Liviu starts from an analysis of secularization as a broad phenomenon of modernity and wonders whether his purpose, the disappearance of religion, is still true. He states that Christian religious traditions have been a source of public reason, and today, they must translate their values in a secular language. The author deepens the debate on the role of religious traditions in Europe, related to entering values in public reason. In particular, the role of the Romanian Orthodox Church had deepened.

The report of Gabriele Di Francesco provides the setting for a research on bullying in educational establishments, on a population of students aged between 6 and 18 years into three levels of education: primary (6–10), middle (11–13), and secondary schools (14–18). The analysis pays attention to dynamical aspects



inherent in the structure of the organization in which this phenomenon arise, school climate, and dynamics of the youth groups within and outside school.

The paper of Adina Rebeleanu and Daniela-Tatiana Soitu aims to understand the universe of non-contributory social benefits based on financial means testing beneficiaries and the subjective meanings in regard to social care services access determinants. Synthesizing the analysis of social benefits based on financial means testing beneficiaries' perceptions, they observe that their way of relating to the healthcare system depends largely on the lack of incomes.

Visual interpretation of satellite data is a new trend of obtaining geographical information for the common populations. The purpose of the study of Hana Svatoňová was to investigate, analyse, and compare the efficiency of reading images and maps, the ability of adolescent children to read images in relation to colours used, and the subjective opinions of research participants on the difficulty of reading various types of images and their preference for images or maps as a source for acquiring information.

The report of Engin Baysen, Šárka Hošková-Mayerová, Nermin Çakmak, and Fatma Baysen provides the results from a research aimed at revealing citation misconceptions of Czech and Turkish university students. Plagiarism is an unethical behaviour which decreases research trustworthiness and also harms related subject area. Therefore, it is also a big problem for the future of science. The research revealed that students have misconceptions concerning providing citations. Thus, it is not possible to attribute students' plagiarism action only to intentional behaviour but unintentional as well. Students are more vulnerable to plagiarize in some plagiarism types while less in others. Cultural differences influence plagiarism types and degree of plagiarism risks.

The work of Consuela Torelli deals with the analysis of social tourism as a mean through which was rediscovered a new identity, the identity of twenty-first century man, who is fragile and frustrated by the continuous stress brought by the quotidian life and by his or her job.

A new hybrid social theory on emergentism is developed by Raffaele Mascella, starting from the higher level property of "no vacuously weak", specified in terms of both the manifest and latent powers of its constituents. After the exploration on whether the belief in emergentism is justified and possible, the author motivates why no vacuously weak emergence seems to be a valid candidate. Then, he argues that this structural variety of emergence is explanatory reducible, but it is not ontologically reducible, to its lower level composing elements, and he concludes that this could be the variety that secures a consistent hybrid social theory.

The third part focuses on new perspective in quantitative theories and models. New mathematical tools are presented for modelling complex social phenomena.

The paper of Antonio Maturo and Šárka Hošková-Mayerová starts from the idea that in social sciences, there is many times uncertainty on the result of an aggregation operation and on the degree to which a relation holds. Thus, the authors propose the algebraic hyperoperations that permit to consider together many possible results of the interaction of any ordered pair of elements and fuzzy sets that give the possibility to measure the degree of belonging of an element to a set

described by a linguistic property or the degree of a relation between individuals. They show some possible applications to social science to give an efficient tool for modelling social phenomena.

Fuzzy events as tool for simultaneously handle the probabilistic and semantic uncertainty in economic and social contexts are considered in the paper of Antonio Maturo and Fabrizio Maturo. The approach generalizes the subjective probability by de Finetti. Assuming a particular algebraic representation, new definitions of fuzzy event and fuzzy probability that generalize conditional event and conditional probability are proposed. Moreover, some applications in social science, in particular in decision-making under uncertainty, are presented. Some possible extensions of such concepts, defining fuzzy event and fuzzy probability of type 2, and possible applications in social sciences are explored.

Fabrizio Maturo and Šárka Hošková-Mayerová analyse the different types of inaccuracies that can afflict the data; in particular, the reasons that lead to the use of fuzzy logic are introduced. They show the limitations of classical regression models that lead to introduce fuzzy regression models. Different types of fuzzy regression models are considered. Because in totally fuzzy linear regression the usual operations between fuzzy numbers lead to a considerable increase of the fuzziness, fuzzy operations to overcome these issues are introduced.

Cristina Flaut studies some connections between Hilbert algebras and binary block codes. She emphasizes how, using binary block codes, it is possible to provide examples of classes of Hilbert algebras with remarkable properties, in particular classes of semisimple Hilbert algebras and classes of local Hilbert algebras.

In the paper of Penelope Kambakis-Vougiouklis, Pipina Nikolaidou, and Thomas Vougiouklis, the class of hyperstructures, called  $H_v$ -structures, has been studied regarding several aspects as well as in connection with many other topics of mathematics. Applications obtained from social sciences, mainly the ones using questionnaires, as in linguistics, are presented, and the use of the bar instead of Likert scale is proposed. The results are formulated in order to become  $H_v$ -structures that appear as a new mathematic tool for advance study in linguistics.

The paper of Fiorella Paone focuses on the need to use systems of analysis able to supervise socialization processes at school, specifically on the influence that new communication technologies have on knowledge construction, elaboration, and transmission of students. She shows a mathematical model with the mean influence rate of each communicational standard on cultural system of students and presents the definition of a class cultural situation on which the model has been tested with the goal of a formal validation.

Andrei Holman and Adina Karner-Huțuleac stress the importance of the media as a source of information on organ donation and transplantation for the general public, affecting people's relevant attitudes and behaviours. The study focuses on Romanian press portrayals of the psychological experiences of people involved in organ transplant cases, either as recipient and donor or as one of their family members. Psychological states are represented as multilayered and frequently

polarized across the narration and the protagonists, focusing on the organ recipient as the main protagonist of the psychological journey that the transplant entails.

Adrian Netedu analyses the trend of demographic evolution in Romania in the beginning twenty-first century; in particular, he shows the negative growth of the population due to the migration trends, the low level of birth rate or fertility, the great infant mortality rate, the general trend of population ageing, and other aspects. He aims to identify whether there are some specific demographical situations and whether Romania is integrated in an East European demographic model with the same threats and weaknesses.

Vanessa Russo focuses on the technical innovations in the passage from the birth of the Web and the 3.0 and studies new paradigms as Lovink's mediactivism, Castells' network affinities, Levy's collective intelligence, and the Barabasi model of small aristocratic world. She also analyses the affinities networks, which are related to the theme "city of Chieti".

The fourth part focuses on integrative theories and models.

Cristina Flaut and Daniel Flaut present some diplomatic ciphers from the seventeenth and eighteenth centuries, particularly used in the Romanian Principalities, emphasizing their similarities with the ciphers used in Europe in that period.

The different means of terms of Logos in Greek philosophical context and in Christian theology are the object of the paper of Rodica Pop. It claims that the concept of Logos was used in philosophical interpretation of the Christian faith, being a constituent of faith. It also states that when the Saint John says that Jesus is the Logos, this is not a philosophical statement, but one religion.

Eronim-Celestin Blaj deepens the theme of morals as social therapy. He starts from the original work of the Romanian scientist Ștefan Odobleja, *Psychologie Consonantiste*, first published in 1938–1939, in Paris, that offers us a moral conception grounded on the consonance, social solidarity consciousness, wisdom, equilibrium, and respect. This approach focuses on the theme of moral character as it has been conceived by the precursor of cybernetics, precisely throughout the laws formulated by Odobleja himself: the equivalence, compensation, consonance, and reversibility laws.

Ethical influences upon social systems and decisions are considered by Alexandru Victor Pricopi that focuses in gnostic libertinism and gnostic views on ethics. Church heresiologists and many modern scholars believe that the members of the Gnostic movements do not give any importance to ethics in their systems. For them, Gnostics are either ascetic, or libertine, but Coptic Gnostic texts from Nag Hammadi show us that some Gnostic movements give an important role to facts in the process of salvation. In the paper, he observes that many modern researchers have highlighted this aspect and have dismantled this stereotype and proposes to expose some problems raised by the Gnostic libertinism.

Some social models are designed to integrate research and evaluation in social planning by Camillo Stefano Pasotti and Francesca Pia Scardigno. They observe that a new partially innovative theoretical dimension of decision-making process is required to be built, with the aim to recognize a "residential identity" of individuals, communities, and even institutions, allowing the best reciprocal communication

about a desirable future for the necessary political response to emerging social needs. “Fluent Evaluation” is the proposal of this new way to read, analyse, and operate through residential identity and reaching for the best efficacy on the new challenges of social policies.

Trajectory modelling to behaviour analysis and social habits are considered by Donatella Gubiani and Marco Pavan. They describe considerable results related to the analysis of mobile spatial–temporal data, focusing on the study of social habits and behaviours, and provide a general perspective for studies on human mobility by depicting and comparing methods and algorithms, highlighting some critical issues with information extraction from spatial–temporal data, and future research directions.

Franco Blezza proposes the “clinical” method as a possible choice for pedagogy as a profession and as research for the social science and other sciences. It can also be called “causistic method and situational” and is an alternative exclusive to statistical and operational method in the community full of scientific rigour and technical applicability. Particular consideration is given to the technical specification for the transition from the particular to the general provided only through the mediation of a professional. He exemplifies the four fields of application of the pedagogy professional with strong preferences to interdisciplinary and interprofessional.

María A. Perea-Mediavilla and Javier López-Cepero deal with expectations towards animal-assisted interventions and improvement on quality of life. Although animal-assisted interventions (AAI) have gathered a solid empirical background as an effective complement to social, educational, and health professions in order to enhance quality of life, Spanish-speaking countries are just starting to pay attention to possibilities they offer. Wide statistical survey and a careful analysis of the data are presented. Triangulation of information between different actors, as well as between two complementary levels of analysis, warranted solid conclusions that should serve as a guide to keep developing AAI in Spanish-speaking countries.

In the paper of Luigi Mastrangelo, the complex relationship between literature, politics, and society is discussed, explaining how literary works can constitute an effective interpretative key of the sociopolitical scenario, assuming you subject them to thorough analysis and culturally appropriate under a point of methodologically. The literature arises in the social and political scenario because its object must be in situations and in social dynamics arising from the relationship between the characters. He claims that the books, in order to be properly interpreted, are to be contextualized ranging from ideological problem, which needs to be addressed from two points of view, objective, and subjective.

The work of Giselda Antonelli, Roberta Di Risio, and Giovanna Di Felice shows how the spread of digital communication technologies has led to substantial changes in individual behaviour, in many newspapers, and in collective practices. The social sciences detect the change by analysing the strengths and weaknesses. This paper aims at presenting the educational offer of a master, addressed to the training of teachers experienced in teaching communication by proposing a blended

methodological approach that combines the teaching laboratory with the a critical and expert use of new technologies.

The papers collected in this volume are addressed, in equal measure, to sociologists, philosophers, mathematicians, statisticians, people interested in ethics, and specialists in the fields of communication, social, and political sciences.

Chieti, Italy

Brno, Czech Republic

Iași, Romania

Warsaw, Poland

July, 2016

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**Part I**  
**Recent Trends in Social Decisions and**  
**Their Driving Forces**

# Religious Beliefs and Superstitions in Contemporary Romania. A Socio-Anthropological Perspective

Nicu Gavriluță

**Abstract** This paper reveals some of the contemporary beliefs, rituals and religious superstitions of the Romanian people. It is underpinned by two sociological field research activities carried out by the Romanian Institute for Assessment and Strategy (IRES (Ro)/RIAS (En)) in August 2013 and October 2014. This study purports to show and interpret the contemporary beliefs of the Romanians with regards to the meaning of life and the imports of death, to the world beyond and the entities populating it. Much of its weight is carried by the beliefs of the Romanians in the year 2013 in respect of the importance of the Church in their personal life and of the answers the Church should give to certain social issues: infidelity, the third world, racial discrimination, ecology, religious tolerance, abortion, nuclear disarmament, euthanasia, unemployment or homosexuality. The last part of this study focuses upon the contemporary superstitions in the Romanian social mind set with regards to talismans and the Halloween; witchcraft and premonition dreams; gambling and the horoscope.

**Keywords** Religion · Life · Death · The world beyond · Magic · Witchcraft · Superstitions

## 1 The Methodology of the Sociological Research of Beliefs and Superstitions

This study is underpinned by two sociological field research activities carried out by the *Romanian Institute for Assessment and Strategy* (IRES (Ro)/RIAS (En)) in August 2013 and October 2014. The former was carried out between the 5th and the 7th of August 2013 on a multi-layered probabilistic sample comprising 1370

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subjects of 18 and over 18 years old. The tolerated uppermost error limit was  $\pm 2.7\%$ . The latter research was carried out on the 31st of October 2014, on a multi-layered probabilistic sample comprising 1214 subjects of 18 and over 18 years old. The tolerated uppermost error limit was  $\pm 2.8\%$ . In both research activities, the method used was CATI (Computer Assisted Telephone Interviewing). Some of the questions of the former research were adapted from the *World Value Survey* study, achieved by The World Values Survey Association ([www.ires.com.ro](http://www.ires.com.ro)). Based on these empirical research activities, I propose an interpretation of the hidden significances related to the survival in the 21st century of certain religious beliefs which border canonicity, i.e. some superstitions belonging to the stock of Romanian popular culture.

## 2 What Is There Left for the Romanians to Believe in Nowadays?

Sociological field research carried out in Romania in the wake of 1990 confirms the tremendous social import of Christian religion in the Romanians' lives. The Romanian Orthodox Church, as an institution, continues to be one of the top institutions in which the Romanians put most of their confidence. This is explained, among others, by the solid traditional religious upbringing the Romanians receive from their families. That is passed on from one generation to the next with barely any changes. To this, one must add that the education system and the Church continue to have a major role in cultivating and refining the Romanians' religious sentiment. Summing up, Romania has always been and still is one of the most religious countries in South Eastern Europe.

In today's context of globalization and rampant crisis, the spiritual role of the Christian churches is seriously rivaled by the social challenges of the moment. On top of the list, in the year 2013, there is the Romanians' expectation that the Church should give answers to some *social issues* (88 %), followed by *spiritual issues* (71 %). In this order, the social issues mentioned by the respondents would be: (a) the problems of the third world (75 %); (b) infidelity (75 %); (c) racial discrimination (74 %); (d) ecology and environmental issues (70 %); (e) abortion (67 %); (f) nuclear disarmament (62 %); (g) euthanasia (60 %); (h) unemployment (59 %); (i) homosexuality (50 %).

An explanation of these expectations is related to the fact that a significant part of the Romanians' sensitivity longs for some cultural and spiritual answers to the big social challenges of the moment. In their opinion, the Orthodox Romanian Church is the institution most entitled to offer such answers.

Moreover, I believe that some of these issues (the third world, the environment, disarmament and unemployment) occur against a growing tendency of secularisation, a mind set typical of European modernity in the centre, west and north of the continent. Some of the most spectacular technical innovations in the European and

American West have appeared along with a strongly secularised mind set, and the symbolic and mythological dimension that used to characterise them in pre-modern Europe has disappeared. Today's technology is devoid of obvious symbolic, mythological and religious components. Therefore, Mircea Eliade was justified to chide the western theologians on account of their failure to rise to their spiritual mission in the 20th century, which is to say that they failed to give valid answers to the challenges of the new society we all live in (Eliade 2000, pp. 197–198). This is the very reason why profound spiritual answers are expected from the Church in order to extricate the social issues mentioned, and especially the new realities generated by biotechnologies. The faithful Romanians cope much better with their negative consequences if they are accounted for and understood as ordeals God meant for us in our daily lives. After all, they are aspects of our human condition and also of the ordeal we are subjected to by God, who thus secretly puts our faith to the test. Reading the social issues mentioned in this religious key means practising a hermeneutics of the every day event and minding the ultimate religious meaning of life.

As a matter of fact, the former research confirms the Romanians' obsession with this spiritual fact. More exactly, 81 % of the respondents think "often" and "very often" of the *meaning of life on earth*. Its deep understanding depends, more often than not, on a revelation we have in the moment of our death. The Romanians' religious faith nowadays makes them figure out *death as a "passage threshold", as an opening to eternal life*. More precisely, 82 % of the Romanians believe that death has a meaning if we believe in God and if we give it a spiritual meaning. 65 % of them believe in *afterlife*.

According to the general Christian doctrine—irrespective of denomination—the believer's fulfilment is ideally achieved within the *Christian family* (Except for the few believers who truly have the vocation of ascetic solitude and spiritual life). Being based upon *sacred matrimony*, the Christian family gives the spouses the original model of the proto-parents (Adam and Eve), and also the model typical of the Christian spirituality of Jesus Christ as a groom and the Church as a bride. Assuming this exemplary model entails a genuine commitment to sacrifice. The main purpose of the sacrifice that the Christian subjects in contemporary Romania are able to commit themselves to is *family*. 95 % of those interviewed on the telephone state that they are willing to sacrifice their life for a member of their family. Fewer and fewer Romanians (48 % according to the sociological research of 2013) are still willing to sacrifice their life for the country. Therefore, in today's Romania, as everywhere else in the European West, *the feeling of patriotism* in its classical sense is in decline.

Nevertheless, what distinguishes the religious life in Romania from the one in Central and Western Europe is especially *the intensity of religious practice*. One out of 5 Romanians goes to church every week and 22 % several times a month. What can be inferred from this is a strong attachment to the denomination and native religion. The Romanians' *religious faith* reaches a very high score (94 %). It is

often associated with *the absence of interest in other cults and religions*. In concrete terms, only 11 % of the Romanians are willing to get acquainted with other cults/religions. However, I deem the following question in the interview to have been rather faulty: “Do you think people should better stick to their religion, or explore different religions?” This double question was understood as religious conversion. Exploring other beliefs is the same, to their understanding of it, as the concrete fact of conversion to other cults/religions. The idea of a better understanding and making sense of one’s own religion with the aid of the knowledge of others (be those foreign, exotic) is far from being socially appealing in today’s Romania. The idea of *the Christian path as the sole path* towards redemption is taken to a limit of its interpretation by few of the respondents: only 25 % of the Romanians think that there is just *one true religion*. Most of the respondents (69 %) hold that there is “some truth” in every religion. This answer clashes against the answer to the previous question that only 11 % of the Romanians over 18 years old are willing to get acquainted with other cults/religions. Most of them focus on living their religious life. The sociological research of 2013 provides concrete data that illustrate the miracles of a religious life which is assumed and lived authentically. In support of this, 82 % of the Romanians are convinced that the *power of prayer* helped them through in life. 45 % of them pray or meditate daily, and 27 % several times a day.

It is also interesting that 67 % of them feel that a physically remote person is spiritually near. A significant 29 % of the Romanians argue that they have seen things which occurred far away. It is even more interesting that 53 % of the respondents felt that a deceased person was close to them. Almost half of them (46 %) have felt the presence of an unusual force, overwhelming in its mystery and might. Another 39 % of the respondents believe in the existence of great supernatural forces.

All these religious sensitivities send us to other religious traditions, the oriental ones in the first place. Their poignant presence in the social mind set of today’s Romanians is due especially to the media and mainly to the profound influence of television in Romania. The source of acquiring these beliefs and superstitions in school and through reading does not count for much. Due to some special programmes of commercial television and aided by some newspapers, a significant percentage of 23.7 % of the Romanians believed in *reincarnation* in 2013. The Romanian Christians believing in reincarnation fall into social categories of faith thus: 25.3 are those with no higher education studies who believe in reincarnation. Close to that percentage are the Romanians with higher education studies who believe in reincarnation: 24.8 %. By dwelling zone in Romania, we notice that the inhabitants of the South, of Bucharest and Dobrogea have a strong inclination to believe in reincarnation. By religious confession, the categories are the following: the Orthodox (24.8 %), the Roman-Catholics (10.8 %), the Greek-Catholics (36.4 %), the Protestants (11.3 %) and the Neo-Evangelicals (7.4 %).

This type of belief blends into other archaic and modern superstitions. One of them is *belief in the magic and talismanic power of amulets*. It is not accidental that

one out of 5 Romanians carry a lucky amulet with them at all times. The talisman incorporates a magic-religious force which renders the owner almost invincible.

Another (post)modern superstition is related to the Romanians' *belief in astrology*. No less than 45 % of the Romanians over 18 years old read the horoscope, and 16 % of them take into account what it says on a daily basis. The secret wish of the Romanians to avoid the evil and bad luck largely accounts for the phenomenon. What the horoscope actually does is to warn you of what is lucky/unlucky on the respective day/week, relating that to your own sign. So, astrology has become a genuine "spiritual discipline", a successful commercial recipe which brings rating and profit. Initially, along with magic and alchemy, astrology used to dominate the pre-modern social European mind set (Culianu 1994, pp. 245–307). Today, it dominates only certain broadcasts of the commercial television programmes in Romania.

It is also due to the television broadcasts that a pre-Christian Celtic holiday has gained a remarkable social success in Romania. That is Halloween (Gavriliuță 2010, pp. 95–97). It comes with a whole range of strange and exotic beliefs and practices, often, though not rightly, associated with Satanism. To a large extent, the significances of this holiday continue to be unknown to the Romanians. Only 61 % of the respondents stated that they knew what it meant in 2014. 44 % of them approved of its celebration in Romania, which is a remarkable percentage, to say the least. However, those who actually celebrate it are much fewer: 12 % of the respondents. There are various reasons. The most frequent one is the association of Halloween with the Satanist practices (32 % of the respondents).

Modern superstitions in Romania are centered upon the strange, albeit sometimes fascinating and challenging figure of the *witch*. Today's witchcraft practices are reminiscences of popular traditions which do a better job of preserving the old pre-Christian beliefs and rituals (Culianu 2009, pp. 49–63). Their substance is, in its essence, a magic one. These very old superstitions have successfully stood the test of time in Eastern Europe, adapting themselves to the requirements of today's moment in history. Thus, in the Romania of 2014, 19 % of the Romanians believed in the witches' power of divination, and 4 % of them declared that they turned to their services for help. More than half of the 4 % declared that what these "specialists" of the sacred said proved to be true (55 %).

Another popular form of divination continues to score a remarkable success with the Romanians. That is the *belief in the premonition power of dreams*. Almost half of the Romanians (49 %) believe in the secret power of foretelling the future with the aid of certain dreams. 44 % of the respondents declared that they had personally had premonition dreams, and 81 % of those who had such dreams argued that they had come true. Moreover, the fulfilment of dreams helps them in their every day life (33 %), at least by ensuring them a necessary physical comfort. In other words, the Romanians consider themselves to be lucky persons (64 % of the subjects of the whole sample).

### 3 Conclusions

Today's Romania (years 2013–2014) lives a religious life which abides by the Bible and the Holy Tradition. Nonetheless, the sociological field research analysed in this study also shows another side of the Romanian religious life. That is, among other things, the restoration of some very old pre-Christian magic and religious symbols, beliefs and rituals, and their adaptation to our modern times. We deal with a *magic face* of the Romanian spiritual life. These non-Christian popular traditions, together with the New Religious Movements, managed to better cope with the challenges of (post)modernity and to hold an important place on the social stage for reasons I discussed in another book (Gavriluță 2006, pp. 50–71). Most of the scraps of these very old traditions which managed to stand the test of time and history are known today under the pejorative term of *superstitions*.

They were often stigmatized by the Christian Church, which explains the caution with which they were officially assumed. Only 17 % of the Romanians interviewed in October 2014 declared that they were superstitious. In actuality, the number of those Romanians knowing and practising them is much larger. Together with official Christianity, these superstitions illustrate, after all, the creative force of the human spirit. They conquer time and space, often making a point. They belong to the stock of popular culture, and they eventually add a note of charm to the authentic real religious life. They cater for many Romanians' wish for mystery and knowledge, and they do it by other means than the official Christian religion does it. Being more often than not complementary with the Christian teaching, they have been tolerated by the Church. They came together to give shape, in this spot of South Eastern Europe, to what Mircea Eliade used to call "the cosmic Christianity". It is a much subtler and persuasive version of the religious life in South Eastern Europe and especially of the Romanian contemporary one.

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# Understanding Institutional Trust. What Does It Mean to Trust the Health System?

Mihaela Rădoi and Adrian Lupu

**Abstract** Research on trust in the health system has been given more importance, since Hardin's study (2006), which found a decrease in trust at the level of important democratic systems, (Canada, USA, UK, Sweden) and Fukuyama's work (1995), where societies are divided into high-trust societies and low-trust societies. Yet the notion of trust is often regarded as ambiguous, difficult to define and to investigate. Trust has only recently begun to be measured and analyzed in the health sector and almost no empirical investigation has been conducted in developing countries. In high income countries this interest is associated with concern for the decline of trust in governments and professionals, and in developing countries has been prompted by debates around the notion of social capital. Empirical studies found a decrease in the degree of trust in medical institutions, which can be explained by epistemological challenges about the authenticity of knowledge (Popay et al. 2003), by a drop in trust in the power of science (Irwin and Michael, 2003), and by an increase in individual and social reflexivity (Giddens 1994, pp. 194–197). The purpose of this article is to identify—in scientific literature—the way in which trust in health systems and the determinants of a relationship based on trust have been measured. In the analysis, we used the PubMed

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database, without specifying a certain time interval, and the reports of the European Commission referring to health. The following concepts were used: trust, institutional trust, health system, literature review.

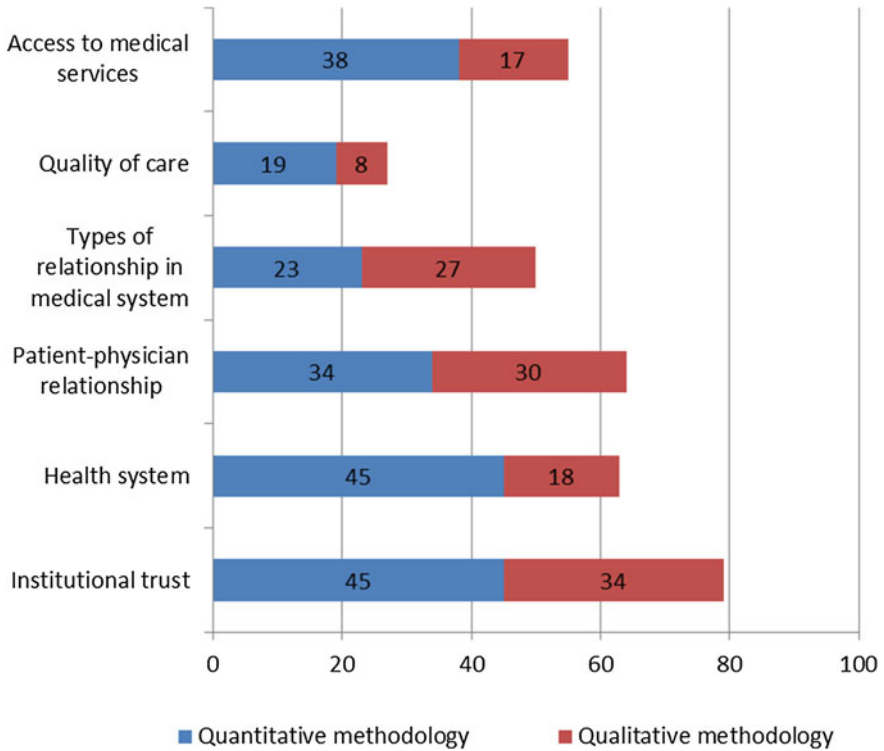
**Keywords** Trust • Institutional trust • Health system

## 1 Introduction

Health system is more and more acknowledged as a predictor that reflects the values and priorities of a nation (Gilson 2003; Freedman 2005). Health system comprises the factors and organizations whose primary purpose is to promote health and to prevent and treat disease (WHO 2008). Health system—considered as social institution—is especially important because it structures relationships between the vulnerable population and the government of that country (Freedman 2005). According to WHO (2007), predictors that reflect a functional health system are as follows: the existence of an infrastructure for adequate medical service delivery; highly skilled health workforce; information accuracy (level of information of the population concerning health plans), adequate medical products, technical performance (medical personnel skills, equipment endowments, medication accessibility), proper financing, effective management, involvement of beneficiaries in health system design, accessibility of services (proximity and eligible costs), healthcare quality, medical system performance (equity, considering patient’s preferences: respect for the person and time of the patient, medical insurances). The purpose of this article is to identify—in scientific literature—the way in which trust in health systems and the determinants of a relationship based on trust have been measured. In the analysis, we used articles and reports ( $n = 79$ ) from the PubMed database, without specifying a certain time interval, and the reports of the European Commission referring to health. The selections criteria we used was full access, full text and only English language, qualitative and quantitative methods employed. The following concepts were used: trust, institutional trust, health system, literature review (Fig. 1).

## 2 Why Is It Necessary to Study Trust?

The issue of trust in physicians, in the medical profession, in medical institutions, and in the healthcare system, implicitly, has been brought to the scientists’ attention lately, taking into account the erosion of trust, determined by the following: the aggressive display in the media of medical personnel migration, of medical malpractice cases, of underfunding and bad management, of the high pressure on the system due to population ageing and to the increase in chronic disease incidence. The erosion of trust is also caused by modifications in the attitudes, values, and expectations of the public concerning the healthcare system, the emergence of



**Fig. 1** The distribution of the reviewed articles by main dimensions and by the type of the research methods employed

private health insurances and of private institutions, the incertitude and economic crises, bombarding the population with ever changing messages and often-conflicting messages on health suggest that we are all in a state of liminality or in “no man’s land” (Armstrong 1993; Bauman 1987; Gifford 2002). The consequence of this behaviour is the public questioning the medical science and people comprising the medical system.

O’Neill (2002) describes lack of trust as a cliché of our times. The consequence of these behaviours is public doubt regarding the medical science and those involved in the medical system. Measuring trust and trust potential can be an important indicator and a support for the health system in its attempt to reform the system (Gilson 2005; Van der Schee et al. 2006). In their article entitled “The End of the Golden Age of Doctoring,” John McKinlay and Lisa Marceau capture the essence of the doctor-patient relationship and the impact of managed care on the erosion of patients’ trust. Perhaps the most notable measure of the change in this relationship lies in the words used to describe it. The “doctor” has become a “provider,” the “patient” has become a “client,” and the “relationship” is now an “encounter” (Table 1).

**Table 1** Differences in doctor-patient relationship from mid- to late 20th century

	Mid 20th century	Late 20th century
Length of encounter	15–20 min	5–8 min
Duration of relationship	Continuity of care	Discontinuity of care (changes with employer and medical staff)
Treatment options	Physician does what the patient needs	Provider follows organizational policy
Confidentiality	Held to be inviolable	Threatened by the number of parties involved and computerized medical records

Source McKinlay and Marceau (2002)

Research on trust in the healthcare system has acquired significantly more importance in the recent period, starting from the works of Hardin (2006), which attest a drop in the level of trust in important democratic systems—Canada, USA, UK, and Sweden). By analyzing the study of Calnan and Rowe (2004) on trust, it is worth underscoring that the most numerous studies have been conducted in the USA (over 50 %), followed by the UK, Canada, and Australia.

In their paper *How do you measure trust in health system? A systematic review of the literature*, Ozawa and Sripad (2013) identified 45 instruments for trust measurement, each with 12 questions on average, instruments which measure levels of trust in different types of relationships with medical systems. The authors concluded as follows: most studies were conducted in the USA, and half of them actually analyzed the relationship between clinicians/nurses and patients. Honesty, communication, confidence, safety, and competence are most frequently correlated with trust. The study of Calnan and Sanford (2004)—that sought to measure the level of general trust in the medical system of England and Wales by using a questionnaire elaborated and applied in Germany and the Netherlands—found the lowest scores on the level of satisfaction in relation to how the health service was run and financed, waiting times, certain professional skills of physicians, as well as the implication of cost cutting for patients. The existence of private health insurance is a determinant of trust erosion in the public health system. The instrument used comprises 32 items grouped into 6 categories: patient centred care, macro policies, professional expertise, quality of care, communication, and information provision and cooperation quality.

The data within the Special Eurobarometer “Patient safety and quality of care” (EC 2014), 71 % of the respondents say the overall quality of healthcare (in their country) is good, one percent higher than within the 2009 study. Respondents in Romania ascribe a good score to the quality of medical services (only 25 %), significantly below the European average, along with Greece (26 %) and Bulgaria (29 %). In the same study, concerning healthcare quality in their country compared to other Member States, Romania is at the bottom: 78 % (the European average is

34 %) believe that medical services are worse. The criteria considered within service evaluation concerned the following: medical staff who are well trained, treatment that works, modern medical equipment, respect of a patient's dignity, access to medical services (accessibility and proximity), no waiting lists for being seen and treated, free choice of doctor and type of hospital, and a welcoming and friendly environment. Taking into account these criteria, we conclude that respondents in Romania ascribed scores higher than the European mean concerning respect of a patient's dignity (29 %, compared to the EU average of 25 %) and free choice of a doctor (28 % compared to 19 %), but also significantly comparable scores concerning the quality of medical personnel and equipments, as well as treatment that works, which suggests that the discontent is related mostly to causes pertaining to the system (underfinancing, bad management), rather than to the interaction/relationship with the medical personnel and all the aspects entailed by this interaction/relationship (evaluation, treatment). Furthermore, the study published by IRES (2014) shows that the medical profession ranks on top of professions that the population ascribes high and very high degree of trust, alongside the teaching and military profession; law enforcement, civil servants, and politicians benefit from the lowest levels of trust.

The assessment of perceived quality of health system (according to Global Health Survey 2011) shows that Romania, alongside Egypt, Colombia, Ukraine, Poland, and Greece, scored the lowest; the main causes are bad management and improper financing. In this study, the directions based on which they assessed perceived quality of services are the following: belief that the health system ensures the best quality for all categories of population (especial the vulnerable ones) and that medical research will evolve in such a way as to provide solutions for solving medical problems. The same study found that the Romanian patients' participation to decision making in the treatment plan is the lowest in Europe, which ranges the therapeutic relationship within the paternalistic paradigm.

By analyzing the findings of these studies, we ask ourselves whether institutional trust is related to norms, regulations, procedures, structure, organization, and financing of the medical system, or if it is related to the micro-analysis based on interpersonal relationships, such as quality of medical care, professional expertise, and care provider-patient relationship? The answer may be provided by qualitative inquiry that explores the way in which both patients and doctors perceive the concept of trust, how one pinpoints a trust relationship, how such a relationship is created and developed.

The results of qualitative inquiry facilitate the development and refinement of hypotheses about how trust functions and can be used to generate questions for use in structured questionnaires. Quantitative inquiry is valuable because it allows larger scale investigation and generates data that can be used, for example, to assess the statistical significance of different determinants to overall levels of trust.

### 3 Determinants of Trust in the Medical System, in the Context of Chronic Disease

The creation, development, and maintenance of trust are fundamental objectives for the fields of medical ethics, (Carter 1989; Pellegrino and Thomasma 1993) for healthcare legislations, and for public health policies (Mechanic and Schlesinger 1996; Mechanic 1998). Conceptually, we can measure trust in the public health system by comparing the way in which individuals access medical institutions, expressing their preference for public or private institutions. Preference for public institutions versus private institutions can reflect the degree of trust and the level of satisfaction for the first or for the latter. In developed countries, individuals access public health services more than twice a year for prophylactic purposes, and they expect not only medical services, but also a supportive environment, based on respect created by the government.

Trust is a fundamental component of the therapeutic relationship and it may be defined, in very simple words, as a patient's expectation for the care provider to act in his/her interest.

A literature review (McKnight and Chervany 2001) on the definition of trust identified 65 works, among which 23 pertaining to psychology, 23 to management and communication, and 19 to sociology, economy, and political sciences. Their analysis has concluded that the definition of trust concerns mainly the characteristics of the trustworthy person (including good will, honesty, morality, expertise, care, integrity, competence, and predictability) and the vulnerability.

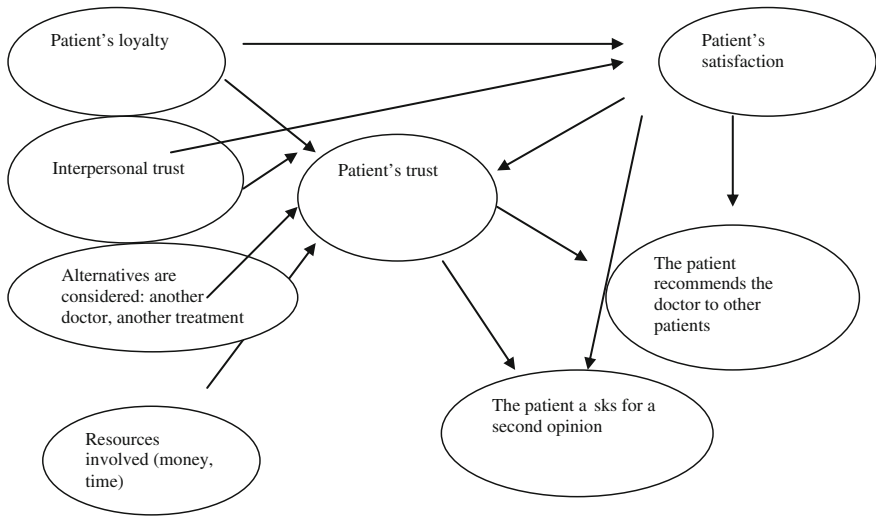
Trust is defined as a process, consisting of varying levels, that evolves over time and is based on mutual intention, reciprocity, and expectations (Lynn-Mc Hale and Deatrick 2000).

Trust can be best understood as a multi-faceted phenomenon, with distinct dimensions: cognitive, emotional, and behavioural; all of them should be seen as bearing various meanings for each individual (Lewis and Weigert 2012). The relationship trust is built in the present, based on past experiences (person's reputation), in order to obtain rewards, (future actions) based on the belief that honesty and morality are attributes of both parties.

In the studies of Ensminger (2001) and Good (1988), the decision of having trust depends largely on previous experiences and on the reputation of parties involved in this relationship (Zucker 1986).

A relationship based on positive experiences is a trust relationship (Fig. 2) that will determine the patient to remain involved in the therapeutic relationship and follow the physician's recommendations (Thom et al. 1999). If premises for a positive relationship are not met, scepticism and mistrust will dominate the relationship' within such a mistrust climate, there are poor chances for any of the participants to discover the knowledge and expertise of the other.

Most often trust relationship is not considered a process-based relationship, but it is measured by studies and experiments that analyze trust as a dependent or independent variable. The independent variable focuses on the benefits of the trust



**Fig. 2** Patient-practitioner relationship (Source Thom et al. 1999)

relationship, such as cutting costs (Noteboom 2000), facilitating cooperation (Gambeta 1988), creating social capital (Putnam 1993, 2000), reducing risks and incertitude (Luhmann 1988).

The dependent variable focuses on factors related directly to trust, as follows: features of the trustworthy person (Messik and Kramer 2001), reputation of the middleman (Coleman 1988), impact of closeness, egalitarianism, and organizational structure in the development of intra-organizational trust relationships (Ouchi 1981).

Seen as instrumental value, trust is the main ingredient for an effective therapeutic relationship. It has been showed to affect some of the most important behaviours and attitudes, including patients' willingness to seek care, reveal very personal information, submit to treatment, participate in research, remain with a physician, and recommend the physician to other patients (Parsons 1951; Rhodes and Strain 2000). It was also shown to mediate clinical outcomes. Shapiro and Shapiro (1983) argue that trust is a key factor in the mind-body interactions that may underlie the effects of placebo, the efficiency of alternative medicine, and that may explain variations in outcomes from conventional therapies, from one patient to another.

Concerning trust relationship, Gray (1997) mentions the halo effect: an interpersonal trust relationship may influence a patient's trust in a hospital or health plan, or the correlative may be true—institutional trust stimulates interpersonal trust (Buchanan 2000).

By using the concept of blind trust, Mechanic (1996) pinpoint that trust in the medical system influences positively trust in medical staff, in medical institutions, and in therapeutic procedures. Medical relationships are much more reciprocal than



any other type of relationships. The physicians' trust in the patient's abilities, especially in chronic disease, facilitates the success of the therapeutic relationship.

In most studies, patient's characteristics do not seem to be predictors of trust. In their investigations on patients with chronic disease, Thorne and Robinson (1988a, b) found that greater trust in the provider is entailed by the provider's attitude of trust in their patient's abilities of managing the disease. Special attention is paid to the importance of patient participating to decision making concerning treatment in constructing the trust relationship. Excluding age, studies proved inconsistent, weak, or inexistent correlations between trust and socio-demographic characteristics (Anderson and Dedrick 1999; Kao et al. 1998). Age may be a predictor of the trust relationship, because it involves long-term interaction of the person with the physician and the medical system. Some studies have found other demographic factors such as race or education to have a relationship with trust but other studies found that it depends on the type and quality of relationship rather than on any particular features of the patient (Thom et al. 1999; Tarrant et al. 2003; Calnan and Sanford 2004) or on relationship continuity (Caterinicchio 1979). Lack of continuity in the treatment was found to have much greater impact on trust relationship than do race, gender, education level, standard of living, or health status (Doescher 2000).

In their study, Mainous et al. (2001) reflect that the elderly and less educated people are more likely to trust both physicians and the system. Meyer et al. (2008) posit that trust increases when patients are treated with respect, seriousness, and when care providers share information with them.

By using the concept of blind trust, Kraetschner et al. (2004) show that some patients relate trust to the physician's professional status; therefore, they do not expect to play an active role, to participate in decision making with regard to the treatment plan. In chronic disease, characterized by high uncertainty and risk, increased dependence in the physician may entail increased level of trust (Calnan and Rowe 2006). Besides interpersonal skills, physicians' technical skills are acknowledged as a factor that determines high levels of trust (Goold and Klipp 2002), and keeping the same physician on a long-term basis may reflect a high level of trust (Kao et al. 1998; Baker et al. 2003). The physicians' behaviour and personality, interpersonal skills, and communication manners seem to be fundamental for building trust. As for situational factors, the frequency of visits to the doctor is not a predictor of trust. Studies found that trust in the physician is often correlated with adherence to treatment, with not changing the physician, not asking for a second opinion, recommended the physician to other patients, few disagreements with the physician, treatment effectiveness, and patient's self-management of health status.

From the perspective of medical personnel, a problem may be their ability of adapting communication and involvement depending on the style of each patient. For the care of patients with chronic disease, studies showed that an important factor—that provides the expected answer—is the trust relationship with the

physician and the medical system. This relationship can be explained by attachment theory, (Bowlby) which posits that a person is used, since childhood, to a certain type of receiving care. These experiences with the attachment person are incorporated within schemes and maps, depending on which the individual acts and understands the behaviour of others within interpersonal relationships, especially in vulnerable times, such as the experience of a chronic disease. By applying attachment theory to adults' behaviour in these situations, Bartholomew and Horowitz (1991) propose a model that identifies four categories or styles of adult attachment: secure, dismissive, preoccupied, and fearful. If the physician is able to identify the type of patient (thus of relationship suitable to the patient's needs), a relationship of trust may be constructed, which is so necessary within the therapeutic process.

## 4 Conclusions

Trust may be related to a host of health system objectives: access to the system, healthy behaviours, continuity and quality of care, improvement of lifestyle, and monitoring of health status. Trust is associated with increased access to healthcare services and to their effective use (Russel 2005), to satisfaction with and loyalty to the physician (Safran et al. 1988), to self-monitoring of the health status (Wang et al. 2007), to the patient's desire of recommending the physician, to other persons, and to adherence to treatment (Hall et al. 2002). The quality of interaction, the involvement in decision making regarding the treatment, the continuity of the treatment, and the implication in behavioural change are determined by the trust between patient and healthcare provider. Socio-demographic factors, access to the healthcare system, use of healthcare services, and negative experiences with the medical system influence the type of patient—medical system relationship (Schwei et al. 2014). Professional norms, the quality of relationships between the categories of personnel medical institutions, and the way in which they reflect upon the patient are factors that can influence the relationship trust (Gilbert 2005). A deep understanding of the factors that determine the creation of a relationship of trust in institutions will contribute to improving medical services provided by institutions; it could also reduce disparities within the medical system and increase the degree of individuals' responsibility for their own health status.

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# When Statistics Are Moved by Words. Biopolitic of International Migration Flows in Contemporary Italy

Gabriele Tomei

**Abstract** The current direction of migration flows in Italy appears strongly linked with the new trends in post-Fordist globalization that pushes an increasing number of high-qualified youths to leave the country in order to insert themselves in the other European knowledge-economies. On the one hand, it unveils the structural transformation of the Italian economy against the backdrop of the cognitive capitalistic turn. On the other hand, the same dynamic show as the power of economic globalization moves people (statistics) just operating through specific keywords that drive the migrants' intentions and perspectives. Referring to Foucault's theoretical analysis of biopolitic, the chapter argues that the new high-qualified emigration flows from Italy during the recent economic crisis have been oriented by means of keywords that convinced people to comply with the rationale of economic calculation. The linguistic way used by these Italian emigrants to stigmatize the contemporary economic situation in their home-country and to imagine their future abroad unveils a clear biopolitical content.

**Keywords** Globalization · Italy · High-skilled migration · Semi-pheriferization · Biopolitic

## 1 Introduction

The contemporary economic crisis in Italy gives empirical evidences that it is not just an exceptional phenomenon but that crisis is part of a global and long-term structural change that affects both the national patterns of production and the international labour market.

The post-2007 economic crisis transformed the southern European countries into laboratories suffering the strength of economic change produced by neo-liberal

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globalization and its impacts on political institutions, society and people's life. The main effect of these trends is a new geography of capital accumulation at global level and, thus, a new equilibrium between the developed, the developing and the under-developing areas within European countries and within the different labour niche inside of them.

Referring to the European situation, the global shift determined a new concentration of financial capital, high technologies and know-how into some very dynamic regions that are now really emerging as the new players of the knowledge-based global economy. On the other hand, other areas in EU have been for the first time pushed to marginalize their role into the global market, specializing their profiles as low-price good and services providers and potential field of investments for global funds interested in short term acquisitions.

Recent trends in human mobility reveal how people are spatially re-distributing according with the tensions, the opportunities and the ties that have been putted into action by the up or down of the economic conjunctures. The main evidence of this is that, since the beginning of the new millennium, the migrations from non-EU South and East countries to Europe started to decline (in absolute terms) or at least to consolidate, whereas others (intra-European high-skilled migrations) seem to come back as a new trend correlating with the above mentioned development of knowledge-based sectors and regions.

In the Italian case, the new outflow of skilled and educated young people that migrate to the northern and more dynamic European economies joined the inflows of young job-seekers and refugee from East Europe and North Africa, according with a sort of dynamic of substitution in the national composition of the workforce.

## **2 The Semi-Peripherization of Italian Economy**

What's happening in the main industrialized economies of the European Union? Are they experiencing convergent or divergent performances (innovation, production, employment)? What does it means in terms of social transformation?

Over the past decades the process of neoliberal globalization has had different effects on different European countries, producing divergent trends in gross domestic product (GDP), innovation, and employment growth rate and therefore creating new equilibria between the different economic sectors and areas. In the decade after the euro was introduced as the common currency (2001–2012) countries such as Luxemburg, Germany, Austria, and Sweden experienced a major growth in GDP per capita ranging from 5 % in Sweden to 37 % in Luxembourg. The GDP per capita in Germany grew by 6 % during this decade, increasing from 116 to 122 (EU-28 = 100); in contrast, Italy, Spain, Portugal, and Greece all experienced a decline in GDP per capita, ranging from 1 % in Spain to 20 % in Italy. In the case of Italy, one of the most industrialized countries of the world, GDP per capita dropped from 119 to 99, falling below the threshold of the EU-28 average.

Northern and Central Europe experienced a new concentration of financial capital, high-level technologies, and know-how that permitted the countries in these regions to maintain and even to strengthen their role as key players in the global knowledge-based economy. In this same period the southern areas of the European Union were pushed into a marginal role, focused on providing low-cost goods and services and seen as a potential field for investment by global funding companies interested in short-term acquisition (Fumagalli 2007).

Italy is rapidly shifting from being one of the most industrialized economies of the world to one of the prime losers of globalization, similar to Japan after the crisis of 1999. Two major reasons for this change are the historically low level of expenditure on research and development (R&D) and, since the early 1970s, the lack of strategic investments in R&D within the industrial sector (Gallino 2003). In the last few years the increasing cuts in public expenditure for higher education and research can be seen as a third reason.

Based on the analytical criteria of the world-systems theory (Wallerstein 1979), Italy appears to have slid away from the 'centre' of the world system of capitalist production to a marginal area defined by Wallerstein as the spatial and functional 'semi-periphery' of the world. The centre, semi-periphery, and periphery are linked by the presence of structural differentials and exploitation mechanisms.

As described before, the Italian structural delay and its continuing failure to invest in R&D caused the economic differential that increasingly separates this country from the more dynamic economies in Europe. These trends have affected the national labour market in two respects: (1) the unemployment level started to rise in 2007 and reached a peak in November 2013, specifically affecting the under 25s and the highly skilled; (2) the informal sector gained prominence due to cost cutting and social dumping strategies in the national labour market. Although these cuts created a grey area in which workers were not required to pay taxes or sign contracts, they also meant that the workers had to forgo labour rights, appropriate salaries, welfare assistance, and insurance coverage.

The migration push-pull mechanisms that resulted from the economic differential were than enforced by the juridical differential—that is, the legal barriers that promote the migration of high-skilled labourers among the EU countries but prevent the same kind of migration from outside the EU, in keeping with the 'Fortress Europe' political approach. Whereas this differential drives skilled Italian youth to apply for special visas to work in countries such as the United States and Germany (Isaakyan and Triandafyllidou 2013), it forces migrants from outside the EU to surrender their competencies to enter the Italian labour market.

The economic and juridical differentials constitute the structural drivers of social transformation in Italy and represent the contextual conditions of the new dynamic and composition of the migration flows.



### 3 Some Statistics About the Italian Emigration in Times of Crisis

Italy has a long history of internal and international emigration but, since 1974 and thanks to its rapid and impressive industrialization, it became one of the new immigration country in the European area. The recent economic crises seems to have stopped this trend and it pushed back Italy officially to be an emigration country as well.

In 2011 the Italian citizens' emigration grew up of +9 % (compared with 2010) and, for the first time, the number of the Italian expatriates (50.057) exceeded that of the Italian citizens returning from abroad (31.466) (Istat 2012: 4; Migrants 2013: 11). The same trend is confirmed by 2013 data that show an increase of 132.179 registrations into the AIRE register, that means +3.1 % compared with the same value in 2012 (Migrants 2013: 7). Some of them are return migrants with Italian citizenship; but the majority is represented by Italian citizens that never migrated before.

Italian expatriates registered at AIRE are 4.341.156 on 2013 January 1st, that means the 7.3 % of the total amount of Italian citizens that reside into the country (Migrants 2013: 7). They are mainly male (52 %), single (54 %), aged between 18 and 49 years old (46 %), expatriated during the last decade (54.6 %) (Migrants 2013: 9). Data from ISTAT reveal a specific dynamism in emigration from people living in the northern and central regions of the country like Lombardia (9.717 emigrants in 2011), Lazio (4.843), Veneto (4.596). Apart from Sicily (4.566 emigrants), the other areas of the Italian south experience much more internal migration than emigration to abroad (Migrants 2013: 11).

The real novelty of this new Italian emigration is represented by the big flow of young skilled and well educated people that leave the country in order to explore the economic and social opportunities in the comparatively most prominent and fascinating area of the post-industrial global growth. In a decade the percentage of Italian graduated emigrants that are older than 25 years moved from 11.9 % (2002) to 27.6 % (2011) whereas the number of those with only the medium school degree declined from 51 % to 37.9 % (Istat 2012: 6). Both groups mainly expatriate to United Kingdom (11.9 %), Swiss (11.8 %), Germany (11 %), France (9.5 %) and Usa (8.4 %) (Istat 2012: 7).

According with OCSE reports (2010), also the Italian university students' emigration is restarting. Due to Italian governments cut off of the education and research expenditures, more and more national students matriculate at Universities in United Kingdom, Spain and Germany and 11 % of Italians attending post-graduated courses in 2012 decided to expatriate in order to complete abroad their academic training (they were 20 % in the field of linguistic, engineering and hard sciences) (Migrants 2013: 15).

The Italian new emigrants leave the home country looking for better career opportunities and personal professional growth (67.9 %), for a job (51.4 %), for a better quality of life (54.3 %), for experiencing an international environment

(43.2 %), for abandoning the country where they are not well (26.5 %), for being more free to live their affective and sexual life without prejudice (12 %) (Censis 2013: 8).

In a certain way, Italy is experiencing a sort of ‘workforce substitution’ according with the U-turn in the development strategy of the country. The disinvestment of national and international capital in the industrial sector and the reorienting of the main economic players toward the financial one undoubtedly expelled many previous workers and they pushed the more skilled and educated ones to emigrate abroad. At the same time the other side of the same economic change, that is the progressive dismantling of the post-war welfare and workfare regime, created the condition for the increasing of the second and informal labour market that maintain the companies’ competitiveness offering them the opportunity to drastically downsize their (labour) cost of productions.

This is also the main reason for the perpetuating of immigration flows of people pulled by the labour demand in the informal sectors. Not despite the crisis but (absurdly) thanks to it.

## 4 500 Reasons to Leave Italy

In 2014, the weblog “Italiansinfuga” ([www.italiansinfuga.it](http://www.italiansinfuga.it)) invited its followers living abroad to describe the reasons why they left their home country. In some weeks, the weblog reached almost 500 posts from emigrants describing what they thought about Italy, its labour market, its political, social and cultural patterns.

The web survey has been participated by several different categories of people. Even if the most impressive group was composed of young people at the beginning of their professional career, many 40s and 50s also published their comments on the weblog. Among the formers and the latters, there were both skilled and un-skilled workers, as well as educated and un-educated people. Almost one-half of the respondent just lived abroad, whereas the other half declared they were going to expatriate in the next future. Participants were not requested to declare their name nor their sexual identity, thus is not possible to consider this as a variable for the content analysis; nevertheless, the signed post seem to be written by man and women in the same proportion.

Their posts represent a very important document in order to analyse what are the most shared keywords among the Italian expatriates and to understand how do they work as ‘linguistic device’ orienting the contemporary Italian emigration.

The graphic representation of the relative weigh that the different words had among the post gives us a very immediate and fascinating image of the real keywords of the new Italian emigration (Fig. 1).

As we expected, the most relevant keyword motivating emigration is ‘*lavoro*’ (labour). The lack of work opportunities and the high precariousness of the few ones are, in fact, the first reason that the participants declare in support of their decision to leave the home country. But it is not only the quantity of the available



which people understand the structural dynamic of the contemporary national society and economy) have both a huge role in articulating the respondents' articulations of their aspirations (Appadurai 2004).

All the three main keywords work as powerful sense-makers. At the micro level, they operate stigmatizing the Italian situation and, then, reinforcing the personal perception that the emigration is the best choice or, sometimes, the only thing to do. At the macro level, they lubricate the intra-European mobility of high-skilled and low-skilled potential workers presenting for both the emerging needs produced by the knowledge-driven labour market as the best fitting opportunities for them. As the very macro-level, this mobility manages the pre-condition for high-competition on the demand side and low-wages on the offer side of the international labour market.

Despite these dynamics move each one at different levels, they seem to be interlinked and interlocked. The analysis of the keywords emerging from the self-representation of the new Italian emigrants opens a glimmer of understanding about how they became part of a broader and more radical migration management design.

## **5 How Words Drive Statistics: The Biopolitical Hypothesis**

The biopolitical approach offers an interesting perspective for understanding how the keywords that we have previously discussed emerged and how this emergence is linked with the semi-periferization process of Italian economy.

Discussing about the nature of the power in the global era, Foucault argued that it does not have a transcendental status and does not drive people through external prescriptions and punishments, because it acts through 'a multiplicity of force relations immanent in the sphere in which they operate and which constitute their own organization' (Foucault 1978: 82). Economic globalization thus operates in an intentional but non-subjective way: problems and constraints are dealt with through a multitude of political, social, and economic agents, convincing people to comply with these solutions in order to be recognized as individuals who share the new rationale of economic calculation.

Recent studies in human mobility discussed the interdependence of migration, power, and structural transformations in both the ascending and the declining phases of economic cycles (Raghuram 2009; Bailey 2013). From a Foucaultian perspective, the international mobility of the workforce also represents the result and the leverage of a form of knowledge that emphasizes 'growth', 'innovation', 'entrepreneurship', and 'mobility' as the four strategic keywords of personal compliance with market dynamics and capital needs. Under the discursive umbrella of 'neoliberalism' this specific form of knowledge power transforms individuals into migrants who act as personal investors and entrepreneurs in the global labour market (Foucault 2008: 190–191, 196).

Biopolitic is the logic of governance that orients people's lives instead of controlling them from the outside. It transforms people's lives because the structural forces that want to use global stratification as the fuel of the new processes of capitalistic accumulation need to achieve their subjective compliance. Lives and bodies so become the crucial battleground for the clash between contextual forces and personal wills, in a situation in which agency is obviously irreducible to the former but, at the same time, it cannot be conceived as completely independent from them.

This analytical perspective shades light on the compliance of the subjective with the systemic rationale of many migration pathways, and makes researcher more ready to understand the role of the cognitive, moral and also emotional dimensions on the one hand in orienting the migrants' choice to expatriate and, on the other hand, in supporting their acceptance of the often hard integrating conditions in the destination countries (Tomei 2011, 2014).

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# Romanian Diaspora and Its Presidents

Romeo Asiminei

**Abstract** The turnout in Europe has experienced a continuous deterioration over the last two decades. Absenteeism causes are many and complex: Lack of trust in politicians, lack of trust in public policies, lack of interest, lack of political culture are some of these causes. In some countries, like in Romania, migration is an important variable when discussing the turnout. Large numbers of migrants are working all over the world but they are still registered in the in country's electoral rolls. The probability that migrants have any interest and/or resources to go to vote in the host countries is relatively low. However, the last elections in Romania were characterized by an increase in the diaspora's intensity of electoral activity. This paper is focusing on two directions of analysis: the political asset and the electoral asset of Romanian diaspora in the context of post-communist presidential elections. The political asset is understood as political participation. The electoral asset is understood as the distribution of votes to the electoral competitors. In this context the paper explores a series of variables and raises a series of hypothetical questions: "Is the diaspora vote a competent one?" and "What is the impact of the votes cast from abroad on the election outcomes?"

**Keywords** Voting from abroad • Diaspora • Political participation • Electoral participation • Presidential election

## 1 Introduction

Migration is not a new phenomenon. People migrated from the beginning of time looking for a better living environment (Lupu 2006). The current globalization just added new variables to migration and generated a new framework of migration (Castels 2002). Moreover, the theoretical approaches on globalization bring into the spot lights new issues like citizenship and multiple loyalties: trans-border citizenship

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(Glick Schiller 2005) or migrants' transnationalism (Waldinger and Fitzgerald 2003). The trans-border citizenship (Glick Schiller 2005) discusses the rights and obligations that migrants have both to the host country and to home country. Migrants do not simply abandon their home country; they retain more or less ties intense with the homeland. In their turn, home countries are also trying to preserve the ties with the emigrants, including the political one and the right to be represented in homeland politics.

We consider that diaspora has three crucial assets: economic, political and electoral. The objective of this paper is to explore the Romanian diaspora's political and electoral assets related to the presidential elections and to raise a series of hypothetical questions. This paper can be used as a starting point for a more in depth empirical research. The paper is based on a secondary analysis of series of data from the International Institute for Democracy and The Electoral Assistance and from The Romanian Permanent Electoral Authority data bases.

The introducing for the first time of the external voting—almost 150 years ago in the US state of Wisconsin (International Institute for Democracy and Electoral Assistance 2007a, b: 247)—was rising at that time and continues to raise fundamental questions regarding the idea of nation's citizens and of political community (Burean 2011) and many country delayed passing a similar law. The spread of democracy, the globalization process and the increase of migration process determined an increasing interest in the voting rights of citizens living, working or just traveling abroad. The external vote was introduced in an incremental manner. For the first time, in Wisconsin, US, the electoral law was empowering soldiers fighting in the American Civil War to vote from abroad. In EU the first external voting law was passed in UK in 1918 and it entitled only servicemen. But these cases were exceptions and the external voting was limited to servicemen and was intended to be recognition for their active participation in wars. Beginning with the acknowledgement of Diasporas and the discussions on globalization a significant number of countries start to adopt external voting. Most of the EU member states introduced the external voting in '80 and '90. The last country from the EU space that adopted an external voting law was Cyprus in 2011 (International Institute for Democracy and Electoral Assistance 2007b).

The external voting is raising a series of questions regarding the idea of nation's citizens, of political community, but also, of the diaspora concept itself. There is a fuzzy constellation of concepts regarding migration that are overlapping or emphasizes a specific dimension such as: diaspora, migrants, long-term migrants, citizens living abroad, abroad workers, non-resident citizens, trans-national community and so on. Van Hear (1998) identifies three characteristics of the Diaspora: (1) the population should be dispersed from the homeland in two or more countries; (2) its presence is enduring; (3) the potential for movement between the host country and homeland exists.

Given that the focus of this paper is the political and electoral political participation, there is no reason to analyse in depth the complex constellation of concepts regarding migration. For practical reasons we'll use the term "Diaspora" understood in a synthetic manner as "population of a country who have migrated abroad and

keep strong identity ties with the homeland” (International Institute for Democracy and Electoral Assistance 2007a, b: 246). In this case we only need to distinguish diaspora from occasional visitors abroad (tourists or business travelers). The most significant part of the Romanian diaspora is falling under the concept of abroad workers on different scales of skills, from unskilled workers in construction, agriculture and housekeeping (Italy, Spain) to highly skilled professionals in medicine (France). Besides the large workers community abroad consolidated in '90 and '00, there is a long-settled community of Romanians that migrated for political reasons to escape the communist regime before 1989 (Burean 2011).

The unprecedented increase of the total size of the Romanian diaspora constitutes itself as a legitimation for greater political rights and representation. However, the extension of the voting rights to the Romanian Diaspora was not simply a result of counting numbers but more a complex political decisions (Burean 2011). Gamlen (2006) underlines three reasons for which home countries pursue diaspora integration: (1) establishing and enforcing a “transnational nation” by building institutions to strengthen symbolic ties to the home country; (2) extracting obligations in exchange for loyalty understood as securing the remittances (Østegaard-Nielsen 2003) and (3) expanding the sphere of political rights in order for individuals to exercise legitimate sovereignty. On the other hand, we can identify a number of arguments against granting citizens the right to vote from abroad. The most important are dealing with the lack of information and the lack of responsibility (Grace 2007). Both arguments are based on the physical absence from the home country. This absence leads to less exposure to information from the national media (although the access to information is becoming much easier), and to a lower direct impact of election outcomes over external voters. Furthermore, Burean (2011) underlines that another argument against the introduction of external voting is the principle of “No Taxation Without Representation” meaning that migrants are no longer paying domestic taxes and for that they should not enjoy full political rights.

## 2 Political Asset

The idea of political community is about strengthening ties with all nations' citizens. Starting 1990 in Romania external voting was allowed. In post-communist Romanian Constitutions (1991, 2003) is explicitly asserted that the state supports the strengthening of ties with Romanians abroad and supports the preservation of their ethnic, linguistic, and religious identity. Before 1990 no external voting was possible and there was no interest for this in the Romanian diaspora. During the communist period the Romanian diaspora was largely dissident. From 1990 until 2008 the votes from abroad were not attributed to any special diaspora electoral district, but were merely added to those from the Bucharest district. Starting 2004 the decision makers paid more and more interest to the electoral resources represented by diaspora. An increasing number of polling stations were established out



**Table 1** A brief history of the Romanian external voting

Year	External voting	Notes
1823–1947	No external voting	No voting rights for the Romanian diaspora
1948–1989	No external voting	The Romanian diaspora was largely dissident
1990	External voting	For the first time there were polling stations organized abroad (embassies and consulates)
1991	External voting	The 1991 constitution acknowledged the existence of the Romanian diaspora and legitimated voting stations in embassies and consulates
1991–2004	External voting	The votes cast were not attributed to any special diaspora electoral district, but were merely added to those from the Bucharest district
2004–2008	External voting	Significant increase of the number of polling stations
2008–present	External voting	New election law created electoral districts for diaspora (4 seats for lower chamber and 2 seats for upper chamber)
2009	External voting	Romanian diaspora change the outcomes of the presidential election
2014	External voting	The highest turnout ( $\approx 380,000$ voters)

of the country and an increasing number of votes were cast abroad. From 2008 the new election law created electoral districts for diaspora (4 seats for lower chamber and 2 seats for upper chamber). A brief history of the Romanian external voting is presented in Table 1.

In Romania external voting is allowed for presidential elections, parliamentary elections, euro parliamentary elections and referendums. There are five voting methods used in the out-country voting (International Institute for Democracy and Electoral Assistance 2007a, b): personal (an elector attends a polling station in person in order to cast his/her vote), postal (an elector completes his or her ballot paper and returns it by post to an official designated to conduct the election), proxy (an elector who is qualified to vote formally appoints another person to vote on his or her behalf), e-voting (any method of voting using electronic means) and fax (an elector receives and returns the voting material by fax). In EU the most common voting methods from abroad are postal and personal, as shown in Table 2. Romania is using a single voting method: personal voting.

Based on the International Institute for Democracy and Electoral Assistance database in December 2014 we have identified two countries in EU which do not allowed external voting: Malta and Greece (yet, the Greece case is not clear). Almost half of the rest of the countries (14) are using only one voting method (personal: 7; postal: 7) and others are using a mix of voting methods (Table 3).

**Table 2** External voting methods (I)

Voting methods	EU member states	Notes
Personal	17	
Postal	18	
Proxy	6	Belgium, France, Netherlands, Poland, Sweden, UK
e-voting	2	Estonia, France
Fax	1	Poland

Source International Institute for Democracy and Electoral Assistance (2007b)

**Table 3** External voting methods (II)

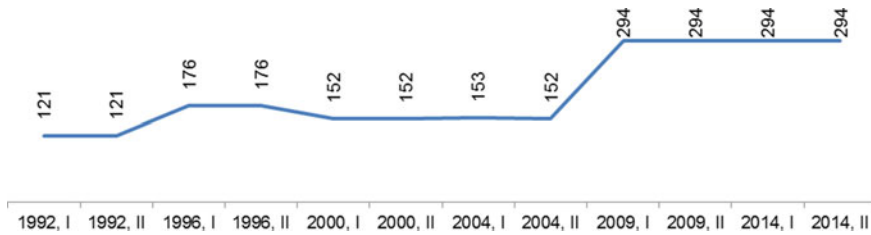
Voting method	EU member states	Notes
Single voting method	14	Personal: 7; Postal: 7
Mixed voting method	12	
No external voting	2	Malta, Greece

Source International Institute for Democracy and Electoral Assistance (2007b)

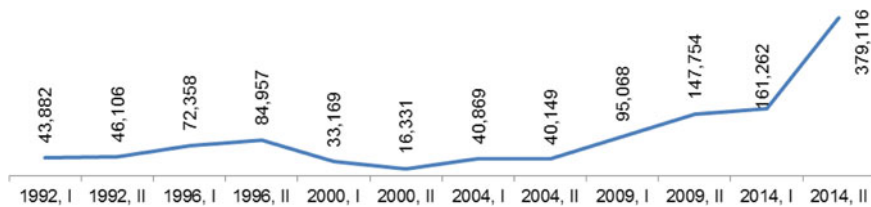
Despite the fact that according to The Constitution Romania is a parliamentary state, the Presidential Elections and not the Legislative ones are the most important ones for Romanian electors, as noticed when looking through the national turnout (Asiminei 2013: 69–74). The same high importance is assigned by diaspora to these types of elections. In this paper we will be focusing on the last six post-communist presidential elections from 1992 to 2014. For the presidential elections in Romania a majority electoral system with two possible rounds is used. If a candidate gains more than 50 % plus one he or she will win the election in the first round. If not, there will be a second round between the first two candidates which gathered the largest number of votes. In the second round the winner will be declared the candidate with the highest number of votes, regardless of the difference that separates him/her from the competing candidate.

In this paper we will analyze the political asset in terms of political participation. However, our perspective is that the full understanding of the political asset needs to count the political participation of the diaspora and the internalization of the new dimensions of the specific political culture of the host country. In the beginning we will be focusing on the administrative framework of the external voting: the dynamic of polling stations number. Until the 2004 presidential election the number of external polling stations was relatively low. According to the Romanian Permanent Electoral Authority (2014) this number was almost doubled starting the 2009 election (see Fig. 1).

The evolution of the political participation in diaspora is absolutely staggering. In 1992 almost 44,000 electors cast their votes from abroad. In 2014 almost 380,000 electors voted for the Romanian president. It is the biggest external turnout in Romanian history. We cannot find a significant statistical correlation between the number of polling stations and the turnout of the presidential election (however, more data from future elections are needed to confirm this). Besides this although



**Fig. 1** Number of polling stations abroad (Source Romanian Permanent Electoral Authority 2014)



**Fig. 2** The presidential turnout abroad (Source Romanian Permanent Electoral Authority 2014)

the number of polling stations had significantly increased in 2009 compared to 2004 (with 95 %) there were protests of Romanians abroad because they could not vote because of the insufficient number of polling stations. The same protests occurred in 2014 when the number of polling stations was similar to the one in 2009. The number of voters had increased in 2014 with 146 %, second round, compared to 2009, second round, as shown in Fig. 2.

We were not able identify in the available Romanian scientific literature a research that explains the dynamics of the Romanian Diaspora turnout. Another consistent explanation (besides the number of polling stations which does not correlate) can refer to the increasing number of immigrants (Netedu 2008). In 2002 (Sandu and Alexander 2009) Romanian migration recorded a spectacular growth due to the elimination of Visas in the Schengen zone. In 2007 Romania became a member state of the EU and a new migration increase is recorded. Sandu and Alexandru (2009: 289) estimates that in 2006 2.2 million of Romanians lived abroad and in 2007 the number was around 2.7 million. The waves of Romanian migration can thus explain the turnout abroad. But this is not enough. The 2008 crisis did not generate, as assumed (Sandu and Alexandru 2009) a massive return of the Romanians in the country. Romanian migrants demonstrated a high degree of adaptation and integration in their host countries (Ulrich et al. 2011), besides the push factors in the country of origin (the acuteness of the economic crisis). We can hypothesize about a series of variables that catalyzes the turnout and a number of

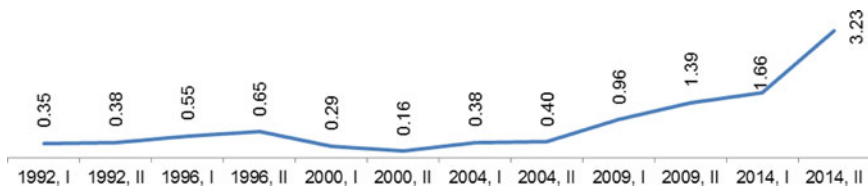
**Table 4** Turnout: catalyzes and inhibit factors

Turnout	Absenteeism
<ul style="list-style-type: none"> <li>• Political activism (political parties, associations)</li> <li>• Believing in changing the political system from Romania</li> <li>• Diaspora’s interest representation</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of interest</li> <li>• Lack of information</li> <li>• Lack of perceived utility</li> <li>• Travel costs (to polling stations)</li> <li>• Legal status of migrants</li> </ul>

factors that inhibit the turnout overseas. Probably, the most important catalyzing variable is political activism: members of political parties, members of the associations of Romanians abroad and initiative and discussion non-formal groups (including online social networks). Others variables that support the turnout are dealing more with perceptions like believes in changing the political system from Romania, or with a rational action like the representation of interests. At the other end we can find inhibiting variables like: lack of interest, lack of information, lack of perceived utility, travel costs (to polling stations) or legal status of migrants (an illegal or semi-legal status is an administrative barrier) (Table 4).

The next legitimate question is regarding the importance of the vote from abroad in electoral situations. We had calculated the impact of votes as percentage of votes cast abroad from the total number of votes. Before 2009 the vote from abroad had a very low impact on elections. Starting with 2009 the Diaspora’s political participation increased from 0.96 % of votes cast abroad from the total number of votes to 3.23 % in 2014, second round (Fig. 3).

We can conclude that Romanian Diaspora is more and more interested in the political issues in their country of origin. Our hypothesis is that diaspora is delivering to Romania democratic structures and practices experimented in host countries. The Diaspora’s political activity had significantly increased in the last two presidential elections (2009, 2014). We can also assume that the diaspora was discovered by candidates as a virgin resource which can be used as an effective electoral asset.



**Fig. 3** Percentage of votes cast abroad from the total number of votes (Source Romanian Permanent Electoral Authority 2014)

### 3 Electoral Asset

Electoral asset is understood as distribution of votes to electoral competitors. The dynamics of the electoral include two periods before 2009 and after the 2009 presidential election. Before 2009 the electoral asset of the Romanian diaspora was insignificant. After 2009 the diaspora proved to be a valuable electoral resource and the candidates for the office of President of Romania have used it. The 2009 presidential election was the first election in which candidates (especially right-wing parties like PDL) had a tailored communication campaign targeted abroad (Fig. 4).

Unfortunately there are no data available for the first post-communist presidential election in 1990. Beginning with 1992 the Romanian diaspora cast its votes predominantly toward right-wing parties' candidates. In 1992 and 1996 elections the most important candidates were Ion Iliescu (FDSN; PDSR) and Emil Constantinescu (CDR). In both elections the diaspora elected the candidate of the right-wing party Emil Constantinescu as president. In 2000 Presidential election the political landscape changed dramatically: the extreme right party's candidate Corneliu Vadim Tudor qualified in second round. In first round the diaspora cast its votes toward independent candidate Mugur Isarescu and liberal candidate Theodor Stolojan.

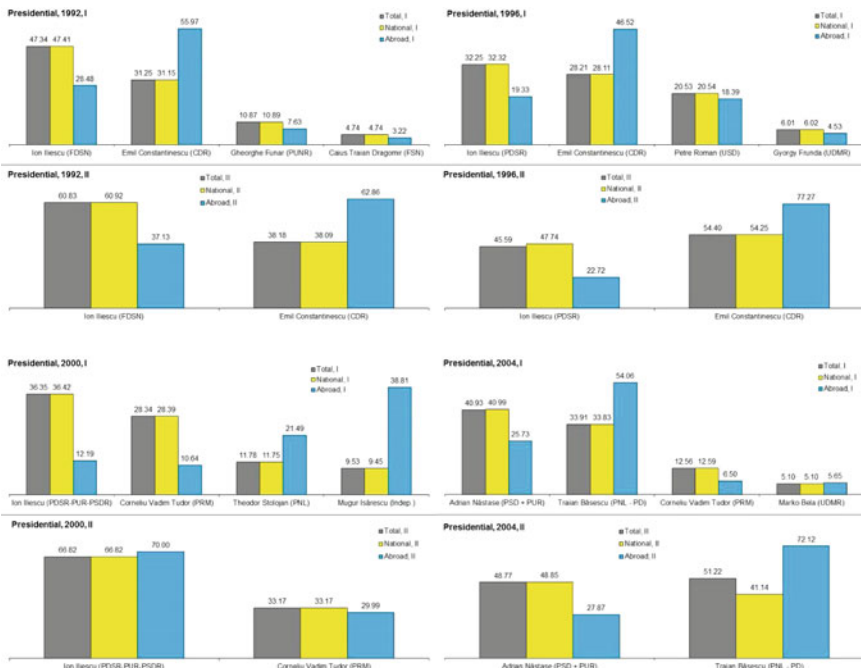


Fig. 4 Presidential election before 2009 (Source Romanian Permanent Electoral Authority 2014)

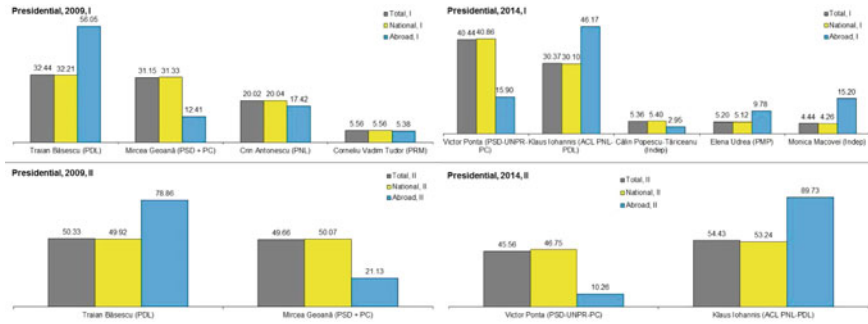


Fig. 5 Presidential election after 2009 (Source Romanian Permanent Electoral Authority 2014)

Stolojan. In order to “save the democracy” the diaspora voted for Ion Iliescu in the second round. This was the first and the last time when diaspora elected a left-wing candidate, even in a higher number as in-country electors. In 2004 the political situation has returned to normal and diaspora voted for the new right-wing party candidate Traian Basescu (Fig. 5).

The 2009 presidential election was marked by a series of premieres: increased number of pooling stations (294 polling stations), increased turnout (≈95,000 first round, ≈148,000 second round) and increased importance of vote (0.96 first round, 1.34 second round). Against a background of in-country absenteeism the diaspora changed the outcome of the presidential elections imposing Traian Basescu as president. Again in 2014 presidential election the Diaspora cast its votes to a right-wing candidate Klaus Iohannis. Despite the massive abroad turnout, the outcome was not influenced directly by the diaspora. Klaus Iohannis also won the election at national level. Iohannis’ campaign staff used and exaggerated the theme of limiting the possibility of diaspora to vote. The Diaspora’s right to vote was an issue subordinated to a larger campaign theme: the weakening of democracy by the left party. The intense political communication generated an increased turnout in-country and out-country and decisively contributed to the victory of the right-wing candidate.

#### 4 Conclusions and Further Questions

The Romanian Diaspora has grown unprecedented since 2002. Despite this growth its political and electoral asset was modest until 2009. After the 2009 presidential election the impact of external votes on the election outcomes has grown a lot. Despite the apparent lack of interest, lack of information, lack of perceived utility and costs of voting, the political participation of the diaspora was higher than before. The electoral impact was decisive in the homeland, both in 2009 and 2014

presidential elections. The Diaspora's intensity of the electoral activity continues to grow: the number of votes cast abroad increased from 43,882 in the 1992 presidential election (round I) to 379,116,2014 presidential elections (round II). Simultaneously diaspora's importance of voting significantly increased: in 1992 diaspora's votes accounted for 0.35 % from the total number of votes in 2014 of the diaspora's votes accounted for 3.23 % from the total number of votes. The last six post-communist presidential elections (1992–2014) were characterized by a strongly oriented diaspora towards right-wing parties' candidates. The Romanian Diaspora is not just an economic asset, but a high important political and electoral asset. Due to our research some questions are imposed:

1. Is it likely that Romanians living abroad have internalized a considerable degree of values and practices of the host country and wish to transfer it to Romania?
2. Can we see diaspora as a voting group that acts as a catalyst for reforming the political system in the less democratic developed homeland?
3. Is the voting behavior of the diaspora ideologically or leaders headed?
4. Is the diaspora vote a competent one?
5. Are Romanian migrants trying to consolidate their "better anticommunists" status by voting the right-wing parties' candidates?

In order to answers these questions we need more empirical data. The goals of this paper were to explore the Romanian diaspora's political and electoral assets and to raise a series of hypothetical questions in recognition of the need of a more in depth empirical research.

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# Microcredit and Quality of Life: An Analysis Model

Valentina Savini

**Abstract** The paper deals with the relationship between microcredit and quality of life. We intend to analyze the quality of life as an indicator of the access to the credit of the “non-bankable”, i.e. those who do not possess the minimum requirements to apply for a bank loan. In other words, the object of the intervention is the relationship between the presence of microcredit programs on a given territory and the social impact that these programs have in terms of purchase or achievement of a self-autonomy by the individual, as well as the achievement or recovery of a full member status of the community, that was unreachable due to poverty conditions or was previously undermined.

**Keywords** Microcredit · Quality of life · Capabilities · Social inclusion · Economic inclusions · Solidarity · Microfinance

## 1 Introduction

Microcredit is a particular form of credit developed since the Seventies in the poorest and underdeveloped areas of the planet. It consists of low-amount loans to people who are normally excluded from the traditional circuit of credit. The feature that allowed microcredit to become the main instrument of ethically oriented finance<sup>1</sup> is the absence of constraints warranties imposed on the applicant.

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<sup>1</sup>Ethical finance or micro finance or socially responsible finance, according to Leonardo Becchetti is «unable to extend credit access to categories not bankable for finance of the second kind [institutional finance, *ed*] and develop new opportunities to combine efficiency and social responsibility (through ethical funds and through the encounter between the micro finance and savers socially responsible)» (Becchetti 2005, p. 152).

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Microcredit is aimed at all those who, being in conditions of social and economic marginalization, are “not bankable”, i.e. without collaterals, offers them a real opportunity of inclusion.

Although several examples of microcredit can be found in Medieval and Renaissance Italy (Bruni and Zamagni 2004; Todeschini 2004; Becchetti 2005; Ciravegna and Limoni 2006; Fondazione Del Monte 2006), the model which makes reference today is undoubtedly that imported from Bangladesh by Muhammad Yunus, an economist and Nobel Prize for Peace 2006. Professor Yunus began his battle against poverty after the famine that struck Bangladesh in 1974. Subsequently, in order to help the poorest of the poor in his country, a task undertaken loan scarce amounts of money to women of a poor village named Jobra, that eventually led him to the establishment of Grameen Bank (Yunus 1997, 2006).

From the beginning the recipients of this ambitious project were women because as Yunus himself writes *«Relatively speaking, hunger and poverty affecting more women than men. If someone in a family has to go hungry, will surely be the woman. And it's always the woman as mother, who lives the traumatic experience of not being able to feed the children with their milk in times of penury and famine»* (Yunus 2006, p. 88). *«When a poor mother begins to gain a bit of money, her concern with to the children, who usually occupy the first place in its hierarchy. In second place comes the home, the woman will buy some tool, reinforce the roof, will make some changes to improve the livability»*. Women seem to be better at managing the family economy and to use effectively the money borrowed. Then, *«if one of the objectives of the development include the improvement of living conditions, the abolition of poverty, access to decent work, the reduction of inequalities, it is quite natural start from women»* (Yunus 2006, p. 89).

In addition to lend small amounts of money to poor women, microcredit praxis is characterized by the creation of small groups. Yunus found that the poor woman alone is too weak whilst if added to a group finds support and strength to go on. Moreover the group allows a constant mutual control and multiplies the diligence of the other members in helping those who are currently in trouble, because if the individual does not honor the debt, the group will not receive the next loan. *«Belonging to the group instills a great sense of security, and this means that the behavior of each is stable and predictable, and reliable. The group exerts gentle pressure to keep all members in line with the overall objectives of the credit program»* (Savini 2012, p. 34).

The third characteristic element of microfinance is the mentoring of consultants for the entire duration of the loan. In the case of Grameen Bank, the bank's traders are closely following the activities of the beneficiaries so that at the first sign of difficulty they can solve the problem. Problems can arise from the fact that customers of Grameen Bank are often illiterate, completely devoid of the basics on numeracy and ignorant of the most basic rules of doing business.

## 2 Microcredit and Current Poverty in West Countries

By Two thousand years<sup>2</sup> on, microcredit has not been an isolated fact concerning the countries of the Third World but a potential tool to overcome poverty in the West Countries.

With the proper and necessary exceptions in the adaptation of microcredit to a globally more advanced context, it is presented as a tool for social and economic inclusion can reconnect and rebuild the social network, the social community and a sense of belonging to it that is lacking in contemporary Western society. On the other hand “give credit” means not only lend money but also “give confidence” and trust to someone, so that even a handshake is enough to settle a deal.

Microcredit goes far beyond the mere mechanism of solidarity because it puts in the hands of the weakest the tools to emerge as individuals from the condition of submission implicated by that solidarity (which really does not help anyone but only the conscience of those who merely bestow crumbs). In these terms, it is a powerful tool able to eradicate the causes of poverty.

Microcredit in developed countries changes its appearance and in most cases even the basic principles. The European Commission in 2009 called microcredit in these terms: «*Microcredit in the EU means loans under €25,000. It is tailored for microenterprises employing less than 10 people (91 % of all European enterprises), and unemployed or inactive people who want to go into self-employment but do not have access to traditional banking services*» (European Commission 2009, p. 4).

Empirical research conducted in 2012 has revealed that in the area of Pescara (Abruzzo, Italy) there are different variations of microcredit: from vain projects to structured credit activities that are suitable to yunusian philosophy. The reality more responsive to the project of Grameen Bank is represented by PerMicro SpA, the leading microcredit company in Italy. The social mission recites:

«We create employment and social inclusion by providing professional microcredit, financial education and the provision of services to start-up and accompaniment to the company, in terms of sustainability of our business. We turn to competent people with a good business idea and people with primary financial needs (housing, health, education), excluded from the traditional channels of credit for poor credit history or precarious employment status».<sup>3</sup>

PerMicro is proof that you can do without speculating finance, gaining perhaps less but promoting a credit activity inclusive of those who are socially and economically disadvantaged.

To a careful analysis, PerMicro appears both as a financial intermediary and social enterprise: while it must ensure itself an income to survive in the market, the other side acts exclusively in favor of people in need.

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<sup>2</sup>In particular, since 2005 as the International Year of Microcredit. See <http://www.yearofmicrocredit.org/>. Last accessed March 2015.

<sup>3</sup><http://permicro.it/storia/>. Last Access March 2015.

The practice of PerMicro, that is so much closer to Bengali microcredit, implies the demand for only moral guarantees and not even real to its “customers”<sup>4</sup>; offers them practical support through the counseling service for the entire period of the loan; the loan is disbursed on advantageous terms and, as far as possible, modeled on their needs.

The conditions so that they can be treated as customers are: the objective conditions of difficulty; being a foreign with papers; being added into an ethnic or religious community that can provide unquestionable moral guarantee; have a good business idea and demonstrate the ability to repay the loan for which they are applying.

In order to demonstrate that the activity of PerMicro is not only inclusive but can be considered as an indicator of the quality of life, obviously intended in terms of capabilities (Sen and Nussbaum 1993; Becchetti and Paganetto 2003), we will proceed to the comments of some samples data collected from field research.

## 2.1 Tables

National data show that the activity of the company, since its establishment (2007) at the time of data collection (2012), the requirement of microcredit has been a growing trend: microcredit for the family still grows faster than that for companies, also in terms of provided money (3,577,242 Euros for the enterprise against 9,093,815 Euros for the family).

Again, at the national level, from the available data it is possible to see how the credit is not granted to anyone, anywhere but follow a hard case selection. Just because it is not about charity, and because you have to prove to desire and deserve an opportunity for personal redemption, only 21.2 % of the interviews (which are in turn 52.4 % of total contacts, i.e. 4555) were successful and received a microcredit for the enterprise. The families received rather more support because they are financed 46.3 % of valid requests, supported by an interview (66 % of total contacts, that is, 6181).

As for the office of Pescara, from 2008 to 2011 were recorded 474 contacts, i.e. people who have applied for a microloan. 40 % of these are of Italian nationality: this proves that Italians represent an important part of the sample in experiencing financial and social exclusion.

Although there is a dispersion of data, the Table 3 shows in percentage terms loan requests, distinguishing for their amount: it appears that the family apply much for small amounts, probably to correct critical situations that are sudden and unexpected (such as dental care or medical small or home renovations); of course, those who want to jump in business requires larger sums (Tables 1, 2 and 4).

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<sup>4</sup>It is essential, as recalled by the Managing Director of PerMicro Andrea Limone, considering the actors of microcredit practice as customers and not mere beneficiaries, as it is usual to hear in the industry, because the word customer returns dignity to the entrepreneur who works seven days 7. <http://permicro.it/articolo-111-intervista-ad-andrea-limone/>. Last accessed March 2015.

**Table 1** Results obtained by PerMicro from 2007 to 2012, in terms of contacts and provided money, distinguishing between enterprise MC and family MC

	2007	2008	2009	2010	2011	2012 <sup>a</sup>	Total
Total contacts	0	934	2171	2216	3602	1813	10736
Enterprise MC	0	41	88	87	225	66	507
Provided in €	0	317.620	643.709	637.404	1.452.219	526.290	3.577.242
Family MC	4	75	186	514	536	577	1892
Provided in €	26.378	400.808	872.809	2.059.558	2.673.765	3.060.497	9.093.815
Total MC	4	116	274	601	761	643	2399
Provided in €	26.378	718.428	1.516.518	2.696.962	4.125.984	3.586.787	12.671.057

National data. Absolute values

Source PerMicro

<sup>a</sup>We consider only the first 6 months of 2012

**Table 2** Contacts, interviews and real financing

	Enterprise MC	Family MC
Contacts	4555	6181
Interviews	2387	4079
Financed	507	1892

Distinction between enterprises MC and family MC

National data. Absolute values

Source PerMicro

Even though the selection of cases for enterprises made by the company is strict, the total so far disbursed by the only branch of Pescara amounts to almost 750 thousand euro.

The PerMicro managers of the office of Pescara speak of its customers in overall positive words: Filipinos have always been the best paying—even if for some time, given the general crisis, they begin to have some difficulty—compared to Pakistanis and Senegalese that however are, by far, the worst. According to respondents, the explanation lies in the fact that they are almost always illiterate and indoctrinated and therefore incapable of reasoning according to rules that their culture and religion do not share and they are not willing to learn and take advice from those who are more experienced in the management of business and domestic economy.

Among the most active customers, along with Filipinos, specialized in the activity of household cleaning, there are Romanian, Georgian and Ukrainian caregivers; Bangladeshis and Pakistanis usually undertake activities of itinerant trade, while Romanian men prefer construction activity.

**Table 3** Amounts requested in relation to purpose of the loan

Amounts requested in €	Purpose			Total
	Family MC	Enterprise MC	NA	
0–1000	0.71	0.53	0.00	0.63
1001–2000	1.07	0.53	0.00	0.84
2001–3000	13.17	2.63	0.00	8.86
3001–4000	18.15	4.21	0.00	12.45
4001–5000	13.88	12.11	0.00	13.08
5001–6000	10.68	3.68	0.00	7.81
6001–7000	4.98	6.84	0.00	5.70
7001–8000	2.14	7.37	0.00	4.22
8001–9000	0.36	2.11	0.00	1.05
9001–10,000	2.14	10.53	0.00	5.49
10,001–15,000	1.78	16.32	0.00	7.59
15,001–20,000	0.00	2.11	0.00	0.84
NA	30.96	31.05	100.00	31.43
Total	100	100	100	100

Period 2008–2011. Percentage values (base 474 individuals)

Source PerMicro

**Table 4** Total disbursed, distinct about purpose

Purpose	In €
MC family	512.311,61
MC enterprise	234.835,00
Total disbursed	747.146,61

Period 2008–2011

Source PerMicro

As regards, however, the majority of requests that arrive at PerMicro, as has been already mentioned, contrarily to the original mission of the company, which identified their target in foreign immigrants, they all come from Italians.

It is hard to say why Italians are turning to PerMicro: of course they are in a situation of need, but since arriving at the branch already in debt, you are unable to establish<sup>5</sup> in what field of activity they operate. By the type of requests that they do, it appears, however, that their desire is to start or restore their own business activity, but it is equally true that only a fraction of the requests got a positive feedback. Of 190 practices, as shown in Table 5, the 68.42 % are rejected and only in 12 % of cases the loan is actually disbursed (Tables 6, 7 and 8).

<sup>5</sup>For further information about what are the motives of the Italians to turn to microfinance institutions, please refer to the company itself.

**Table 5** Applications of Italians at the office of PerMicro in Pescara

	A.V.	% V.
MC family	81	42.63
MC enterprise	107	56.32
NA	2	1.05
Total	190	100

Distinctions by products. Absolute and percentage values  
*Source* PerMicro

**Table 6** Outcome of the practices of the Italians at the Pescara branch of PerMicro

	A.V.	% V.
Esbursed	23	12.11
Started	14	7.37
Rejected	130	68.42
Waiver	23	12.11
Total	190	100

Absolute and percentage values  
*Source* PerMicro

**Table 7** Product required by foreigners at the Pescara branch of PerMicro

	A.V.	% V.
MC family	171	69.80
MC enterprise	73	29.80
NA	1	0.41
Total	245	100

Absolute and percentage values  
*Source* PerMicro

**Table 8** Outcome of the practices of foreigners at the Pescara branch of PerMicro

	A.V.	% V.
Esbursed	128	52.24
Started	18	7.35
Rejected	81	33.06
Waiver	18	7.35
Total	245	100

Absolute and percentage values  
*Source* PerMicro

Comparing funding requests for purpose and outcome of the practice between Italians and foreign reveals interesting data. In percentage terms, the requests for the family—especially when it is in the country of origin—relate predominantly (69.8 %) foreigners, of which only 29.80 % want funding for the company, in the face instead of 56.32 % of Italians.

The interesting thing is that foreigners are seen liquidated 52 % of applications for funding, while only 12 % of Italians. This difference is probably due to the fact

that foreigners come in branch with very specific ideas and have targets for which it is easier to finance them; while Italians, often indecisive and indebted, most often appear scared and looking for someone who can help them and do not have the slightest idea of how to repay the debt. PerMicro, as data say, favors neither Italians nor foreigners, it is open to all those who have a need, therefore the majority of immigrants is then necessarily due to the way they present themselves in filial respect to Italians.

### 3 Conclusion

What could be identified as “the other side of Microcredit” is the new and real awareness that it is a truly effective and efficient business ethics and not a form of useless charity. The fact that it is just a financial intermediary to ensure credit to whom credit has none, is a strong signal of what civil could be economy (Bruni and Zamagni 2004) that progressively integrates those who have been excluded from the logic of the market.

In the relationship between microcredit and quality of life we advance the hypothesis that assuming that microcredit, as we have tried to show, has a function of social inclusion through entrepreneurship education, education to the responsible use of money and the duty of the refund, it can be considered a lever for improving the living conditions of a growing segment of the population.

In particular, the relationship between the number of microcredit practices initiated and those in relative poverty on a given territory (as obtainable from national estimates ISTAT), can be identified as valid and trusted indicator of quality of life.

In mathematical terms, the equation looks like this:

$$QoL = \frac{SMNs}{PRP}$$

where the quality of life is equal to the relationship between the Started Microcredit Negotiations and People being in a situation of Relative Poverty.

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# Qualitative and Quantitative Evaluation of the Entrance Draft Tests from Mathematics

Šárka Hošková-Mayerová and Radovan Potůček

**Abstract** This contribution deals with the qualitative and quantitative evaluation of the entrance draft tests of mathematics for aspirants for the bachelor and master study on the Faculty of Military Technology of the University of Defence. These tests have been organized by the Department of mathematics and physics since 2010. The paper gives information about the history and contents of these draft tests, about the rate attained by the aspirants for the study and about the rate of single type of test examples and analyses these tests from the qualitative and quantitative point of view in the period of the last five years.

**Keywords** Military professional education · Entrance examination · Entrance draft test · Entrance proceeding success rate

## 1 Introduction

Let us start with James M. Becker's words: *"The forces of change are more widespread and more insistent than ever before. The rush of events tests the ability of our political, economic, and social institutions to adapt and grow. As yet the necessary adaptations in education have not been entirely satisfactory. A fateful lag exists between situations in which men and women must live and their preparation to do so wisely. The magnitude of these changes and the increases in knowledge and insights required necessitate new approaches to learning at every level of education and in all areas of the curriculum"*. It seems to be almost unbelievable that these words were already said in 1965 as they clearly depict the problems of nowadays. *The social studies have a key role in the development of young men and*

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*women capable of living intelligently in a world characterized by pervasive and tumultuous change.*

Recent trends in Social Science must reflect trends ongoing in the whole society. The task of social studies is to describe these trends, study them and draw conclusions and consequences that might be expected in the society. As well as today's society is continuously changing and developing, also the students' approach to studies is completely changing, too. In connection with relatively easy availability of information that can be obtained not only through media but especially on the internet, also the number of possibilities how to get the most detailed information possible is becoming wider. This includes information about studies at universities, about the range of offered fields and specializations that given universities offer their students. Universities are trying to provide applicants with the most detailed information about the admission procedure, its content and range through printed materials and news in the printed media and especially through their websites. The Faculty of Military Technologies of the University of Defence (hereinafter referred to as FMT UD) follows the trend of growing awareness, thus meeting future students' requirements and expectations to be well and in detail informed not only about the studies but also about the admission procedure. An ideal opportunity how to contact future applicants and enable them to get an realistic idea about the studies, its quality and demandingness, as well as the admission procedure, are the Open days.<sup>1</sup> The Department of Mathematics and Physics of FMT UD also regularly takes part in these events. It informs not only about the entrance tests of mathematics, but it also offers the applicants the opportunity to take part in draft entrance tests of mathematics for free.

## ***1.1 History of Draft Entrance Tests of Mathematics***

The history of draft entrance tests of mathematics at FMT UD is relatively short, however, even a five-year period enables us to evaluate their contribution and to compare the success rate of applicants. The authors are university teachers who in the long term participate in mathematical education of future professional soldiers as well as civilian students who study military specializations with the aim to find a future job in companies that cooperate with the army and/or with other security forces.

Moreover, it has to be mentioned that the University of Defence plays the key role of the Czech military professional personnel university-level education and of the science research within the Ministry of Defence. Education and research are therefore the school's priorities, completed with expert and processing work. University provides for accredited education in bachelor, master and doctoral degree programmes. The follow-on training is organized in life education programmes (Hošková-Mayerová 2011).

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<sup>1</sup>Dny otevřených dveří FVL a FVT [online]. Web page of University of Defence. Available from [http://www.unob.cz/sluzby\\_zarizeni/stranky/den\\_otevrenych\\_dveri\\_fvl\\_fvt.aspx](http://www.unob.cz/sluzby_zarizeni/stranky/den_otevrenych_dveri_fvl_fvt.aspx).

In the last years the most significant changes have occurred in the contents of education, new educational and study programs have been accredited, reflecting current needs of the Czech Republic Army (Hošková 2010). Significant changes were made to the contents of newly accredited study programs. The education achieved here is comparable with university civil education provided by public schools and universities as well as acceptable within the EU. Concurrently, conditions have been created for soldiers to assert themselves after termination of their career contracts (military careers) in their secondary careers in the labor market of the civilian sector (Rosická and Hošková-Mayerová 2014).

Graduates of all these fields must have very good logical thinking, they also need to have good knowledge of social sciences and of decision-making process, as it is assumed that they will work on various management positions requiring everyday work with people. So that students are able to meet all requirements of university studies, it is necessary for them to have sufficient knowledge and skills gained at secondary school. This knowledge and experience are tested at entrance exams which include especially tests of mathematics, English and physical fitness test (Hošková-Mayerová 2014).

## 1.2 Draft Tests

As mentioned above, the authors of this paper deal with education of mathematics as well as admission process in the long term. They observe trends of knowledge (or ignorance) of their future students.

The idea behind organizing draft tests of mathematics is to make sure the future students are well-prepared for the entrance exams and know not only the level of these tests and their thematic content, but also the environment in which the entrance exams take place.

The idea of draft tests is not new, a similar opportunity has been offered for some time by e.g. The Faculty of Civil Engineering of CTU in Prague<sup>2</sup> or the Faculty of Finance and Accounting of UE in Prague<sup>3</sup> where they are held on-line.

First draft tests of mathematics took place in 2010 and were only meant for students of secondary military school. The following years were meant for everybody interested in the study.

The numbers of participants (Military Secondary School is further abbreviated to MSS and Civilian Secondary School are abbreviated to CSS) in the draft entrance tests of mathematics (in the table shown as DEEM) at FMT UD together with numbers of participants in the entrance exams (shown as EEFMT) in the last five

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<sup>2</sup>Přijímací zkoušky „NANEČISTO“ [online]. Web page of the Department of Mathematics of The Faculty of Civil Engineering of CTU in Prague. Available from <http://mat.fsv.cvut.cz/nanecisto/>.

<sup>3</sup>Přijímací zkoušky nanečisto na FFÚ VŠE v Praze [online]. Web page of the Faculty of Finance and Accounting of UE in Prague. Available from <http://kbp.vse.cz/testy/>.

Univerzita obrany, Fakulta vojenských technologií  
2014

## MATEMATIKA – přijímací zkouška „nanečisto“

\_\_\_\_\_ VYPLŇTE \_\_\_\_\_

Jméno a příjmení: .....

NEVYPLŇUJTE

Počet správných odpovědí	
Počet bodů	
Opravil (podpis)	

Právě jedno uvedené řešení je vždy správné. Za správně zakroužkovanou variantu je 5 bodů, za označený chybný výsledek nebo neřešený příklad je 0 bodů. Pro zvládnutí testu je třeba získat alespoň 50/100 bodů.

1. Po úpravě výrazu  $\left(\frac{a^{-2}b^{-4}c^2}{a^{-1}b^{-2}c^{-1}}\right)^{-2}$  dostaneme

- a)  $\frac{a^2b^{-2}}{c^4}$  b)  $\frac{a^2b^4}{c^6}$  c)  $\frac{a^6}{b^{-4}c^2}$  d)  $\frac{c^{-2}}{a^2b^4}$  e)  $\frac{a^2b^2}{c^4}$

2. Po úpravě výrazu  $4^{4x-3} \cdot 16^{3-2x}$  dostaneme

- a)  $16^{1-2x}$  b)  $4^{2x-3}$  c) 16 d)  $4^{2+x}$  e) 64

3. Po úpravě výrazu  $(x^{-1} - y^{-1})^2 \cdot (\sqrt{xy})^4$  dostaneme

- a)  $\frac{1}{x^2} - \frac{1}{y^2}$  b)  $\frac{x-y}{(xy)^2}$  c)  $(x-y)^2$  d)  $\frac{xy}{x-y}$  e)  $(x^2 - y^2)^{-1}$

4. Řešením rovnice  $\frac{1+p}{x-1} = \frac{1}{p-1}$  vzhledem k  $x$  ( $p$  je parametr) dostaneme

- a)  $x = p^2$  b)  $x = \frac{1}{1-p^2}$  c)  $x = \frac{1}{p^2}$  d)  $x = \frac{1+p^2}{1-p}$  e)  $x = 1-p$

5. Grafem funkce  $y = -x^2 + 2x - 2$  je parabola, která osu  $x$

- a) protíná v bodech  $x = -2, x = 2$  b) dotýká se jí c) protíná v bodech  $x = -1, x = 1$   
d) neprotíná e) protíná v bodech  $x = -1, x = 2$

6. Diskriminant  $D$  kvadratické rovnice  $ax^2 + (a-b)x - b = 0$  je výraz

- a)  $D = b^2 - a^2$  b)  $D = 0$  c)  $D = 4ab$  d)  $D = a^2 + b^2$  e)  $D = (a+b)^2$

7. Řešením nerovnice  $|1-x| \geq 2$  jsou všechna reálná čísla  $x$ , pro která platí

- a)  $x \in (-\infty, -1)$  b)  $x \in \mathbf{R}$  c)  $x \in (-\infty, -1) \cup \langle 3, +\infty$  d)  $x \in \langle -1, 3$  e)  $x \in \langle 3, +\infty$

8. Funkce  $\frac{1}{\ln(2-x)}$  je definována (má smysl) pro ta reálná čísla  $x$ , pro která platí

- a)  $x \in (-\infty, 1) \cup (1, 2)$  b)  $x \in (-\infty, -1)$  c)  $x \in \mathbf{R}$  d)  $x \in (-\infty, 2) \cup (2, +\infty)$  e)  $x \in (1, 2)$

9. Řešením rovnice  $\frac{\log x^3 - 2}{\log x - 1/2} = 2$  je

- a)  $x = \sqrt{10}$  b) rovnice nemá řešení c)  $x = 1/10$  d)  $x = 10$  e)  $x = 100$

10. Je-li  $\frac{100^{2-x}}{1000 \cdot 10^{x+1}} = 10^{-3}$ , pak

- a)  $x = -1$  b)  $x = -2$  c)  $x = 0$  d)  $x = 2$  e)  $x = 1$

Fig. 1 Assignment of draft entrance test of mathematics of 2014

- 
11. Je-li  $\cos x = -\frac{4}{5}$ , kde  $x \in \left(\frac{\pi}{2}, \pi\right)$ , pak  $\cos 2x =$   
 a)  $\frac{7}{25}$  b)  $\frac{3}{5}$  c)  $-1$  d)  $-\frac{3}{25}$  e)  $-\frac{7}{5}$
- 
12. Nejmenší perioda funkce  $y = \cotg \frac{\pi x}{2}$  je  
 a)  $\frac{1}{2}$  b)  $2$  c)  $\frac{\pi}{2}$  d)  $\frac{2}{\pi}$  e)  $\pi$
- 
13. Řešením rovnice  $2 \sin x = -\sqrt{2}$  jsou právě všechna  $x \in \mathbf{R}$ , pro něž platí ( $k$  je celé číslo)  
 a)  $x = \frac{1}{4}\pi + 2k\pi$  a)  $x = \frac{3}{4}\pi + 2k\pi$  b)  $x = \frac{1}{2}\pi + 2k\pi$  a)  $x = \frac{3}{2}\pi + 2k\pi$  c)  $x = \frac{1}{4}\pi + 2k\pi$   
 d)  $x = \frac{7}{2}\pi + 2k\pi$  e)  $x = \frac{5}{4}\pi + 2k\pi$  a)  $x = \frac{7}{4}\pi + 2k\pi$
- 
14. Argument (neboli úhel v goniometrickém vyjádření) komplexního čísla  $\frac{-4}{1+i}$  je  
 a)  $0$  b)  $\frac{5\pi}{4}$  c)  $\frac{3\pi}{4}$  d)  $\pi$  e)  $-\frac{\pi}{4}$
- 
15. Určete obvod obdélníku s úhlopříčkou délky  $2\sqrt{10}$  cm, jsou-li délky jeho stran v poměru  $1 : 3$ .  
 a) 32 cm b) 28 cm c) 24 cm d) 20 cm e) 16 cm
- 
16. Určete poloměr  $r$  koule, jejíž objem je číselně roven jejímu povrchu.  
 a)  $r = \pi^2$  b)  $r = 1$  c)  $r = \sqrt{3}$  d)  $r = 3$  e)  $r = \pi$
- 
17.  $\frac{8!}{6!} - \binom{7}{4} - \binom{6}{3} =$   
 a) 1 b) 2 c) 0 d) -2 e) -1
- 
18. Přímky  $p, q$  o rovnicích  $p: x = 2 - t, y = 1 + 2t, t \in \mathbf{R}$  a  $q: x - 2y = 1$  jsou  
 a) rovnoběžné různé b) kolmé c) různoběžné, svírající ostrý úhel d) totožné e) mimoběžné
- 
19.  $3x^2 - 6x = 2y^2 - 6$  je rovnicí  
 a) kružnice b) hyperboly c) paraboly d) elipsy e) není kuželosečka
- 
20. Na ekofarmě chovají slepice a králíky. Všechna chovaná zvířata mají dohromady 200 nohou a počet kusů slepic je o 4 větší než počet králíků. Kolik je králíků?  
 a) 24 b) 28 c) 32 d) 36 e) 40

Fig. 1 (continued)

years, for which detailed information can be found on websites are given in the following table: (more information can be found at webpage<sup>4</sup>).

Number of participants/Year	2010	2011	2012	2013	2014	Sums
Civil youth	–	43	66	42	21	172
Students of MSS and college	21	38	27	23	33	142
Participants of DEEM total	21	81	93	65	54	314
Participants of EEFMT total	466	549	537	423	372	2347
DEEM/EEFMT ratio (%)	5	15	17	15	15	13

<sup>4</sup>Zpráva o výsledcích přijímacího řízení [online]. Web page of the Faculty of Military Technology of the University of Defence in Brno. Available from <http://www.unob.cz/fvt/studium/Stranky/zprava.aspx>.

## Ukázkové řešení příklady k přijímacím zkouškám z matematiky na FVT UO

1. Zjednodušte výraz  $\sqrt[3]{\frac{x^2}{\sqrt[5]{x}}} \cdot \sqrt[5]{x^2}$ .

Užitím vzorců  $\sqrt[n]{a^m} = a^{\frac{m}{n}}$ ,  $\frac{a^k}{a^\ell} = a^{k-\ell}$ ,  $(a^k)^\ell = a^{k\cdot\ell}$ ,  $a^k \cdot a^\ell = a^{k+\ell}$  postupně dostáváme:

$$\sqrt[3]{\frac{x^2}{\sqrt[5]{x}}} \cdot \sqrt[5]{x^2} = \sqrt[3]{\frac{x^2}{x^{\frac{1}{5}}}} \cdot x^{\frac{2}{5}} = \sqrt[3]{x^{2-\frac{1}{5}}} \cdot x^{\frac{2}{5}} = \sqrt[3]{x^{\frac{9}{5}}} \cdot x^{\frac{2}{5}} = \left(x^{\frac{9}{5}}\right)^{\frac{1}{3}} \cdot x^{\frac{2}{5}} = x^{\frac{9}{5} \cdot \frac{1}{3}} \cdot x^{\frac{2}{5}} = x^{\frac{3}{5}} \cdot x^{\frac{2}{5}} = x^{\frac{3}{5} + \frac{2}{5}} = x^{\frac{5}{5}} = x.$$

2. Zjednodušte výraz  $\left(\frac{9}{8}\right)^{1-x} : \left(\frac{16}{27}\right)^x$ .

Vyjádřením čísel pomocí mocnin  $9 = 3^2$ ,  $8 = 2^3$ ,  $16 = 2^4$ ,  $27 = 3^3$  a užitím vzorců z příkladu 1. dostáváme:

$$\begin{aligned} \left(\frac{9}{8}\right)^{1-x} : \left(\frac{16}{27}\right)^x &= \left(\frac{3^2}{2^3}\right)^{1-x} : \left(\frac{2^4}{3^3}\right)^x = \frac{(3^2)^{1-x}}{(2^3)^{1-x}} : \frac{(2^4)^x}{(3^3)^x} = \frac{3^{2(1-x)}}{2^{3(1-x)}} : \frac{2^{4x}}{3^{3x}} = \frac{3^{2-2x}}{2^{3-3x}} \cdot \frac{3^{3x}}{2^{4x}} = \frac{3^{2-2x+3x}}{2^{3-3x+4x}} = \frac{3^{2+x}}{2^{3+x}}. \end{aligned}$$

3. Zjednodušte výraz  $\frac{\left(u^{\frac{1}{3}} - v^{\frac{1}{3}}\right) \cdot \left(u^{\frac{2}{3}} + \sqrt[3]{uv} + v^{\frac{2}{3}}\right)}{\sqrt{u} - \sqrt{v}}$ .

Užitím vzorců  $(a-b)(a^2+ab+b^2) = a^3-b^3$ , kde  $a = u^{\frac{1}{3}}$ ,  $b = v^{\frac{1}{3}}$ , a  $a^2 - b^2 = (a-b)(a+b)$ , kde  $a = \sqrt{u}$ ,  $b = \sqrt{v}$ , dostáváme:

$$\frac{\left(u^{\frac{1}{3}} - v^{\frac{1}{3}}\right) \cdot \left(u^{\frac{2}{3}} + \sqrt[3]{uv} + v^{\frac{2}{3}}\right)}{\sqrt{u} - \sqrt{v}} = \frac{u - v}{\sqrt{u} - \sqrt{v}} = \frac{(\sqrt{u})^2 - (\sqrt{v})^2}{\sqrt{u} - \sqrt{v}} = \frac{(\sqrt{u} - \sqrt{v})(\sqrt{u} + \sqrt{v})}{\sqrt{u} - \sqrt{v}} = \sqrt{u} + \sqrt{v}.$$

4. Řešte rovnici  $\frac{\alpha + \beta}{\alpha - \beta} = \frac{\beta}{\alpha - t}$  vzhledem k proměnné  $t$ .

Po vynásobení rovnice součinem jmenovatelů obdržíme rovnici  $(\alpha + \beta)(\alpha - t) = \beta(\alpha - \beta)$ . Roznásobením obou stran dostaneme  $\alpha^2 - \alpha t + \alpha\beta - \beta t = \alpha\beta - \beta^2$ , tj.  $\alpha^2 - (\alpha + \beta)t = -\beta^2$ , odkud  $\alpha^2 + \beta^2 = (\alpha + \beta)t$ , takže

hledané řešení je tvaru  $t = \frac{\alpha^2 + \beta^2}{\alpha + \beta}$ .

5. Určete hodnoty parametru  $p \in \mathbb{R}$ , pro které parabola o rovnici  $y = 2x^2 + 2px + 8 + 3p$  protíná osu  $x$ .

Parabola, která je grafem kvadratické funkce  $y = ax^2 + bx + c$ , protíná osu  $x$  právě tehdy, když je diskriminant  $D = b^2 - 4ac > 0$ . V daném případě je  $D = b^2 - 4ac = (2p)^2 - 4 \cdot 2 \cdot (8 + 3p) = 4p^2 - 24p - 64 = 4(p^2 - 6p - 16)$ . Diskriminant  $D > 0$  právě tehdy, když  $p^2 - 6p - 16 > 0$ , tj. když  $(p+2)(p-8) > 0$ , přičemž kořeny  $p_1 = -2$  a  $p_2 = 8$  pomocné kvadratické rovnice  $p^2 - 6p - 16 = 0$  můžeme určit buď z paměti, anebo užitím vzorce pro řešení kvadratické rovnice  $p_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{6 \pm \sqrt{6^2 - 4 \cdot (-16)}}{2} = \frac{6 \pm 10}{2} = \begin{cases} -2, \\ 8. \end{cases}$

Součin dvou výrazů je kladný právě tehdy, když jsou buď oba výrazy záporné, tj. když  $p < -2$  a  $p < 8$  neboli když  $p < -2$ , anebo když jsou oba výrazy kladné, tj. když  $p > -2$  a  $p > 8$  neboli když  $p > 8$ . Daná parabola tedy protíná osu  $x$  pro hodnoty parametru  $p \in (-\infty, -2) \cup (8, +\infty)$ .

Fig. 2 Material for self-study with sample tasks solved in detail—first page

With the exception of 2010, in all other years approximately 15 % of all participants of entrance exams took part in draft entrance tests of mathematics. This number is very surprising for us. The entrance exams are free of charge so we would expect the number to be much higher. One of the aims of the research was to find out why the participation in the exams is so low. Another question was whether social climate (generally prevailing opinion of mathematics, significance of education, etc.) influences the low participation?

## 2 Assignment of Draft Entrance Exam of Mathematics

The entrance exam of mathematics at FMT UD (Potůček and Račková 2008) is in a form of a test created by 20 tasks of secondary school mathematics with 5 multiple choice answers only one of which is correct. The level of difficulty is not very high as there is limited time of 50 min for completing the test of mathematics. The applicants have over 2 min to read a task, solve it and circle the answer. The applicants are not allowed to use any help, including a calculator.

For each correctly marked answer the applicant gets 5 points, for an incorrect answer 0 points, so it is possible to get maximum of 100 points of test of mathematics, while to successfully pass the entrance exam of mathematics it is necessary to get at least 50 points. Results of all used versions of entrance test are made public on the website of UD after the admission process has ended. The types of tasks of the entrance exam of mathematics are the same as those of draft entrance exam. Sample task of draft entrance test of mathematics of 2014—see Fig. 1.

Solved draft entrance tests are corrected and sent via email to applicants together with not only the total sum of points but also the overview of points reached for each task.

After going through the draft entrance exam, each participant gets a 4-page material for self-study and final individual revision for entrance exams of mathematics with 20 sample tasks solved in detail. Because of covering various versions of assignments, some tasks are sometimes more difficult than those at entrance exams—see Fig. 2.

## 3 Success Rate of Applicants from MSS and Civilian SS at Draft Entrance Tests of Mathematics

Information about the success rate of applicants when solving individual tasks at draft entrance tests of mathematics from 2010 to 2014 (tasks with success rate over 50 % are given in green, tasks with success rate of 50 % are yellow and less than 50 % in orange) are shown in the following Chart 1, where abbreviation MA stands for MSS students and CA stands for CSS.



Year\Ex	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	ΣAsp
'10/MA	17	11	12	21	21	19	16	16	10	21	8	7	10	3	18	15	9	14	13	19	21
'11/CA	25	17	18	35	30	31	27	19	22	33	8	8	9	6	32	26	18	17	14	33	43
'11/MA	28	21	24	36	30	33	28	23	19	34	15	13	15	2	31	25	19	20	17	33	38
'12/CA	46	32	41	39	39	40	39	28	16	38	12	21	27	28	36	26	43	16	11	29	66
'12/MA	20	20	22	25	24	20	15	17	6	20	7	10	12	13	8	11	19	6	5	14	27
'13/CA	31	22	8	5	21	29	28	31	26	23	6	9	15	6	25	18	22	17	5	26	42
'13/MA	15	13	6	8	12	20	13	18	11	16	2	5	6	6	12	8	14	14	4	14	23
'14/CA	15	10	7	15	11	13	12	2	13	14	2	2	6	5	6	5	8	5	5	12	21
'14/MA	20	16	14	21	16	19	20	3	9	18	7	2	7	13	15	10	4	12	16	22	33
Solv.Ex.	217	162	152	205	204	224	198	157	132	217	67	77	107	82	165	144	156	121	90	202	314
SE-CA	117	81	74	94	101	113	106	80	77	108	28	40	57	45	99	75	91	55	35	100	172
SE-MA	100	81	78	111	103	111	92	77	55	109	39	37	50	37	66	69	65	66	55	102	142
Rate[%]	69	52	48	68	65	71	63	50	42	69	21	25	34	26	53	46	50	39	29	64	50%
R-CA[%]	68	47	43	55	59	66	62	47	45	63	16	23	33	26	58	44	53	32	20	58	45%
R-MA[%]	70	57	55	78	73	78	65	54	39	77	27	26	35	26	46	49	46	46	39	72	60%

**Chart 1** Success rate of applicants from MSS and CSS, success rate of solving individual types of tasks

**Table 1** Type of tasks

1	Modification of formula with powers and radicals
2	Modification of exponential expression
3	Solution of an algebraic formula with the help of formulas and reduction
4	Expression of unknown from the formula
5	Solving quadratic equation, relative position of parabola and axis
6	Discriminant quadratic equation depending on parameter
7	Solving linear inequalities with absolute value
8	Domain of function
9	Logarithm of number term, solving of logarithmic equation
10	Solving exponential equations, logarithmic rules
11	Relations among goniometric functions
12	Determination of the smallest period of composite goniometric functions
13	Solution of goniometric equation
14	Operation with complex numbers
15	Task from plane geometry, solving of triangle
16	Volume or surface of solid, depending on its size
17	Modification of combinatorial formula, solving of logarithmic equation
18	The relative positions of two lines in the plane
19	Classification of conics given by a general formula
20	Word problems (verbal tasks) leading to the system of two linear equations

Draft test of mathematics as well as entrance exams of mathematics are designed with the following 20 types of tasks covering the basic parts of secondary school mathematics.

Chart 1, which gives numbers and percentage success rate of applicants when solving individual types of tasks in 2010–2014 with distinction of CSS and MSS students, shows that the average success rate of solving tasks is 50 %, so it is possible to state that the level of difficulty of draft entrance test of mathematics is chosen appropriately. MSS students were more successful than CSS students with solving 16 tasks. The biggest differences in favour of MSS students proved to be with tasks to express unknown from the formula (task no. 04, difference of 23 %) and tasks to classify conic section (task no. 19, difference 19 %). Students of CSS had the same success rate as MSS students with a task to define a complex number (task no. 14, success rate 26 %). CSS students reached a higher success rate than MSS students only with 3 tasks, i.e. a task of plane geometry to define a triangle, a square and a circle (task no. 15, difference 12 %), tasks to modify expressions with binominal coefficients and factorials (task no. 17, difference 7 %) and tasks to solve a logarithmic equation (task no. 09, difference 6 %).

MSS and CSS students reached the highest average success rate when solving tasks to calculate the discriminant of a quadratic equation (task no. 06, success rate 71 %), to simplify an expression with powers (task no. 01, success rate 69 %) and to solve exponential equation (task no. 01, success rate 69 %). The reason of a higher success rate of solving these tasks can be the fact that tasks to define the discriminant of a quadratic equation as well as tasks to solve an exponential equation belong to basic and frequent secondary school tasks which are also algorithmically uncomplicated.

On the contrary, MSS and CSS students reached the lowest success rate (Hošková and Račková 2010) when determining relations between goniometric functions (task no. 11, success rate 21 %), defining a period of a goniometric function (task no. 12, success rate 25 %) and when solving a task to calculate with complex numbers (task no. 14, success rate 26 %). Tasks of goniometry traditionally cause trouble to a significant number of students. Failure when calculating with complex numbers most probably comes from the fact that the thematic area “Complex numbers” (it is a part of 4th year SS students curriculum) was not taught and thoroughly practised at the time of draft entrance test of mathematics.

Based on the data given in Table 1 it is clear that FMT UD applicants coming from students of military secondary school were better prepared for the draft entrance test of mathematics than students of civilian secondary schools, as they reached an average success rate 60 % as opposed to 45 % of students of civilian secondary schools. Better results of MSS students can be explained by a higher portion of classes of mathematics, which is taught 5 lessons a week, than at civilian secondary schools. The number of classes of natural sciences tends to decrease in recent years, typically there are 3–4 classes a week. Another reason for higher success rate of MSS students might also be the systematic guidance of MSS students by their teachers, high interest in studies at FMT UD and purposeful direction of MSS students to the career of a professional soldier.

## 4 Results

What needs to be done?

Clearly set rules of education in general and especially in mathematics, as there have been many significant changes in the Czech Republic which have caused some damage.

The education system should not be dependant on the type of government and should not change with every new minster of education, as it is the case very often, unfortunately.

Only when the system is clear and stable it can be successful. Correctness or incorrectness of the chosen procedure, however, will not show during a several years, it needs a longer period of time. That is why a discussion of wide professional public is needed before the rules are set and validated.

Goals of education shall not be formed vaguely but it must be absolutely clearly set what knowledge and especially skills are expected from each type of education.

Furthermore, it is necessary to significantly increase the status of teachers in the society at all levels of education.

One of the possibilities how to reach this goal is to increase the quality of educational process of future teachers; but especially approach of official state representatives towards teachers in general must change.

Concerning mathematics—none of official representatives should boast with their failures of mathematics studies, just as it often happens nowadays, but on the contrary, the necessity of logical thinking should be continuously emphasized. There are a lot of real-life examples that can be used in a way so that even an average citizen understands them. One of the suitable ways how to positively present mathematics is e.g. financial mathematics. Money is in the focal point of all people, regardless of their age and education. An example of mortgages or other types of loans can be easily used to show how necessary it is to be educated in mathematics (in order not to get fooled, not to overpay a loan too much, etc.).

## 5 Conclusion

In conclusion it is possible to state that draft entrance tests of mathematics at Faculty of Military Technologies of University of Defence in Brno are a suitable tool for preparation of people interested in studies at the faculty. Draft entrance tests of mathematics enable applicants to get ready for “real” entrance exams whose tasks as well as solutions of several past years can be found on a website.<sup>5</sup> On the Open day as well as the draft entrance tests of mathematics, applicants may see the

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<sup>5</sup>Úplné zadání zkušebních otázek a příkladů a jejich správné řešení [online]. Web page of the Faculty of Military Technology of the University of Defence in Brno. Available from [http://www.unob.cz/fvt/studium/Stranky/zkusebni\\_otazky.aspx](http://www.unob.cz/fvt/studium/Stranky/zkusebni_otazky.aspx).

environment where the exams take place and get rid of their exam fever and worries of the entrance exams. Based on an increasing interest of applicants on the Open day that take place at UD regularly twice at the turn of winter/summer semesters, as well as permanent interest in passing the draft entrance tests of mathematics whose synoptically evaluation can be found on a website,<sup>6</sup> it can be expected that the interest in passing this specific type of entrance exams “at no risk” will be stable or it might slightly increase. Draft entrance tests of mathematics undoubtedly contribute to students to be better prepared before the real entrance exams and their chance of being accepted and of their future studies at FMT UD increased.

Let us finish again with James M. Beker’s words: “*Clearly, the more we can make the accumulated experience of mankind, as represented by the social sciences, available to students, the better. Such study has value not merely for its own sake, but for the sake of understanding the rich resources of pertinent wisdom available for dealing with contemporary problems. It is important, therefore, the attention be directed to the nature of recent developments in the social sciences, the influence of these developments upon current efforts to strengthen social studies instruction, and the emerging trends which stem from these efforts.*”

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<sup>6</sup>Výsledky přijímacích zkoušek z matematiky „nanečisto“ [online]. Web page of the Faculty of Military Technology of the University of Defence in Brno. Available from <http://www.unob.cz/fvt/struktura/k215/documents/vysledky%20prijimacich%20zkoušek%20nanečisto%202014.pdf>.

# Methods and Models of Social Planning in Italy

Vincenzo Corsi

**Abstract** Social planning is founded on theoretical and methodological importance in the field of applied sociology. In applied sociology, concepts, theories, models and patterns of explanation are used for the study of social phenomena. The methods of social research are designed to identify, describe and explain the social needs of individuals, groups and communities. In this paper are described the methods of analysis of social needs and building models of local welfare in Italy.

**Keywords** Social planning · Social policy · Welfare

## 1 Introduction

In the disciplines that study society, and the economic, political, and social phenomena that accompany it, the concept of “social” qualifies the activities of academic research. To concern oneself with the social means to study society, its phenomena and its problems in order to obtain academic knowledge capable of describing explaining, and interpreting the phenomena. In addition to this aspect of sociological research we must consider the use that such research can have in the context of policies of intervention with the aim of resolving social problems in order to improve the living condition and social relations of people, groups and communities. Sociological research can be applied in the design of intervention policies concerning living conditions, need, and disadvantage, both economic and social.

We must consider the importance of quantitative and qualitative methods of social research for the analysis of social care needs of the population. We must not

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forget the importance of stakeholder participation in the planning process of welfare services. Participation is a method of social planning in Italy.

## 2 Social Policy and Planning of Welfare

The use of the term “social” as an adjective or as a noun phrase is common within the disciplines that are concerned with behaviours, relations, and organizations that make up society. As an adjective it refers to the life phenomena associated with organizations, groups and communities. Interpreted in this way the word social takes on the meaning of essential variables and matrices from which originate structures and organizations, institutions and relations of a given society. The word “social” combines itself with other qualifying concepts of a descriptive, interpretative, and directive nature, and with the practical intervention within the bounds of theoretical and applied research. Examples of structurally fundamental aspects of theoretical and practical actions of sociological sciences are given by the specializations in disciplines most focused on the intervention related to aspects of society with the aim of improvement. In these cases we address social policy, social planning, but also specific aspect of sociology concerned with emergent phenomena that have functional implications on the improvement of living condition of people and society.

From what has been said one can conclude that the qualifying connotation of the concept of “social” is singled out in society, in institutions, and in the micro and macro relations in which humans are inserted within organized and ordered collectives. The term “social” can be applied in planning and social forecasting when it is focused on welfare policies. In such cases one finds the construction of welfare systems in the varying forms of support policies related to incomes of individuals and families, policies for child-teenage welfare, policies for the family, schools, elderly people, health, integration of migrants, disability, work, and housing. The concept of social refers to the systems of help and assistance.

Thus the concept is combined to the fullest extent with the problems of people and of the ways in which a society chooses to resolve them. Social policies are models and methods to identify, reflect on and intervene in the problems of daily life of people, groups and communities, which a society considers worthy of attention and improvement according to a preventative and reparative logic of need and of disadvantage of material and relational dimensions. The word “social” in this sense indicates social planning policies directed at responding to needs, sanitary, educative, housing etc. In these aspects of the social, public policies are invested through the construction of the welfare system in which interventions range from financial transfers to people and families in need to creation of social and health services in the region.

By means of example, we would like to draw attention to direct forms of preventing situations of joblessness, temporary or permanent, such as in cases of illness, incapacity, involuntary redundancy, or different forms of insurance for old

age or maternity. The areas of intervention are numerous and range from preventative policies to policies relating to work, to health policies and social benefits with different models of planning, implementation and intervention to a full or partial extent of the areas and of the types of need of people and different social groups, balancing financial transfers with local services with differing degrees of taking care of the user.

In this sense the word social relates to the practical intervention concerning people, groups and communities. These aspects of intervention enacted in the context of local services define the role and identity of support professionals and of all those who work with differing roles within the context of the “social”. Planning is a process orientated to the improvement of the types of promotion and tutelage of people’s well-being; it provides responses to social needs and social benefits through the planning and enactment of social services, social benefits and health services within the region.

The concept of social policies is difficult to define, as is its function. In this study we limit the investigation to considering social policy as that which the state does for the well-being of its citizens (Hill 1999, 21) with reference to the capacity of the state, in its various functions, to reveal the needs of individuals and transfer these into social services and areas of intervention. The following analysis is specifically focused on a sector of social policy: social services and the way in which in Italy the system of social service is constructed within the region.

This system of welfare takes the name of local welfare, due to the particular local construction of social services via the method of social planning and the particular attention that such a method gives to the analysis of needs of people present within a certain geographical area. In Italy social planning is situated amongst the essential tools of the construction of local welfare; the latter defines social policies according to the principles of subsidiarity.

Siza writes that the planning of social services “has found its greatest development in the institutional phase of social policies as a rational, organic and democratic means of coordinating public interventions; it has demonstrated itself as the expression of the state that intended to present itself in terms of even more inclusive of new rights and new needs intervening in every aspect of social reality, that organized its action in order to perform its growing regulatory and distributive function” (Siza 2002, 24). Its maximum development as a method of construction of social services took place within the expansion phase of social policies, according to a model of rational action in the analysis of social needs, in the acquisition of resources, in the planning of interventions and in the completion of projects.

Currently, also in relation to the fiscal crisis of the state, one can note a reduction in public intervention in favour of a multiplicity of actors of social policies, regarding above all the area of non-profit, which has contributed to determining a change in the model of social planning. This has witnessed the participation of more public and private, social and sanitary actors in the planning of local social policies, according to the method of applied consensus either regarding the analysis of social needs of the identification and construction of the offer of the social services of a

specific region. This change took place also within the models of the social planning in Italy and in the methods of analysis of social needs which went from being predominantly quantitative to being diversely articulated in quantitative and qualitative approaches. We find once more a process of rendering more adequate the decision making process regarding the needs of the region, of the population involved, and the public and private actors present in the area.

### 3 Methods of Social Research for Analysis of Care Needs

The analysis of social care needs can be considered as a kind of pre-evaluation, with the aim of focusing on the initial situation before the planning of welfare services. The study of the social needs of the people or of a local community is very complex. The problems are related primarily to the epistemological aspects and methods of data collection.

Giving an “objective” definition of the social needs of the people is difficult, but necessary. Frequently, the planning of welfare services is not orientated towards the actual needs expressed by citizens but follows different paths. According to Palumbo this trend is in fact changing: the role of pre-evaluation is strongly emphasized in the planning and construction of the welfare system (Palumbo 2001, 164).

We must naturally consider the importance of quantitative and qualitative methods of social research for the analysis of the social care needs of the population, however we must not forget the importance of stakeholder participation in the planning process of welfare services. The latter element was introduced in Italy by Law no. 328/2000 which, amongst other things, provides the Area Plan as an instrument for strategic planning of local welfare.

The Area Plan, the instrument for the construction of the local welfare provided by the Italian welfare system, contains a separate section called ‘Local Social Profile’ that presents the analysis of the social needs of the area. The Local Social Profile describes the social, economic and cultural rights of the area through the collection and analysis of official data, analysis of secondary data, interviews with representatives of public and private agencies, interviews and informal conversations, as well as thematic meetings with representatives of certain categories of people. The aim is to reach an understanding of social resources and social needs of the territory for building a local welfare system.

The analysis of social care needs of the people is carried out through qualitative and quantitative methods of social research, and through the participation of stakeholders. Participation is a method of social planning; we must take into account the demands of social services of the people and to incorporate these services in the local welfare system.

In the study of social needs for planning is necessary to distinguish the analysis of needs in two stages: firstly, the selection of demographic indicators of needs; secondly, the approach to social epidemiology. In the first case we collect data related to the needs and resources of society, present and future, in the area (the age



structure of the population, population dynamics). In the second case, we analyse the different impact of social needs and social welfare on different stages of life: childhood, family, addiction, mental health, the discomfort caused by poverty and economic poverty and unemployment. The methods can be quantitative or qualitative. These methods facilitate the collection of a large quantity of information regarding impressions, opinions, and attitudes.

The planning of welfare services cannot be separated from the effective recognition of the social care needs of the citizen people. The methods of social research are important but not sufficient; people must be involved in the analysis and planning of local welfare system.

Methods of social research can be classified into formal methods and informal methods. Both categories comprise a variety of investigative techniques, both empirical and theoretical, within a scientific, rigorous methodological structure, even if they are not without criticisms of greater or lesser validity. Each method has its own exploratory validity adapted to investigating particular aspects of social reality in relation to the various academic objectives situated in the theoretical phase of the process of research and to the paradigm to which social science refers.

The distinction between formal and informal methods is not in fact a dichotomy, and within the research methods available to the sociologist there is not only one option to be chosen once and for all, but a continuum of possible applications that range from the use of the informal instruments to more strictly formal ones. In social science, moreover, it is difficult to adopt strictly formal methods due to their intrinsic nature or their application. Such methods can exclude the possibility of distortional effects in the results obtained within the study.

The methods classified as informal are those which are indicated as descriptive methods: the ethnographic method is useful in analysis, of a limited number of people, of situations regarding a community or groups. Informal methods in some social research context and in relation to specific academic objectives, demonstrate a research capacity greater than formal methods of research, allowing the researcher to arrive at significant discoveries concerning certain social phenomena otherwise not able to be investigated with the same level of accuracy and depth by formal research methods. The limit of these methods is represented by the wide-ranging tendency towards generalization, in comparison with formal methods, of the obtained results. This is due to the fact that informal methods, unlike more formal ones, usually operate on few cases or unique cases. Informal methods in various cases are employed in a preliminary fashion in the inquiries in which more formal techniques of collecting data are applied. It is also possible that in social research formal methods are used in parallel to informal methods in order to render the scientific investigation more efficient in obtaining its academic objectives.

Within the category of formal methods of sociological research one finds investigative techniques used primarily on statistic methodology. Thus one reaches understanding of social reality by moving within the area of quantitative analysis of the phenomena investigated. In this area we find demographic research, investigations on the ground that implement techniques of data collection based on the use of questionnaires and of proportionalisation of the population. In conclusion, the

difference that runs between informal and formal methods can be equated in many respects with that which differentiates qualitative sociology from quantitative sociology. Normally qualitative sociology makes use of informal research methods whereas quantitative sociology makes use of predominantly formal methods of research.

Qualitative methods are more used than quantitative methods in accessing the world of people's personal lives and understanding individual reasons of social actions, or rather the points of view of the social actors in various situations of daily life. In this methodological framework reference is given above all by the example of action, to which belongs research of individual motivation behind social action. Quantitative methods belong to the realm of the concrete and lend themselves well to collection of clear data, that allows the verification of empirical hypotheses in a logical coherent way.

Qualitative investigations, that consider the points of view of the actor, are more adapted to analysing motivations, meanings and emotions of people in subjective aspects related to the individual or collective life. In sociological research the two methods of social investigation are often used in a complementary fashion in relation to the academic objects defined by the researcher. Quantitative methods take on a more rigorous procedural aspect; qualitative methods permit the researcher to reach deeper and more detailed types of sociological understanding of social actions, functioning on the reconstruction of individual motivations. There are numerous situations in which the qualitative methods, used in the phase of data collection, is accompanied by quantitative techniques.

In the area of social planning quantitative methods have represented the developments of the synoptic-rational model, whilst the introduction of qualitative methods of social investigation has allowed the shift of attention to social planning as a process of participation of all the actors present in the area: public and private institutions and the citizens with the aim of opening up social capital as a safety net from social risks.

Di Nicola states that

In an analysis of functioning mechanisms of welfare systems, social capital can be included as a new intervening variable that, depending on perspectives, is considered a "condition" for the proper functioning of a system or an "effect" of its proper functioning.

The creation of a protective institutional network for citizens to combat the most important social risks that are not under individual control (old age, poverty, disability-inability, unemployment etc.), the provision of services to promote better opportunities for all (e.g. education) and the reduction of dependence of citizens on the family-community network of support (health, reception and assistance facilities) all strongly influence not only the collective quality of life, but also the trajectories of the lives of individuals, their life plans, the possibility to realize these plans and the way in which individuals relate to others and to political and social institutions (Di Nicola 2014, 255).

Participation is a model through which citizens gain awareness of the necessity to engage themselves in the decisions regarding the planning of local welfare systems, either as citizens or as third sector associations. In fact associationism is one of the "fundamental factors that produces social capital, "intended as the

combination of social networks together with cooperative attitudes, respect for norms, of reciprocity and trust in others and in institutions that favour collective life and act for the common good” (Di Nicola 2014, 256; Stanzani 2010, 33–34)”.

## 4 The Model of Social Planning in Italy

The Italian Law no. 328/2000, law of welfare reform, provides some tools for the construction of the local welfare system. The law contains many important provisions, including a method of planning for the construction of local welfare. These tools consist of planning documents which, according to the different levels of government, plan interventions and social services. These plans incorporate the expectation of the achievement of the objectives, tools and resources to be activated for practical use.

In the construction of local welfare, there are four levels of government identified by the Law no. 328/2000. The municipalities have administrative functions and predispose welfare of the Local Plan, the provinces contribute to the programming of the system according to the procedures defined by the regions, the regions have functions of planning, coordination, management and verification of social interventions and prepare the Regional Social Plan, the State prepares the National Social Plan.

The Constitutional Law no. 3 of 18 October 2001, the reform of Title V of the Italian Constitution, addresses the changing of the institutional order of the Republic regarding the redefinition of the responsibilities of the different levels of government on social welfare.

The change in legislation outlines a new relationship between different levels of government: state, regions, provinces, and municipalities. As in the previous reform the state played a central role; today the state is responsible for defining the essential levels of assistance, whereas the regions have been given the power to legislate on social issues, and local authorities are responsible for the ownership of the planning and management of the local welfare system.

The municipality is responsible for the planning of social services in the area. The local welfare system can be seen both as the final tool of the reform of the entire system conceived by Law no. 328/2000, and as a starting point for the planning, implementation and monitoring of services and social interventions. In this way the local authority assumes the role of regulator and engine of social policies and actions created and activated in concert with other public and private social services. According to the principle of horizontal subsidiarity, local public institutions have a duty to ensure civil society (conceptualized as the set of families, associations, voluntary, non-profit organizations) participates in the understanding of a real need in the planning of welfare services.

The local welfare planning is done by the Municipality with the participation of all stakeholders; health services, public and private institutions, civil society, associations, voluntary, non-profit organizations.

In the context of social policies there are different models of social services planning. Siza writes: “For nearly two decades in the theory and practice of social planning, (...), two models were found to be prevalent, programming synoptic and incremental” (Siza 2002, 45).

The synoptic planning or rational-synoptic approach represents the traditional model of social planning. This model, also called the absolute model of rationality, according to Palumbo is based on certain assumptions, summarized below: “An individual or collective decision-maker must identify a policy issue on which there is consensus among the relevant stakeholders; a decision maker (...) must be defined in a consistent manner and order all the aims and objectives, the pursuit of which should be the solution of the problem; a decision maker (...) must identify all possible alternatives (...); a decision maker (...) must provide all the consequences (...); a decision maker (...) must compare each alternative in relation to its impact on the achievement of each goal and objective; a decision maker (...) has to choose the alternative that maximizes the achievement of the targets” (Palumbo 2001, 144).

Siza writes that Faludi “was the theoretical maximum of the synoptic model, (...), called procedural model because the programming is considered in this approach, a specific mode of thought and action, a decision-making process that is founded on ‘application of rationality, which has its phases and its tools regardless of the context where a is expressed” (Siza 2002, 45; Faludi 1973).

The method for a critique of the synoptic-rational model was born in the seventies from the incremental model, which “is at the center of his attention to the fact that the decision is taken in the context of the interaction between multiple actors with different views not only of the problems, holders but also (...), the means to solve them”. This model, according to Battistella “exceeds the previous rational-synoptic approach that produces self-referential planning and requires a strong cognitive control and operational behaviours of both the actors and the effects of each policy. Rational approach, the incremental model contrasts with a plan that focuses on the interactive dimension of the decision” (Battistella 2004, 53–54).

## 5 Conclusion

The incremental model provides for the involvement of multiple stakeholders in all stages of social planning; for such reason, this pattern is important for the development of social planning in Italy which today tends towards engagement and negotiation with institutional actors and civil society building local welfare. The same Law 328/2000 states in Article III paragraph 1, among others, the principles of subsidiarity and cooperation.

The construction of the local welfare in Italy is currently carried out by the method of social planning. The Municipality is at the centre of the system. The decisions on social welfare services to be activated are taken by the method of participation. Both public and private institutions participate in the decision-making process concerning the recipients of services to do with public welfare.

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# Social Sustainability in Urban Regeneration: Indicators and Evaluation Methods in the EU 2020 Programming

Barbara Ferri

**Abstract** The contribution deals with some orientations for *impact analysis* within the process of urban regeneration, on the basis of guidelines of the European Structural Funds 2014–2020 aiming at regional development policies which are more focused on *desired results* and on a *place-based approach*. The *impact assessments* is now deemed essential in order to improve use of resources, making more effective programs and ensuring transparency of public decision-making. In this regard, the contribution underlines the need to strengthen the connections between urban/territorial planning and decision support systems. In particular, starting with a review of the concept of *social sustainability*, the paper outlines some of the main *indicators* existing in recent European studies for urban regeneration, so to identify the impacts of the interventions and defining suitable decision making processes to guide policies. Some references to the ANP multi-criteria network approach (Saaty and Cillo 2008) are reported in reference to the case of Pescara (Italy), as useful method to understand whether the urban regeneration orientations determines a condition of development which is preferable than the baseline.

**Keywords** Reliability · Decision making process · Mathematical modeling · Spatial data · GIS · Quality assessment · Utility value

## 1 Introduction

Urban Regeneration today is the focus of urban development strategies. Many authors agree that it can be defined as the *local redevelopment of neighborhoods, cities, metropolitan areas* through *multidimensional and place based* policies to interpret changes. Urban regeneration requires an *integrated approach* to urban development, in terms of social, economic, physical, environmental, cultural and

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participatory interventions to improve the *quality of life*. In order to define sustainable urban planning strategies, the notion of *social sustainability* today is included within the broader framework of the *impact assessment of plans, projects and policies*, since sustainability is increasingly focused on *intangible aspects* (happiness, wellbeing, sense of place), not limited to environmental and economic issues, generally related to physical renewal of degraded urban sites, or employment, equity and poverty alleviation indices. This emphasizes the need to examine social sustainability and its main themes, dimensions and measurement in the context of *sustainable urban regeneration* (Colantonio and Dixon 2009). In the context of sustainable planning strategies (European Commission 2011), we can consider *social sustainability* in the broader framework of Territorial Welfare. It requires evaluation methods for the analysis and verification of the results due to the urban regeneration processes. In particular, the *Impact Evaluation* of policies is deemed essential within the new EU programming phase 2014–2020 in the perspective of a more effective spending of funds (Ministry of territorial cohesion et al. 2012).

*Quality of life* and *social inclusion* are now among the main objectives, to be pursued through *integrated development strategies* focused on *measurable objectives* concerning matters of education, welfare, mobility, modernization of services, agricultural activities and minor historical centers redevelopment, strengthening of productive sector.

The contribution outlines the main assessment tools for the socio-economic development (European Commission 2013a, b) and highlights the importance of defining *performance indicators* to be used in the *systematic reviews* for cumulating knowledge, to understand “what works and for whom” (Ministry of territorial cohesion et al. 2012). In this regard, the contribution is intended to analyze the current sustainability indicators proposed in the frame of recent studies on European territorial cohesion. Finally, in order to define a *social sustainability assessment framework*, the contribution is intended to point out the usefulness of hierarchical approaches—linear or network models as AHP and ANP (Saaty 1980, 2008)—to manage the processes of knowledge and support public decisions, proposing some essential elements for decision making on urban regeneration in Pescara city (Italy).

## 2 The Main Evaluation Needs of Regional Administrations

The experiences of past program evaluations related to previous phases 2000–2006 and 2007–2013 of the European programming generally have highlighted in our country an excessive fragmentation of interventions, often with poor results (Ferri and Monaco 2011; Ferri 2013, 2014).

In the actual planning phase of the Community Structural Funds, the urban agenda appears richer in guidelines, proposing a more *place based* approach: policy and actions more compliant to local needs and specific urban contexts.

The Regional plans of Evaluation, introduced during 2007–2013 as a cognitive tool for territorial governance, have now new European methodological perspectives and indications. In Italy, the National System of Evaluation (SNV), implementing the guidelines of the European Commission, gives an essential role to the *indicators* to monitor the progress due to the programs in relation to the achievement of objectives. These parameters should be responsive to the policy formulated by measuring changes in the area, on the basis of relevant *output and outcome indicators* and related *targets*; furthermore they should be measurable, clearly explained and linked to the objectives of the program, in order to provide support to the further stages of the impact assessment (European Commission 2013a).

The *ex ante* evaluation proposed in Europe for 2014–2020 assumes the role of verifying the design of the program, ensuring the fulfillment of the specific needs of local contexts and providing useful information for the subsequent monitoring activities. In particular, recent guidance documents on *ex ante* evaluation will focus the analysis process on

- *external coherence*, with respect to national strategies and EU priorities (*Europe 2020 Strategy*), regional planning on specific needs (reported as specific objectives), considering some issues of *functional areas* as city-regions or metropolitan and rural areas having specific territorial characteristics or specific target groups;
- *internal coherence*, in terms of synergies of objectives related to the axes of the program, so to ensure *effectiveness* in the achievement of the expected results; relationship between actions and expected results for target groups and beneficiaries; identification of factors which may affect the expected results.

## ***2.1 Methodological Perspectives for the Impact Evaluation of Plans and Urban Programs***

The methodological innovations of the new 2014–2020 programming phase propose a clear definition of *objectives* and *desired outcomes*, from which *actions* and *implementation time* will depend. As previously highlighted, these results will be measured through *indicators*, described by specific *target values* in order to “make clear the purpose of the interventions” and provide citizens with a verification tool on actual achievements, as basis for the further *impact assessment* proposed now as activity to be carried out with programming. Indeed, the impact assessments are proposed to include the evaluation process in the formulation of policies, verifying “whether, to what extent and for which subjects the actions taken have actually had an impact on the quality of life of people and/or for the opportunity enterprises” (Ministry of territorial cohesion et al. 2012, p. 21).



**Table 1** Impact evaluation—approaches, evaluation questions and tools

Approaches	Main characteristics
Theory based evaluation	Analysis of empirical evidence on the contribution of an intervention compared to the effects observed. Evaluation of qualitative and participatory kind: the given information is about policy and its qualitative impact on the beneficiaries group. Evaluation question: “ <i>How things should logically work to produce the desired change?</i> ”
Counterfactual evaluation	Analysis of empirical evidence and some assumptions; Quantitative evaluation; the information provided is essential in the analysis Costs/Benefits and Costs/Effectiveness. Evaluation questions:
	“ <i>Is the difference observed in the outcome after the implementation of the intervention caused by the intervention itself, or by something else?</i> ”
	“ <i>How much difference does a treatment make?</i> ”
	“ <i>What would have happened in the absence of the intervention?</i> ”

Source Reworking by Evalved (2013b)

Most recent planning documents of the EU Structural Funds and Cohesion show that evaluation process plays a crucial role in enhancing socio-economic development of local contexts (see also European Commission 2013b), in order to document the *causal relationships* between actions planned and desired results.

There are many quali-quantitative techniques formulated in the European context in order to improve quality of the impact evaluation. The guidelines document “The Programming Period 2014–2020, Monitoring and Evaluation of European Cohesion Policy” (European Commission 2013a) underlines that these approaches depend on the specific request for assessment, emphasizing the need to make public the results of these evaluations. The Evalved guide (2013b) provides orientations on different valuation approaches for economic and social development policies, including *theory based evaluation* and *counterfactual evaluation*. In particular, the first one requires an understanding of the theory underlying the program, describing the situation under which certain changes are produced (*comparing theory and implementation*); the second one provides a quantitative estimate of the effects and requires an understanding of whether an intervention produces the desired effects on specific elements of interest (*identifying and estimating causal effects-by counterfactual approach*) (Evalved Guide, p. 47) (Table 1).

## ***2.2 Indicators to Measure Social Sustainability for an Integrated Approach to Urban Regeneration***

In defining appropriate urban development strategies, we need for a depth knowledge of urban contexts, available resources and values of the territory, data

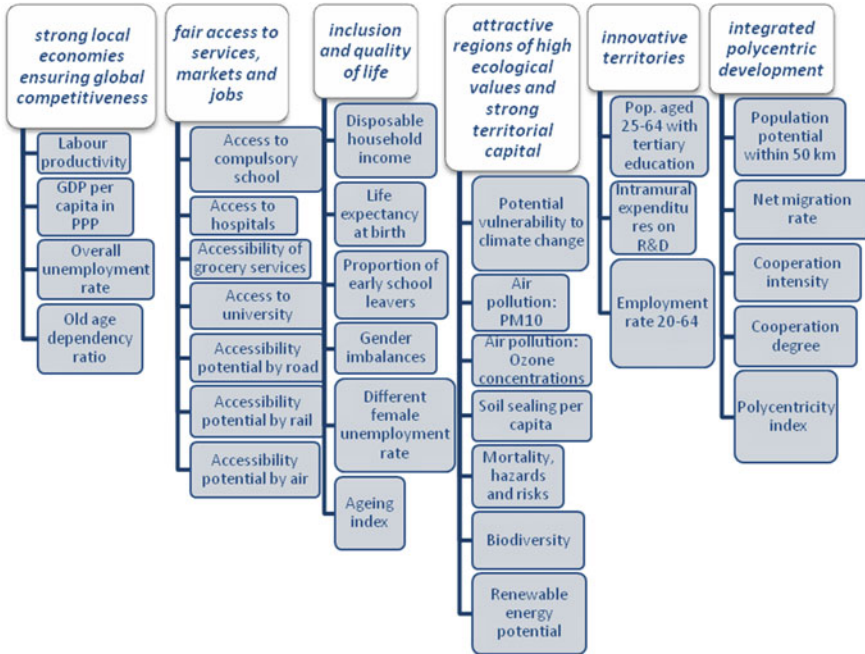
and information on the present situation of the beneficiaries, trends in the medium—long term. The recent contributions to research on *qualitative and quantitative indicators*, as measurable aspects for specific policy areas deemed relevant to understand the changes due to the implementation of policies.

Recent international studies and national projects identify the main aspects to be considered for socio-economic impact assessment of urban programs, in terms of *Housing, Employment, Facilities and services in Education, Recreation/open public spaces, Health, Crime, Social Inclusion and Economic context*.

The World Health Organization (WHO) Healthy Cities Programme put *health and quality of life* as core issues to pursue through a process of physical and economic development of the city, encouraging urban planners to integrate health in urban policy, privileging *equity, sustainability, implementation of social capital and community safety*. The guidelines on *Healthy Urban Planning* were defined during the International Conference of Healthy Cities, held in Belfast (Northern Ireland) in October 2003. The Oxford Institute for Sustainable Development carried out a research for *Measuring the Social Dimension of Sustainable Development* (Colantonio and Dixon 2009) starting from some European documents (the “Urban Sustainable Development in the EU: A Framework for Action” 1998, the “Bristol Accord” 2005 and the “Leipzig Charter on Sustainable European Cities” 2007). The main focus of the research is on the definition of *social sustainability in urban regeneration* and on the best practices to measure and monitor it, identifying 10 social sustainability dimensions and policy areas: *Demographic change (ageing, migration and mobility); Education and skills; Employment; Health and safety; Housing and environmental health; Identity, sense of place and culture; Participation, empowerment and access; Social capital; Social mixing and cohesion; Well being, happiness and quality of life*.

In particular, the research is about indicators focusing on the social dimension of sustainable urban regeneration (Annexes 4, 7, 8). In promoting a sustainable urban model, the Urban Environment Observatory of Malaga (OMAU 2012) developed a research on the main metropolises in the northern Mediterranean region. *The idea of sustainability in urban models involves the interplay of territorial actions on the city configuration combined with environmental and landscaping elements as well as the optimal management of natural resources, while promoting social cohesion and the participation of citizens* (p. 25). The study has identified 20 indicators, as common basis to deal with the notion of urban sustainability, in order to track the evolution of urban systems. The indicators are organized in 4 main axes: *territorial management and urban design, mobility and transport, natural resources management and social and economic cohesion*.

Within the framework of the European Spatial Planning Observation Network (ESPON 2013), the *Interco* (Indicators of Territorial Cohesion) Program aimed at developing indicators and indices to measure territorial cohesion, the results of the “Scientific Platform and Tools” Project have identified 32 *top indicators* organized in 6 territorial objectives (Fig. 1): *strong local economies ensuring global competitiveness, innovative territories, fair access to services, markets and jobs, inclusion and quality of life, attractive regions of high ecological values and*



**Fig. 1** Territorial objectives and Indicators by the Interco Project. *Source* Reworking from Interco Indicators, (Draft Final Report, Espo 2013, p. 4)

*strong territorial capital, integrated polycentric territorial development* (see Interco Draft Final Report 2011, p. 3).

Previously in 2002, the European ESPON Program involved organizations and European institutions of research in the formulation of a methodology for Territorial Impact Assessment (TIA), in order to monitor the impact of cohesion policies on European territories. In this perspective, a methodological proposal intended TIA as strategic evaluation to integrate the different dimensions of impact—economic, social, environmental, landscape, cultural—of European policies, in particular by identifying three components of territorial cohesion: *territorial efficiency, territorial quality, territorial identity*; specific indicators are defined for each component (Camagni 2006).

At national level, the Ur-Bes project (2012) involved Italian cities to measure equitable and sustainable welfare in their local areas. The project, coordinated by Istat, took place under the assumption that the parameters used to assess the progress of a society can't be exclusively economic, but they should also take account social and environmental dimensions of wellness. The reference is to a number of measures: Environment, Health, Economic Welfare, Education and Training, Employment and Conciliation of Time Life, Social Relations, Security, Subjective Well-being, Landscape and Cultural Heritage—as Density of Green Town and

urban parks of significant public interest, Consistency of the historic urban fabric—Research and Innovation, Quality of Service—as Taking charge users for municipal services for children, municipal waste disposal, density of urban networks of public local transports, Taking charge of the elderly for integrated home care service, per capita expenditure for elderly home care service, Index accessibility to hospitals having emergency department, etc.—Politics and Institutions. It shows that Quality of Life is *multi-dimensional* and needs *a range of indicators for social and cultural services, environment, economy, governance* (European Commission 2010).

In urban and territorial contexts, combining *participation and rationality* for context/user-based solutions requires the use of integrated assessments and the ability to use the *indicators* in the processes of evaluation of interventions (Maturó et al. 2014). As mentioned above, in order *to inform and improve* decision making processes relating to urban regeneration, *sustainability appraisal methodologies* have been developed also within the impact analysis of plans and policies (Camagni 2006). In the framework of the *multi-criteria evaluation methods*—developed within the analysis of complex systems to solve decision problems in presence of many objectives and heterogeneous and conflicting criteria—the *hierarchical approaches* of AHP (Saaty 1980) and ANP (Saaty and Cillo 2008) have been applied at the international level in the formulation of urban and social policies, suggesting—even in Italy—interesting methodological perspectives. In particular, the ANP approach seems suitable for *knowledge management*, stakeholder participation and *building consensus*, and for *ex post* monitoring of the urban regeneration processes to be carried from the early stages of policy planning. Indeed, ANP approach integrates economic, environmental, social and institutional dimensions of sustainability and considers their interdependencies:

- the Analytic Network Process (ANP), developed as generalization of the AHP, aims at obtaining an influence network of *clusters* and *nodes* and defining priorities of these elements by using pairwise comparisons and judgments (Saaty 2008);
- it is structured as “single network” and/or “structured network” of *benefits, opportunities, costs and risks* (BOCR), providing a general framework for decisions in which the *dependence relationships and feedback* among clusters and nodes (respectively of objectives and criteria/*performance indicators*) are considered (Saaty and Cillo 2008).

In this framework, this contribution emphasizes the need to integrate these analyzes in the formulation of urban development policies, in order to examine and coordinate the opinions of stakeholders, and to consider the aspects deemed essential for sustainability, ensuring a process of public decision-making aid (Ferri 2014). Indeed, the basic structure of ANP provides both the importance of the alternatives of land uses as regards the different aspects of sustainability (in terms of objectives and criteria), both the importance of the decision criteria as regards the alternatives of urban transformations.

### 3 Issues of Urban Regeneration in Pescara (Italy)

The question of defining an evaluation design for determining the socio-economic effects of an urban regeneration program for the future development of Pescara city is put. The purpose of evaluation is to understand—at the ex ante stage of policy formulation (*Programme design stage*)—whether a policy works and under what circumstances, considering multiple perspectives and aggregating qualitative and quantitative data. The aim of the evaluation put emphasis on *identifying appropriate interventions*, considering the context of intervention (see Hošková-Mayerová et al. 2013), the impacts of urban policy for different groups of stakeholders and beneficiaries, *human judgments and development ambitions of actors*, trade-off among different priorities, the *expectations and experiences of local people in a local development setting* (European Commission 2013b).

In this respect, some evaluation purposes are identified in Evalsed Sourcebook (2013b, p. 16) especially in:

- Planning/efficiency, *ensuring that there is a justification for a policy/programme and that resources are efficiently deployed;*
- Knowledge production, *improving understanding of what works in what circumstances and how different measures and interventions can be made more effective;*
- Institutional strengthening, *improving and developing capacity among programme participants and their networks and institutions.*

#### 3.1 Pescara City

In the Abruzzo region, Pescara has a quite recent history, since its foundation as a province was in 1927. The heavy bombing during the second World War has erased many traces of its past and it was marked by a strong expansion in the post war reconstruction years. The main elements of the urban structure of Pescara are the marina, the waterfront and the river, which were essential in the development of the city. Today the city is characterized by the differentiation of roles of the urban areas: the historical centre with cultural functions and recreational activities connected to meeting and dining, the central area with commercial functions, the seafront in south and north of the port, with residential and tourism activities connected to sea bathing, and the western part of the city, with industrial plants.

##### 3.1.1 Some Data

Population: 121.366 (Istat data 2014), Surface area equal to about 35 Km<sup>2</sup>, Density of population equal to about 3500 inhabitants per Km<sup>2</sup>, Old age index: 196.4 %

(percentage ratio between the number of over 65 years old and the number of young people up to age 14), structural dependency ratio: 59.2 % (social and economic strain of the non-working population (0–14 age and 65 years old and over) on the active one (15–64 age) (Istat data 2014)).

In the recent years Pescara is examining the great development opportunities afforded by some large strategic areas waiting for new uses and redevelopment processes: the area resulted from the disposal of the old railway station in the center of the city; the area of the former oil storage on the riverside; the ex-CoFa area in the rear port; the area of the former goods-station in Pescara Porta Nuova; the area of former Camplone foundries in west Pescara; the peripheries behind the railway embankment; the areas near the airport. The urban renewal in these areas is expected as a reminding of the whole urban system, with particular attention to issues of mobility, hospitality and a better use of public spaces. In particular, the redevelopment of the area located behind the Marina of Pescara is now the focus of the debate on urban issues: a portion of the port area is currently disused and awaiting for new functional uses. The redevelopment of this area is part of the redevelopment plan of the ports in Abruzzo, and it is also designed in the frame of the urban regeneration process for an area which is still rather separated from the city (Ferri and Maturo 2012).

For these areas the Town Government will have to propose interventions that are sustainable, functional, morphological, figurative and symbolic high quality (Clementi 2013), and able to achieve the thematic Community priorities, related to local welfare, education, mobility, urban resilience, environmental sustainability and social inclusion (CIPU 2013). Furthermore, since the Pic Urban 2 experience in Pescara has represented an attempt to deal with the great social problems of some peripheral urban areas in disadvantaged neighborhoods near the airport in the period 2000–06, it would be interesting and useful to monitor over time the results, especially regarding urban safety and quality of living.

### 3.2 Challenges

The expected urban projects—mainly focused on the redevelopment of disused areas and peripheral areas—should reorganize the entire urban system of Pescara and pursue the goals of sustainable urban regeneration, in line with the guidelines of the European Agenda for urban areas. In particular, the main challenges for the future development of Pescara concern (Fig. 2):

- Reinforcement of housing in urban regeneration
- Social inclusion, employment and economy promotion
- Facilities and Services in Recreation/Public open spaces
- Waterfront and riverfront valorisation
- Brownfield redevelopment of sites
- Urban heritage conservation.

**Fig. 2** Redevelopment of Pescara Porta Nuova railway station, 2008



The aspects to take into account for projects and policies to foster sustainable communities in the perspective of *city-wide development plans* should also concern the indications of the Inter-ministerial Committee for Urban Policy (CIPU), established in Italy in 2012, and the Guidelines for National Urban Agenda 2014–2020, as well as the recommendations of the European Vision of Urban Design for Sustainability (EUE Group 2004) (Table 2).

### 3.3 Decision Problem Structuring

Identified the evaluation criteria, the relationships between the decisional elements have to be identified, defining clusters and network to make explicit the logic of intervention of urban regeneration which is a complex, *multi-sectoral* and *multi-objective* process (Fig. 3).

Interactions within the network are defined identifying dependence relationships and feedback among clusters, so to connect them according to their outer and inner dependence influence (Saaty and Cillo 2008).

Since the paper aims at underlining that this kind of analysis can help us to get indications on whether the situation arising the implementation of a policy is *preferable* with respect to the situation without intervention, the assessment phase will not be performed here. It would require the participation of experts and stakeholders invited to provide their ratings for the environmental, social and economic aspects, through the *pairwise comparison* on clusters (criteria) and then on cluster elements (nodes/sub-criteria) on the basis of the *Saaty scale*, having a control criterion on mind (Saaty and Cillo 2008).

**Table 2** Example of checklist of relevant categories to focus on

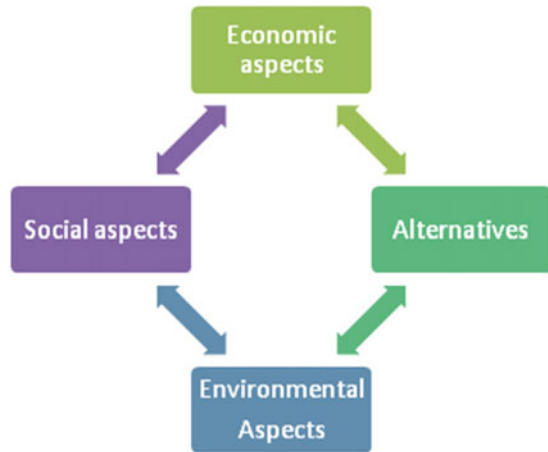
Clusters	Criteria	Sub-criteria/nodes
Economic issues	Infrastructures	Efficiency of Transports, mobility and accessibility
	Financial factors	Efficiency and effectiveness in the use of resources
	Tourist facilities	Strategic location of central functions, resorts, hotels and restaurants
Enhancement of asset for local development		
Social issues	Innovation in Political/Institutional factors	Social cohesion and community involvement (smart system and advanced digital technologies for data sharing)
		Reducing contemporary housing problems
	Proximity to basic services (welfare and training)	Offering targeted services to support social housing
		Effectiveness, efficiency and accessibility to service activities, accessibility to public spaces
Perceptive aspects	Increase of urban resilience through efficient urban structures	
Cultural factors	Creation and valorisation of spaces of identity to arouse a sense of belonging (Exhibitions and museums, Festivals and concerts)	
Environmental issues	Sustainability	Incentives for energy efficiency and development of renewable energy
		Reducing land consumption
		Incentives for maintenance, reuse and renovation of the existing resources
	Environmental quality	Organization of integrated ecological districts
		Health, biodiversity, ecological protection
Opportunity for sports		
Presence of Open spaces, Urban parks		
Alternatives	1. Vision of local urban regeneration plans and policy	
	2. Don't invest	

Operationally, by implementing the *Superdecisions* Software developed by Saaty, the *priorities* of nodes (sub-criteria) and clusters will be obtained as principal eigenvectors (weights) representing the relative importance of clusters and the relative importance of nodes within each cluster with respect to one node in another connected cluster.

These priorities will be organized in two *matrices* (one for clusters and one for nodes), subsequently put in a *weighted super matrix*, from which the *limit super*



**Fig. 3** Example of simple decision network



*matrix* will be obtained, providing the final priorities (Bottero et al. 2008). Finally, in order to evaluate the stability of the results, the further *Sensitivity analysis* will provide guidance on how a variation of the weights of criteria may change the final priority of the alternatives.

## 4 Conclusions

By the application of methods and tools to evaluate programs—implemented and/or concluded—derives an important *learning* opportunity. In this perspective, the Community and national documents underline that just at the stage “during the program” it will be understood *what works, under what circumstances, what certainties and doubts are about the implementation of policies* (Ministry of territorial cohesion et al. 2012, p. 21). However, some authors agree that the application of the impact assessment is still characterized by considerable variability, requiring further refinement of evaluation capabilities.

Indicators assume a crucial importance in this new phase of European programming which is more *results-oriented*. In particular, evaluators should verify that the result indicators produce the main effects of the program. The importance of proposing suitable *criteria* to evaluate the results achieved is related to the objective of responsibility for any interventions of urban policy.

The idea is that an ANP approach for decision making on land uses could be helpful also to deepen and learn more on the analysis of the causal links between an intervention of urban transformation and its effects, providing useful guidance for the subsequent phases of policies planning.

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# Stopping the Evil or Settling for the Lesser Evil: An Experimental Study of Costly Voting with Negative Payoffs in a TRS Electoral System

Roman Chytilek and Michal Tóth

**Abstract** The strategic voting across families of various electoral systems is often depicted as “settling for lesser evil” (e.g. Cox in *Making votes count*. Strategic coordination in the world’s electoral systems. Cambridge University Press, New York, 1997; Gschwend 2004) in order to prevent the worst outcome of elections. In this paper we experimentally (13 sessions with 18–30 participants, 546 voting situations) explore the degree of strategic voting (as compared to non-voting) framed in situations with (non-compulsory) costly voting where voters face outcomes with positive and negative payoffs (“stopping the evil” framing) and/or with solely negative payoffs (“settling for lesser evil” framing). We explore voters’ decisions in rather complex environment of the two-round electoral system, with symmetric amount of private information about the preferences of electorate available to them and show that voters’ behavior does differ markedly in both the situations. The results have implications for the representation and democracy.

**Keywords** Elections · Framing · Experiment · Electoral systems

## 1 Introduction

After the first round of the Czech Republic’s first direct election of President, which was held using an absolute majority two-round system (TRS) in January 2013, there was a major shock when the center-right candidate, Karel Schwarzenberg, made it to the second round with 23.4 %, trailing <1 % behind the front-runner Miloš Zeman, >7 % ahead of the rest of the field. This was a truly unexpected result, as Schwarzenberg was never among the top two candidates in any of the 14

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pre-electoral polls conducted by Czech polling agencies through November and December 2012, after the field of candidates had been set. In those surveys, he on average polled a tiny 8 % of the vote and lagged not only behind Zeman, but also an independent and moderate candidate—Jan Fischer—and center-left Jiří Dienstbier. The media coverage of the polls was largely concentrated on the top two candidates (Gregor and Hrbková 2014: 111) while Schwarzenberg got little attention, spent only a modest resources and seemed virtually uninterested about the result of the vote.

At the same time, Schwarzenberg was *helped* by the polls. At the moment when the anything-but-moderate Zeman pushed past Fischer into first place in the polls, Schwarzenberg's campaign started to spend money heavily in order to define the election (at first without mentioning any specific candidate) as a contest between candidates who on the one hand were controlled by special interests that posed a danger to democracy and who divided the nation, and on the other hand candidates who are able to unite the people. Naturally, this included Schwarzenberg, the heir to the legacy of the late former Czech President, Václav Havel, and was the worthiest candidate who had the highest valence. This was sufficient for a considerable number of late-deciding voters or even those who were initially reluctant to go to the polls to support him in the days directly preceding the first round and catapult him into the runoff. He continued with this strategy in the second round; however, Zeman didn't follow suit and framed the contest as decision between the Left (him) and largely unpopular Right (Schwarzenberg) to proceed to a rather convincing win. One year later, the story was nearly repeated in Slovakia, where center-right candidate Radoslav Procházka also always polled in very modest single digits but his electoral result more than doubled, nearly making it into second round after defining himself as the only candidate who could beat the frontrunner.

The viability of the strategy of Schwarzenberg and Procházka was well documented in several empirical studies about the TRS voting and its effects. Cox (1997: 133) invokes two examples, Peru 1990 (Fujimori beating Vargas Llosa) and Russia 1996 (Yeltsin beating Zyuganov) where the common scenario was voter coordination on one candidate who was perceived to be a viable alternative to another (leading) candidate that should be beaten at any cost. Less elaborated is the analysis of events that lead voters to such prediction and enable the coordination. We believe that in such highly personalized  $M = 1$  elections, it is the presence of multiple pre-electoral polls which reveal the choices of voters who have decided earlier that alters the nature of decision-making for undecided voters. This conceptually amends the nature of such elections—although technically held simultaneously, they are, in effect, sequential.

In the rest of the paper, we briefly discuss the properties of sequential voting procedures and their effects for voting. We tackle the issue from the perspective of the strategic reasoning of the undecided electorate. Consider a situation where voting is costly, abstention is possible, and the payoffs from the candidates vary. In such a situation, is the (personal) decision to vote and/or is the (group) ability to coordinate affected, whether the voting act is among several decent alternatives, or the goal is to prevent a lousy candidate from winning, or even if the vote is among

several bad candidates? Are the factors that can explain group decisions the same when choosing among several good options compared to settling for the lesser evil? We try to answer the question through a series of laboratory experiments with TRS voting.

## 2 Properties of Sequential Voting

Battaglini et al. (2007) distinguished between elections where all voters make their choices simultaneously, and those which are sequential in nature, with some voters knowing the choices of earlier ones. They found a surprising amount of votes which use a sequential procedure (US primaries, roll-call votes, EU referenda). They also argue that voters may be helped by various polls and surveys which inform them about the choices of early voters. The mechanism behind the sequential processes, *learning by voting* (Morton and Williams 2001; Morton 2004; Knight and Schiff 2010) allows voters to gather information about the quality of the candidates during the campaign, when voters in later stages attempt to uncover the personal information of early voters from their voting returns. The studies usually document that candidates benefit from momentum effects when their performance in early rounds of voting exceeds expectations.

Most studies on sequential voting concentrate on its full-fledged variation—contests where the information available to late voters comes in the form of results from actual choices of early voters, mostly US primaries. As a rare exception, in their natural experiment with French overseas territories, Morton et al. (2015) found that exit poll information decreases voter turnout, with a substantial bandwagon effect among those who still turn to vote. Deltas et al. (2015) discuss the sequential nature of US presidential primaries and compare sequential and simultaneous voting procedures from the perspective of candidate selection, with the former having much better coordination properties, yet with the trade-off of the possibility of early voters not properly learning about candidate qualities and coordinating around a low-quality candidate. Similarly, Knight and Schiff (2010) see a trade-off between sequential election systems, which place too much weight on early information but enable late voters to make quality decisions, and simultaneous procedures where all voters weigh the information equally but rely too much on their priors.

## 3 Highly Personalized TRS Elections—Sequential or Simultaneous?

Most—even if not all—presidential elections held using a two-round voting system use the majority principle as a threshold of legitimacy (Perez-Liñán 2006). Is it possible to extend the concept of sequential vote to this type of elections, which are—

strictly speaking—simultaneous in nature? Does the information from polls influence voters to the extent that we could analytically treat such elections as an “as if” sequential contest? As the classical study of Blais et al. (2006) documents, the polls induce strategic voting for some voters, prompting them to desert lower-ranked candidates. On the other hand, the contagion effect (similar to the “learning by voting” mechanism) was not found in the 1988 Canadian data. Strictly speaking, the polls inform voters (decided or undecided) only about the intention to vote of some of them, who moreover can later change their minds. Although several recent studies indeed document some intra-personal variability at the individual level during elections (Blumenstiel 2014; Blumenstiel and Plischke 2015) caused especially by priming effects, there is also literature (Kleinnienhuijs and Walter 2014) that shows that at the aggregate level, the situation and support for alternatives is relatively stable. On the other hand, the discourse of the polls, explicitly distinguishing among those voters who have already made up their minds and those who are undecided, clearly supports the sequential character of highly personalized contests. Moreover, undecided voters are helped even more by such surveys and polls that not only measure actual support for candidates, but often also their chances in various runoff setups.

Majority as a minimum threshold not only guarantees a minimum level of support for the victor; it also allows the electorate to select the ultimate winner of the contest. In presidential and semi-presidential regimes, it also in theory strengthens prospects for democratic accountability through pre-electoral (or pre-second round) alliances and broader support for presidential administrations. These expectations have been empirically questioned in some cases. Payne et al. (2002) show that a runoff often merely offers voters the opportunity to choose “the lesser evil” and vote *against* the least preferred candidate; the implications for governability are in fact negative. The lesser evil argument is empirically under-researched however. We have found only one study (Burlacu 2012) documenting that voters (regardless of electoral system) carefully choose among the alternatives even when presented with several poor options.

The majority requirement and the possibility of runoff thus alters the sequential logic of the vote considerably. When information about a frontrunner which may be seen as a very unwelcome alternative by undecided voters becomes available, the remaining candidates can make credible claims about their electability when directly pitted against him in the runoff, thus diminishing incentives for bandwagon effect, reminding voters that a vote cast for candidate who would lose the runoff will be wasted. As several studies (Abramowitz 1989; Rickershauser and Aldrich 2007; Burden and Jones 2009) show, electability is indeed an important factor affecting voters’ choice, and the voters’ choice becomes more complex with the effective number of candidates after the first round being considerably higher than in plurality elections (Wittrock and Lewis-Beck 2011; Kacprzyk et al. 2013). This all should hint at the fact of the extreme importance of the runoff setup considerations. The change of frontrunner can—rather than bandwagon—generate an underdog effect, providing nonmyopic voters with incentives to vote for a candidate who is running lower than second or third place before the election. Highly personalized

elections, with numerous polls and a “horseshoe” discourse (Patterson 1994; Hahn and Iyengar 2002; Strömbäck and Shehata 2007; Matthews et al. 2012; Pétry and Bastien 2013), are an especially suitable event for this type of effect to occur. Note that here we are in partial disagreement with Cox (1997: 129), who considers polls and momentum of a given candidate to be a necessary conditions for a bandwagon effect to take place. We think that both scenarios are possible and we thus put more weight on voters’ considerations about the frontrunner and his chances when matched against various opponents in the runoff.

On the other hand, for the underdog effect for the trailing candidate to occur under the TRS, intense support from undecided voters and/or a shift among decided voters is required. This is especially vexing problem when voting is not compulsory. Underdog situations present voters with mixed incentives: on one hand, they can believe that they are personally efficient (Finkel et al. 1989; Opp 1999; Blais 2001: 130–132) because they bring resources and personal expertise to bear in changing the outcome; on the other hand, they can be skeptical about the chances that group will succeed in the task as a whole. This can be especially true in “lesser evil” situations, where voters can doubt the group success and they therefore refrain from voting, especially compared to the situations when there emerges a worthy opponent in the race which is capable of beating the “evil” frontrunner. Is there empirical support for this line of reasoning among anonymous electorates? Our experimental design tries to discover whether there will be equal or different group behavior in the above-mentioned situations. We also try to answer the question concerning which factors influence the conjectures about individual and group efficiency in designs that vary in the presence of “evil.”

## 4 Experimental Design

As we are primarily interested in voting and abstention in highly personalized TRS elections with different degrees of candidate support among decided voters and concomitantly the different amount of momentum they enjoy among undecided voters, our design differs markedly from previous experiments on TRS (Blais et al. 2007, 2011). What we do have in common with them is the goal of representing the concepts of “bonus from the elected candidate” and “electability.” We do not, however, embed the categories in the concepts of position and distance, but have been trying to represent them in another way. The reason is that in highly personalized elections, positional considerations—if present—are often overshadowed by the valence factors connected directly with the personalities of candidates or simply with the momentum that candidates are able to enjoy (or not). Moreover, we are not primarily interested in the choice of the electorate as a whole but only of those late, undecided voters, who are confronted with a candidate who is enjoying momentum among them but still casts some doubts about his electability because of low support among those who decided early.



In our design, we introduce several properties which are associated with real world TRS elections: information from polls, costly voting with the possibility of abstention, and the various level of momentum for the candidates running among the undecided voters. The “polls” were represented by the group of “decided voters,” their aggregate preferences always being known to the subjects who had yet to decide whether to vote, and if so, for whom. Voting was costly, with separate costs for the first round and the runoff. The momentum among undecided voters was represented through symmetric information about payoffs the subjects would receive (should they vote or not) after one candidate wins the majority. These payoffs accordingly differed for each candidate.

We investigate voter behavior in three types of situations: (1) choosing “the lesser of evils”—and election act among several candidates with negative payoffs; (2) the possible victory of a candidate with positive reputation which is pitted against a poor, yet leading, candidate; and (3) elections with several decent candidates, with one of them enjoying momentum among undecided voters. Similarly to the framing experiments, there was no obvious baseline in the experiment and group behavior was compared for all three situations.

## 5 The Experimental Procedure

The experiment was conducted at the end of September and the beginning of October 2014 at Masaryk University’s computer rooms. The participants were randomly chosen from the ORSEE database of students of Masaryk University and were invited to the experimental session. The actual amount of participants was 290 students, including 170 women and 120 men. Without any knowledge of the purpose of experiment or the knowledge of the experimental conditions in each session, participants were assigned to the sessions according to their time preferences. The self-assignment poses little problem in this particular experiment as there were no control groups and all participants received the same treatment in a combination of between-subject and within-subject designs. The subjects were financially compensated, and their average payoff was 200 CZK + 50 CZK show up fee.

There were 13 experimental sessions with a various number of subjects ( $5 \times 18$ ,  $1 \times 19$ ,  $2 \times 21$ ,  $1 \times 24$ ,  $1 \times 26$ ,  $1 \times 29$ ,  $2 \times 30$ ) with each session lasting approximately 60–90 min. The capacities of sessions varied in order to observe turnout in different sizes of electorates to test another hypothesis that we do not report in this paper. At the beginning of each session, the participants were randomly seated at the computers which they used the whole time. In order to prevent interaction and the communication between the subjects, the workplaces were physically separated by cardboard boxes. The experiment was conducted using Z-Tree software (Fischbacher 2007).

Prior to the actual experiment, the participants were informed about the conditions of the experiment and how the final payoffs would be paid out. The first part

of the experiment was subsequently initiated and the participants were asked to read the short text about the voting systems. A test comprising five questions followed. The questions in the test were based on the information from the short text about the voting systems, and the purpose of the test was to verify the participants' understanding of the voting procedures. The responses provided by subjects, however, had no impact on the final payoff.

Participants were then acquainted with the experimental procedure and with the calculation of the final payoffs. All the information was provided on computers and was simultaneously presented by an administrator. Since voters in real elections do not decide at the same time, the experiment was designed to imitate such a situation. The subjects were also given this information and it was explained that some people may make their decision to vote sooner or later than others. The electorate was therefore divided into two groups: the group of voters who decided to participate and had already determined their preferences (decided voters) and the second group which consisted of all experimental subjects (undecided voters). However, all participants were at the beginning of the experiment told that they were in the group of undecided voters and that the group consists of half of all possible voters. The whole electorate therefore had the size: the number of the participants  $\times 2$ . The experiment hence used some inevitable but minor deception, because voting decisions of decided voters were set in advance to meet certain criteria.

Each participant was given starting capital of 350 ECU (experimental currency unit) which changed after every voting situation in relation to the decision made by the participant himself and the decisions made by other participants. The actual amount of money which participants received after the experiment was determined by an exchange rate (its value was set according to the overall participants' profits to ensure that the average profit in Czech crowns would be approximately 200 CZK). Participants didn't have any information about the exchange rate calculation; they were told only that its value is approximately  $4.5 \text{ ECU} = 1 \text{ CZK}$  and could thus expect conversion process with a linear relationship between CZK and ECU.

The subjects afterwards had an opportunity to partake in several voting situations; every of these corresponded to elections using a two-round voting system. The subjects were, however, provided no information about the number of repetition of voting or information about the length of the experimental session. They were only informed about the number of other participants.

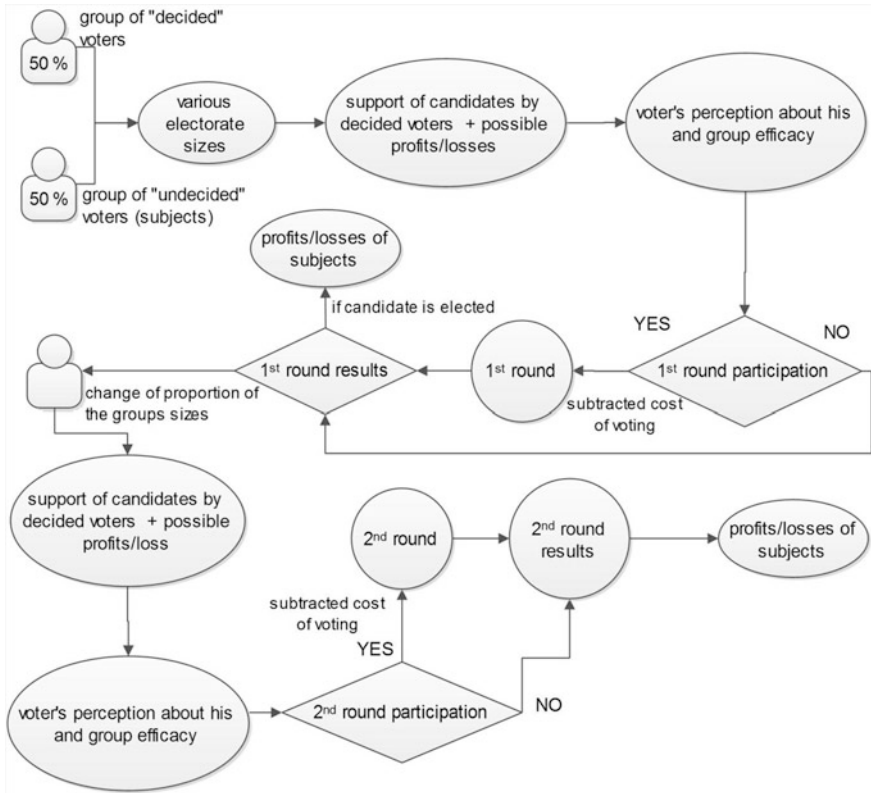
The participants could have participated in up to 42 voting situations. During this sequential voting, in every situation they could choose from four candidates, labeled as A, B, C, or D. No further personal information about the candidates was provided. Participants only had knowledge about the size of each candidate's support among the group of decided voters and what the payoff would be if a candidate would have won the elections (the candidate had to gain an absolute majority of votes to win). The payoff for one voting situation could have been either positive or negative, ranged from  $-60$  to  $60$  ECU and varied from small to high. The average difference between the highest and lowest payoff was 23.86 ECU, just short of three times the cost of voting for both rounds of the vote. 14 situations were

only positive payoffs, 14 only negative, and 14 were mixed positive-negative situations.

The support of candidates by decided voters was determined prior to the actual experiment by the researchers and these levels of support were chosen to show the differences in the voting situations. It was then the impact of the differences in possible payoffs and also the influence of the closeness of elections which could influence the voters' behavior. The distance between the first and the second candidate as well as between the second and the third was one of the most important independent variables. So as to prevent the participants from learning specific voting behavior, the 42 sequential voting situations were in random order (the order was the same in every session).

Prior to each round of elections, the subjects could have decided whether they wanted participate or not. However, they did not know how many subjects had already decided to do so. If subjects decided to vote in the first round, they had to pay a cost of voting 5 ECU, or 3 ECU in case of the second round. By participating in elections, subjects could then influence the results of elections, which were calculated from the number of votes from both decided and undecided voters given to each candidate. However, this result (as well as the payoff) affected all participants (even those who decided not to vote). If no candidate received an absolute majority of votes, then the two candidates with the highest number of votes proceeded to the second round. If candidates had an equal number of votes, the candidate that proceeded to the next round was randomly selected. After the first round, the participants were informed about the turnout in both groups of voters (turnout among the decided voters was always 100 %), overall turnout, and the number of votes gained by each candidate. All voters from the "decided" group whose candidate had proceeded to the second round, participated in the second round as well and again voted for the same candidate. Even some decided voters, whose candidate was eliminated, participated in the second round and gave their votes to a different candidate. The number of those voters and also their preferred candidate was randomly generated. Participants were informed about their payoff shortly after one of the candidates had been elected. The value of this payoff was added or subtracted from every participant's account, regardless of whether they decided to vote or not. Subjects were also informed about the turnout in the second round, as well as about the number of decided voters whose candidate didn't pass to the second round. Participants were also told about the amount of decided voters, who decided to vote despite the fact that their preferred candidate had been eliminated in the first round. The experiment then proceeded with another voting situation according to the same principles (Fig. 1).

After the last elections, subjects were informed about their final payoff in ECU and also in CZK. The whole experimental session ended with an anonymous questionnaire mapping subjects' demographic characteristics as well as their political sophistication. The sophistication was measured by questions about the Czech political system and international politics. The very last part of the experimental session was a short debriefing providing general information about the purpose of the experiment and the payoffs were subsequently given to participants.



**Fig. 1** The experimental procedure. The voting situation

During the debriefing the participant often made remarks that invoked the concepts of their personal efficiency, freeriding and group efficacy.

## 6 Results

Each of the participants from the 13 groups participated in 42 voting situations, together for 546 voting situations (546 first round votes and 345 second round) and 19,798 individual decisions (12,180 in the first round and 7618 for the second round). In 201 cases, the candidate was elected in the first round, while in remaining 345 cases, there was a runoff. The candidate with the highest payoff was elected in 485 situations while in 61 situations the group failed to elect him (9 of them were in the vote that ended in the first round, while 52 in the second round). The amount of strategic voting (not selecting the candidate with the highest bonus in favor of supporting somebody else who was deemed more electable) was 7.5 %, unevenly

spread among three kinds of momentum situations, being as high as 9.5 % in situations with positive payoffs but a mere 4.5 % with situations with negative payoffs. In this paper, we only report voters' behavior in the first round, which is of primary importance for our research questions.

### 6.1 *Turnout in the First Round*

The average turnout in the first round was 42.90 % and in the second round 42.28 %. The amount of freeriding is consistent with levels reported by Blais (2001) for collective action problems. The lowest turnout was in situations with negative payoffs and the highest for negative-positive situations. The difference is about 15 %, significant both statistically and substantively; voting situations with only positive payoffs attract higher turnout than negative payoffs, but they are significantly lower than positive-negative ones. This pattern emerged in all but one session, in which the turnout for situation with negative payoffs was slightly higher than with positive ones. All this hints at different subjects' conjectures about group efficacy in all three types of situation. Subjects were prone to investing resources to simply increasing the probability of minimizing the extent of the loss, but participated most when there was also a result whose payoff was positive *and* within reach (Table 1).

To determine which variables affected turnout in voting situations, we ran OLS regressions with three independent variables, two representing a bonus from a candidate and one being a proxy for electability: (1) the payoff difference between the leading candidate in the group of decided voters and the candidate with the highest payoff for the subjects, (2) the vote difference between a leading candidate among decided voters and the candidate with the highest payoff for the subjects, and (3) the size of payoff from the most preferred candidate. We separately present models for voting situations with positive, negative and positive-negative payoffs (Table 2).

All three models (controlled for session ID) are robust. For the situations with positive payoffs, first round turnout is best explained by the combination of the size of payoff from the most preferred candidate (3) and vote difference between that candidate and the candidate leading among undecided voters (2). Simply put, to turn out and vote, the subjects were concerned about the absolute amount of payoff they would get if their preferred choice was elected; the more their favorite trailed the frontrunner, their propensity to vote increased. In situations with negative payoffs, the voting was determined by the payoff difference (1) and vote difference (2). Quite intuitively again, group turnout was higher when there was a greater difference in payoffs between the bad results as well as when the "less bad" candidate trailed the frontrunner to a greater extent. Particularly striking were the results in positive-negative payoff situations where the R<sup>2</sup> (0.57) was the highest and the turnout rate was best explained by a combination of payoff difference (1) and the size of payment from the most preferred candidate (3), while vote

**Table 1** Group turnout 1st for all three types of voting situations by sessions

Session ID		1st round turnout, structured by payoffs			
		Positive	Negative	Positive-negative	Total
1	Mean	42,857	43,253	50,793	45,634
	N	14	14	14	42
	St. deviation	13,855	14,807	18,978	16,070
2	Mean	50,714	36,428	55,238	47,460
	N	14	14	14	42
	St. deviation	13,280	14,527	16,523	16,590
3	Mean	52,380	38,888	57,936	49,735
	N	14	14	14	42
	St. deviation	15,208	17,702	20,868	19,398
4	Mean	49,261	38,669	52,463	46,798
	N	14	14	14	42
	St. deviation	17,448	14,950	22,066	18,904
5	Mean	51,984	26,984	52,380	43,783
	N	14	14	14	42
	St. deviation	13,363	9462	11,676	16,517
6	Mean	36,538	32,692	46,978	38,736
	N	14	14	14	42
	St. deviation	15,217	14,528	23,085	18,618
7	Mean	43,253	42,857	46,825	44,312
	N	14	14	14	42
	St. deviation	14,318	21,728	17,529	17,759
8	Mean	47,916	31,547	49,702	43,055
	N	14	14	14	42
	St. deviation	15,739	12,415	19,021	17,621
9	Mean	44,047	30,952	46,428	40,476
	N	14	14	14	42
	St. deviation	15,933,189	9171	19,196	16,475
10	Mean	46,240	38,345	46,616	43,734
	N	14	14	14	42
	St. deviation	16,014	21,986	21,833	20,015
11	Mean	45,238	30,952	50,340	42,176
	N	14	14	14	42
	St. deviation	13,436	12,354	19,741	17,267
12	Mean	33,673	28,571	37,755	33,333
	N	14	14	14	42
	St. deviation	9964	12,667	18,721	14,420
13	Mean	40,714	30,952	44,047	38,571
	N	14	14	14	42
	St. deviation	15,807	15,766	20,762	18,065
Total	Mean	44,986	34,699	49,038	42,908
	N	182	182	182	546
	St. deviation	15,226	15,608	19,427	17,881

**Table 2** The factors influencing group turnout in the 1st round

	Voting situations (payoffs)								
	Positive (N = 182)			Negative (N = 182)			Positive-negative (N = 182)		
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$
Payoff difference between leading candidate and most preferred by the subjects	0.034	0.061	0.046	0.298**	0.046	0.393	0.385**	0.068	0.408
Vote difference between leading candidate and most preferred by the subjects	0.198**	0.070	0.174	0.496**	0.068	0.431	0.036	0.082	0.025
Maximum payoff from the candidate	0.461**	0.075	0.538	-0.089	0.430	-0.012	0.746**	0.150	0.400
Constant	24.134*	2.048		20.029*	2.329		26.063*	1.867	
R <sup>2</sup>	0.434			0.431			0.579		

\*\* $p < 0.01$ , \* $p < 0.05$ , controlled for: ID session

difference (2) was not significant. In other words, the readiness to coordinate and elect the trailing good candidate was influenced only by the fact how “good” the good candidate was and how he was “different” from the bad one, with no increased attempts of freeriding in situations when the contest was tight. The finding about different combinations of variables which are able to explain group behavior in all three scenarios is interesting but needs further elaboration.

## 7 Conclusion

Although one rather common school of thought (Taagepera 2007) is that with a TRS, all bets are off, our experiment especially succeeded in contrasting two kinds of situations. When there were only bad alternatives present as the voting choices, the willingness of the subjects to invest their resources and engage in costly voting that would bring them—and the group—only another negative result (although some alternatives were much worse than others), was the lowest. On the other hand, in the “stop the evil” scenario, turnout was consistently the highest and the vote difference between the frontrunner and a good candidate was not a factor that would prompt some subjects to freeride and abstain. The third scenario, with several decent options and with one of the candidates enjoying momentum, was somewhere in between the two extremes. As the payoff circumstances were evenly set in all three types of situations, we believe the subjects must have held different assumptions about group efficacy when considering whether to vote (or not).

Our findings are at the same time consistent with the empirical evidence from Czech and Slovak presidential elections and provide some support for the possibility of the underdog effect to occur. Clearly, we should not fully abandon the Coxian perspective about how events in TRS contests are most likely to unfold. But for highly personalized elections with their distinct properties, we can have more faith in nonmyopic voters who care about the runoff setup, are eager to stop the evil candidates from winning, and vote accordingly.

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**Part II**  
**Recent Trends in Social Systems**  
**and Control**

# Public Values and Social Communication

Sabrina Speranza

**Abstract** In the Country system, the political-institutional level, the economic, cultural, social and media levels are strictly connected and interdependent. Their relationships are physiological when they retain their identity and function independent; they are pathological when they claim for submission and exploit and corrupt by using power or money. Recent laws are not helping innovation, but consolidating old rents. Spaces between information and communication skills are increasingly blurred. Social communication is not a sector of activities, it's a value choice based on an extended, interdependent ethical awareness of all social system. Social system is guaranteed by the truth of information and by ethical values choices of communications.

**Keywords** Social • Country-system • Information • Communication • Public administration • Education • Profession

## 1 Introduction

Social communication is here understood in two senses:

- as complex information flows crossing typically a contemporary society, and that contribute to the emergence of a public sphere (or general interest);
- as a value choice of each communication, based on the awareness and interdependence of all the ethical dimensions of a social system (institutional, political, economic, cultural, civil).

With social communication you want to refer to the communication that characterizes the entire society and not only to the activities of a part of it, intended to campaigns—functional and symbolic—of empowerment, awareness and social

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promotion. These, in fact, are only a field of public institutions communication (required by law) and of private profit and nonprofit organizations.

According to the first meaning, communication is social communication as a whole society; it affects the processes of formation, existence and experience of the society (culture, daily interaction, socialization, institutionalization, social change). In the second sense, communication is social every time, from any field comes from, who is attentive to the discomfort and intervenes for his care and protection. The communication can only be “relational social attention”.

The two meanings can be said to be complementary: the communication of the whole society, and attentive to it.

## 2 Social Communication and Country-System

In a State of pluralist democracy—based on universal suffrage, secrecy and freedom to vote, periodic elections, the multiparty system, the principle of tolerance of dissent-social communication can be a fundamental process of feeding, conveyance and protection of historical public values as the general interest (or the common good) and the right to the truth of the information.

It acts as a communication between the multiplicities of interests, ideas, values, social groups present in the system—because each country has effectively guarantee edits existence, the possibility of free development and to be recognized by the general interest pursued. The general interest (or the common good) does not have an objective consistency, but it is what emerges by comparing ideas, different opinions and different values of warranty; and is always open to criticism and overcome because what is achieved with the comparison is every time a particular conception of the general interest. For this in pluralistic democracies is ensured wider constitutional guarantee “freedom of expression” and “pluralism of the media” (television, radio, newspapers) that allows the formation of so-called “public sphere”: “In it act and express individual members of the political class, journalists, opinion leaders, intellectuals, and are activated opinion movements of various kinds, which often lead to envisage forms of society. This public sphere, free and pluralistic, is distinct from and independent of political parties and the Parliament electorate-circuit, but is politically influential and listened, because it is here that form the ideas, opinions and programs that then feed both proposals party is the life of the Parliament” (Bin and Pitruzzella 2011: 52).

It is in the public sphere that the social system, or civil society, can point to get it towards a goal, when organizing (associations) and is expressed (public opinion). It is, however, an increasingly differentiated and diversified in the political, economic and socio-cultural, where “processes and products highly evolved state systems articulated in the territory, mobility between social classes and ethnic groups multiply active subjects, the rights, expectations and points of view” and this means that it is harder to reach it and listen to it, and that the ways to do that are “more

long, laborious and conflicting, (...) bear the mark and scars of contrasts, contrasts of hard and social conflicts, often in preparation the political confrontation radicalized” (Scandaletti 2003: 68).

In the public sphere bounce contents and meanings through which institutions make themselves known. Parliament, Government, Courts, Authority, Bank of Italy, regions, provinces, municipalities, health agencies inform “duty” (the content of parliamentary debates, laws, government measures, procedures, services) and to communicate political objectives (the meanings that must enter the field of the knowledge and belief of the people in order to guide their social behavior and political-electoral).

Since the eighties, they bounce through the media system. With the liberalization of the airwaves (Constitutional judgment no. 202/1976), the means and tool so information and communication, public and private, they become co-stars in the public arena. The media system—economically and politically independent, with up its own network environments, cultures and professional techniques—constitutes the place of visibility of all other systems, able to activate and to influence social change. Parties evanescent, television lounges, political telegenic, gatherings and rituals sensitive to filming, slogans from the military and sports lexicon, great representative economic, professional and social mix private interests and associative, weave relations with Parliament for benefits in exchange for regulatory approval, with the media for the visibility of their proceed, with citizens to get attention and adhesions.

Flock to social communication that has no social vocation. The political-institutional, economic, cultural and social systems are interdependent with the media system and profile of communication depends on the objectives for which trigger their function of mutual attraction. Their interaction must assume autonomy and mutual control, collaboration and competition; can be functional and pathological.

The interaction of political and institutional system with media system is functional, for example, when defining the legal framework for the government of the media (l.no. 103/1975 on the redefinition of the public monopoly of Italian television—RAI; law in support of publishing in crisis, 1981; establishment of the Authority, 1997).

It is pathological when the political and institutional system defines the legal frame work or the government of the media according to interests related to “political and economic affairs”. For example, favoring the outcome of the dispute between the “big business for maximum private operator and the deal political in the public service entrusted to RAI”. It is pathological when a decree “save” illegal developments of the media system; when influence the choices of the information world, “the pressures of parties, bodies institutional publishers, directors and editor sto get on the attenuation of unwelcome new so harmful, avoid investigations, favor the recruitment or appointment of directors and editors friends” (Scandaletti 2003: 77).

The interaction of information with the political-institutional is functional: when each system does its part with “roles chosen and not suffered”; when the information they provide citizens with the media, careful to “delays, errors and omissions” that press releases of political power and the public never return; when the information has a publishing company active, a line recognizable, is the watch dog of power and voice to civil society, within queries true; when politician can choose between more media and therefore be less affected by any confrontations with editorial guidelines, editors and journalists, and when the information is pluralistic and balanced (in established democracies big newspapers can stand for target reader sand in some elections, but not always for the same part); when newspapers keep their vantage points far from the centers of power and when journalists are preparing well to the profession and update themselves in continuity; when the information shall ensure the act of political power and the politicians can not restrict the dissemination of information in convenient defused by the plurality, the commercial purpose of the media, independence of the judiciary guaranteed.

The interaction is pathological when political figures, strong, imposing conditions to director weak (for example requiring a certain number of minutes in the main news program and choose the interviewer, not wanting that opponent); when the public places of political debate are reduced to a single medium (such as television) and when the same party newspapers are reduced to “flags” rather than real instruments of broad and effective communication policy; when journalists go to lunch with politicians and “publishing is impure” (for example publishing that uses information to make business and politics).

The interaction of the media system with the social system is functional: when the social system influences the market with the demand for quality and the media system provides products consequential when ally in the control of the political and institutional system, when the system of media chooses the editorial line of “service” and the commitment to build, over time, a more detailed information production the facts.

The interaction is rather pathological: when the social system influences the market with the question not of quality and the media system fields (for example with products and tabloid gossip); when the media system chooses editorial “unscrupulous” (use questions lowest on the market to make profit or induce some to support electoral interests) or “all-encompassing” (as it offers uncritical container of messages of others), always in the name of the numbers, that is, of the audience and its advertising space.

The interaction of the social system with the media system is functional: when readers directly support the media (buying every day the newspaper); when choosing the head (changing when it no longer meets the information needs); when not only read but ask, offering quality issues by correspondence as readers-active users. It is pathological when lower levels of reading put at risk the independence of the newspapers, readers do not react by changing the head, or program, if they no longer meet the information needs.

### 3 Information as Public Value

In the crowding of social communication, is the information having to represent and defend the right of all to the accuracy and controllability of sources. The functional interaction with the information, and information with civil society, is crucial because it allows the use of the weapon with which it is expected that fight, in a democracy, the political and social conflicts, and that they make choices: dialectics (Miglino 2006). Social communication is its shuttle: ago by shuttling between the parties because it congeals and affirm the will of the majority, because they are under surveillance powers on the community.

In the democratic, just the flow of information becomes a factor of realization of fundamental social values such as freedom, equality, and solidarity. The social work of all communication is intentional or specifically professional then that of a help to the deployment by providing the social plural possibilities of expression, evaluation, action. It is to bind the word for the knowledge of necessity, conditions, references, solutions of social reality (information) and the contact between the ideas, the values, and the opinions that you have it (communication).

Very simply, we can replace the value of public information in the daily necessity, of each of us, to inform and be informed. In one of the first volumes in the seventies have been responsible for the initiation, in Italy, the reflection on the need to “secretary” the social through information, is wrote: “The simplest cases of life teach us that it is not possible choose, orient, evaluate, judge whether or not on the basis of sufficient information. All choices, decisive or trivial, we do in everyday life, in work, in business, in any kind of activity, our relations with others depend on the information available to us and on our willingness to use the mat the right time. This is, at least, the condition of their success; and without this condition are not choices, but wobbles randomly or unrest in a vacuum. (...) When information is missing or when, being available, it is not used, the problems remain in soluble. (...) And those who invested with any power, deliberately conceal or disguise information that would be useful to the people to make their choices, you are taking a serious responsibility and unforgivable. Because any decision or project, any plan reform is to revolutionary, without a base of information, as much chance of success than they can have those flows from top of a skyscraper to reach the ground un harmed” (Tavazza 1973: 16).

As previously highlighted, communication is inherently “relational social attention”, but in practice is implemented only if it is a repeated value choice of an extended ethical awareness of an entire social system. Public ethics of social communication is to let it use only as a process of movement and power of those values above, essential to all mankind. In this sense, there is no social relationship that has not, in the communication, the responsibility of transparency and credibility of information: in the way hinders or supports it, in the way the condition so meets, as where it is considered part of an ethic of mutual shared responsibility, all dutifully and al so directed to an exterior that is the context of everyone’s life. And there is no ethical principle (well, justice, truth) that can be used differently depending on what, where and for what it operates in society.



The Pontifical Council for Social Communications told it about forms and communication skills, but it can be applied to every area of the human-social: no one can break away from the primary duty to express and foster an authentic vision of human development in its sized material, cultural and spiritual; no relationship should be able to deceive statement or omission because every person has the right to preserve, as much as possible, its freedom of choice, without manipulation and suggestions (Pontifical Council for Social Communications 1997).

For that “you cannot do good journalism if it lacks a social vocation. In this sense, the journalist is like the doctor, or teacher. The “virtue ethics” or “care” applied to information put the emphasis precisely on the dedication and responsibility that should take each moving on its own more freedom” (Fabris 2009: 1009).

From a regulatory standpoint, the information is to report the facts as they are and as fully as possible. From the point of view of values, we have to decide every day not to ignore aspects of human suffering and discomfort that pushes the edge of social participation. Otherwise, the information makes an indefensible selectivity. Already indefensible than art. 2 of the Italian Constitution on the inviolability of human rights (dignity, equality, participation) than art. 21—freedom of information—(nothing should prevent to deal specifically of capital); than art. 33 on the freedom of movement of knowledge (it has therefore always the responsibility to know everything that is in the interest and co-responsibility of the community to know) and respect the art. 2 on the rights and duties of the journalist (l.no. 69/1963, *Ordinamento della professione di giornalista*) who is free to inform, but responsible for the “respect for the truth in the facts observed” and “source” cannot go wrong, but should “rectify” and repair errors.

When dealing with the “social”, the information of the major mainstream media becomes “alternative” or non-mainstream information. “Social” is rather to be considered as matters relating to the whole phenomenology of a society, not just as problematic dimension generated by the society. For a society, social is the problem herself, always and everywhere present. It is really a problematic context, connecting the functional and symbolic structure that paradoxically and simultaneously marginalizes and excludes. Marginalizes and excludes in all areas (political-institutional, economic, cultural, and civil).

Society and its social as such, physiological and pathological, is therefore all the source, content and commitment to the information. Would not need to give itself the task of social: journalism should always be social, as a profession able to bind the word to protect everyone.

## 4 Main Limits to Social Vocation of Information

### 4.1 *Impure Publishing*

“As a pure publishers, publishing Italian matters, there has never been a shadow”. Even worse is gone era fascist “with censorship and top ministry official, the

abolition of party newspapers, the Press Federation channeled in fascist unions, dismissal of uncomfortable director, servitude full of new born radio” (Scandaletti 2004: 116). Still prevails a publishing information derived from economic and financial interests (*La Stampa* from car industry, *Corriere della Sera* from textiles, *Il Resto del Carlino* and *La Nazione* by sugar producers, *Il Mattino* and *La Gazzetta del Mezzogiorno* by Naples Bank); also the State has adequate promoting, through the oil company, *Il Giorno* and the Agi agency.

All legitimate under art. 41 of the Constitution on economic freedom: therefore information as free economic enterprise too. However, “doing business” with information means ask conditions, require result so particular interest when it consists deploying pact of honesty with the public interest. It means to confuse freedom and truth of information with market needs (internal conditioning of ownership of the means such as costs and profits) and politics (external constraints a rising from the middle powers such as consent, visibility, benefits).

In particular, freedom of information must continuously free from dangers within and outside the professional system. In 1990, the *Patto sui diritti e i doveri del giornalista* of the newspaper *la Repubblica* reiterated its autonomy as a single war head for not “suffer interference of a political, economic, ideological (...) from organizations, institutions, associations, public or secret, public companies or private pressure groups”. In 2004, the *Carta del Corriere della Sera* has confirmed the vocation and mission of free information to guarantee the readers; in 2005, *Il Sole24Ore* is committed to control conflicts of interest with its own *Codice di autodisciplina*.

The *Carta Informazione e pubblicità* of 1988 shows that the information may end up doing advertising, to shuffle their role intentionally or not with that of communication of the advertising industry and public relations; the *Carta dei diritti e dei doveri del giornalista del servizio radiotelevisivo pubblico* of 1990 refers to how well information programs of public service broad casting can be constrained by advertising and sponsor ships if, for example, relate to individuals, corporations, institutions from which the journalist can accepting, directly or indirectly, “gifts and donations as payments, reimbursements, free loans, invitations to travel, travel and free trips” (art. 18 “Informazione e pubblicità” and art. 19 “Regali e donazioni”).

The *Carta di Treviso* of 1990 (and additions of 1995) on the protection of minors in information was not signed by the editors (Scandaletti 2005). Cost of equity and the needs of profit can push the information is not restricted even in front of the person of the child, both as actor and as a victim of a crime, allowing its identification and exploiting “his case life” except as sensational. The *Codice di autoregolamentazione tv e minori* in 2002 remembers to information and television companies that the person of the child is also a spectator and that the news should not disseminate, in the time slot protected, “sequences particularly brutal or scenes that might create disturbances and imitative forms (...), which may harm the mental or moral integrity” (art. 2.3 “Programmi di informazione”).

The news on health or on the problems of the psychological sphere, emotional and sexual “can induce in speculative interpretations or distorting the facts”; may overlook any particular conditions in which a citizen, reading a newspaper or watch

a newscast, it can be: can cause “(...) alarmism, disturbances and any possible distortion of the truth (...)” (1995, *Carta di Perugia*, art. 7 and art. 8). Data can be published opinion polls, of political attitudes, market research that are not always “reliable, complete, relevant, meaningful” and they are responsible for the sources issuers (opinion polling organizations, journalists and clients) (1995, *Carta Informazione e sondaggi*). The information can also be partial in public service broadcasting, where the duty of impartiality is the most ideally required not only to broadcasts, but to all kinds of books (1995, *Carta dell’informazione e della programmazione a garanzia degli utenti e degli operatori del servizio pubblico radiotelevisivo*). Cannot retain or adequately protect the data processed for journalistic purposes so unbalancing the delicate relationship between the right and duty of the press and respect for fundamental rights of the citizen (dignity, confidentiality, protection of identity and personal data). It can collect, record, store and disseminate news about “events and events relating to persons, collective bodies, institutions, customs, scientific research and of thought”, without being identified and not only to pursue strictly professional purposes; may in correctly use “invasive techniques” that do not protect all the specificity of places, from home to those of care, detention or rehabilitation (1998, *Codice deontologico relativo al trattamento dei dati personali nell’esercizio dell’attività giornalistica*, art. 1 “Principi generali”, art. 2 “Banche-dati di uso redazionale e tutela degli archivi personali dei giornalisti”, art. 3 “Tutela del domicilio”; 2003, *Testo unico sulla privacy* D.lgs. n. 196).

May disturb the market reporting, so intentional or negligent, news that alter “the trend of stock prices or that hide situations of instability”; can “make profit staff or third parties” with economic and financial information, disseminating facts, circumstances and assessments useful to their interests (2005, *Carta dei doveri dell’informazione economica*; 2007, Consob approves the process disciplinary).

Can promote, “if characterized by emphasis or dramatizations (...), strong expressions or threatening both oral and written”, all attitudes in sports events can cause accidents, acts of violence, or violations of laws and regulations by the public or fans; cannot ensure “correct information about any crimes being committed during competitive events” (2008, *Codice di autoregolamentazione delle trasmissioni di commento degli avvenimenti sportivi*; 2009, *Decalogo del giornalismo sportivo*).

Can use misnomers, spread inaccurate information, summary or distorted in front of socio-cultural reality emerging and urgent as those of “migrants, asylum seekers, refugees and victims of trafficking”; the superficiality of information can “arouse unwarranted alarms, expose them to retaliation (...) so by the authorities of the country of origin, that of non-state entities or criminal organizations” (2008, *Carta di Roma*).

Can contribute, on television show so legal proceedings in progress, to make them “process-show”, mixing news and commentary, investigated, indicted and convicted, the prosecution and defense without “respect the rights to dignity, honor, reputation and to privacy guaranteed by the Constitution to the people directly, indirectly or occasionally involved in the investigation and in the process” (2009, *Codice di autoregolamentazione per i processi in tv*).

Cannot recognize and respect the dignity and the professional quality of the journalists themselves, rendered “condition able and black mailed by inadequate remuneration, corporate policies are more attentive to the economic savings that investments editorial and final product quality journalism, from choices of work organization also by fellow journalists placed in positions hierarchically superior” and the lack of collaboration and solidarity (2011, *Carta di Firenze*).

Can became less when dealing news regard in prisons, people in need of protection privileged citizens deprived of freedom or in the difficult phase of reintegration into society; can provide data not always reliable and updated on the prison context, to confuse the alternative measures and the different modes of execution of the sentences equivalent to freedom and raise an un justified social alarm (2013, *Carta di Milano*).

#### ***4.2 Mingling with the Political Communication in the Public Administration***

Until the nineties, the communication of the Public Administration was primarily political, namely promoting the image and profile of the summit of combining public in order to obtain or reconfirm the popular support through elections or other designation (Razzante 2002).

From the nineties onwards, there have been legislative measures that have sought to transform the relational schema between State and citizens:

- 1. no. 142/1990 (*Ordinamento delle autonomie locali*) reorders matter of local autonomy, recognizes the right of citizens and provides forms of access and participation in the administrative proceedings;
- 1. no. 241/1990 (*Nuove norme in materia di procedimento amministrativo e di diritto amministrativo*) regulates the right of access to administrative documents (transparency, participation in the administrative order, speed of administrative action, the statement of reasons of the proceedings, the principle of consensual);
- Decree of the President of the Republic June 27, 1992, no. 352 precise organizational tools to implement the law no. 241/1990 and refers for the first time Urp (*Ufficio per le relazioni con il pubblico*) as an opportunity that each government can be assessed; will be the art. 12 of Legislative Decree no. February 3, 1993, no. 29 (*Razionalizzazione dell’organizzazione delle amministrazioni pubbliche e revisione della disciplina in materia di pubblico impiego*) to define the transition from the opportunity to the compulsory Urp; Directive October 11, 1994 (*Principi per l’istituzione ed il funzionamento degli Uffici per le relazioni con il pubblico*) will give clear objectives, activities and organization while the circular of 21 April 1995, no. 14, define the objectives of staff training;
- D.lgs. of 12 May 1995, no. 63 (*Misure urgenti per la semplificazione dei procedimenti amministrativi e per il miglioramento dell’efficienza delle pubbliche amministrazioni*) introduces general schemes of reference for the

adoption of the *Carta dei servizi*, intended for the definition and maintenance of standards of quality of services and the recognition of role of control and re-orientation of the services by the citizen-user;

- interventions definitive simplification and transparency of administrative actions are then set by Bassanini read: l. no. 59/1997 (*Delega al Governo per il conferimento di funzioni e compiti alle Regioni ed enti locali; per la riforma della Pubblica Amministrazione e per la semplificazione amministrativa*);
- l. no. 127/1997 (*Misure urgenti per lo snellimento dell'attività amministrativa e dei procedimenti di decisione e di controllo*); l. no. 191/1998 (*Modifiche ed integrazioni alle leggi 15 marzo 1997, no. 59 e 15 maggio 1997, no. 127, nonché norme in materia di formazione del personale dipendente e di lavoro a distanza nelle pubbliche amministrazioni*); l. no. 50/1999, (*Delegificazione e testi unici di norme concernenti procedimenti amministrativi*).

Each measure has understood and implied information and communication as necessary to organize, simplify access to, participate, choose, and verify requirements, guidelines and actions of the State and citizens. It matures, in fact, the need to legitimize them as regulatory product: they restore the space and the role of journalism as an autonomous and co-essential to democracy; elevate communication from propaganda activity or bureaucratic function to service for citizen-user, citizen-voter, and distressed citizens.

Information and communication will be redefined as though two areas of activity other than the law 7 June 2000 no. 150 (*Disciplina delle attività di informazione e di comunicazione delle pubbliche amministrazioni*). In this sense, it was previewed as a new feature of our system (Ingrao 2000), winning the internal resistance of the bureaucracy with the political alliance Frattini-Di Bisceglie, with the support of the Federazione della stampa and of the Associazione italiana della comunicazione pubblica e istituzionale. It was a law especially extraordinarily waiting to return to the Uffici stampa rights and duties of the information; for the range of public communication as institutional, political, social, but not journalism; to define the respective structures and profiles professional employees.

Mandatory distinction between information communication not sufficiently distinctive, however, already in the text of the law. As paragraph 4 of art. 1 (*Finalità e ambito di applicazione*) specifies that “information” is the focus on the means of mass communication, through print, audiovisual and computer tools, in paragraph 5 the purposes of information and communication are confused because they all relate for communication activities such as:

- (a) “to illustrate and promote the knowledge of the regulatory provisions, in order to facilitate implementation;
- (b) illustrate the activities of the institutions and their functioning;
- (c) promote access to public services, promoting knowledge;
- (d) promote knowledge widened and deepened on topics of public interest and social;

- (e) to facilitate internal processes to simplify procedures and modernization of the equipment as well as the knowledge and the start of the route of administrative;
- (f) promote the image of the government, as well as that of Italy, in Europe and in the world, giving knowledge and visibility to events of local, regional, national and international”.

So journalism of *Ufficio stampa* would also public communication. Not only that, he also carried out some basic services of Public relations: “The activities of information and communication of public administrations are conducted, as well as through programs provided for institutional communication is not advertising, even through advertising, distributions or promotional sales, billboards, the organization of events and participation in specialized exhibitions, fairs and conferences” (art. 2, *Forme, strumenti e prodotti*, paragraph 1).

In addition, *Ufficio stampa* and *Portavoce* are shown both as information structures: “information activities are carried out through the *Portavoce* and *Ufficio stampa* and those of communication through the *Ufficio per le relazioni con il pubblico* (Urp), as well as through similar structures such as *Sportelli per il cittadino*, *Sportelli unici* of public administration, *Sportelli polifunzionali* and *Sportelli per le imprese*” (art. 6, *Strutture*, paragraph 1).

The *Portavoce* is a person appointed by the political leadership and not necessarily have to be a communicator. Therefore cannot be a structure of information in the sense in which this activity is to be understood by a Press. In fact, art. 7 (*Portavoce*) defines implicitly a political communicator: “The organ of the summit of the public may be assisted by a *Portavoce*, also outside the administrative authority, responsible for working directly for the purpose of political-institutional relations with the media”.

It is the same art. 9 on *Ufficio stampa* to give to failure interpretations, doubts and uncertainties:

- paragraph 1, “The government (...) can provide itself (should not?) (...) of an *Ufficio stampa*, the activity of which is addressed in priority to the means of mass information” (as a matter of priority? It’s or not is a primary source of official information?);
- paragraph 2, “The *Uffici stampa* are made up of staff registered with the *Albo Nazionale dei Giornalisti*” (art. 6 of the *Regolamento* provides that during the first application can be confirmed the position of the staff although without a specific securities provided for access and the requirement of entry in the professional journalists; art. 3 says that it is not sufficient enrollment in and that it must have a bachelor’s degree);
- paragraph 3, “The *Ufficio stampa* is headed by a coordinator who assumes the title of *Capo Ufficio stampa*, who, on the basis of directives issued by the summit administration, liaise with the media, ensuring the highest degree of transparency, clarity and timeliness of communications to be provided in the areas of interest of the administration” (in what sense “directives issued” and by whom?, the information should not be independent?).

In the *Carta dei doveri* is made clear that the responsibility of the journalist to the citizens will prevail against any other and that the journalist can never subordinate to the interest of others, particularly to the publishers, the government or other bodies of State. “(...) We thought, with the arrival of the new law on public communication of the State and Local Government—on which, however, we have not formulated a few reserves—to be able to pull, as they say, a sigh of relief and there were also flattered that for the occasion always opposing political forces in Parliament had reached agreement in order to allow the launching of an instrument long awaited by category. (...) But it was realized immediately—by the *Regolamento*—that an article of the law, which speaks of State secret, of secrecy, of protection of personal data privacy and ethical compliance of the cards (art. 1, paragraph 4) is in stark contrast to the rules contained in the law establishing the Ordine dei Giornalisti, for which the journalist is obliged only to secrecy about the source of the information, if that is confidential and that the journalist must bear the substantial truth of the facts” (Bianchini 2001).

Since 2000 we are witnessing a tiring unresolved reconquest of Ufficio stampa to the journalistic information. The *Carta dei doveri del giornalista degli Uffici stampa* of 2002 had shown the difficulty of the same Consiglio Nazionale in rereading the role of information in public administration based on the specificity of structures (Ufficio stampa, Portavoce, Ufficio per le relazioni con il pubblico) and activities (information and communication) due of the l. no. 150/2000.

The *Carta* was written: “The journalist, within the government sector, operates in full awareness to safeguard two fundamental principles (...). This is the right (instead it is the duty) to inform the public institutions and the equally important principle, this time directed to the citizens to be informed (...). The Ufficio stampa in which the journalist works should be considered as a place in which materializes the exchange of information between the institution and the citizens. This exchange operates in two directions: on the one hand the journalist “tells” the body, the way it works, the other is a carrier, within the entity, the needs of citizens with respect to the institution of reference”.

The information that is not provided as unidirectional, but as exchange, finding a reciprocity or a direct relationship with the citizen. The information is not, however, an impersonal service that reaches the city through the media?

Always in the *Carta* of 2002: “(...) A particular duty of the journalist that works in the institutions is to foster dialogue between body and user, working to perfect knowledge of the rules, for the full transparency of administration, for the improvement of services and the removal of barriers to their full enjoyment: he therefore facilitate dialogue and organizes listening tools, using their own professional specificity not only to make clear the institution to citizens but to make her understand and abide by them. In this sense, the journalist while in active research and collaboration with colleagues of the media for the discussion of issues and news of a specific nature, organizes professional tools for direct information, able to give voice to citizens administered or that go anyway in the direction of reducing the

distance between the institutions and the citizens”. Information is confused with what to do instead of the Ufficio per le relazioni con il pubblico (Urp).

In the *Carta* of 2010, the structure and the professional profile of the Ufficio stampa are peremptorily recalled to the fundamentals of journalism. The *Carta* defines the activity of Ufficio stampa “a function purely journalistic”. Clarifies that the information is not public relations, not relations with citizens, not marketing or advertising and that the figure of the Portavoce “widespread, especially in politics and in elected bodies, is not within the field of journalistic information and is therefore not included in the definition of Ufficio stampa”. Moreover, “the Ufficio stampa is the primary structure of journalism to the outside and the journalist who works there is bound to observe the *Carta dei doveri del giornalista* and all other documents ethical reference for members of the Ordine dei Giornalisti, in regardless of the nature and type of contractual position held (...)”.

The *Carta* of 2010 plays and shares with the l. no. 150/2000 the two principles of “the right of citizens to be informed and the right/duty to inform the public institutions”: (...) both in public and private sectors, the journalist (...) is maintained, even in a normal scope of cooperation, to separate its task from that of other actors in the field of communication”. Its professional behavior must conform to the principle of information. It can accept “instructions and directives” but only by those who, as part of the institution, organization or company, has explicit title to provide it, and provided that “the provisions are not contrary to the law professional ethics, to *Carte deontologiche*, to Contratto di lavoro”.

From 2013, the journalists of the Uffici stampa can expect it from their colleagues in the effective cooperation of the public as much of the principles of impartiality and transparency, because they are required to do so.

Just in implementation of anti-corruption law (l. no. 190/2012) and in line with the recommendations of the OCSE in relation to integrity and public ethics, April 16, 2013 was approved the *Codice di comportamento dei dipendenti pubblici* (DPR no. 62). The *Codice* specifies the duties of conduct for employees of public administrations and their violation is a source of disciplinary responsibility.

If they fulfill the duties of loyalty, impartiality and good conduct—duties highlighted as *minimal*, basic—also contribute to the realization of the information service of an Ufficio stampa because, together, do not give in:

- the position and powers there they own, but pursue the public interest (art. 3, *Principi generali*, paragraph 1);
- in dependencies and conflicts of interest, information to be used for private purposes (paragraph 3);
- to unequal treatment of the content and recipient of information and services (paragraph 5);
- gifts, compensation and other benefits (art. 4);
- to take part in associations and organizations whose areas of interest may interfere with the conduct of the office (art. 5, *Partecipazione ad associazioni e organizzazioni*, paragraph 1);



- to decisions and actions that follow serious reasons of personal convenience or political pressure, trade union or superiors (art. 6, *Comunicazione degli interessi finanziari e conflitti d'interesse*, paragraph 2);
- the infringement of the obligations of transparency and cooperation in the unavailability, processing, retrieval and transmission of data subject to the obligation of publication (art. 9, *Trasparenza e tracciabilità*, paragraph 1);
- the mediation of third parties and promises of utility as an intermediary in the various moments in an administration may be in the conclusion of agreements and shops (art. 14, *Contratti e altri atti negoziali*, paragraph 1);
- indifference towards the misconduct of colleagues (art. 15, *Vigilanza, monitoraggio e attività formative*).

Together they could be more resistant to political conditioning, meanwhile that the policy reflects a possible ethics reference, since it is already a political practice such as a profession. One of the most critical determinants for ethics and deontology of the actual political-institutional system concerns the potential influence on the information and the system of professional media. In 2012, the magazine of the University of Applied Ethics “Ramon Llull” of Barcelona (*Ramon Llull Journal of Applied Ethics*) published the first Spanish code of ethics for politicians (*Code of Ethics for Politicians*). Inspired to the principles of the *Universal Declaration of Human Rights* human of 1948, the *Code* summarizes those to qualify a political career (justice, respect, service, responsibility, integrity, professionalism, transparency) and in Chapter IV (*Relationship with the media*) these principles are translated into the political duty to respect the “autonomy of the media, without interfering, coerce or put pressure on their practices” (art. 17).

### **4.3 “Optional” Training and “Confidential” or “Uncontrolled” Access to the Profession**

7 August 2012 was approved the reform of the regulated professions (DPR no. 137, *Regolamento recante riforma degli ordinamenti professionali*) and the draft bill no. 3270 on associations of non-regulated professions has become the law of the State January 14, 2013 (l. no. 4/2013, *Disposizioni in materia di professioni non organizzate*).

For a long time, the Italian legislature was called to dissolve the fundamental issues of specific training, the procedures for access to the profession, the conduct of such business as well as the ability to take disciplinary definitive (Spalletta 2007). In 2007, it was hoped in the approval of the bill on the reform of intellectual professions (Ddl no. 2160). The urgency of a significant intervention was explained by the now “(...) strong presence in our area of professional studies and consulting firms in other countries, the marked quantitative difference between the offer global service from professionals italian and the demand of users who are increasingly oriented towards the quality of the service, the peculiar asymmetry of information

and the relevance of the social costs resulting from inadequate performance” (Atti della Camera XV Legislatura 2007: 2).

Failure reform included: the reorganization of access to intellectual professions, the reorganization of Ordini, Albi and Collegi Professionali, recognition of professional associations, the discipline of the professional company and the union of these provisions with the rules of Secondary and higher university.

The DPR no. 137/2012 on regulated professions and l. no. 4/2013 on non-regulated professions have changed little:

- the information has remained a *protected* profession, yet dispensable from university and internship controlled only by the Ordine dei Giornalisti;
- the communication skills can self-regulate.

As for the regulated professions, then also the information, the main changes introduced by the DPR no. 137/2012 are:

1. *The reiteration of the exclusivity of what is defined profession* (art. 1, letter a)—“For regulated profession means the activity, or the set of activities, reserved by express provision of the law or not unique, whose operation is only permitted after enrollment in colleges or orders subject to professional qualifications or to the establishment of specific skills”.
2. *The training* is no longer required, the duration may be even shorter, compatible for civil servants (art. 6, paragraph 1)—“The professional training is mandatory when provided by individual legal professional, and has a maximum duration of eighteen months (paragraph 5). The training can be done in constant civil service or in private employment relationship, as long as the related disciplines provide methods and working hours appropriate to guarantee the actual performance. On the enforcement of that provision Council supervises the local body or association”.
3. *Continuing education* (art. 7, paragraph 1)—“In order to ensure the quality and efficiency of the professional service, in the best interest of the user and the community, and to achieve the goal of professional development, every professional has the obligation to treat the continuous and constant updating of their professional competence in accordance with this Article. Any violation of the preceding sentence constitutes a disciplinary offense”.
4. *The disciplinary function* (art. 8, paragraph 1)—“At the advice of the order or territorial college are instituted disciplinary councils territorial entrusted with the tasks of education and decision disciplinary matters relating to the register. (...) The members of the disciplinary council are appointed by the governing territorial president of the court in the district where they are located, among the persons specified in a list of names proposed by the corresponding advice body or association (paragraph 3). The directors of the National Councils of the College or exercising disciplinary functions cannot exercise administrative functions. For the distribution of functions between the disciplinary and administrative directors, pursuant to the provisions of the preceding sentence, the National Councils of the College or adopt implementing regulations, within

ninety days after the entry into force of this Decree, with the approval of the Minister vigilante” (paragraph 8).

5. *Compulsory insurance* (art. 5, paragraph 1)—“The professional is required to enter into, including through collective agreements negotiated by the national councils and the social security institutions of professionals, adequately insured for damage caused to the customer from the exercise professional activity, including the activities of custody of documents and values received by the customer. (...) The practitioner must disclose to the customer at the time of the assignment, the details of the professional policy, its ceiling and any subsequent change. The violation of the provision of paragraph 1 shall constitute a disciplinary offense” (paragraph 2).
6. *Permitted informative advertising* (art. 4, paragraph 1)—“It is admitted by all means advertising information concerning the activities of regulated professions, specializations, their qualifications related to the profession, the structure of the professional and the fees required for benefits (paragraph 2). The advertising information referred to in paragraph 1 must be functional object, true and correct, must not violate the obligation of professional secrecy and should not be ambiguous, misleading or derogatory (paragraph 3). The violation of the provision of paragraph 2 shall constitute a disciplinary offense”.

The reform of the professions was advocated in particular by the communicators. In the media system, to recognize, there was only the Order of Journalists. Recognize the professions and associations of communication meant to certify and constrain profiles, requirements, ethics and sanctions to ensure reliability users (Scandaletti 2006).

L. no. 4/2013 has, however, established only the voluntary self-certification. It refers to the non-regulated professions predominantly intellectual and redefines:

- as “(...) economic activity, also organized, once the provision of services or works to third parties, and habitually pursued mainly through intellectual work, or with the help of this, with the exception of activities reserved by law to registered in lists or pursuant to art. 2229 of the Civil Code, the health professions and activities and crafts, commercial and public exercise specific regulations” (art. 1—*Finalità e definizioni*, paragraph 2);
- as “(...) and free exercise of the profession founded on autonomy, competency and independence of judgment and intellectual technique, respecting the principles of good faith, the expectation of the public and customers, fairness, enlargement and specialization of services, the professional’s liability (paragraph 4). (...) Carried out individually, in a partnership, company, cooperative or in the form of employment” (paragraph 5).

The main changes introduced by l. no. 4/2013 are:

1. *Recognizes the role of associations* (art. 2—*Associazioni professionali*). Those who practice may in fact “form associations to professional character of a private nature, based on a voluntary basis, without any constraint of exclusive

representation, with the aim of enhancing the skills of its members and ensure compliance with the rules of professional conduct, facilitating the choice and the protection of users within the rules on competition” (paragraph 1).

You could also do this before with the difference that now, by law, the “statutes, clauses associative, ethical principles, organizational structures and technical-scientific” (paragraph 2), the “lifelong learning” of members (paragraph 3), the “points” of information and reference for the citizen-user customer or consumer (paragraph 4) become “requirements”, provided to ensure the transparency of operations and ownership of associations, to promote a code of professional conduct by which to proceed to disciplinary sanctions and to protect users.

2. *The associations may meet in turn in forms “aggregatives”* (art. 3—*Forme aggregative delle associazioni*), “preserving their independence” (paragraph 1). The group forms represent member associations in an independent and impartial and have functions of “promotion and qualification of their professional activities, dissemination of information and knowledge, representing the common instances in political and institutional”, control of the work associations themselves in terms of “fairness of professional standards and quality of operations and codes of conduct” (paragraph 3).
3. *Associations committed to the usefulness, transparency, fairness and truthfulness of their advertising information* (art. 4—*Pubblicità delle associazioni professionali*). The information on websites must be “useful, transparent, true and correct” (paragraph 1). It is guaranteeing the legal representative of the professional association (paragraph 2).
4. *Their advertising must ensure that the “full knowability”* (art. 5—*Contenuti degli elementi informativi*) of the memorandum and articles of association of the association, the association of professional activities which refers, in the composition of the deliberative bodies and holders of officers, the organizational structure, the requirements for participation in the association, with particular reference to the qualifications related to the professional activities of the association subject to the obligation of members to proceed constant retraining and the preparation of appropriate tools to verify the effective implementation of this obligation and the indication of the share to be paid to achieve the statutory purposes, the absence of profit. The “informational burden” is even more challenging when members use the affiliation to a particular professional association which “mark or certificate of quality of its services”. The full knowability is then extended to the code of conduct, to the list of members updated annually, to the headquarters of the association in Italy, in the presence of a structure dedicated to the scientific and technical training of associates, to possession of a certificate quality, guarantees activated to protect users.
5. *Promotes voluntary self certification* (art. 6—*Autoregolamentazione volontaria*). The party exercising an unregulated profession can proceed to the qualification of its business independently from accession to an association (paragraph 1). Self-regulation will be in accordance with the principles and

criteria of accreditation required by “technical rules UNI” (paragraph 2) and will be the Ministry of Development to inform professionals and users about the technical standard UNI adopted by the bodies responsible for professional activities not regulated (paragraph 4).

6. *Allows associations to release its members, after the necessary checks and under the responsibility of their legal representatives, a certificate of guarantee of transparency in the professional services market (art. 7—Sistema di attestazione).* Aspects on the basis of such clearance may be issued are:

- the regular membership of the professional association;
- the presence of the necessary requirements for participation that association;
- respect, in the exercise of, the quality standards and professional qualifications for the purpose of maintenance of their association;
- guarantees provided by the user (for example the information desk);
- possession of an insurance policy for professional liability stipulated by the professional;
- possession by the professional writing of a certification issued by an accredited body on compliance with the technical standard UNI.

7. *The certificate is valid for the entire period in which the professional is duly registered association (art. 8—Validità dell’attestazione).* Convenes associations (individual or aggregate) to the collaboration for the development of the UNI with specific technical bodies or by the institution of standardization their contributions during the public inquiry, in order to ensure maximum consensual, democratic and transparent (art. 9—*Certificazione di conformità a norme tecniche UNI*, paragraph 1). The certificate of compliance to the technical standard UNI defined for single profession can be issued at the request of the individual practitioner, by the certification bodies accredited by the sole national accreditation body “Accredia” (paragraph 2).

The correct implementation of the law supervises the Ministry of Economic Development (art. 10—*Vigilanza e sanzioni*, paragraph 1). And sanctions under the Consumer Code (Legislative Decree no. 206/2005), especially the publication of “false information” on the website of the association or in certificates issued (paragraph 2).

## 5 Discussion and Conclusion

Ethical codes evidence that Italian information is subjected to *artifices and undue pressure*. They are the most obvious and reliable repertoire of all that information to work can really happen when the properties and powers over the media and communications follow business logic or policies. The codes reveal a laborious emancipation from the risks of mingling with economic, political and ideological.

At the same time, it is not easy to respect *the dialectic between the political forces and between different institutions, bringing the positions so correctly, uncensored nor forcing and by promptly correct any errors or mistakes*. It had already admitted the Consiglio dell'Ordine dei Giornalisti della Lombardia in 1998: "the autonomy of the profession and individual journalists rests solely on ethical principles. (...) Only the journalist, who works in compliance with professional ethics, has not "awe" (...). Freedom of information, in fact, needs rules (...) fixed by the legislature and "built" from category through the *Codici* and *Carte* freely signed" [*Massimario della giurisprudenza professionale* 2002].

The task of protecting and guaranteeing the right of all to the truth of information not only about the Uffici stampa, but all the political and institutional system: every professional context must be an ethical community communication.

Finally, social communication can neglect the values of the public interest and the truth of information because it is not bound by rules of professional practice.

The Italian model of professions was drafted by the Consiglio Nazionale dell'Economia e del Lavoro (CNEL) in 2005, in the *Quinto Rapporto di monitoraggio sulle professioni non regolamentate*.

In the universe of self-employment, that is done outside of traditional employment, sometimes as an alternative or as a complement to it, the most common occupations are those concerning skills, enterprise activities, the activities of the trade, intellectual activities and health activities.

If you refer to how they are governed, are identified, in our system, three types of professions:

1. *Protected* professions, for the exercise of which is planned enrollment in Albi and the establishment of an Ordine to which is delegated the control function of the activity;
2. *recognized* professions or regulated by law, for which, however, will require only the entry in Albi or lists, without the need for the establishment of an Ordine (such as insurance agents and insurance adjusters);
3. *unregulated* professions, that is, not subject to regulation but are present in the labor market and are represented by their associations.

According to Cnel, the three types of professions—whose classification is useful to highlight how the law has intervened in an articulate and graded, providing a *maximum* intervention (the establishment of an Ordine), *medium* (a regulatory law, without the establishment of an Ordine), or *absent* (all other professions)—can congeal into two basic categories: *ordered, regulated* or *protected* professions and *unordered, unregulated* or *unprotected* professions.

In order to pursue a regulated profession you need to follow a training process established by law (generally required qualifications details and an internship), pass a qualifying examination (to check the level of preparedness of the candidates, to protect the community) and enroll in a register.

The exercise of the non-regulated professions, however, while requiring intellectual knowledge and techniques also very high, does not need, from a legal

standpoint, the possession of a specific educational qualification or subscribing to an Ordine or Albo.

From this point of view, in the media system essentially operate a *regulated* profession information (*journalism*) and many (all others) communication skills (advertising, public relations, public communication, lobbying, show, and all the operators that are emerging from the Registro degli Operatori della Comunicazione—Roc—established by the Authority for the Communications) without recognition and regulation.

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# About “The Using Value” of Religion in the Academic Studies

Cristina Gavriluță

**Abstract** The text was elaborated after some debate about the usefulness of academic study of religions in the Religions and Ideologies Research Seminar which took place in Iași and also by participating in la **Summer Contact Session «Paradigms of Cohabitation, Tolerance and Interreligious Dialogue»**. The present study aims to analyse three scenarios for the academic study of religion in the modern context. Basically, we want to show that regardless of the manner of approaching the religious element (the foundation of all natural sciences according to O. Spengler, a variation in a mental computerized construction, based on the theories of IP Culiianu, a complete science encompassing fundamental changes that can operate thanks to “creative hermeneutics”, according to M. Eliade) there are sufficient reasons to believe that the academic study of religion has an “use value”. Although no spectacular mutations would be obtained at cognitive and behavioural level, the simple religious familiarity and knowledge of the religious field allows a more profound approach of reality. Moreover, the academic study of religion could offer young people the chance to discover, know and respect the other person’s values.

**Keywords** The crisis of modernity • Faustian spirit • Proximity principle • The principle of magic • The principle of remoteness • Symbolic deficit • Religiousness • Morphological revolution • Mind game • “Use value”

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## 1 Culture Crisis and the Study Religion

To concern oneself with the importance or the lack of importance of studying religion nowadays in the academic environment—or outside it—might seem outmoded to some. They might ask themselves, naturally: *what is the point in wasting our time with such questions when present-day science and technology succeed in providing the answer to many of the human being's mysteries?* This could be the view taken by those educated under the sign of modern science and technology. In our turn, we ask: *could solving scientific and technological enigmas be the only reason of being for some academic fields?* And in these circumstances, what is the status and the rationale of those fields dealing with the study of religion?

Certainly, things are much more complex in practice and they cannot be solved by using simplistic patterns, just with questions and answers. Philosophers,<sup>1</sup> historians, anthropologists, sociologists point, each in their own way, to a certain crisis of the (post)modern world. Gianni Vattimo, for example, calls such a society in crisis a *transparent society*. Its roots would be in “the present-day crisis of the unitary conception of history” (Karl Popper, for example, said that a scientific theory should not claim to state a definitive truth. Instead, it should be subject to criticism and permanent adjustment. The conclusion is that any scientific knowledge proposes and deals with relative truths. This tendency, opposing universalist discourses and omniscient claims, is also present in the case of philosophers such as Michel Foucault or Jacques Derrida (Vattimo 1995, p. 8). One of the symptoms of this transparent society would be the installation of a relative chaos, where important roles are played by information and communication.<sup>2</sup>

Amongst others, the models promoted by training and education institutions are also responsible for this situation. It is enough, for instance, to take a look at the curricula of a few Romanian middle-education institutions and we'll notice a decrease of the number of hours allotted for the study of subjects such as philosophy, logic, psychology. Some subjects are missing almost completely. Ethnology, anthropology, the history of religions seem to be rather exotic, being completely unfamiliar subjects for aspiring students of the humanity courses at University.

In higher education, the situation is more nuanced: although there exists an offer from the humanity faculties, that is study modules are proposed for undergraduate

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<sup>1</sup>Karl Popper, for example, said that a scientific theory should not claim to state a definitive truth. Instead, it should be subject to criticism and permanent adjustment. The conclusion is that any scientific knowledge proposes and deals with relative truths. This tendency, opposing universalist discourses and omniscient claims, is also present in the case of philosophers such as Michel Foucault or Jacques Derrida.

<sup>2</sup>In the context of modernity, some authors point to a crisis of reason. Thus, Jürgen Habermas, in his *Theory of Communicative Action* proposes a real dialogue between individuals, based on common argumentation principles. The American philosopher Richard Rorty, in an essay suggestively titled *Hoffnung statt Erkenntnis (Hope in Place of Knowledge)* proves to be a supporter of *critical* discussion. This, he author claims, is much more important to knowledge than researching the ultimate, absolute truth.

and graduate studies—BA and MA (interpretation theory and practices, Christian philosophy, anthropology and ethnology, multicultural studies etc.), the number of prospective students showing interest in them is, with few exceptions, very low. This is due both to the poor level of training and information achieved in middle education, as well as to the low use the labour market has for specialists from these fields. As an example, the only specialities in the wide domain of social and humanistic studies that are being sought-after and have become fashionable in the academic environment of Iași are those that also have and (additional) practical component. That is to say psychology and social work, political studies, international relations, social communication, public relations and, to a lesser extent, sociology. By far the studies most sought-after in the academic environment in Iași and in the country are Law and Economics.

In a market oversaturated with accountants and lawyers, the Romanian student continues to attend the courses of Economics and Law. Why? Probably due to a certain (self)nurtured pragmatic spirit and not necessarily due to a calling. This clearly shows that, hidden behind choices that have nothing to do with the demands of the labour market, with the law of supply and demand, lies the profile of an entire institutional mechanism whose primary aim is to provide immediate practical skills and not cultural and moral training for the youth.

In any case, culture and the classic education model are seen as an outmoded ideal. How did we get into this situation? What is happening with religion and with its study in the present-day context? These are questions that have received all manner of answers. We shall dwell in the following lines on some explanatory scenarios.

## 2 Faustian Spirit, the Decadence of Science and the Rebirth of Religiousness

In an admirable work, with the enticing title *The Decline of the West*, published at the beginning of the 20th century, Oswald Spengler tried to identify the specific data for man’s historical and cultural evolution. The *organicist model* provided the author with an important support for advocating his ideas concerning the evolution of modern science and knowledge, as well as for outlining the corresponding tendencies.

The assumptions are as unexpected as possible: “*there is no Natural science without a precedent Religion*” (Spengler 1996, p. 522)—the author writes—because, in a way similar to “every myth and every religious belief, every critical science is based on an inner reality; its notions have different structures and sonority, without being different in principle. All the objections brought to religion from natural sciences also concern the latter. (...) The phrase «Man created God in his own image» is valid for every historical religion and is not less valid for every physical theory, however firm its reputed basis of fact” (Spengler 1996, p. 523).

In essence, Spengler's theory attempts to show that every religion and every science is dominated by the spirit and the principles of the age in which it appeared and developed. Thus, Antiquity would correspond to the *principle of proximity*, that would translate into researching the visible being. On an artistic level, this principle found its manifestation in the aesthetic symbol embodied in the *nude statue*. It is not by accident that in Ancient Greece the Gods had anthropomorphic faces and representations, sharing human destinies and living close to humans. For the Ancient Greek it was impossible to represent an abstract God, with no visible form. It is precisely these religious representations that were the starting point for what we could call "knowledge of nature" in Antiquity.

The model is repeated across space and eras. The Arab culture would have the *magic principle*. This would have made possible the birth of alchemy "with its ideas of mysterious substances like the «philosophical mercury» which is neither a material nor a property but by magic can transmute one metal into another" (Spengler 1996, p. 524). In architecture, this principle took the shape of the mosque and of the arabesque.

Whereas the Ancient Greek wished to know the visible and the proximity, and the Arab dealt with the research of the magical things in this world, modern man is more sensitive to what is remote and invisible. Why? Because the very evolution of religious ideas, beliefs and representations went from the *concrete* (it is not by accident that we talk about hierophanies and divine apparitions in certain times) towards the *abstract*. Christianity, it seems, had an important role in this.

Gradually, we, modern humans, have emptied divinity from any shape, placing it in the transcendent realm of abstractions and pure contents. This shift in perception and paradigm is captured in famous phrases such as *deus otiosus* or *God is dead!* Religion itself took on a special character: *it gradually went from the sphere of feeling to that of philosophy and knowledge*. Today, for instance, we offer subject matters such as the history of religions, the sociology of religions, the philosophy of religions in order to gain knowledge at *scientific, abstract level* about aspects that in the past used to belong especially to the spiritual practice.

Being built around the *principle of remoteness and the infinite*, modern Western man's thought and representations aspire to penetrate the unknown, the invisible. We mention here the research in molecular genetics, quantum physics, superior mathematics, the abstractizations in art etc. All proclaim one way or another that "our will for domination is above nature. *This is Faustian*. However, from this point of view miracles appear to us as exceptional from the laws of «nature»" (Spengler 1996, p. 539).

If all scientific and thought models expressed, essentially, the principles of religious models specific to their time, we wouldn't have reasons to worry about the presence or the absence of religion in our lives, even under the shape of academic subject. However, according to Spengler's theory, religiousness in science is, in fact, a form of decadence of world knowledge and understanding, despite the progress made by scientific knowledge nowadays. The fate of science will be sealed by its own exhaustion of *inner possibilities* of providing answers to our doubts and uncertainties. "Exact science must presently fall upon its own keen sword because

of excessive methodological refinement and problem posing. First, in the 18th Century, its methods were tried out, then, in the 19th, its powers, and now its historical role is critically reviewed. But from Skepsis there is a path to “second religiousness,” which is the sequel and not the preface of the Culture. Men dispense with proof, desire only to believe and not to dissect. Critical knowledge ceases to be an ideal of the spirit” (Spengler 1996, p. 585).

The Faustian spirit, specific to the modernity of our time, discovers that its ambitions to be all-encompassing and all-knowing remain practically insoluble problems. Theories, paradigms, models of analysis and thought are challenged. Gianni Vattimo places all these under the sign of *weak thought (pensiero debole)*<sup>3</sup> replacing the *strong thought (pensiero forte)*, universal and atemporal. The inter-disciplinary approaches and methods themselves or the birth of new sciences are a sign that Faustian knowledge discovers its limits. The scenario thus outlined is far from optimistic.

In this context, expressed through Oswald Spengler’s scepticism, the usefulness and the necessity of the academic study of religion appear, at least from a theoretical perspective, as a manner of tuning the other sciences to origins and first principles, represented by religious ideas and beliefs. Certainly, in Spengler’s opinion, the accent is placed on critical, rational knowledge, and this is not the most fortunate of positions religion could be in. We refer here to religion as an experienced fact and not as an act of knowledge.

However, such an alternative of knowledge in the academic landscape could offer the modern youth, somewhat saturated with scientific abstractizations that attempt in vain to encompass truth beyond the visible limits, new signs and significations for their knowledge. They could discover a symbolic universe that could throw more light on the web of scientific theories and concepts. While this will not help them make astounding technical and scientific discoveries, it will definitely allow them to assume their limits and to overcome the crises generated by the eternal search for knowledge and absolute truth.

### 3 The Destiny of an “Apterous Fly”

A scenario the same as interesting and thought-provoking is launched by Ioan Petru Culianu in 1984, in his volume, *Éros et magie à la Renaissance. 1484* (Culianu 1984). The author notes that modern sciences presuppose the existence of a specific mentality, very different from the one in the Renaissance, for example. The Renaissance man lived in a Universe saturated with magic, and his mentality crystallised around this fantastic universe.

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<sup>3</sup>*Weak thought* can be connected to Heidegger’s notions of *Andenken* (commemorative thinking, recollection), *Verwindung* (distortion), *Überwindung* (overcoming, convalescence, resignation). In other words, “weak thought” suggests a methodological weakness, which leads to the acceptance of other views.

As a consequence, the sciences of the time proposed specific models for knowing and understanding the world. Astrology, alchemy, magic were respectable and valued disciplines. No-one doubted their *usefulness value*. “Let us not forget that under the label «natural magic» there circulated very diverse technical knowledge—from manufacturing animal and vegetal dyes to pyrotechnics and optical procedures—as well as theurgic and medical procedures, cryptography, stenography and telecommunication techniques, without leaving out the techniques for manipulating the individual and the masses, which did not find their full application until the present day. As far as the art of memory is concerned, it worked so well, that it is surprising it fell into obsolescence during the 17th century” (Culianu 1994, pp. 250–251). Thus, no sign of crisis of the Renaissance culture or of its decadence. If during the Renaissance the spiritual sciences dovetailed into the social mental, how can we explain their disappearance from the scientific landscape and, as a consequence, the mutation occurring at the level of the social mental?

The model on which Ioan Petru Culianu builds his answer comes, quite surprisingly, from the sphere of exact sciences. More precisely, it is a mathematical model. *The theory of fractals* can redefine, amongst others, progress and the scientific and cultural shifts marking the history of mankind. According to such a theory, history can be seen as a fractal, and all the objects and the facts composing it are nothing less but fragments, fractions, fractal objects.

Thanks to this approach, science and philosophy come closer to each other and meet again. Although “a philosophical science is a contradiction in terms. There is, however, a way to reconcile the irreconcilable.” (Boutôt 1997, p 249) This “morphological revolution” Alain Boutôt speaks about is based on a few principles:

- (a) “The parts have the same structure or structure as the whole, but at a different scale, allowing for slight deformation” (Mandelbrot 1998, p. 184)
- (b) “Its shape is either extremely irregular, or extremely broken and fragmented, irrespective of the scale of the examination” (Mandelbrot 1998, p. 184)
- (c) “They contain «distinctive elements», whose scales are very diverse and cover a very broad range” (Mandelbrot 1998, p. 184).

From this perspective, history is no longer thought about in the terms of the classical physics and philosophy, as a uniform, linear and irreversible flow. Moreover, we cannot speak about a future, but instead about several possible futures (Gavriluță 2003).<sup>4</sup> At the time of the Renaissance, modern science was practically a mere scenario for a possible future, which, in that particular context, had no chance to materialise! It was like a mutant, an *apterous fly*. What contributed crucially to the formidable adaptation and survival of this mutant were the ideological and socio-historical circumstances of the time (especially the Protestant Reform), favourable to a certain type of choices.

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<sup>4</sup>The fractal analysis model can also be applied successfully to sociological analyses concerning social time. A binary-fractal model of research is proposed by Nicu Gavriluță in *Fractalii și timpul social (Fractals and social time)*, Cluj-Napoca, Dacia Publishing, 2003.

Practically, the entire process of the establishment of modern science is similar to a *mind game*.<sup>5</sup> “Our scientific spirit was born like an apterous fly, which, in the great whirlwinds of the 16th century was fortunate enough to pass unnoticed and not to be eliminated by the unforgiving natural selection. This hit the Renaissance sciences so hard, that it robbed them of any chance for recovery” (Culianu 1998, p. 253). In Culianu’s vision, the process is not definitive and nor is it irreversible. Depending on the conditions of the eras following the moment of Renaissance, we can think out various scenarios for explaining and knowing the world.

Thus, we can postulate a humanistic model of knowledge, a scientific model (dominant nowadays), an inter-disciplinary model, a religious model, a magical model etc. Each of these appears as one of the *potential futures*. Some scenarios have had the chance to be embodied in history, others will probably never have a life or else they will have an obscure and peripheral existence. Everything depends on the choices made by the games of the human mind. The destiny of the “apterous fly” appears thus as an uncertain one, constantly under trial from the challenges of the world and the combinatorial games of the human mind.

Theoretically, at any moment a mutant could appear, one that could serve perfectly the demands of the moment, putting in parenthesis the scientific knowledge of today. The very “fascination exerted by religion also derives—albeit in an unexpected way—from the same source, for religion, the same as philosophy, science and even literature, is also a computational process” (Culianu 1998, p. 344).

The presence of the study of religion at university level nowadays could be the result, from this perspective, of a choice dictated by the principles of interdisciplinarity in understanding the world or by ideological or political grounds.<sup>6</sup> On the other hand, the results of scientific studies (we mention here the studies in the domain of quantum physics, that prove theoretically the possibility of the rebirth of bodies at the end of times) could bring back onto centre-stage the need for an academic study of religion. Thus, it is not compulsory that the true reason for the presence of the study of religion in the academic environment to be grounded solely in the mere fascination exerted by religion or in the mere curiosities of a modern man not having to worry about tomorrow. The future is open to any possibility: religion may gain more ground in academic study, just as well as it may disappear from university curricula. Everything depends on the choices we operate at some point in time.

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<sup>5</sup>Ioan Petru Culianu, in *Arborele gnozei. Mitologia gnostică de la creștinismul timpuriu la nihilismul modern (The Tree of Gnosis: Gnostic Mythology from Early Christianity to Modern Nihilism—translated from English by Corina Popescu, Nemira Publishing, Bucharest, Romania, 1998)* shows that mind games, through the choices they operate, can determine the route of our existence. “But life is, almost by definition, a type of operation we call analogous: it gives the impression of a continuous flow because the decisions it requires from us are too swift to be perceived as «digital», that is as sequences of binary commutations” (p. 343).

<sup>6</sup>We believe that the events on the international political stage (the Gulf War, the terrorist attacks of 9/11, other social movements) are also grounded in the idea of religious views. This could be a strong argument in favour of considering the study of religion as a form of education towards knowing and accepting the Other, different from a religious point of view.

#### 4 A “Creative Hermeneutic” of Religions in Universities?

A more certain and optimistic perspective is that offered by Mircea Eliade. For the religion historian, a very important moment in the study of religion was the year 1912. This is a reference year, because the studies published then marked definitively the study of religion from a sociological, ethnological, psychological and historical point of view.

The important writings published that year were: Emile Durkheim, *Formes élémentaires de la vie religieuse*; Wilhelm Schmidt, *Der Ursprung der Gottesidee*; Raffaele Petazzoni, *La religione primitiva in Sardegna*; C.G. Jung, *Wandlungen und Symbole der Libido*; Sigmund Freud, *Totem und Tabu*. These works were both starting points and challenges for all subsequent research made in the field of religion. Furthermore, they prefigured the possibility of studying religious phenomena from different perspectives. Besides, Mircea Eliade makes a pertinent radiography of the development of religious studies on the four levels mentioned above, in a chapter titled *A retrospective overview of the history of religions: 1912 to present* (Eliade 1994, pp. 29–66).

In the author’s opinion, the history of religions, as well as the science of religions in general, appear as integrant formulas for knowledge, without which knowledge of other fields would be incomplete, insufficient. The psychological, sociological, ethnological approaches are facets of the research of the religious phenomenon and represent, for the religion historian, important reference points in his hermeneutic endeavour. “We do not intend to develop here a methodology for the science of religions. The issue is far too complex to be dealt with in a few pages. But we believe it is useful to repeat the idea that *homo religiosus* is actually “the total man”; therefore, the science of religions should become a total discipline in the sense in which it should use, integrate and articulate the results obtained by the various approaches to the religious phenomenon” (Eliade 1994, pp. 23–24).

This integrating, inter-disciplinary approach is a logical part of the Eliadian vision on man and religion. According to it, we cannot research man while separating him from his religious existence. Irrespective of the manner in which the religious manifests itself in various socio-cultural contexts, the author proves that the sacred is consubstantial to the human being. Therefore, to know and research nature and human existence means to research what the religion historian calls being *homo religiosus*. “Indeed, it is difficult to imagine how the human spirit would function without the conviction that something irreducibly *real* exists in the world, the same way it is impossible to imagine how consciousness could have appeared without giving meaning to man’s tendencies and experiences. (...) The dialectic of the sacred has preceded and served as model for all the dialectic movements later discovered by the human spirit. By revealing being, meaning and truth in an unfamiliar, chaotic and threatening world, the experience of the sacred paved the way for systematic thinking” (Eliade 1994, pp. 5–7).

Although “a second Renaissance”,<sup>7</sup> one resulting from the encounter between Western culture and the Indian and Sanskrit philosophy, never materialised, *cultural renewal* through the study of religion is possible at any time, claims Mircea Eliade. The approach best serving this renewal would be a *creative hermeneutic*. Thanks to this approach, “significances not perceived before are unveiled and highlighted with such vigour that, after the assimilation of the new interpretation, consciousness does not remain the same. The creative hermeneutic eventually transforms man; it goes beyond simple training, it is at the same time a spiritual technique likely to change the quality of existence itself. This is especially true for historico-religious hermeneutics” (Eliade 1994, p. 102).

The religion historian’s ideas outline a scenario in which the study of religions is ever-present at academic level. However, Eliade does not opt for just any type of knowledge of religious life and phenomena. In order to have a renewing affect at individual and social level, these studies presuppose, first and foremost, a *total hermeneutic of the religious*. The discoveries made in the field of religion could thus serve those who work in the field of arts, creation, literature etc. Such an optimistic approach, we believe, would have chances to succeed only in the context of a paradigm shift at the level of scientific knowledge and only as a result of a radical change in education policies. Otherwise, it can only have affects at particular level. The researcher and the scientist can discover on their own, thanks to a *creative hermeneutic*, new meanings and significances of the things researched. Furthermore, these discoveries can operate profound changes at the level of knowledge, understanding and feeling of the one concerned with unlocking the mysteries of this world.

## 5 Some Reasons Why the Academic Study of Religions has “Usefulness Value”

At a first level, the academic study of religion may constitute a form of erudition and knowledge. And it is no small thing, when we bear in mind that the mere knowledge of religious ideas, belief and systems and of the way they have worked in time can considerably broaden the horizons of the one studying them.

Even if the result is not a spectacular mutation at cognitive and behavioural levels, the mere familiarisation with and knowledge of the religious realm allows a more thorough approach of other professional fields of interest, offering at the same time a broader vision on the latter. Let us not forget that “at its origins, any cultural creation—instruments, institutions, arts, ideologies etc.—was either a religious

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<sup>7</sup>It is the idea postulated by Max Müller at the middle of the 19th century, the “second Renaissance”, following the Italian Renaissance, capable of bringing about an unprecedented cultural and spiritual renewal. Unfortunately, the encounter with the Eastern culture and spirituality only manifested itself in the specialists’ spheres and did not bring about the expected acculturation phenomenon.



expression or had a religious justification or source. This is not always obvious to the non-specialist, especially to the one trained to conceive «religion» according to the forms proper to the Western societies or to the great Asian religions” (Eliade 1994, p. 111). The rediscovery of this fact could result in new understandings of the various fields of modern research.

For instance, for those interested in the study of physics, knowledge of religious ideas could give their work more substance. For some, the abstract approaches of the modern science could gain meaning and significance. The same could happen in the domains of art and creation. Moreover, we can hope that some religious ideas can be useful for the new scientific challenges.

A fashionable topic nowadays is *the crisis of modern man*. He has sociologists, historians, anthropologists, philosophers and religious historians equally concerned. To a great extent, they all agree it is a crisis of the spiritual values. It would be the result either of a *déficit symbolique* (Augé 1997), or to a *great mobility of social and symbolic reference points*, as Georges Balandier asserts. Irrespective of the causes generating the crises of modern man, the remedies may also come from the part of the academic study of religions. The great mobility of reference points—proposing an accounting-type experiencing of life—would be opposed by the profound meaning of existence. Mircea Eliade calls this *the rediscovery of the sacred*. This can happen not only through religious experience and practice, but also through study and research. This could give another meaning to the existence of modern man, plagued by fears, anxieties and uncertainties when facing both life and death.

We do not know whether this re-discovery of the sacred is necessarily equivalent to the *second religiousness* Oswald Spengler speaks about, but it would definitely bring back to the foreground *symbolic thinking* and all that it entails. Before rigid thought, marked by positivism and practical reasoning, symbolic thought could re-awaken long-forgotten values, feelings and sensitivities. It is not necessary to wait for modern science to exhaust itself in order to turn back towards eternal values. Science and religion are not mutually exclusive, but instead they can live together in the most natural of ways, even in modern times. This explains, for example, the interest for religious facts of researchers coming from the fields of psychology, sociology, anthropology, philosophy or exact sciences.

Nor do we know whether Eliade’s dream to make the history of religions and integrating science that would give depth to human knowledge will come to life any time soon. We also believe that it would be completely unproductive to endlessly wait for the moment of a major paradigm shift (see also Culianu) in order for the study of religion to gain a superior status. We can hope, though, that the academic study of religion will not educate just minds, but also souls. More precisely, if taught appropriately, religion can sow inside us the idea of tolerance and respect for the other. Recent experiences show that the main challenges of modernity are related to the encounter with the Other. They translate into identity issues, form an ethnical and religious point of view.

We do not know whether those attending university courses on religion will become religious and how much, but they will definitely have the chance to discover, to know and to respect the values of the Other. And that in itself is not unimportant!

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# Religious Traditions in the Modern Public Sphere. The Case of Romanian Church

Marius Liviu

**Abstract** Secularization was a broad phenomenon of modernity. His purpose, the disappearance of religion, is still true? Last two decennial studies attest the revitalization of sacred and his repositioning in the public sphere. Christian religious traditions have been a source of public reason. Today they must translate their values in a secular language. The role of religious traditions in Europe is to lobby for entering values in public reason. Romanian Church had not and has not a social doctrine. Can it be considered an actor of public reason?

**Keywords** Secularism · Christian tradition · Modernity · Society · Politics

## 1 Hermeneutics of Secularization

The assumption of modernity that produces the decline of religion today has no longer the same effect argumentative. Teleological idea of modernity as secularization is replaced by the prospect of desecularization of religion, and the sacred and spiritual is reposition in relation to the individual and society. Everyone designs its existence within a form of moral or spiritual ideology that gives him inspirational and motivational force. Each individual lives according to its own conception of human flourishing interrogations shaped by fundamental reason: what is an accomplished life? What makes life worthy to being lived? The answers to such questions were in the religious traditions until secular times. However, today secularization is not seen as a denial of the divine, but as a time when the identity documents of *sacrum* are investigated. Secularization in the opinion of Taylor has three meanings: circumscribing the faith in the sphere of individuality, religious practice lacks vitality and possibility of assumption or rejection of religious beliefs.<sup>1</sup> Last interpretation of

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<sup>1</sup>Cfr. Taylor (2007).

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religious phenomenology can be considered the most obvious manifestation of the modern secular process.<sup>2</sup> The causes of *mental deviations* were determined by conceptual changes within elite groups and the hermeneutics of Protestant Reformation, that were born anthropocentric vision of moral order based on discipline and mutual benefit. The transformation of modern and contemporary era is defined as the stage of the disenchantment of the world.<sup>3</sup> The modern moral order has the source in the natural law of the twelfth century.<sup>4</sup> The fundamental idea of this paradigm is mutual respect and service of individuals that make up the society. Conceptual construction of this society is not merely human, being, however, a form of the divine plan. Taylor identifies three main characteristics of this society: political society is a tool to ensure the quality of life of individuals, political society ensures the safety and free trade, purpose of political society is fixed in terms of individual rights.<sup>5</sup>

This vision of moral order produced a profound transformation of the social imaginary. The dimensions transformed are: economy, public sphere and popular sovereignty. The public sphere is defined as a space where community bring together the members of society, especially through the media, to discuss matters of common interest and to be able to form a common opinion on an issue. Therefore, the public sphere is the place involving all individuals of communities, where the society can develop a shared perspective on important issues. Due to the reflective and critical character, public opinion has become normative for political decisions. This dependency relationship between government and the public sphere appears as a fundamental feature of a free society. The assertion of popular sovereignty has contributed to the birth of modern society through the exercise of citizenship. The people have become aware that they can claim their personality and work together for emancipation from any political order. This horizon has configured a horizontal society, where everyone has access to institutions. Dismissal the mediators forms has enhanced the consistency of individual conscience.

The modernity means the exit of religion,<sup>6</sup> abandoning a model in which religion was structuring. The new role that religion plays in modern societies is not circumscribed by concepts such as secularization and secularism. For the same Gauchet, the first term would describe the evolution of the relationship between the Catholic Church and State, and the second the role played by the catholic and protestant countries in the public sphere.<sup>7</sup> Manent believes that separation of church and state is the mark of modern democracy, considering that European history revolves around the complicated relationship, often conflicting, of the political and religious court.<sup>8</sup> Vatican II represents the highlight of separation between the two

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<sup>2</sup>In ancient Greece the individual lacks a belief in a deity was banished from the city, considered a public danger, especially for the education of the young (Cfr. Adamut 2011, pp. 152–153).

<sup>3</sup>Cfr Gauchet (2006).

<sup>4</sup>Cfr Grozio (2010), Von Pufendorf (2008), and Locke (1990).

<sup>5</sup>Ibidem

<sup>6</sup>Cfr Gauchet, M., op. cit., p. 5ss.

<sup>7</sup>Cfr Ibidem, pp. 11–12.

<sup>8</sup>Cfr Manent (2003).

entities, when religion starts to leave absorbed by democracy and institution ceases to be an objective truth, which believers obey.

The role of religion has diminished by the rational view on the world.<sup>9</sup> Durkheim believed that religion is not just a system of beliefs and ideas, but also a system of symbolic action involving certain rituals that have the function of maintaining social cohesion. Both Weber and Durkheim built the axioms about secularization on supply and demand, determining the endpoint disappearance of religion from the public. This disappearance was given by Mills: sacred will disappear everywhere, except the private domain.<sup>10</sup> Secularization as a autonomous political or social phenomenon was shaped by other theories. Luckman considered secularization as a consequence of broad social change rather than a decline in religious sentiment. Independent of the century, there is an invisible religion, with the source in the private area, based on human experiences objectives.<sup>11</sup> For Wilson religion will exist because no socio-political system can fully satisfy the human requirements. Secularization is an evolutionary phenomenon that consists in the gradual rationalization of life dimensions.<sup>12</sup> Berger believed that secularization under the authority of religious symbols. The subjectivity of secularization is given by withdrawing his authority in the sphere of individual and his objectivity consists in reducing radicalization of religious traditions identities.<sup>13</sup> The quantitative decrease of participation in public religious practices was the argument for Acquaviva considered the secularization as a loss of sacred meanings in the public sphere, but not in personal space.<sup>14</sup> Inglehart and Norris have realized a reinterpretation of the role of secularization. According to them, due to the study of statistics, people living in vulnerable environments focusing on religious values, as opposed to companies with elevated degree of safety where these values are not favoured. And how the poor societies are more numerous, it can be concluded that the number of people who assume religious traditions today are more numerous.<sup>15</sup>

## 2 Religious Traditions and the Public Sphere

Religion cannot be reduced to an opponent of political modernity. The diversity of religious traditions in a united Europe can play an even greater role in the public sphere, if the confessions are recognized as partners in the implementation of certain public policies. Subsidiarity is a form of public partnership, and he cannot

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<sup>9</sup>Cfr Ibidem, p. 25.

<sup>10</sup>Mills (1959, p. 33).

<sup>11</sup>Cfr Luckmann (1967).

<sup>12</sup>Cfr Wilson (1966).

<sup>13</sup>Cfr Berger (1967).

<sup>14</sup>Cfr Acquaviva (1991).

<sup>15</sup>Cfr Inglehart and Norris (2004, p. 3).

deny the role of traditions and religious activities. Democracy is a political system that enables actors in the most comprehensive of its participation in shaping the public reason,<sup>16</sup> the centre of gravity of this form of government. According to Rawls, this area is defined in democratic societies by the fundamental political questions, political figures and concepts, their application content and the criterion of reciprocity.<sup>17</sup> Relations between the public and religious tradition in modernity is subject to radical change, a reality that could lead to a so-called ultra modernity.<sup>18</sup> The latter can be regarded as a process of demythologizing of modernity. The role of religious traditions in the public space is stripped of their sacred and dogmatic content, and exposed to law term in public manifestations. However, religion remains a primary component of public space because his phenomenology is also a public one,<sup>19</sup> although modernity interprets as an individual, personal and private choice. How can coexist two perspectives? The task of defining a model of cohabitation is a task for democratic society. Such a paradigm is shaped, according to Weiler,<sup>20</sup> in the *Preamble* of the Poland Constitution, because it relies representatives of both dimensions. Political and legal claims religious traditions have become more pronounced in Europe. Religious traditions argue in public debate and take over the tasks, providing information and motivating their followers in the political positions. Others defined their religious concepts in terms of political and legal rights. The pluralism traditions were approached by secular French assimilation and Dutch and Anglican multiculturalism. The first attempts to substantiate community citizens acquiring a set of national and republican values, and the second focuses on ethnic and religious cultural pluralities recognition as a constituent of policies.

Liberal state must protect all religious events and to exempt citizens from the obligation to operate a clear distinction between secular and religious reasons in the public sphere.<sup>21</sup> After leaving post marxist ideology, Habermas presents a model of democracy in that the religious values play an important role and place in the centre of relationship between religion and democracy the concept of rational dialogue, even he is not abandoning secular principles like freedom, state neutrality and the separation of church and state. In contemporary secular society the citizens translate religious contents to all members society in acceptable reasons. The relationship between religious traditions and the state takes today a form almost uniform. Ferrari identifies the following features of this pattern: state neutrality in the individual religiosity, liberalism for public religious activities and secular jurisdiction.<sup>22</sup> This

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<sup>16</sup>Cfr Rawls (2011, p. 27).

<sup>17</sup>Ibidem, 27.

<sup>18</sup>Cfr Williame (2004, p. 11ss).

<sup>19</sup>Patapievici (2005a): A true religion, though conducted only private, cannot be only private.

<sup>20</sup>Cfr Weiler (2003).

<sup>21</sup>Habermas (2011, p. 73).

<sup>22</sup>Cfr Ferrari (1999, pp. 2–3).

model can be found not only in political and legal culture of the West, but also in national or supranational level, such as the Convention on Human Rights.

Regardless of the definition gives the Europe Union, outlining a paradigm that takes into account national identities, regional, religious and linguistic diversity is impossible because of religious plurality and otherness respect. Such a pattern should define a set of values that may be assumed by each tradition. An attempt has been made by article 152 of the Treaty to institution a Constitution for Europe, which lists the following values: tolerance,<sup>23</sup> human dignity, freedom, democracy, equality and rule of law. Article place universal values of any specific religious traditions in the national arena. Twentieth-century Europe was defined deeply since 1957 by building European institution and outlining the two ideological blocs. After the collapse of the communist system have felt the effects of the schism of 1054 that politics cannot ignore. Common block values should take account of religious affiliation, because this constitutes a milestone in personal identity. Entry Orthodox states in the European Union, led to short term solutions to overcome religious dissonance. The emphasis was on the first Christian millennium lacking institutional identities and John Paul II in his encyclical *Slavorum apostoli* underline quality of protector of Europe not only of the St. Benedict, but the Saints Cyril and Methodius. Furthermore, accentuating the importance of Christian heritage, does not deny the role played by revival, reformation or enlightenment. Perhaps this is the reason why the Preamble to the Treaty remained neutral and was spared the implementation of terms such as Christian heritage, revival, reformation or enlightenment.

Christian ecumenism in the European construction has played an important role. Religious traditions have been a factor in favour of European integration and EU institutions have facilitated an approximation of the former. Article 152 of the Treaty establishing a Constitution for Europe on dialogue with religions states that it must be open, transparent and regular, but religious traditions didn't enjoys consultative status, so that religious communities manifest their presence by their members involved structures or through various institutions like the Catholic Office of Information and Initiative for Europe. Since the last decade of the last century the Presidents of the European Commission promoted dialogue with major religious traditions. In 1989 was founded *Prospective Cell*, a service under the coordination of the President and Chief Commissioner whose aim Churches information on various aspects of European integration. Another perspective outlined by Delors in a speech on April 14, 1992 held in front of representatives of churches, saying that if in the coming years, we will not give a soul to Europe, to give it spirituality and meaning, unification cannot be make. This later position became the foundation of the association *A Soul for Europe* promoting links with European institutions and inter religious discussion forum in a spirit of tolerance, openness and mutual

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<sup>23</sup>Habermas believes that the German noun *Toleranz* was borrowed from Latin and French in the sixteenth century, a period of religious wars. In the XVII–XVIII centuries, tolerance becomes a legal connotation. Cfr Habermas (1, 2003, pp. 2–12).

respect. In the association are integrated Commission of the Bishops Conferences of the European Community, Church and Society Commission of the Conference of European Churches, Conference of European Rabbis, the European Humanist Federation, Muslim Council for Cooperation in Europe and the Office of Ecumenical Patriarchate to the EU. Any philosophy or religion represented institutional can become member of the association. Romano Prodi transformed cell Foresight Group Policy Advisers in order to have real-time and independent expert opinion on the religious implications of the EU's political activities. It is composed of diplomatic representatives, ecumenical associations and beliefs. Working groups are organized in the following areas: economics, science, society, foreign affairs and dialogue with religions, churches and organizations humanities. The duties of religious organizations have the following responsibilities: to promote dialogue between faith and politics, participation in the design and implementation of EU policies and information on the situation of religious communities.<sup>24</sup> The purpose of these organizations is not unique, protecting the interests of the churches, but also involvement in the political debate of ideas. Thus, since discussions about establishing a Constitution for Europe in 2002, the main Christian traditions have created a space for informal dialogue with the European institutions.

### 3 The Case of the Romanian Church

The interrogation of the relationship of Christian traditions and democracy is justified by appeals versus this political form and because is the system invoked against all forms of totalitarianism. Maritain argued that Christianity should not be restricted to any political forms because Christian identity is independent of the organizational system.<sup>25</sup> In contrast, Vlastos advocated the idea of a close link between Christianity and democracy, because the latter is meaningful only if the values of love and justice express the former.<sup>26</sup> The dilemma created by the historical situations crossed half of the twentieth century the two European Christian religious buildings. In the West, democracy has been strengthened by the emergence of political movements of Christian inspiration. Political parties arising on religious criteria resulted in redefining the relationship between religion and politics.<sup>27</sup> These parties without the endorsement of Catholicism stressed their autonomy by reducing the role of the religion. Christian political movements have acquired a distinct identity in the period in which occurred the gradual transition to the community (*Gemeinschaft*) in the society (*Gesellschaft*). Political parties have provided a confessional explicit Christian presence in contemporary political

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<sup>24</sup>Williame, J.-P., op. cit., p. 40.

<sup>25</sup>Cfr Maritain (1999, pp. 42–43).

<sup>26</sup>Cfr Vlastos (1939, p. 26).

<sup>27</sup>Cfr Kalyvas (1996, p. 260).



regimes, which act advocates that democracy cannot exist by denying the role of religion in the public space. Without these parties relationship between religion and state institutions would not outlined, as such were fixed limits of state action and Church, and offered a good view on the equation consists of public and private space. Romanian Church interference political movements occurred with the advent of democracy and when they do not put religious identity of the members as a criterion of belonging. The Romanian Orthodoxy exhibit an inability to present a political theology of modernity, caused by the inadequacy of message to the era and how she developed in the modern state.<sup>28</sup> The Orthodox community was a political and not a religious one. The religion meant little adherence to faith and, moreover, to the *lex*. Christian law has banded over on ancestral law, a system of rules to political territory, and less the canon, a phenomenon that has led to participation, but in obedience. Romanian theology did not centre the human person that generates social and political forms of organization. Orthodoxy became a product of Romanian history and national morality that can give solutions, even to the politics. In this context the ideological relationship between Christianity and democracy could not be long, and when it was initiated common denominator of Christianity and democracy was the nation.

The reflection on the relationship between Christianity and democracy began in the 20 s with the initiation of *Cerc de Studii Social Crestine* that published magazine *Solidarity*.<sup>29</sup> The underlying principles of democracy according to Bartolomeu Stanescu are nationality and family,<sup>30</sup> and for Serban Ionescu democracy has generated an unprecedented moral disorder.<sup>31</sup> Members of this group have not developed a philosophy of community in opposition to society, but for the first tie appeared reference to concepts such as social solidarity and person. The Church was not opposed to the state in modernity, but was along with its institutions. Into the Romanian space the conflict between a church that wants preservation of the privileges and state aiming at incorporating individual privacy was not possible, for which outline a role for Christians in public life and social did not occur. Secular event of XIX century looked goods and not religious values.<sup>32</sup> This is why socialism, populism, conservatism and radical ideological development could occur before any ideology of Christian Democracy. The most important romanian theologian of the twentieth century, Staniloae also considers the Christian faith is a national bond of national communion<sup>33</sup> and the policy must ensure that a nation maintain the tradition.<sup>34</sup> His conception of democracy was one floating. In 1934 states that there is a close link between democracy and individualism and its

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<sup>28</sup>Cfr Barbu (1999, p. 246).

<sup>29</sup>Cfr Ionescu (2001, pp. 71–112).

<sup>30</sup>Stanescu (1920, p. 246), apud Barbu D., *Republica absentă*, p. 248.

<sup>31</sup>Ionescu (1–3, 1921, p. 1).

<sup>32</sup>Soare (2004, p. 194).

<sup>33</sup>Cfr Staniloae (2004, p. 119).

<sup>34</sup>Cfr Idem, *Crestinism si valoare in viata natională*, Lucefăru 2 (1941a, p. 130).

derivative is Marxism.<sup>35</sup> In 1941 the same author believes that democracy equals communism, as the purpose is the same, the equality between people.<sup>36</sup> Three years later Staniloae defined democracy as a dictatorship because they have committed the same error.<sup>37</sup> In contrast, Bishop Nicolae Balan believes that democracy is closely related to the nation, not to Christianity.<sup>38</sup> It should be noted that the approach to relationship democracy-faith was not uniform within Orthodoxy and that remained the perspective of political involvement from 1940. The doctrine of the Church was only one conjectural, although influx of public orientation was a major one, so that interrogation about the faithful involvement in political reason was non denominational.

For two years in the *Partidul National Taranesc* appeared a Greek Catholic reflection on the relationship between Christianity and democracy, reflected in the collection entitled *Problemele timpului*, with a total of seven volumes and the source in the personalism thinking of Maritain and Mounier.<sup>39</sup> Corliolan Ghetie articulated this perspective. This, quoting Maritain, says that man, society is composed of individuals, and society and the common good is the goal. Christians must reject any justification of the state or any political legitimacy based solely on the virtues of a nation.<sup>40</sup> The impact on the public sphere was minor because the publication of texts coincided with the establishment of communism and thus reports of the Orthodox tradition has been eroded. In Romania, after 1989, although several political parties presented as Christian Democrat, none has succeeded in presenting a coherent project in this regard because there is a reflection on how the equation and because orthodoxy continued to report to the state. The sociological research from 1998 made by Sandu show, paradoxically, that people who claimed to be religious tended to vote for the political left, without them present a political program and to clarify his views on the role of religion in public space.<sup>41</sup>

The fall of communism has provided religious traditions a new political perspective. Romania is marked by reconstruction dilemma about relationship between political and religious. The public sphere aspire to moral values on which Christian tradition can offer, but it can be a source as long as Orthodox hierarchy preferred to coexist with the political class rather be on a critical and moral position? Romanian Orthodox ethos contributed little to the establishment of a public space articulate at critical and symbolically level. *Orthodox ethics could not generate contractual secular behaviour, ethical and civically because she did not appear in public space with the intent to promote such values. Religionist is here completely disconnected*

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<sup>35</sup>Idem, Un atlet al nationalismului crestin, apud Costion Niculescu, Teologul in cetate. Parintele Staniloae si aria politicii, pp. 35–35, Cristiana, Bucuresti (2003).

<sup>36</sup>Idem, Iisus Cristos si problema socială, Telegraful Roman 52 (25 decembrie 1941b).

<sup>37</sup>Idem, Tara noua, Telegraful Roman 36 (3 septembrie 1944).

<sup>38</sup>Balan (1923).

<sup>39</sup>Ionescu (1, 2002, p. 162).

<sup>40</sup>Cfr Chetie (1995, pp. 26–35).

<sup>41</sup>Cfr Sandu (2000, pp. 80–83).

from *ethical and civil*.<sup>42</sup> Although adherence to orthodoxy is overwhelming numerical and participation are relatively consistent Christian moral principles influence on behaviour is minimal. Moreover, the symphony of church and state became a cartel, consolidated by politics that wants orthodoxy to be a social partner of the state. In predominantly Orthodox countries democracy does not appear as a founding political form of a society, pluralism, in which religious tradition becomes a unifying factor trans confessional. In Romania democracy has an instrumental role providing political regime that allows the formation of the nation. Religion-democracy relationship is indirect and full of ambiguities, which makes the first not to participate intensively in public political forum. A modernization of the Romanian Church would be relieved of duality religion-nation, which could lead to desecularization of Orthodox faith.

In conclusion it can be considered that the role of religious traditions in contemporary context is subject to challenges that constantly demands redefining their identity in the European public sphere.

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<sup>42</sup>Patapievici (28 ianuarie–3 februarie 2005b, p. 5).

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# Methodological Issues for the Analysis of Bullying in Educational Environments

Gabriele Di Francesco

**Abstract** The report provides the setting for a research on bullying in educational establishments, on a population of students aged between 6 and 18 years into three levels of education: primary (6–10), middle (11–13) and secondary schools (14–18). The analysis pays attention more than reparative therapeutic aspect of the phenomenon, to the dynamical aspects inherent the structure of the organization in which this phenomenon arise, to school climate and to the dynamics of the youth groups within and outside of school.

**Keywords** Bullying · Educational organization · School climate · Group dynamics · Class group

## 1 Foreword

To conduct research on bullying involves primarily the need to ask yourself some basic questions to help clarify some of the problems concerned with the matter. Firstly, attention should be paid to the term bullying and more particularly on what is meant by bullying in the Italian socio-cultural context, as well as on an inter-personal and group dynamic context, and on processes of socialization of traditional and/or anticipatory-progressive types that are observed. Additional questions are focused on types of values and on the regulatory processes of social life.

The scope and complexity of the issues arising from such questions is really wide, including aspects which are purely anthropological and cultural (traditional culture), evaluation of relational and socio-organizational processes, analysis of environmental and spatial contexts, references and identity of persistence behaviors and attitudes customarily encoded. Finally, what influences social identity, culture

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and organizational choices in bullying as an inevitable phenomenon in the dynamics of the social group.

In terms of definition, while keeping in mind the significance of some of its Italian popular culture etymology (such as those of *guappo*, *guapparia*, and also that of the godfather or sacramental godfather figure), to specify the contents of the phenomena of “bullying”, reference is made to the main acts and behaviors that are characterized as bullying, harassment, often repeatedly perpetrated by a boy, or more frequently by a group of boys, against another classmate, school or neighborhood, more or less the same age. “Bullying” (from the English bullying “bully”, domineer, intimidate) can generally be defined as an action that aims deliberately to do harm, to damage another individual. The bully, as a single or a group, wants to overwhelm a person to feel stronger, more important, and to better be relied upon (Belotti and Castellan 2006; Olweus 2007).

## 2 The Research Design

The focus of research has been placed on analyzing bullying in group dynamics within schools, as a social organization in which much of the processes of socialization of young people should be accomplished.

The school, is noted, on the other hand, that it is the privileged place in which bullying occurs and can play a significant position in consolidating oppressive behavior and the role of the bully and victim within the class-group, but at the same time, it may be a facilitating environment in counteracting the spread. Several studies show that the structure of the school, the organizational, teaching methods and how relationships may be factors favoring the emergence and consolidation of prevarication (see Caravita 2004; Fonzi 1997).

This focus primarily or preferably scholastic does not exclude the areas of life outside school, family and friendship, nor the contexts in which interactions take place: in the classroom and on public transportation, spaces for social relations.

Particular attention is paid to identifying the dynamics of the actor/victim of bullying, specifying both the corresponding types of action, and the sociological variables that lead to the identification of the relative profiles of bullies and victims in their specification of subjects, active or passive, individual or collective. The preferred aspect to handle the problem is however sociological because more attention is attributed to it than a therapeutic approach of the phenomenon, with emphasis placed on the study of the victims of bullying and to its pathological characteristics in order to undo the damage, to the dynamic and generative aspects inherent in organizations where such phenomena occur (Fonzi 1997).

The lives of young people within social groups, the place of their social life is in fact in many ways comparable to the effervescence of what Alberoni called “*statu nascent*” (Alberoni 1971), in which a group of actors synchronously decide to create another entity identified as a collective or social group. The binding element of this spontaneous build is precisely the group dimension, the discovery of the

possibility of being able to bear a collective identity, especially in pursuing objectives felt as common. This drive, this effervescence, is such that it causes the aggregational process to be developed around a progression of foundational and regulatory states that sees the participation of each according to his instances of social claim and self-assertion against others, following a double autonomous and adaptational tract, in which their subjectivity intersects flexibly.

Adaptation, as newcomers, (new members or newcomers) to the positions of others, whose components are already present within the social groups, in proposing autonomy, sometimes even in terms of imposition, worldviews, own choices, own values and organization is the interaction that builds new hierarchies in the group (Di Sauro and Manca 2006).

Research was thus prepared with the dual purpose of making the first survey on bullying through the analysis of socio-organizational and developmental procedures for monitoring over time, in order to prevent bullying and its effects on the dynamics of the youth groups within the school. With this logic in mind it a quantitative survey was designed to detect bullying through the experiences of school leaders (see also Gagliardini and Bortone 2007; Menesini 2003).

In operational and verification terms the following dimensional areas were taken into account: (1) Structural conditions and socio-environmental impact of the schools; (2) Characterization of the socio-cultural area of interest; (3) School disposition and internal organizational characteristics of the various structures; (4) Incidents of bullying in the past three school years within the school; (5) Strategies and interventions for the prevention of bullying; (6) Evaluation of the phenomenon and its related, as well as attitudes towards bullying. Finally, with regard to the universe of reference all the schools in the area of the Abruzzo region and in particular of individual locations were included in experimental study. The survey covered a sample of 393 schools in the Abruzzo region of Italy. Of which 211 were primary or elementary schools (54.45 %), 15 were comprehensive schools, 98 secondary junior high schools (overall 27.74 %), and 69 high schools (17.81 %).

### 3 Bullying: Frequency and Types

The first data regards relative consistency of bullying, which, according to school principals, is present in 62.59 % of schools of all levels (Table 1).

Bullying episodes inside and outside the school seem to be correlated with the opportunity to attend areas of socialization also outside the school during the free time from school commitments. In elementary schools this possibility is certainly less extensive and therefore the episodes focus within the school (33.81 %) and on school buses (30.22 %). In high school spaces are wider and therefore the difference between the inside and the outside of the school is minimum: in both cases the frequencies were 30.33 %.

**Table 1** Frequency of bullying incidences in the last three years in various occurrences—vol%

Incidences of bullying	Frequency of bullying episodes		Total
	Often/At times	Rarely/Never	
Inside of schools	30.72	25.38	29.18
Outside of schools	26.02	36.92	29.18
On the way home from school	15.05	7.69	12.92
On transportation (train, bus)	5.33	10.00	6.68
On school busses	19.12	13.08	17.37
During a school trip	3.76	0.77	2.90
In other cases	0.00	1.54	0.45
NA/Don't know	0.00	4.62	1.34
Total	100	100	100

**Table 2** Frequency of bullying in schools distinguished by type of schools in various contexts in the last three years—vol%

Context of bullying	Elementary	Junior	High	Total
Inside of schools	35.88	35.88	28.24	100
Outside of schools	19.85	51.91	28.24	100
On the way home from school	24.14	36.2	39.66	100
On transportation (train, bus)	10.00	33.33	56.67	100
On school busses	53.85	44.87	1.28	100
During a school trip	53.85	38.46	7.69	100
In other cases	0.00	100	0.00	100
NA/Don't know	0.00	0.00	100	100

Multiple choice answers

With regards to the types of bullying we refer primarily to “verbal abuse”, which often occur in 23.24 % of the cases and “sometimes” for 27.70 %, and then to “threats” and to the “rejection by peers”, i.e. the *conventio ad escludendum* which youth groups often implement against other young group individuals or isolated groups. Follow the “theft” (often 10.27 %—but sometimes 5.54 %), the “derision or mockery” (often 8.65 %—but at times 17.73 %), the “damage to property of others” (often 8.11 %—to at times 4.99 %). You can also see how the types differ with the transition from elementary school to high school (Tables 2 and 3).

The actions taken are largely conducted by male isolated subjects (41.30 %), males in the group (24.16 %) followed by isolated females (13.77 %) and females from groups (11.95 %). The incidence of mixed groups, made up of boys and girls, is very low accounting for bullying only for 7.01 % (Table 4).

The actions are directed especially towards isolated males (MI) and towards isolated females (FI). The data shows that in fact the victims are the 47.61 % males and 32.64 % for females. The group consisting of only males or only females is apparently safer, more protected from the actions of bullying, while it seems more vulnerable in mixed groups (Gmixt). The negative action in any case involves isolated subjects, mostly males, preferably acting alone and sometimes in groups.



**Table 3** Frequency of bullying that have occurred in the last three years in various levels of schools—vol%

Tipologie di bullismo	Elementary	Junior	High school	Total
Physical aggression	10.25	15.63	10.16	9.33
Verbal abuse	30.33	54.7	27.81	28.93
Threats	7.79	32.9	8.56	10.93
Damage to property of others	7.79	6.51	3.74	6.00
Theft of others'	4.92	6.51	8.02	6.13
Rejection by peers	10.66	22.07	6.95	9.87
Induction to self-isolation	3.69	5.07	2.67	2.53
Gossip and slander	2.05	3.42	8.02	4.00
Derision or mockery	13.52	38.94	17.11	14.67
Refusal of speaking	8.61	11.52	2.14	5.20
Cyber-bullying	0.00	2.4	2.67	1.60
Other types	0.41	0.34	2.14	0.80
Total	100	100	100	100

Multiple choice responses

**Table 4** Types of bullies and types of victims—total schools in the last three years—vol%

Types of victims								
Types of bullies	MI	MG	FI	FG	Gmixt	Others	NA	Total
Male (isolated)	43.87	18.18	35.88	0.00	37.93	0.00	20.00	38.69
Males in group	25.16	54.55	22.52	25.00	18.97	0.00	0.00	23.82
Females isolated	14.84	0.00	20.23	0.00	5.17	0.00	0.00	15.48
Females in groups	11.61	9.09	15.27	50.00	10.34	0.00	0.00	13.51
Mixed groups	4.52	18.18	6.11	25.00	25.86	0.00	0.00	7.59
Others	0.00	0.00	0.00	0.00	1.72	100	20.00	0.46
NA/Don't know	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.46
Total	100	100	100	100	100	100	100	100

Multiple choice responses

## 4 Bullying and the Composition of the Class Group

With respect to group dynamics, we wanted to see if bullying were to vary depending on the presence of those considered somehow “different” in the class group, evaluating four different types of students: non-EU foreigners; Community foreigners; students with different religious faiths; students with disabilities.

Based on the four types listed the interviewed were asked to indicate the percentage of “importance” each component carried within the individual classes of their institute. It was thus possible to consider six classes of values that include the absence of subjects belonging to the four categories identified in class to the presence of more than 20 % of these subjects in class (Table 5).

**Table 5** Frequency of bullying in response to the presence of various types of students to their “importance” carried in percentages in schools—vol%

Students bearing different weights	Extra EU foreign students	EU foreign students	Students from different faiths	Differently abled students
Absence of “different” students	49.45	63.75	57.60	49.46
From 0.1 to 5 %	67.92	66.09	69.14	67.26
From 5.1 to 10 %	63.89	51.61	58.73	57.45
From 10.1 to 15 %	72.97	30.00	61.90	87.50
From 15.1 to 20 %	55.56	50.00	16.67	80.00
More than 20 %	42.86	16.67	50.00	33.33

These relationships have allowed us to observe that in the interactions of the school groups, there is an increasing trend of bullying with increasing weight percentage of “different” subjects. This is the case of the presence of non-EU foreign students whose inclusion in the class up to a certain rate does increase the percentage of bullying, but then collapses to tip over. In fact, the rate amounts to 67.92 % when the presence of foreign students is contained up to 5 % of the total students, it increases to 72.97 % if the rate increases to a value between 10 and 15 %, then decrease to 55.56 % when the weight of foreign increases again and finally collapses to 42.86 %, reversing the trend, when recording more than 20 % of foreign presence in the classroom.

The trend of the data would seem to be associated with the rules that govern the dynamics of the group and the formation of mergers and alliances within the class group. To substantiate this hypothesis is the repetition of the trend observed for all four given situations. It is observed that even the presence of European community foreigner students between 5 and 10 % correlates with growth phenomena up to a critical point or breaking point when the positions are reversed. This cut-off in this last case appears to occur when 15 % of foreign European community students is overrun in the class. Beyond this limit bullying decreases up to a point where it is greatly limited. With more than 20 % of foreign students in class the rate of bullying is just 16.67 %.

A similar trend and perhaps even more marked is highlighted with reference to the presence of students professing different faiths. Here, too, the rate is maintained at a high level when a composition that sees the boys of different religions reaches 15 % of the total students in the class. Beyond this threshold, an increase of the same students the frequency of bullying decreases similarly up to 16.67 % and then it attenuates to a balanced share of 50 %. Similarly growth is observed of the bullying phenomena—this time much more important—in the presence of students with disabilities up to and exceeding the threshold of 20 %. As long as the ratio of the “disabled” subjects and able-bodied subjects remains below 20 % the phenomena is present and it increases (from 49.46 to 80.00 %). Exceeding this threshold percentage the phenomena goes down (this time to 33.33 %).

The explanation is not easy, but could be correlated with the dynamics of the social group, both for the emergence of groups or dominant subjects within the class beyond a certain threshold of presence, or for both the occurrence of topological differentiation or transactions and for the allocation of space for most significant subjective relationships in the interactions between the various components, for both the dynamics intergroup which would lead to build alliances—even tacit and factual—achieving a balance between the various forces in the field.

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# Perceptions of the Family Receiving Social Benefits Regarding Access to Healthcare

Adina Rebeleanu and Daniela-Tatiana Soitu

**Abstract** We start from the premises that the public health insurance system reform in Romania fall in the liberal trend of reducing the state's direct role in delivering and providing health care services, increasing decision autonomy and responsibility of the insured person. The present undertake aims to understand the universe of non-contributory social benefits based on financial means testing beneficiaries and the subjective meanings in regard to social care services access determinants. Synthesizing the analysis of social benefits based on financial means testing beneficiaries' perceptions, we observe that their way of relating to the health care system depends to a large extent on the lack of incomes. The interpretation of health care access perception of this category of users comes as a discontent and criticism to the system and to the social actors' transfers (informal payments, physician- patient relation, lack of information).

**Keywords** Healthcare access · Health determinants · Family · Social benefits · Means testing

## 1 Introduction

The perceptions and social representations of determinants in access to health care services reflects practices, experiences and lessons drawn from personal and professional situations, but also ways of relating to changes in the social protection and public health system. Arguments for their pinpointing lie in the necessity of

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synchronising interventions at the social policies and public health level with those at the citizens' level. The present tendencies of Romanian neoliberal health care reform can generate changes in the interactions between the main actors involved. The role of individual has been reconsidered within the present health system. The beneficiary is, at the same time, service user, insured person and citizen.

Some of the arguments we can invoke in favour of an explanatory study regarding perceptions and representations of health care services access difficulties are the necessity of knowing the socio-geographic particularities of health care services access, identifying associated purposes and motivations of beneficiaries' resort to health care services, but also the possibility of explaining the investigated issue- what are factors and underlying mechanisms influencing access.

National studies (Dragomirișteanu, Mihăescu-Pinția, 2010, pp. 17–29) focus to a greater extent on evaluating the perception of professionals and decision-making actors within the system rather than on beneficiaries' perspective. Research conducted between 2006 and 2008 in the North-Western region of Romania, regarding disparities in having access and using health care services, has concluded the following: the opinions of the majority of family physicians and that of the representatives of local authorities converge with the results of the questionnaire-based inquiry which identified accentuated vulnerability to the risk of illness and difficult access to treatment for the rural population, especially children, elderly and uninsured persons (Popescu et al. 2009). In the research "Ethical perspectives and determinants of access to primary assistance for vulnerable groups<sup>1</sup>", the groups/individuals perceived by medical, social and socio-medical service providers as being vulnerable regarding access to primary assistance were people with no income or low income, elderly (particularly those residing in rural areas), social welfare beneficiaries, disabled people and youth, those not attending any form of education. According to medical and socio-medical services providers' perception, lack of income and health insurance are the main triggers of vulnerability in access to health care. The area of residence is also mentioned as a limiting factor of access valid for other categories of people as well, but it is estimated that the patient's material resources can compensate the drawback. Other triggers considered responsible for difficult access are lack of education and information. In regard to individuals residing in rural areas, the degree of vulnerability of local families and citizens is more visible (Soitu and Rebeleanu 2012). Individuals engaged in subsistence farming are also included in the vulnerable group. In brief, underprivileged families, especially those that do not qualify to receive social benefits, along with some monoparental families have been identified by the afore-mentioned service providers as vulnerable groups (Rebeleanu and Șoitu 2013, pp. 109–116).

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<sup>1</sup>The inquiry approach focused on analyzing the perception of primary assistance, social and socio-medical service providers and was conducted between July and October 2011 in Cluj and Iași counties as part of the project: "Postdoctoral Studies in the Ethics of Health Policies" implemented by "G.T. Popa" University of Medicine and Pharmacy, Iasi.

The present analytical approach is focused on the understanding of the social context of families granting from non-contributory social benefits based on the means-tested principle, together with the understanding of the subjective meanings in relation to the determinants of health care service access. In our opinion, their perceptions represent a good starting point in evaluating the accessibility of the Romanian public health care system.

## 2 Determinants of Health Care Access

With reference to the social determinants of health, McDonell (2002) mentions the socioeconomic status, the social structure and cultural factors. Going further to a macrosocial level, a state's economic and social development represents an important factor with a demonstrated impact on the state of health. While at an individual level determinants are rather traits that are important but usually unchangeable (gender, age, genetic factors), social determinants of the population's health are to be found at a macrosocial level and are out of individuals' control. The economic and social environment, education, physical environment, the social support network, health services, the quality of drinking water are all considered important determinants of the population's state of health. Social and community networks, in which family is also included, play an important role in the individual's health (Vlădescu et al. 2008). Moreover, in the social policy literature, the family is viewed as a social organisation unit, generating individual and collective welfare, even in the more developed societies (Gilbert et al. 1993, p. 4). The family provides both economic and non-economic support. The family is in many societies the main provider of protection for those/individuals in need, and in the rural area, it can be the only such provider.

Universal access to health care is considered to be the most important health determinant (WHO 2008, 2010; Raphael 2008). Even though it can be seen as a determinant of health per se, health services access is generally seen as a plurality of factors, such as: an existing medical infrastructure, logistics and specialists, existing personal factors (income, socio-educational factors, culture, interest, knowledge, personal health evaluation) and an existing legal and institutional framework. The behavioural model concerning the use of health services developed by Ronald Andersen (cited in Gruber and Kiesel 2010, pp. 351–356) describes the process of using health services as a causal interaction among three categories of factors: societal determinants (medical technology and social norms that configure and guide the medical protection system), the medical protection system (in charge with allocating available resources to medical protection institutions and the training of the organisational staff who provides medical services) and individual determinants (age, gender, genetic factors, etc.).

The family has an important role in ensuring access to health care for children. Heck and Parker (2002) have illustrated that the socioeconomic status and family structure are determinants of health services access. When drawing a comparison

between the access of children with single mothers and of those with both parents, Heck and Praker concluded that the greatest difference is made by mothers' educational level—mothers' high educational level does not breed differences in children's access to health care, for the two-parents family structures, whereas a low educational level of single mothers favours the access to care of children coming from one-parent families more than two-parents families. Nevertheless, in both situations health insurance coverage is a determinant factor (Heck and Parker 2002).

### **3 Overview on the Present Social Health Insurance System and on Family Social Protection**

In relation to health care access, we mention the difference and dichotomy brought by Law 95/2006 concerning the healthcare reform: those insured with a contribution payment and those insured without a contribution payment. If we take into account that the right to social protection guarantees especially the protection of different categories, which are in social risk situations that emerged despite their will, we see that the health insurance regulations actually establish the right for social protection in case of illness of those exempted from the contribution payment who thus receive, due to the law, social and healthcare benefits, because they are considered to be indirectly vulnerable. In the category of non-contributory insured individuals we find the co-insured, children, social aid beneficiaries, people with disabilities and the unemployed.

The 2012–2013 Social Work Reform Strategy concludes that the protection of the least favoured categories has to be ensured through family policies and fight against poverty policies, as well as through adequate policies for the disabled and elderly people. Moreover, Law 292/2011 on social work defines the vulnerable group as “the people or families at risk of losing the capacity to satisfy their daily needs due to illness, disability, poverty, drug or alcohol dependency, or other situations that may lead to economic and social vulnerability” (art. 6, let. p). It is establishing state's responsibility to ensure the vulnerable persons access to some fundamental rights: housing, social and health care, education and employment. The following categories are mentioned in the in the category of people exposed to the risk of social exclusion: people living alone and families without income or with low incomes, the homeless, the victims of human trafficking and those serving a confining sentence.

At a European Union level, although there is not a common family policy, there are common directions for family protection: economic support for those exposed to social marginalization, among which is the monoparental family, reconciliation of labour and family life, support for children and young people (Popescu 2004). The most alarming trend observed in central and eastern European countries after 1990 is the importance given to the social benefits based on financial means testing

(Standing 1996; Ferge 1997). In Romania, the only family benefit with a universal character is the state child support allowance.

Within the Romanian legislation, there are two types of social benefits based on financial means testing: social aid and family support allowance. Both social benefits have undergone multiple changes from a normative point of view (Popescu 2004; Rebeleanu 2011).

In what concerns the family support allowance, the present regulation framework for this benefit is Law no. 227/2011. The benefit is granted to monoparental families and families that up bring children under the age of 18. According to the law that regulates the family support allowance, the family is represented both by the husband, wife and children who live together and by the one person who lives and provides for her children. The allowance is granted based on family incomes and number of children. The purpose of this benefit is to increase the family revenues in order to ensure better up bring, care and education conditions for the children, to stimulate children's school attendance if the family has low incomes. We believe that is important to remember that for the families with school age children, the child's school attendance becomes an eligibility criterion for the family support allowance; the allowance can be suspended/diminished if the children do not attend or interrupt school with good reason.

Designed as a last defense line against poverty, in Romania, social aid is given to families and single persons, since 1995. The domestic unit is represented by the person living alone or the family (married or single people, with or without children, who live and carry on a household together). The eligibility of the individuals without domicile is one of the positive changes brought by the Law no. 416/2001, allowing for the inclusion in the guaranteed minimum income system of a category (for example, the Roma) which was excluded by the previous legislation (Law no. 67/1995). The right to health is associated to the right to a minimum income (the beneficiaries of social aid have the quality of insured in the public health insurance system, without the individual contribution payment, the contribution to the social health insurance being paid from the state budget).

A study conducted in 2011 by Ministry of Labor, Family and Social Protection illustrates that 3/4 of the social benefits recipients are from the rural area and the percentage of female legal representatives is almost the same with the percentage of male legal representatives. The fact that the number of social aid recipients with a female legal representative is increasing might suggest that many of these family structures could be monoparental families (MMFPS 2011). If the guarantee minimum income comes with the right to health of the recipient and his family (insured without the contribution payment to the public health insurance system), for the recipients of the family support allowance there is no legal means to ensure their access to healthcare. In other words, we can speak of the law-maker's indirect acknowledgement of the vulnerability of the social welfare beneficiaries in accordance with economically determined health service access, but not of the families who apply for the family support allowance for the same reasons. The logic and order of resorting to these family financial protection means are probably based on the following affirmation concerning social welfare, which is 'the last safety net,



used after the persons have depleted all other forms of social protection' (Strategia națională de asistență socială, 2011–2013).

It fact, the right to family support allowance is not associated, from a legal point of view, with the right to health. This aspect can lead to the following consequences: on the hand, in the case of monoparental families, is the parent is not working could be at risk of losing the health care system insured status; in this case, the person can elude soliciting family support allowance in favor of social aid which, although smaller when referring to the quantum, it guarantees the beneficiary the status of health care system insured without payment of contributions.

The aforementioned aspects are just a few of the legal arguments due to which the option to analyze the perceptions of the beneficiaries in relation to access to health care services has focused on beneficiaries of non-contributory social services, which even from a legal perspective can encounter difficulties in health care access.

## 4 Methodological Framework

Our choice is for the constructivism paradigm. In the study of perceptions, constructivism is concerned with perceptual and cognitive ways of seeing reality, trying to discover individual mental processes in building things (Parker 2005). We have tried to identify versions of the social reality concerning the access to primary healthcare services, in relation to its exercise and effective use. The perceptions concerning the possibilities and conditions of healthcare services usage of those holding a double capacity, that of recipient of non-contributory benefits based on means-testing (assimilated to the acknowledgement of an objective situation of economic and social deprivation) and that of user of healthcare services, show the instrumental and practical dimension of the access significance, seen as a social construct.

The data was gathered from two focus groups (one from the urban area and one from the rural area) of social benefit recipients, based on means tested (family support benefit, guaranteed minimum income). The focus groups were conducted in Cluj County, in November 2012. We included in the focus groups social benefits, more precisely recipients who were part of a family who receives social benefits. The reason is that the family is the reference unit for social aid and support allowance, based on present regulations, and our approach is focused on the family's vulnerability in relation to the access to healthcare services, aspects that are hardly researched in Romania. The research deontology elements were observed. The registered dialogues were transcribed and analyzed employing thematic analysis. The classification of the answers was done through content analysis, with topics emerged from the discussions. It is a thematic analysis, relying on the constructivist perspective. The thematic units are: *health representation*, *determinants of the access* to healthcare services, *perceptions* related to the health care system, and *perceptions* related to the responsibility in health.

Participants at the discussion groups are persons entitled to the right of receiving family support allowance and/or social aid. Each of them is the legal representative of the family. In spite of our attempt to create mixed groups, women have had a higher representation rate, which is in compliance with the latest national data regarding the distribution of the social benefits and one-parent family allowance beneficiaries by gender of the legal representative (MMFPS 2011). Some participants did not have the ‘insured’ status, benefiting from the family allowance as the legal representatives in a one-parent family. In every given case the beneficial owner was a woman. A single family allowance beneficiary had the ‘co-insured’ status—the husband was an insured taxpayer. There were cases in which the family allowance was allocated together with social benefits, which suggests a precarious financial situation of the respective families. Some participants, even if qualified for family allowance, whose limits and quantum are more generous than those of the social benefits, applied for the protection given through Law 416/2011 regarding the insured minimum wage system.

This research is exploratory and does not aim to be a comprehensive study. The data we collected can become a starting point for further research areas.

## 5 Results and Discusses

We aim to identify and analyse the factors contributing to the appearance and maintaining of inequalities regarding health services access among families receiving non-contributory social benefits from Cluj County. The emphasis lies on health care access from the beneficiary’s and user’s of medical care services point of view.

The participants in the focus group are mainly concerned with the lack of resources and insurance. A key element here is the lack of access to health services due to scarce financial resources. The lack of financial resources affects on the one hand the possibility to buy drugs prescribed by the family physician, and on the other, the direct access to the doctor and other specialised services.

I should have an operation done but I haven’t got any money; it costs 25 million [lei]; where can I get that amount from? From social benefits? (S6, rural)

Even if my doctor prescribes reimbursable drugs for my children, I still have to pay to get them...Free of charge is not free of charge for the children either (S5, urban)

“I don’t go to the doctor because I know I don’t have enough money for the drugs- they are very expensive. I can’t even get free drugs for the children- there is only a discount for them. On the prescription it says “100% discount” but when you go to the drug store you have to pay 12 or 15 lei”. (S2, urban)

If the lack of financial resources is accompanied by the lack of insurance, the access problem becomes greater. The only solution that the participants indicated is going to the emergency department. The lack of insurance also leads to avoiding medical care requests. The lack of financial resources is strongly felt also when one

has to cover costs regarding compulsory requests to the family physician for certain medical services, closely related to accessing social services. As a result, a pre-requisite for the family allowance is for the children to attend school and a pre-requisite for social benefits is a periodical issue of the “able to work” certificate. Not presenting the certificates on time leads to the withdrawal of the right to the allowance or social benefits.

You have to pay the certificate to the doctor for the child to be able to go back to kindergarten after an illness (S5, urban)

...for social benefits they have to testify that I am able to work and even that certificate costs 20 lei (S1, urban)

I benefit from social welfare. I am insured, but I must take a certificate to the employment agency that proves that I am able to work and the doctor issues it only for money...I don't find this normal (S1, rural)

In the case of transfers between doctor and patient, informal payment is mentioned, many a times too high for the beneficiaries of non-contributory welfare.

Those who have money treat themselves; those who don't, don't; I was hit and I stayed three days in the hospital, unconscious. They didn't operate on me before my wife and son gave money to the doctor (S6, rural)

I had a problem with my daughter, ill with appendicitis; they kept her in the hospital for 10 days without drugs, only with ice on her tummy. I talked to the doctor on duty and he told me to take her home. After two days she was hospitalised again as an emergency case at a different hospital where they operated on her because of an ovarian cyst and appendicitis. At the first hospital they didn't do anything because I didn't have any money to give. Other parents told me they paid between 100 and 200 euro in hospitals for their children. It seems that only bribe works here. (S4, urban)

Informal payments are a reality of the medical system (Rebeleanu 1997; Popescu 2004; Vlădescu 2011) and reducing these represent concerns and priorities in matters of health policies at decision-making level. Due to lack of sufficient funds, the family's inability to pay affects the child's health and the parents feel guilty and helpless. Corruption and the lack of financial resources in the specialized medical assistance system determined participants to believe that the health care system is ineffective and incapable of attending to the participants' health requirements. We also estimate that the lack of information (even though it is not recognized as such) also plays a determining role in granting access and triggers discontent towards the system. As demonstrated, prior experience within the doctor-patient relationship generates certain expectations for patients. Changes in the access procedure for health care services and the public's ignorance related to them increase the level of frustration.

The previous doctor understood our situation...he knew we couldn't pay...But the current doctor demands we make an appointment, or else we have to pay for the exam. (S5, rural)

We have to make appointments for our children as well... I took my child to the doctor, but our appointment was set one month later. So I gave up the appointment and paid for the exam, because it was urgent. (S3, rural)

I go to the doctor and I only get an appointment a few months from now. What am I to do in the meantime? Simply treat myself and then take the blame for it? (S2, urban)

...I saw my family physician and he referenced me to the clinic for my sinus infection. But I didn't go because I knew I couldn't afford it (S4, urban.)

On the other hand, people whose children or family members have suffered from a medical condition are well aware of their obligations as policyholders. The obligations they were able to mention refer to preventing illness, offering correct information related to the history of disease and respecting medical decisions and treatment.

The majority of respondents believe that the relationship with the primary assistance system is an appropriate one. The family physician seems to have the best understanding of the family and its difficulties, while the impossibility of acquiring treatment tends to become a reality of the health care system. The family physician references patients to specialized services, but their access is affected by a lack of resources allocated by the National House of Health Insurance towards service providers.

The family physician gave me a reference for medical tests. But at the clinic I was told they had no more funds. (S4, rural)

Another reality characteristic of the Romanian health care system is patient ignorance. This lack of information is also perceived by service providers and is present in the National House of Health Insurance reports, in the Presidential Committee Report (2008). We emphasize that current legal provisions state that the insurance contract is arranged between the House and the service providers, while the patient remains unaware of the health benefits he/she is entitled to. The patient also tends to be dissatisfied with situations in which he/she has the contractual obligation to partly or fully pay for certain services. The discontent of social welfare beneficiaries becomes accentuated, since the amount of their available resources is limited. Ignorance about the services covered in the basic health insurance package could influence the option for voluntary insurance. In theory, such an option would require a private health policy holder to be aware of the basic package provided under the compulsory social insurance. Yet, the question being raised is whether socio-economically underprivileged families could opt for a private policy. It is considered that this specific category may be excluded from private insurance (Eckenfels 2002).

In matters of health and service access, the main concern is the guarantee that medical care services can be used for children.

I don't go to the doctor...I haven't been since God knows when. I haven't got an insurance nor money to pay for it. I only go with the children to the doctor, whereas I... (S6, urban)

...I don't really go to the doctor...because I know I haven't got a good reason to. If you haven't got insurance...the former doctor understood us, the poorer ones, but now... (S4, rural)

I go to emergency department...if it's the case. And also to the doctor, but if I haven't got insurance she can only see me but I have to buy the medicines (S3, rural)

The participants in the study are beneficiaries of means tested benefits, a financial support system addressing persons who are no longer qualified for or do not meet the requirements for any other form of social benefits. Local studies show that in the case of households with children under 15, the redistributive effect of the social services is more modest. Where there are no social protection services, a significant segment of households with children would be labelled as poor, on the basis of income obtained from the family's market capacity and its pensions (Raț 2009, pp. 179–197). The deprivation gap is more profound when nobody in the family has a job and this aspect was identified in our one-parent family research, in which the adult (more often the mother in our study) does not have medical insurance as he/she is not active on the labour market. National statistics regarding the insured minimum wage is a confirmation of the fact that there is a great number of women legal representatives of the social welfare beneficiaries (a service that is available after accessing the family allowance according to the logic of granting social assistance benefits) (MMFPS 2011). The gender of the legal representative and the one-parent structure of the family represent a risk factor towards access due to lack of insurance, a fact that has been confirmed by the participants in the study, both from the urban and the rural area.

While the lack of sufficient funds appears in both residence areas—urban and rural—there is another important aspect to be taken into account in the rural area: the lack of human resources. In a village there is a single family physician that covers 2200 inhabitants. The differences between the urban and the rural areas are one of the factors quoted by the Romanian health analyses (Popescu 2004; Popescu 2009, pp. 152–167; Vlădescu et al. 2008). The huge gap between the rural-urban in what sanitary and medical infrastructure are concerned and a concentration of the poorest in the rural area (at least in Romania) are associated with the lack of qualified staff, other than the family physician. These factors shed doubt upon the issue of 'freedom of choice' among health services providers for those with poor health and the more economically vulnerable from the rural area. A distinction must be made between freedom of choice per se and the freedom of choosing something (and not something else); in other words the quality of alternatives for them to choose from. This distinction is analysed in detail by Alkire (2002) who distinguishes between having more alternatives (range of choice) and strengthening freedom of choice. Lack of choice is mainly felt in the rural area. There is a risk factor concerning access perceived by the focus group participants when they relate to their doctor. In other words, the pre-existent relationships of a retired family physician turned the persons on his/her list into "disadvantaged" (S2, S3, S6).

Even, the residence area is mentioned as a factor that puts a limit on access but it is estimated that the financial funds of the patient can compensate for this drawback.

Those who have money go to the doctor. It doesn't matter if you're from the countryside or the city (S2, rural)

If I have a problem and a person with money shows up, the doctor will forget about me and take him instead (S6, rural)

The residence area is seen by those from the urban area as an advantage in what access for the inhabitants of the rural area is concerned (*"I've often seen that they take those from the countryside in front of us, because we live close by and we can easily come back"* (S4, urban); *"I am often asked where I am from for the appointment, because those from the countryside have priority"*(S3, urban)). Nevertheless, this is also seen as a disadvantage, in what the medical care quality and access to specialised doctors are concerned (*"in the countryside the doctors aren't as good as those in the city"* (S5, urban); *"in the city there are better hospitals and doctors"* (S5, urban)). However, participants living in rural areas consider that inhabitants of urban areas have a clear advantage:

...you are treated differently if you are from the city... (S3, rural)

I was waiting at the doctor's, queuing at the clinic when somebody showed up after me and he was called in by the doctor. He looks on your referral and sees that you come from the countryside and tells you to wait because you've got plenty of time while those from the city are in a hurry (S4, rural).

Social welfare beneficiaries consider education as a possible trigger of difficulties in accessing services, as well as in entering the labour market. On the one hand, lack of education is associated with ignorance about the demarche for requesting medical care, while being on the other hand perceived as a discriminative factor related to privileged access to health care.

When I went in for medical tests, they asked me about my studies and after I answered, they had nothing more to ask me. (S3, rural)

Not having any studies is bad. You can't find work. And if you don't have a job...you have no choice, you get social welfare...at least we have insurance, but what about those who don't? They just wait home to die... (S2, rural)

If you attended primary school and go see a doctor, you can get informed and prevent a disease...But it's better to go to school. Now they have personal hygiene classes in schools. And sometimes, the child ends up teaching the parent. (S2, urban)

Ethnicity is only perceived as a determinant of access in urban areas.

I would get a job, but nobody wants to hire me...And I have tried to work. I get positive answers on the phone, but when I show up and they see I am a Roma woman, they immediately tell me the job is no longer available. Some doctors don't even pay attention to me when I ask questions. (S3, urban)

I also submitted my CV, but nobody called to schedule an interview. And even if they did...they never try to see what I am capable of once they learn I am a Roma. I want to get a job to apply for insurance. (S2, urban)

Belonging to the social work beneficiaries category is also perceived as a discrimination reason in relation to access to health care.

I spent two weeks in the hospital with my child, I slept on a chair. They wouldn't pay any attention to me because I am a social work services beneficiary. (S4, urban)

Doctors sometimes reference patients underhand. I am not even aware of every illness I have. But if for example I had the flu and I went to the doctor, I would not get the expensive compensated drugs, only the cheap ones. I think we are all entitled to the best. (S5, urban)

Such cases are being documented, namely illegal situations in which prescriptions are paid even though the specified drugs never reach patients (some are deceased or out of town). These occurrences are possible as a result of the rudimentary control system used by the National Health Insurance House that has been trying, for more than 10 years, to implement a software system for monitoring drug consumption (Vlădescu et al. 2008).

Regardless of contribution, social welfare beneficiaries claim undifferentiated treatment. Their arguments revolve around the necessity of health care services for them, as well as their families.

According to respondents' opinion, equal access is also conditioned by the preparation and availability of the physician, the latter's behavior in the doctor-patient relationship and the quality of medical training.

My neighbor and I suffer from the same illness. We saw different doctors and we got distinct treatments. I am doing well, but my neighbor has tried three treatment plans. Equal access depends on the doctor's quality and willingness;" "They should not talk down on us, we are patients too and they should treat us well because they took an oath... (S5, urban)

The previous doctor understood our situation...he knew we couldn't pay... (S5, rural)

Our doctor is kind, but she can't see us without an appointment because she has a lot of patients. (S2, urban)

It has been observed that uninsured people who lack the financial resources to pay for a consult depend on the doctor's willingness and availability to work without remuneration. This is related to the social expectations that patients have of their family physicians, which are probably rooted in the socialist health system era. Another similar expectation is related to handing out medical certificates free of charge, although the law states that family physicians may charge patients for certain medical certificates. The equity principle represents a benchmark in the health care policy (WHO 2008, 2010) and stands as focal point in the continuous reform of the Romanian health care system. In retrospect, amending the primary assistance system represented a primordial objective for the Romanian health reform process after 1990. We emphasize the fact that Romanian legislation distinguishes contributing policyholders from non-contributing policyholders. The exemption from paying contribution for social welfare beneficiaries and children (categories indirectly deemed vulnerable by the legislator) is perceived by participants as state protection granted to groups of people that would otherwise not be able to access health care services.

I get social welfare, but... it's a good thing because we have insurance. (S2, rural)

I think of my children...I personally have insurance, I am coinsured and I also had it when I was out of work. (S3, rural)

I am a social welfare beneficiary so I am insured, but if I only had a one-parent family payment, I would not have enjoyed insurance. (S3, urban)

Social aid and family support allowance beneficiaries are willing to learn and assume preventive health behaviors, which indicate a recognized responsibility towards individual health, as well as towards the family members' state of health. On the other hand, in the eyes of the respondents, the responsibility of granting access to health services falls to the state.

Money or no money...one should have access to free health care, or at least to compensated care for children; The Ministry of Health ought to make sure the law is abided by.... (S1, rural)

Free healthcare for the deprived...and access for the uninsured. (S5, urban)

Yes...national authorities and the Ministry of Health...they should enforce equal rights for everyone. (S4, urban)

Taking into account previously mentioned aspects pertaining to the importance of the doctor-patient relationship in accessing services, non-contributory welfare beneficiaries partly place responsibility in the hands of doctors.

## 6 Final Remarks

Our inquiry approach has highlighted at least two categories of vulnerable beneficiaries regarding access to health care services, overlooked or ignored by legislators: the one-parent families in which the mother (the woman) is the legal representative and the families eligible to receive family income supplement.

Summing up the perceptions of means based social aid beneficiaries, the risk of exclusion from health care services for this category of people is confirmed. Their relationship with the health care system is largely dictated by the lack of income. Poverty makes covering the costs of compensated drugs impossible, generates fear and uncertainty related to seeking services beyond primary assistance or emergency services (for the uninsured). The informal payments, patient ignorance and doctor-patient relationship are the other factors in order to affect the families access to health care.

Developing a supportive environment for the family's state of health is crucial and can be attained through reducing social inequalities via the wellbeing policy, by addressing unemployment on the long term in order to consolidate the labour market and by fighting discrimination. Combating poverty and social exclusion is vital for tackling or correcting social inequalities in the health care system.

Another desiderate is the formation of primary assistance networks to secure continuity in granting primary assistance in disadvantaged areas. This translates into expanding services at community level and developing health care services in rural areas and small localities in which the population's needs are presently not well covered. These recommendations are taken into account in the Committee Report.



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# New Trends in Obtaining Geographical Information: Interpretation of Satellite Data

Hana Svatoňová

**Abstract** Visual interpretation of satellite data is a new trend of obtaining geographical information for the common populations. Research participants (11, 15 and 19 years old students) were asked to solve spatial tasks on both true and false colour images. Differences in the efficiency of task solving regarding various types of source documents were analyzed. The generated scores were evaluated according to the participants' age and gender. The research results show that young non-experts interpret satellite data in false and true colour successfully.

**Keywords** Geographical information · Interpretation of satellite data · Remote sensing · Earth observation

## 1 Introduction

Satellites orbiting the Earth can acquire an enormous amount of data over a range that would be impossible for any ground-based methods alone. Space technology is usable for lot of problems of global dimensions. For many years valuable data and equally valuable experience has been gained with satellites such as Landsat, NOAA, Meteosat, ENVISAT and many others. Satellite data are used in basic research to refine the scientific picture of the Earth, for detection landscape changes, education and disaster management (Dordain 2007). The potential of Earth observation by satellite is enormous. Satellite images are an increasingly important source of information about the geographic reality (Kovařík 2012; Talhofer et al. 2015).

The purpose of the study described in this paper is to investigate, analyze and compare the efficiency of reading images and maps, the ability of adolescent children to read images in relation to colors used, and the subjective opinions of

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research participants on the difficulty of reading various types of images and their preference for images or maps as a source for acquiring information.

## 2 Interpretation of Satellite Data

Satellite data as well as maps contain positional and thematic information. Interpretation is the specific process of study of geographic reality based on the detection, identification and spatial localization of individual objects and terrain features recorded in the satellite images. To interpret the image means to decipher its contents in terms of purpose (Svatoňová and Lauermann 2010). Information is encoded in images in different shades of colors and textures.

Acquiring geographic information from images involves the following steps:

- in the correct recognition and classification of objects,
- in determining their properties, quantitative and qualitative characteristics,
- the accurate spatial (position) localization of detected objects,
- examination and assessment of the interaction and causality between the displayed objects and phenomena,
- analysis of these links and detect patterns that characterize critical components and properties displayed area.

The elements of visual image interpretation—colour and tone, texture, shadow, pattern, association, shape, and size—are routinely used when interpreting satellite imagery (Lillesand et al. 2008).

The basic element of interpretation is the colour and tone. Both of interpretation signs represent the primary level of complexity. The size and shape as the geometrical arrangement of the colours represent secondary characters. Colorful shapes of a certain size have texture or pattern—are spatially arranged. Deductive elements are height and shadow, context and place, these constitute the highest, fourth degree of complexity.

Adults' obtaining information from images by visual interpretation was analyzed by Lloyd et al. (2002) and Van Coillie et al. (2014). Lloyd et al. (2002) investigated how people process information from aerial photographs to categorize locations. Three cognitive experiments were conducted with human subjects viewing a series of aerial images and categorizing the land-use for target locations. Van Coillie et al. (2014) analyzed the accuracy of image digitization performed by adults with various degrees of experience regarding processing images and various degrees of motivation. Digitizing accuracy varied strongly across monitored participants. Moreover, it was stated that, generally, the accuracy was very poor. Svatonova and Rybansky (2014) evaluated various types of landscape visualization with respect to reality perception. Testing of research participants proved that the most effective visualizations are simulated flights over the country and 3D visualizations using orthogonal images.

## ***2.1 Colour of Image as an Important Sign of Interpretation***

A colour represents another important element of an interpretation aid. Black and white images generally appear to be more difficult to interpret. In the case of colour images (both true-colour and false-colour), the method of interpretation depends on the aim of the particular task and the need to identify the features as having various physical or chemical properties. Satellite images are provided to the users in true-colour and false-colour colours. The colours in an image will depend on what kind of light the satellite instrument measured. True-colour images use visible light, red, green and blue wavelengths—so colour are similar to what a person would see from a space. False-colour (not-true-colour) images incorporate infrared light and may on expected colours (NASA 2014).

Though there are many possible combinations of wavelength bands, the Earth Observatory typically selects one of four combinations based on the event or feature we want to illustrate. A false-colour image sacrifices natural colour rendition (in contrast to a true-colour image) in order to ease the detection of features that are not readily discernible otherwise (for example the use of near infrared for the detection of vegetation in satellite images, floods are best viewed in shortwave infrared, near infrared, and green light because muddy water blends with brown land in a natural colour image. Shortwave infrared light highlights the difference between clouds, ice, and snow, all of which are white in visible light). A false-colour image can be created using solely the visual spectrum (e.g. to accentuate colour differences), typically some or all data used is from electromagnetic spectrum outside the visual spectrum (e.g. infrared, ultraviolet or X-ray). The choice of spectral bands is governed by the physical properties of the object under investigation.

## **3 Research**

The research was focused on a comparison of visual interpretation efficiency for true-colour satellite images and false-colour satellite images.

Research respondents solved selected spatial (and identical) tasks in pairs of documents (true-colour image and false-colour image). Tasks were focused on the identification of types of objects and land-use defined in satellite images with a scale 1:100,000. The main research questions, with subquestions, were formulated with respect to the following research objectives:

- What is the difference in the visual interpretation of true-colour satellite images and false-colour satellite images?
- Is the identification score for types of land use and the purpose of selected objects identical for true-colour satellite image and false-colour satellite image?
- Are the respondents more successful in the identification of elements in true-colour images or false-colour images?

- What types of land use are distinguished better in true-colour images and what types are easier to identify in false-colour images?
- How well can the students interpret satellite images taken at different times?

Considering the research questions, the test was focused on the evaluation regarding the efficiency of interpretation of satellite images. Used documents (see description below) were sorted in two groups and two equivalent test sets were created—version A and version B.

Three questions were aimed on the objective differences in the interpretation of images:

- Specify, which types of land and objects (water area, river, forest, field, built-up area) can be found in the not-true-colour image and the true-colour image.
- Match the map cutout into the appropriate segment in the not-true-colour image and the true-colour image.
- Analyze two satellite images taken of the same locale 20 years apart and describe how the mining area and its vicinity changed.

Testing was performed at the schools in the spring and autumn of 2013. Research questionnaires were distributed as individual tests for students. The purpose of the test and organizational instructions were presented to students at the beginning. No time limit was specified, however, students completed the test in an average time of 20 min. Eventual ambiguities were answered during the test. With respect to the test form and task specification, the score was assigned manually. Answers were evaluated by one person.

### ***3.1 Test Documents: True-Colour and False-Colour Images***

Cutouts from images taken by LANDSAT satellite was used to test work with satellite images. Images taken by the LANDSAT 7 satellite were selected for testing. The participants solved identical tasks using true-colour images or false-colour images. With respect to the purpose of false colours, we were interested, if the not-trained interpreters could achieve better results identifying particular objects, even if these colours were not true.

True-colour images contain clear, needed colour combinations of channels in RGB evoking an impression of the true colours. In this image the true colours can be obtained from channels 1 (blue), 2 (green) and 3 (red). The RGB colour combination ‘321’ is favorable for non-expert interpreters, because the colours of the object match with reality. However, false colours are frequently used for practical applications. In this case, combinations of different channels and colours are used and provide better interpretability of objects or their features. The colour combination labeled ‘742’ was selected for false-colours, which allowed for good recognition of water areas, rivers and forests. The colours of LANDSAT images combined with RGB (Red, Green, Blue) ‘742’ option shows the water areas in blue



**Fig. 1** Cutouts from LANDSAT images, *left* true-colour satellite image, *right* false-colour image (Source TopGIS)

or black, water streams in blue and the forests are displayed green; fields are displayed by a pink-green mosaic, built-up areas appear in violet-pink. The image colours enabled a very good distinguishing of water areas and flows. Fields are more difficult to find a parallel with reality for non-expert interpreters; depending on the crop or surface (they appear as a pink-green mosaic).

Test documents:

- True-colour satellite images (LANDSAT 7, RGB '321'), scale 1:100000, resolution 30 m.
- False-colour satellite images (LANDSAT 7, RGB '742'), scale 1:100000, resolution 30 m.
- A pair of satellite images from the LANDSAT satellite dated 1984 and 2005 (Fig. 1).

### 3.2 *Participants*

Research was performed with students aged 11, 15 and 19. In total, 378 students participated in the research: 198 boys and 180 girls. Students aged 11 and 15 were educated at elementary school. They were members of eight different classes, two different schools. One teacher conducted all the lessons in each school. The 19 years old participants were first year university students (Teaching of Geography, Masaryk University, Brno, Czech Republic). 90 % of the students studied at grammar school in the past. Two subsequent classes whose lessons were conducted by one teacher were tested.

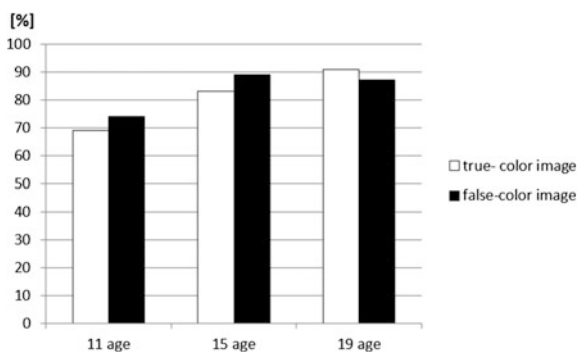
### 3.3 Evaluation and Results

The second part of the research was focused on a comparison of visual interpretation of true-colour images and false-colour images by adolescents.

The following conclusions can be made based on an evaluation of tasks focused on the identification of particular objects in false-colour images and true-colour images:

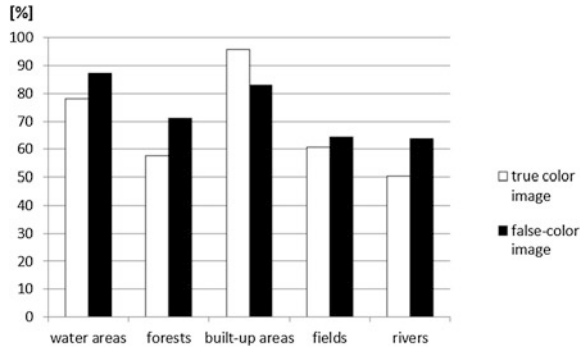
- The participants achieved an average score from 66 to 94 %.
- The average score achieved in images with different colours is not same. Differences in score were small, differences corresponding to the age groups of participants were maximally 5 %, see Fig. 2. Slightly better scores were achieved with false-colour images.
- Image interpretation skills changed with participant age. 11 and 15 years old students achieved better results with false-colour images. That result is in contrast with their subjective evaluation of image reading difficulty as related to colours, as the participants considered the false-colour images very difficult to read.
- The evaluation of interpretation efficiency in relation to gender shows very similar values. The only exception was 11 years old girls, who had significantly better scores for true-colour images (difference 15 %). This supplements and confirms the analysis of reading of aerial images and maps. In this case, both genders showed similar results with images (there was a difference for maps).
- The efficiency of identification of selected objects and areas varies in relation to colours used in the image provided as a source for identification.
- Participants achieved very good scores in the identification of water areas and rivers shown in false colours (water areas: on average 95 %, 15 and 19 years old students achieved full 100 %; 83 % for rivers in false-colour images vs. 61 % for true-colour images). This confirms the assumption that the selected colour combination, i.e. LANDSAT 7 image with combination '742', enables a very good distinction of water areas and water flows to non-experts. The reason is that these elements appear in expected and predictable colours.

**Fig. 2** Efficiency of object identification regarding true-colour images and false-colour images





**Fig. 3** Efficiency of interpretation of types of land in satellite images in relation to image colour type

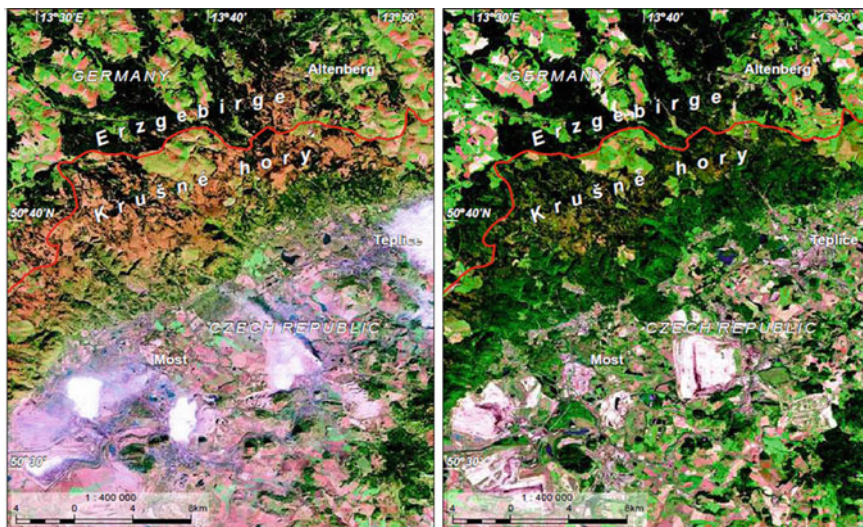


- Participants were slightly more successful in identifying built-up areas, fields and forests in true-colour images. However, the differences were within 5 %. The unusual colours used to display built-up areas in false-colour images confused only 11 years old participants, which achieved a score of 83 % (a very high score all the same) compared to 96 % achieved with true-colour images. Consistent scores exceeding 70 % were achieved for forest identification in true-colour images and the score increased with age, specifically from 58 to 93 %.
- Generally we can observe that non-experts and children without previous training are able to interpret false-colour images very well (Fig. 3).

Detailed analysis in relation to participants’ age was performed for the task of identifying the type of land-use. The older participants showed a more efficient identification of land-use type.

- Significant difference was detected between 11 years old children and the other two age groups. The youngest group did achieve a significantly lower score. The other two age groups were quite equipollent. In other words, there is a big jump in score between the 11 years old students and the older participants.
- Only the score for identification of “built-up area” types in true-colour image was very similar across all age groups. 11 years old children achieved almost the same score as older students.
- The success ratio remained unchanged for various areas. 11 years old participants showed the same differences in score according to the type of the area, but the total results were ca. 20 % lower than score achieved by 19 years old participants.

The participants were also asked to assign a map cutout to the appropriate location in satellite image (in both true-colour images and false-colour images). The two cutouts contained objects with noticeable colours or shapes (e.g., lake and airport runway), the other two cutouts contained less noticeable objects (suburban settlement and highway crossing). The evaluation brought a number of results:



**Fig. 4** Landscape changes in time, Ore mountains in the Czech Republic and great lignite mines Landsat satellite images, *left* 1984, *right* 2005 (Source ESA School Atlas, p. 200)

- Cutouts with noticeable objects (e.g., lake—shape and color, airport—shape) were assigned correctly with score up to 100 % in several groups of participants, including the youngest participants.
- For the cutouts containing less noticeable objects, the score was significantly lower: working with suburban settlements: ca. 50 % of participants correctly assigned a round settlement with a forested area; ca. 44 % of participants correctly assigned a highway crossing (both were presented in true-colour images).

The identification of landscape changes over time was quite difficult for students. The real situation in LANDSAT 5 and LANDSAT 7 satellite images displayed a landscape dramatically damaged by surface coal extraction, surrounded by damaged forest in 1984 (see Fig. 4). After 20 years this area is significantly reclaimed, but the extraction still continues into a limited extent (image dated 2005). However, all the answers containing a formulation mentioning a positive change, such as “forest ratio is increased”, “forests are greener”, “there are more meadows, fields and ponds”, “the damaged areas are smaller”, “the landscape looks more healthy, greener”, etc. were considered to be correct.

The results show that:

- Participant age played significant role in the ability to specify the changes in the area. 19 years old students achieved significantly higher scores, probably also thanks to a deeper knowledge of environmental issues, as they are confronted with these issues during their entire education process.
- Further analysis of results according gender shows that the girls achieved higher average scores than boys. A reason in the 15 years old students’ group could be

the faster development to maturity and better formulation and synthetic thinking in girls.

Moreover, subjective classification of the difficulty of object identification in true-color images and false-colour images was evaluated as well. We wanted to know if the subjective evaluation corresponds with the objective results, and eventually how the subjective evaluations change with participants' age.

## 4 Discussion and Conclusion

Satellite images are an important source of information about the geographic reality. Their potential for obtaining geographical information is enormous. Visual interpretation is a new trend how to take geographical information for the common populations. Childrens' ability to interpret aerial images very well was confirmed also in study realized by Liben and Yekel (1996) and Muir and Blaut (1969). The purpose of the research was to compare differences in the efficiency of visual interpretation satellite images in various color presentations. It was found that:

- The participants achieved an average score from 66 to 94 %.
- Image interpretation skills changed with participant age.
- The average score achieved in images with different colours is not same.
- The older participants showed a more efficient identification of land-use type.
- Participants were slightly more successful in identifying built-up areas, fields and forests in true-colour images.
- Participants achieved very good scores in the identification of water areas and rivers shown in false colours.
- Participant age played significant role in the ability to specify the changes in the area. 19 years old students achieved significantly higher scores.

Differences in map skills related to gender were confirmed also by Chang and Antes (1987). The development of visual and cartographic skills by tracking landscape changes in satellite images taken from different points in time seems to be very promising. It is difficult for younger students, but they achieve very good results with a teacher's support (see also studies performed by Blaut et al. (1970)). Landscape changes and their environmental evaluation represent an important part of an education in landscape and environment protection. The monitoring of landscape changes is also necessary in case of emergency situation when such changes could indicate number of natural or human-induced catastrophes (Hořková-Mayerová et al. 2013; Hofmann et al. 2013, 2015). According to the trends, satellite and aerial images are very useful tools for obtaining the geographical information.

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# Misconceptions of Czech and Turkish University Students in Providing Citations

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and Fatma Baysen

**Abstract** Writing research reports is found to be challenging for students. One of the most encountered problem concerning student projects is providing citations. The present study is aimed at revealing citation misconceptions of Czech ( $n = 130$ ) and Turkish ( $n = 250$ ) university students. Students have misconceptions concerning providing citations. Thus it is not possible to attribute students' plagiarism action only to intentional behaviour but unintentional as well. Students are more vulnerable to plagiarise in some plagiarism types while less in others. Cultural differences influence plagiarism types and degree of plagiarism risks.

**Keywords** Citations · Plagiarism · Misconceptions · Czech university students · Turkish university students

## 1 Introduction

Due to increasing number of projects in every education area, focused education researchers have focused on issues concerning writing the projects. Mayerova stated the importance of understanding the written information and referencing (Mayerova 2014). Writing research reports is found to be challenging for students. For example, Head (2008) states that students have difficulties in how to consider

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the information they process. Lee (2008) stated that most students are not aware of the amount of accessible references. Holliday and Li (2004) reported that students have difficulties in reaching, organizing and synthesizing information while writing their term papers. One of the most encountered problem concerning student projects is providing citations. While writing their projects students, depend on earlier research in writing their research report. Thus those references utilized in their own work should be cited, obeying ethical rules. Instead, students are found to plagiarise. Most undergraduate students show plagiarism (e.g. Strittmatter and Bratton 2014). Plagiarism is,

turning in someone else's work as your own; copying words or ideas from someone else without giving credit; failing to put a quotation in quotation marks; giving incorrect information about the source of a quotation; changing words but copying the sentence structure of a source without giving credit; copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (Plagiarism.org 2015).

As the phrase above showed different types of plagiarism are evident and each type explains plagiarism partially. Attempting any of them leads to plagiarism. Plagiarism concept content still enlarges with the changes in technology and information sciences. However, each type is important in explaining the concept of plagiarism and the degree of plagiarism, as is intended in the present study. Plagiarism is an act of fraud, because it involves both copying (stealing) someone else's work (words, sentences, thinking) and not providing citation (lying about it, also hiding) afterward. In short: "Not to give credit to original authors although you used their words, sentences or thinking". Thus plagiarism is an unethical behaviour. Plagiarism decrease research trustworthiness and also harms related subject area. Therefore it is also a big problem for the future of science. When plagiarism is investigated in literature, which is considered as an important problem regarding scientific communication, students plagiarized both intentionally and unintentionally (Papay-Carder 1983; Fowler 1998; Alam 2004; Bennet 2005; Dawson and Overfield 2006; Duff et al. 2006; Belter and Pré 2009; Mahmood et al. 2010; Evering and Moorman 2012; Ural 2012; Goh 2013; Shashikiran 2014).

Misconceptions are ideas which are not accepted as scientific in the light contemporary findings. Research regarding misconceptions in literature is found to be less related to librarianship and information sciences (Graveline 2010; Çakmak 2015) but more to education sciences, behaviour sciences and psychology (Cheak et al. 2013; Ahmad et al. 2012; Henderson 2011; Löfström 2011; Gullifer and Tyson 2010).

Present study consider Czech and Turkish students' unethical academic behaviour regarding plagiarism, which is asserted to be the result of their misconceptions, based on inadequate or lack of knowledge of what plagiarism is, is considered. The present study aimed to reveal plagiarism misconceptions of university students. According to this aim, the present study revealed the frequency of students having beliefs, conceptions and thus misconceptions concerning providing citations. Adding comparison in between two different student groups is also

revealed to see if there is any relation between plagiarism intensity and the nationality of the students.

The present study intends to attract the attention of the researchers in librarianship, academics, teachers and information sciences researchers to the problem of unintentional plagiarism, increase their awareness and to encourage them to conduct in-depth research.

## **2 Method**

In the present study quantitative research approaches are followed to reveal mis/conceptions and their dispersion among students concerning plagiarism. Thus the study is descriptive in nature.

### **2.1 Participants**

Two groups of students from two different countries attended the study, Czech and Turkish. Total of 380 university students participated in the study voluntarily. Of these 250 are Turkish and 130 are Czech students. Turkish university students belong to the Faculty of Education, Department of Psychologic Counselling and Guidance (148) and Preschool (102) in North Cyprus. In the Turkish students group 149 were girls while 101 boys. Czech students are from different technical and military universities in Brno, Czech Republic. University of Defence Brno, Faculty of Military Technology (35); BUT, Faculty of Business (60); Mendelova University, Faculty of Business and Economics (35). In the Czech students group 83 were girls while 47 boys. The students did not attend any special program or seminar concerning Plagiarism.

### **2.2 Data Collection**

A questionnaire consisted of 14 Likert type (Yes–No–I’m not sure) questions depending the literature concerning Plagiarism is prepared by the researchers (Appendix). The statements are short, clear in meaning and understandable by university students—piloted before the research. Students answered the questionnaire in their natural settings—in their classes. The students were given as much time they needed to fill in the questionnaire, but they finished answering in 5–10 min. Students were given information about the research and were given explanations when needed by the researchers during the test applications.

### 2.3 Data Analysis

Each item was analyzed accordingly to reveal how many students (and %) have the right conception and those who do not-Misconceptions. A number (and %) of students who are not sure regarding each item were also found. Following is a Statistical Analysis (Chi square) to find out if there is a significant difference ( $p = 0.05$  or  $p = 0.001$ ) concerning each statement between the number of Conceptions and the number of Misconceptions found.

### 2.4 Results

In the Turkish group only three students were found answering all the questions correctly. Of these one of them answered all the items (14 items) as: "I'm not sure". Thus it can be interpreted that almost all of the Turkish participants in the present study show (or will show) the act of Plagiarism (Table 1). Significantly more Turkish students answered incorrectly to items 2, 4, 5, 6, 11 and 14. Significantly more Turkish students answered correctly to the items 1, 9, 10 and 12 only. Finally, the number of Turkish students answering correctly is not significantly different than the number of students answering incorrectly to the items 3, 7, 8 and 13. The most challenging item for Turkish group students was item number 2, while item number 9 was the easiest one for this group. On the other hand, 11 (8 %) students answered all the questions correctly. However, this percentage is also accepted as low. Significantly more Czech students answered wrongly to item 11 only (Table 1). The 11th item is common for the two groups being the most challenging. Significantly more Czech students answered correctly to the rest of the items. As can be also interpreted from the results below, Czech students are more knowledgeable concerning plagiarism therefore they were more successful in the questionnaire than the students in the Turkish group (Table 2).

## 3 Conclusion and Discussion

Both Czech and Turkish students have misconceptions concerning providing citations. Thus the reasoning behind their probable plagiarism action is their misconceptions regarding providing citations. It is not possible to attribute students' plagiarism action only to intentional behaviour but to their unintentional action as well. Students are more vulnerable to plagiarise in some plagiarism types while less in others. Culture differences create differences in plagiarism types and degree (frequency of students) of plagiarism risks. A wide range research, starting from secondary school students to university and PhD students, like the one presented



**Table 1** Turkish and Czech students' (mis)conceptions and significance calculations in providing citations

Quest. no.	Turkish						Czech							
	Conception (C)		Misconception (M)		Not sure		Sig.	Conception (C)		Misconception (M)		Not sure		Sig.
	f	%	f	%	f	%		f	%	f	%	f	%	
1	104	42	57	23	89	35	C > M; p < 0.001	114	88	10	8	6	4	C > M; p < 0.001
2	78	31	138	55	34	13	M > C; p < 0.001	117	90	3	2	10	8	C > M; p < 0.001
3	96	38	77	31	77	31	No diff.; p > 0.05	106	82	18	14	6	5	C > M; p < 0.001
4	70	28	119	48	61	24	M > C; p < 0.001	113	87	11	9	6	5	C > M; p < 0.00
5	87	35	122	49	41	16	M > C; p < 0.05	75	58	52	40	3	2	C > M; p < 0.05
6	88	35	118	47	44	18	M > C; p < 0.05	83	64	44	34	3	2	C > M; p < 0.001
7	89	36	117	47	44	18	No diff.; p > 0.05	86	66	33	25	11	9	C > M; p < 0.001
8	112	45	87	35	51	20	No diff.; p > 0.05	75	58	43	33	12	9	C > M; p < 0.00
9	122	49	76	30	52	21	C > M; p < 0.001	113	87	10	8	7	5	C > M; p < 0.00
10	107	43	75	30	68	27	C > M; p < 0.05	101	78	16	12	13	10	C > M; p < 0.00
11	71	28	128	51	51	21	M > C; p < 0.001	34	26	76	59	20	15	M > C; p < 0.001
12	112	45	83	33	55	22	C > M; p < 0.05	104	80	14	11	12	9	C > M; p < 0.001
13	95	38	93	37	62	25	No diff.; p > 0.05	110	85	16	12	4	3	C > M; p < 0.001
14	70	28	102	41	78	31	M > C; p < 0.05	74	57	36	28	20	15	C > M; p < 0.001

**Table 2** Comparison between the number of conceptions of Czech and Turkish students regarding each item

Quest. no.	Sig.	In favour of	
		Czech	Turkish
1	Yes; $p < 0.001$	√	
2	Yes; $p < 0.001$	√	
3	Yes; $p < 0.001$	√	
4	Yes; $p < 0.001$	√	
5	Yes; $p < 0.05$	√	
6	Yes; $p < 0.001$	√	
7	Yes; $p < 0.001$	√	
8	<b>No diff.</b>		
9	Yes; $p < 0.001$	√	
10	Yes; $p < 0.001$	√	
11	<b>No diff.</b>		
12	Yes; $p < 0.001$	√	
13	Yes; $p < 0.001$	√	
14	Yes; $p < 0.001$	√	

here is important to detect the degree of unintentional plagiarism problem. It is important to prevent the occurrence of misconceptions concerning providing citations and to delete them if already occurred (Baysen 2012; Baysen and Baysen 2013).

## Appendix

### Questionnaire

1. You can copy the information on the internet without providing citation because it is anonymous.
2. If you citate/quote an author than you have to get permission from him/her.
3. There is no need to provide citation whenever a figure or a table is copied.
4. There is a need to cite if only most of the research paper is used.
5. There is a need to cite if only original words used in the source are copied.
6. If you write the author's thinking in your own words, than there is no need to cite.
7. If you change the words of the author than there is no need to cite.
8. If the information is known by everyone and is widely used or common, there is no need to provide citation.
9. If the sentences copied are short, there is no need to provide citation.
10. If you translate the information (from other language), there is no need to provide citation.

11. If you summarize part of author's sentences, you can provide citation at the end of your text.
12. If you summarize more than one paragraph of an author and write your own paragraph, there is no need to provide citation.
13. If you use a friend's written work, there is no need to provide citation.
14. If the data is from interviews and conversation conducted by you, there is no need to provide citation.

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# Identity and “New Social Tourism”

Consuela Torelli

**Abstract** This work deals with the analysis of social tourism seen as a mean through which rediscovery a new identity, the identity of 21st century man, who is fragile and frustrated by the continuous stress brought by the quotidian life and by his or her job.

**Keywords** Accessibility · Identity · Wellbeing · Authenticity · Experience

## 1 Introduction

The BITS (International Bureau of Social Tourism) defined in 1963 social tourism as: *a combination of relations and phenomena which derive from the involvement in tourism of all those people who have a low income and whose participation is guaranteed or helped by social measures*. Nowadays Social Tourism is not a synonym of poor tourism anymore, but of a fair and ethical tourism that brings development whereas it is necessary. This kind of tourism is based now on a new dimension named “glocal”, from which “glocal tourism” a neologism that encompasses a touristic vision which is both a global and local vision oriented toward social equality. Social Tourism and related organizations should bring a deep renovation in this activity. Social Tourism product in the 50s and the 60s was characterized by a contained process which is not sufficient anymore. It is necessary a high professionalism of the tour operator that must be prepared to welcome an exacting custom in search for a new kind of journey or vacation in new places during different seasons of the year. The key points are originality, unconventionality of the vacation, authenticity of the experience, accessibility to everyone and the discovery and revaluation of localities.

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Nowadays, society gives a particular relevance to free time since man constantly perceives the need of having much more time to dedicate to himself and in this way tourism becomes one of the most diffused activity to use free time. Touristic activity puts individual in a dimension which is different from quotidian life and facilitates socialization and communication. These two factors are very relevant, in particular for those who have difficulties to access in the activity itself, among which there are old people, young and adolescent people, disabled people and who have no economic possibilities to spend for touristic expenses. It is possible to label a phenomenon as a “touristic phenomenon” when three main elements occur that is: (a) movement toward a place that is different from our own residence, (b) duration of the movement which must be not too much long, (c) reasons for the movement different from those of a change of residence. Cohen identifies five main reasons which could influence the movement of an individual as well as his/her travelling that are listed as follows:

1. recreation reasons;
2. escaping from quotidian life;
3. live new experiences;
4. discover other alternatives of travelling;
5. existentialism reasons, since man is in search for new spiritual centers to discover through the touristic activity (Cohen 1979). The main task of Social Tourism is that to give everybody the possibility to access to tourism for a full self-affirmation of the individual both as a person and as a citizen. Social Tourism is at the same time a right and a social service which has to be accessible physically and economically even to the people who are not capable to exercise the inalienable right of vacation.

It is a kind of touristic practice which privileges socialization, relations, the exchange of experiences, the introduction to different cultures and the recovery of one’s own identity in spaces and times that are different from those of the quotidian life (Cannas 2009). Social tourism is a kind of tourism which aims at socialization and which makes it its main practice. It is an actor of economic growth and promotes new territorial arrangement based on local development and it is a partner of the projects for world development.

Free time and vacation represent today the highest moment of psychophysical wellbeing and it is so strong the relation between tourism and the desire of feeling happy that it makes the touristic phenomenon more and more relevant at social and cultural level. Many are the expectations and the hopes concentrated on vacation that becomes symbol of the conquest of a new social identity through self-affirmation and the development of communicative relationships. Vacation should represent a mean to recover our identity which has been lost during the work life. It is a ritual, where everything must be perfect. This myth of vacation is not always as it seems in the concrete experience both because of the difficulty of taking a break from the quotidian life and of the touristic industry that has encompassed in consumerism even the vacation spaces and times, running the risk of creating new

“consumerism cathedrals” (Corvo 2007) and to not meet the needs of each tourist; in fact many initiatives have been promoted to improve the quality of the touristic offer through marketing advertising and different professional figures have been developed to improve the touristic services and structures in order to meet tourists’ needs and desires and not to make feel him an intruder. Social wellbeing should be promoted and intended at a collective level with the hypothesis of a new sense of identity and belonging.

La Cecla (2003) maintains that “the frontiers are a face to face between two realities, two cultures, two territories; a place where the comparison substitutes the conflict”. Social Tourism aims at giving back to travelling its authenticity, intending it as encounter, discovery and changing. The attention is focused not only on distant destinations, but also on community tourism which is based on hospitality by families, small hotels, high relational dimension agritourism, as well as walking in the woods or in little villages or sharing experiences with ecologist groups or communities which welcome disadvantaged people. The attention is focused on the individual with his or her needs, expectations and anxieties. Social Tourism represents an occasion to know the others better and become aware of ourselves, rediscovering the real values of life. Meeting other people helps to socialize and social operator’s task is to guarantee the access to tourism to everybody, with no prejudice and differences.

Another element to take into consideration is population average age which is continuously rising thanks to the technological and scientific development announcing a more and more old population in the next future. Therefore it is necessary to abandon the welfare policy or attitude toward Social Tourism and to change the direction in favor of an autonomy culture, recognizing the value which the independence has for a person. Welfare culture should be substitute by normality culture (Fantini 2002), so that free time and recreation become a right of everyone, even of those people who have economic or health problems. Furth more vacation for disabled people should not be considered anymore a form of therapy, but a moment of socialization, of encounter with the other, of recreation and psychophysical wellbeing. Many tour operators have not entered in the logic of the social tourism yet and have difficulties to consider the disabled or people with whatever kind of problem useful consumers. In the end we must not forget the Manila Declaration of 1980 which stated the right of the disabled tourist or of the tourist in particular and difficult conditions to have the same possibilities of touristic fruition of the others. At the end of the 90s, marketing begun to reevaluate the figure of the disabled in the perspective of the touristic fruition since it would have been able to attract also its chaperons so to become a new marketing reality which could invert the trend. The 11 % of adult population, according to an Eurostat research carried out by Touch Ross, is disabled and to this percentage are added the children, the old people and pregnant women, so that the market of social tourism reaches a total of 60 millions of people. Social tourism is an actor of the territorial arrangement and of the local development since tourism has an impact on the territory which can be both positive and negative.

It is important to preserve the territory through a responsible behavior in the full respect of the identity of the local population and environment. Scholars have identified the three “s” of social tourism which are

- (a) social,
- (b) sustainable,
- (c) solidarity.

The key points of sustainable social tourism are:

1. the respect of environment and local identities
2. to offer new means to regions to reevaluate abandoned territories and to replenish these territories without the exploitation of the resources
3. to generate economic, social and cultural benefits for the local inhabitants.

Sustainable tourism is defined as “tourism that respects both local people and the traveler, cultural heritage and the environment” (UNESCO 2006). It seeks to provide people with an exciting and educational holiday that is also of benefit to the people of the host country. Sustainable tourism produces a series of variations which are the following:

**Responsible tourism** is any form of tourism that can be consumed in a more responsible way. It is tourism which:

1. minimizes negative social, economic and environmental impacts;
2. generates greater economic benefits for local people and enhances the well-being of host communities;
3. improves working conditions and access to the industry;
4. involves local people in decisions that affect their lives and life chances;
5. makes positive contributions to the conservation of natural and cultural heritage embracing diversity;
6. provides more enjoyable experiences for tourists through more meaningful connections with local people, and a greater understanding of local cultural, social and environmental issues;
7. provides access for physically challenged people;
8. is culturally sensitive, encourages respect between tourists and hosts, and builds local pride and confidence (*Cape Town Declaration, 2002*).

### **Ecotourism**

Ecotourism is a form of sustainable tourism—all forms of tourism can become more sustainable but not all forms of tourism can be ecotourism.

“Ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy, study and appreciate nature (and any accompanying cultural features—both past and present), that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations” (*Ceballos-Lascurain, 1993*). (*The official definition adopted by the IUCN in 1996*).



***Geotourism***

Geotourism is a touristic practice which sustains or enhances the geographical character of a place, its environment, culture, aesthetics and the well-being of its residents.

***Voluntourism***

Voluntourism is a form of travel where one volunteers on projects which give back to the community.

***Solidarity Tourism***

Social tourism tries to promote also the poor territories and the developing countries and in that case it can be identified as “solidarity tourism”. Community based tourism is known as a tourism in which the local populations control the tourist activity, from the methods of reception of the participants to the generated incomes. It offers better perspectives to poor regions, on an economic as well as human level. In this perspective, it is the village communities that organize themselves to create tourist visits adapted to local realities, develop the culture and the human exchange, and respect the environment. They also manage the complementary incomes resulting from this activity. Thus, the rural populations can both defend their patrimony and their rights as well as assert themselves as economic actors, able to diversify their incomes in order to improve their living conditions (Šimková and Kasal 2012).

## **2 Research Project**

The methodology of research applied to this work is circumscribed within Abruzzo region in Italy and it is based on four stages:

1. identifying the field of research;
2. identifying the privileged witnesses job and who is oppressed by the social position he holds during the year;
3. semi structured interviews;
4. Delphi analysis.

Mapping the field of research has the aim of choosing and defining the active corporations in the territory and the social actors involved in Abruzzo social tourism. Moreover it helps to find out the characteristics of the territory useful for the development of Social Tourism in the region. Privileged witnesses will be selected within the field of tourism activity and to them will be administered a semi-structured interview to understand the system. A semi-structured interview has a rigorous set of questions which does not allow one to divert; it is open, allowing new ideas to be brought up during the interview as a result of what the interviewee says. The interviewer in a semi-structured interview generally has a framework of themes to be explored and the specific topic or topics that the interviewer wants to

explore during the interview should usually be thought about well in advance. Then through Delphi method, will be gathered all the behaviors and opinions of the professionals toward the future sceneries of social tourism in Abruzzo. The Delphi method is a structured communication method, which relies on a panel of experts who answer questionnaires in two or more rounds and after each round, a facilitator provides an anonymous summary of the experts' forecasts from the previous round as well as the reasons of their judgments. During this process the range of the answers will decrease and converge towards the "correct" answer. A number of Delphi forecasts are conducted using web sites that allow the process to be conducted in real time such as Tech Cast Project and Horizon Project (Talhofer et al. 2012).

### 3 Discussion and Conclusion

The main task of social Tourism is to consent everyone the access to tourism for a full self-fulfillment of the individual both as a person and a citizen. It represents at the same time a right and a social service, accessible to everyone, since it is an alienable right. It is an actor of economic growth and promotes new territorial arrangement based on local development and a partner of the projects for world. This touristic practice allows the tourist to feel not a stranger but a friend of the local hosts and through this new way of accommodation to make authentic experiences through which rediscover one self's identity and priorities. Besides it creates also the opportunity for the birth of new professions in tourism field thus hindering in part the problem of unemployment. In this way it is possible to assert that Social Tourism as a way to rediscover the new identity of 21st century man.

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# Weak Emergentism and Social Systems

Raffaele Mascella

**Abstract** An emergent higher-level property is ‘nonvacuously weak’ if it is specified both in terms of the manifest and latent powers of its constituents. The manifest powers are always in action, while the latent ones are activated only when lower-level entities interact into a specific configuration. After the exploration on whether the belief in emergentism is justified and possible, I motivate why non-vacuously weak emergence seems to be a valid candidate. Then I argue that this structural variety of emergence is explanatory reducible, but is not ontologically reducible, to its lower-level composing elements. I close by arguing that this could be the variety that secures a consistent hybrid social theory.

**Keywords** Complex systems · Weak emergentism · Downward causation · Nonvacuity · Social structures

## 1 Introduction

Emergence seems to constitute a unifying framework and a central problem for modern sciences. This centrality is reflected also in recent debates about social theories. The causal effectiveness of social structures is usually debated in opposition with the belief that individuals, the composing entities, have the capacity on their own to causally influence the complex world. It is the traditional contention between sociological holists and methodological individualists.

Surprisingly, advocates of social emergentism often neglect (Elder-Vass 2012) what is currently unproblematic in the natural sciences: a theory of emergence logically implies downward causation. The aim of the paper is to argue for a reconciliation between social emergence and a specific theory of downward causation.

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Scientists and philosophers do not agree on a single, concise definition of what is or should be a complex system or an emergent property (see Ladyman et al. 2013). Different strategies, both qualitative and quantitative, have been adopted for this aim and for understanding their main features (see, for example, Bhaskar 1975 and Dennett 1991). One assumption seems to be common to all analyses of emergent properties. It is the view that some phenomena are somehow, ontologically definable or epistemologically interpretable, as a series of hierarchical levels in which what happens on one level is at least partially autonomous from what happens in other levels. A natural question is around a perceived arbitrariness in choosing levels of analyses in the hierarchical complex structure and why the hierarchical interpretation of such phenomena should consider the ladder-like structure as the only candidate, and not the tree-like as a possible one (Kim 1999). In physics, there is a widely held view that stable phenomena that appear in some part of the energy spectrum seem to be real features of the world. Here, identifiable physical meanings provide objectivity by clearing from problems of conventionality.

Another common assumption that emergentists embrace is materialism, of any sort. The idea of mysterious, transcendental forces, has been abandoned with the fall of vitalism and substances dualism as possible explanations of life and consciousness, the two main phenomena putatively emergent. This is due largely to empirical reasons, as progressive research programs in sciences has been historically fruitful when the strategies have been methodologically reductive and ontologically physicalist (Papineau 2001).

Then, the varieties of the notions of emergence that are debated share two hallmarks with respect to the relation between the higher-level emergent phenomena and the processes of the lower-level basis: (a) emergent phenomena are dependent on lower-level processes (with the conception of supervenience as the most popular interpretation of this upward determination), (b) emergent phenomena are autonomous from lower-level processes, at least in being not predictable on the basis of the lower-level informations (Bedau 1997, 2003). The unpredictability of emergent properties is a key feature to distinguish emergent properties from resultant properties, which instead are structural and predictable from lower-level features. Autonomy can be a consequence of nonexplainability or due to ontological irreducibility of higher-level properties to their constitutive basal elements. Thus, the controversial question is: how can a phenomenon be, at the same time and consistently, dependent and autonomous from the same processes?

This question poses at least a metaphysical problem that will be addressed in the paper, arguing that a variety of weak emergence given below is ontologically dependent on, and simultaneously autonomous from, the composing elements. This could help to shed light into social systems, clarifying from an emergentist perspective the role of individuals/agents in the determination of social structures, their properties and causal powers.

## 2 Varieties of Emergence and the Problematic ‘Strong’ Version

One of the most plausible varieties for stating the hierarchical dependence is reductionist physicalism. It does not address metaphysical issues but, nevertheless, an apparent implausibility comes from the eliminativist strategy, leaving just an epistemological role to higher-level properties and no ontological contribution at all. This is the ‘weak’ version of the notion of emergence, whose instances are structural, dependent from the way the composition at the lower level has been done. Higher-level properties of this sort are more conveniently studied in their own, as special sciences always do. It is not necessary to postulate their reality, as the reduction to underlying levels seem to neglect an ontological role and the higher-level causal powers are reducible to the causal powers of the composing elements. Thus, it is an extreme stance that gives no distinctive role to putative emergent properties, except to an epistemological utility. It is a kind of a metaphysically ‘innocent’ emergence (Chalmers 1996).

In the middle ground between extreme materialism and dualism, there is a different view which holds that emergent properties are instantiated on the basis of the underlying level, but their type is non-identical. This is the ‘strong’ version of the notion of emergence. Arguments from multiple realization are a key approach along this line, for higher-level properties are generally obtained through multiple configurations/states at the lower level. One can consistently adhere to the causal physical closure, with the new causal powers derived from the causal powers of the underlying level, but the autonomy of what emerges is preserved, as emergent properties have new and distinct causal powers that can act at the same level, upward and downward. Indeed, in the downward causation also a reflexive causation is apparently involved, that is causal effects at the lower-level may be also in the same constituents that causally implies a systems (or a subsystem) to expose such emergent features.

Unfortunately, strong emergence faces a series of problems. First, Kim’s ‘exclusion’ argument inevitably lead to a competition between higher-level downward causation and lower-level causation acting at the same level, in which the upward determination pushes to give precedence to the causation of the bottom level. Let’s consider this simple question: if an emergent  $M$  is realized by  $P$ , why  $P$  cannot supersede  $M$  as causes of all effects caused by  $M$ ? To begin the argument, recall from Kim (1999) that, any same-level causation of  $M^*$  by  $M$  (suppose both are emergent properties) presuppose  $M$ ’s causation of  $M^*$ ’s lower-level  $P^*$ . But this is a case of downward causation, and  $M$  is a higher-level property, thus having a lower-level base  $P$ .  $P$  realizes  $M$ , and  $M$  in turn causes  $P^*$ , then if causation is understood as nomological necessity or in terms of counterfactuals, it follows that  $P$  is a cause of  $P^*$ . But emergence is not properly a causal relation, thus  $P$  causes  $P^*$  not in a causal chain via  $M$ . At this point, in Kim’s words: “This appears to make the emergent property  $M$  otiose and dispensable as a cause of  $P^*$ ; it seems that we can explain the occurrence of  $P^*$  simply in terms of  $P$ , without invoking  $M$  at all.

If M is to be retained as a cause of P\*, or of M\*, a positive argument has to be provided, and we have yet to see one.”

In the following, I will defend a positive argument for invoking M as a nonotiose and nondispensable cause of P\*.

Kim’s argument, also considered in the light of criticisms (see Achim 1997, Corry 2013), show also the discomfort in synchronic downward causation. If a whole W has an emergent property M at time t, the fact that M emerges at t depends on the fact that at the lower level there is a configuration of parts with a certain specific feature, let’s say that the element E has a property P at t. But now, having E a property P from which emerges M in the whole W always at time t, how can E be caused to have P at t by the whole having M at t? It seems to be implausible that, simultaneously at time t, E having P is the realizer and the effect of W having M, simply because we assume (metaphysically) that the causal power of E due to having P can be exercised only when E already possesses P. Thus, the only acceptable kind of emergence, with respect to the timing of acting causal powers, is diachronic emergence, the view that emergent properties, upward determination and downward causation must be exploited without synchronisms along the temporal evolution.

Second, irreducible causal powers at the higher level contravene causal inheritance, which is endorsed by many philosophers as a compelling stance. Third, it is irrelevant from a scientific point of view simply because in scientific explanation irreducible properties can only play a primitive role (Bedau 2003).

Indeed, the notion of strong emergence, while still acceptable by changing the metaphysical assumptions, fails in not having any concrete example, apart from properties as life or consciousness that are difficult to penetrate. Here we face heavy difficulties in giving a complete account in terms of all their micro (lower-level) interactions, at all levels of possible analyses. It could be just our ignorance, or at the other corn they could effectively be cases of strong emergence, but this would happen on the ground of a counterintuitive metaphysical framework. However, apart from counterintuitive assumptions, O’Connor (2005) clarifies that when the alleged new ontology is made rigorous and explicit, the ontological irreducibility appears only conceptual.

### 3 Types of Weak Emergence and the Consistency of Downward Causation

In the standard arguments against ontological emergentism, properties at the lower level are often considered as possessed altogether and simultaneously by the lower-level elements. What about if the lower-level elements have latent powers exhibited only in specific and relevant circumstances, when an adequate environment involves new interactions between them and the exposure of new powers?

Let’s consider the previous notion of weak emergence, in which we assume that: (a) the wholes exhibiting emergent properties are obtained through a combination

of physical elements; (b) the emergent properties supervenes on the lower physical components; (c) the emergent properties depends on the way physical combinations are structured.

Emergent features remain latent until lower-level elements are combined in certain ways. Instead, lower-level elements manifest certain properties, so called ‘micro-manifest’ properties (Shoemaker 2002), when they are isolated, or when they are combined with other lower-level elements in a way that does not cause anything to emerge. This is also the case of aggregative relations (Wimsatt 2006) in which the organization of parts does not matter. But until we don’t combine such elements, we cannot know all their alleged laws and properties that result from their various combinations (see Broad 1925, for an illustrative example about chemical elements). Thus lower-level elements can have latent properties, so called ‘micro-latent’ properties, and also latent causal powers might be involved, powers that lower-level elements show only when they are combined into the relevant sorts of combination (Shoemaker 2002). And as O’Connor and Wong (2005) point out: “[I]t is true in an emergentist scenario that everything that occurs rests on the complete dispositional profile of the physical properties prior to the onset of emergent features. [...] The difference that emergence makes is that what happens transcends the immediate [...] interactions of the microphysics.” And as noted by Wilson (2010) “[s]uch a weak dispositional understanding of micro-latent powers is compatible with micro-goings-on’ being preconditions for the occurrence of new fundamental powers, forces/interactions, or laws at the higher-level [...] Physicalist proponents of micro-latent powers [...] need to identify a more substantive understanding of micro-latency”.

When lower-level components are combined in a way such that the higher-level structural whole shows emergent behaviour, we can distinguish among two kinds of lower-level properties. The first, that I call ‘vacuously weak’, consists of properties that are knowable prior to entering into what Shoemaker (2002) calls the ‘emergent engendering process’, thus specified only in terms of the micro-manifest powers of the constituents. The second, that I call ‘nonvacuously weak’, consists of properties specified both in terms of micro-manifest and micro-latent powers of the constituents. Notice that, as in the second kind properties are partly specified in terms of micro-latent powers, an instantiation of the second kind is realized only after the micro-latent powers have been exercised in a relevant combination. Here, the terms ‘vacuously’ and ‘nonvacuously’ are intended to target the ontological consequences: in the nonvacuously variety of weak emergence, contrary to the vacuously one, we may recognize an ontological contribution. I motivate this in the following.

Notice that both, vacuously weak and nonvacuously weak, properties are realized by, and the resultant of, lower-level constituents’ properties and relations. Instead, for what concerns the theoretical predictability we face an opposition: vacuously weak properties are predictable on the basis of lower-level constituents manifested properties, nonvacuously weak properties are not predictable on such basis because it is the combination of manifested and latent powers of the constituents that provide this new kind of properties. Thus nonvacuously weak properties are unpredictable on the basis of the micro (lower-level) facts that determine



the instantiation of the vacuously weak properties. Nevertheless, it is the vacuously weak properties that determine the nonvacuously weak ones, but not as realizers. For it is only by the cooperative intervention of the micro-latent powers that nonvacuously weak properties are realized.

Whether they are practically predictable is another matter. From the point of view of computational models (Symons 2008), where emergence has been usually related to predictability through simulations, the nonvacuously variety cannot be instantiated. For the rules governing the behaviour of the system have to be given explicitly in the computational model in order to allow the proper interactions of lower-level constituents and thus the proper resulting temporal evolution. Then all lower-level properties are manifested and expressed through the rules. And the fact that properties stated in the model's rules are usually interaction rules has no importance, for it is just in real situations that interactions can reveal an otherwise latency of powers. Thus, what Bedau (2003) identifies as an emergent property in computational models, in our distinction it corresponds to a vacuously weak emergent property.

What is the consequence for downward causation? Kim's exclusion argument now is disarmed, allowing us to argue that emergent phenomena, of the nonvacuously weak sort, are not epiphenomenal. The argument, in line with the one given by Shoemaker (2002), is the following.

Suppose  $M$  and  $M^*$  are nonvacuously weak emergent properties determined by the lower level properties  $P$  and  $P^*$ , respectively. Thus  $P$  and  $P^*$  involves only the micro-manifest powers of the composing lower-level entities, while the specifications of  $M$  and  $M^*$  involve both manifest and latent powers of the same entities. Suppose, also, that  $M$  causes the instantiation of  $M^*$ . Kim's first step is that  $M$  can cause  $M^*$  only by causing  $P^*$ . But  $P^*$  is just a determiner of  $M^*$ , not a realizer, because its instantiation is only a part of the instantiation of  $M^*$ ; then  $M$  causes  $P^*$  which in turn, in cooperation with the micro-latent properties of the composing elements of  $P^*$ , determine  $M^*$ . The same can be said about the relation between  $P$  and  $M$ :  $P$  determines  $M$ . Is this sufficient to say that  $P$  causes  $P^*$ ? No, because the manifest causal powers of  $P$  are not sufficient to determine the causal powers of  $M$ , which are the result of manifest and latent powers of the composing elements. Thus  $P$  cannot cause  $P^*$  alone, and there is no overdetermination involved. The complete picture is:  $P$  determines  $M$ ,  $M$  causes  $M^*$  by causing  $P^*$  that determines  $M^*$ .  $P$  alone cannot cause neither  $P^*$  nor  $M^*$ . Then it does not preempt  $M$  as a cause of  $P^*$  (or as a cause of  $M^*$ ), for  $M$ 's causal powers are obtained through manifest powers possessed by  $P$  and latent powers not possessed by  $P$ .

In order to give a more substantive understanding of micro-latency, as requested by Wilson (2010), we face the difficulty that micro-latent properties and causal powers are not predictable prior to their actualization in the course of specific interactions. Indeed, when micro-latent properties and causal powers are actualized in specific interactions their result is absorbed in the new whole exhibiting alleged new properties, and the isolation is no straightforward. This may be the purpose of some future research but, in any case, the example provided by Broad at least confirms the consistency of the notion.

If the argument is correct, I think the existence of nonvacuously weak emergent properties can support also an ontological claim in support of emergentism. They can be argued to be the properties having new irreducible causal powers, that is causal powers not reducible to the causal powers manifested by their isolated lower-level constituents. And, as shown in the previous argument, for them downward causation is admittedly consistent with the metaphysical assumption of a principle of no over-determination.

Why should we grant an ontological contribution in the case of nonvacuously weak emergence? Under the standard metaphysical assumption called 'Alexander's dictum', common to all varieties of emergentism, the answer is straightforward. Alexander's dictum is the view that to be real is to have new, non-derivative, causal powers. In nonvacuously weak emergence the causal powers of the putative emergent property are obtained through a combination of manifest and latent powers of the composing elements. Here, the non-derivativeness should be intended with regard to the micro-manifest powers, not to the latent ones. For it is only such powers that are knowable about lower-level elements, powers that are not into the emergent engendering process; and thus, outside the engendering process, they are the ones that are usable in order to predict the behaviour of the whole. But latent powers give a necessary contribution to the emergent properties of the whole, thus emergent properties of the nonvacuously weak sort are non-predictable and non-derivable.

To conclude, notice that the metaphysical assumption of the 'causal realization principle' (the view that if P realizes M then any cause of P must be a cause of M, and any cause of M must be a cause of P) and of the 'principle of causal inheritance' (the view that higher level occurrences inherit their causal powers from lower-level occurrences that realize them) is consistent with the scenario outlined with such varieties of weak emergence. Both principles are nonvacuously true in the variety of vacuously weak emergence, and vacuously true in the nonvacuously sort. For in the former case we have no latent powers, thus the lower-level determiner P is a realizer and all its causal powers are inherited by M; while, in the latter, P is not a realizer.

## 4 Weak Emergence and Social Structures

In social sciences the debate around emergence somehow corresponds to the debate between methodological holists (roughly, that social events are fully determined by social structures) and methodological individualists (roughly, social events can be completely accounted for by human individuals and their relations). I'm more inclined to think that a hybrid theory is the solution, as does for example Archer (1995), when she argues that social events are codetermined by structural forces and individual causal powers. In any case, emergence is of primary ontological importance as its absence would render impossible to talk about the autonomy of social structures, as well as about the alleged 'reality' (Le Bouillier 2003).

But emergentism, as Kim argued (1992), entails downward causation. Then emergent social theories can be successful just in case the claimed reality of emergent properties is reconciled with downward causation. First of all, weak emergence could be the answer. Weak emergence, contrary to strong emergence, takes the causal powers of the system to be explainable by the structure of the system, that is the combination of parts and their relations. But, while some sociologists (Elder-Vass 2011) argue that the effects of social organization are not reducible to lower-level actions, in particular to the level of individual actors, others (Le Boutillier 2013) claim the reducibility to individual actors. And these perspectives should be also complemented with views expressing the interdependence of both levels (Giddens 1979).

A helpful distinction is a slightly modified version of the one provided by Durkheim (1982) about social facts, revisited for the purpose of the paper. We can consider two categories of social facts: the ‘morphological’ types, that is “[...] the number and nature of the elementary parts which constitute society, the way in which they are articulated [...]”, and the ‘cultural’ types, a conflation between Durkheim’s institutional and non-institutional types, collecting shared beliefs, ideas and moral attitudes common to social groups. The consistency of weak emergence is straightforward in the case of morphological types, whilst it is dubious in the case of cultural types (Le Boutillier 2003). It seems, instead, that if we consider the nonvacuously weak kind of emergence, we could explain also cultural types as emergence properties.

We cannot elude that it is the specific combination of parts which gives to the system some causal powers. The account of nonvacuously weak emergence provides a theory in which individuals and their interactions, with their manifest and latent properties, are considered as cooperating in the engendering process of emergence. Thus, emergence is explainable with, but not reducible to, lower levels. Furthermore, downward causation is meaningful and plausible.

The starting premise, in the social level analyses, is that the set of features that human individuals manifest when they are isolated are different from the set activated and shown during interactions with other individuals in a social environment. This is coherent with the most part of social and psychological theories. From this premise, we may say that individuals have both manifest powers, exercised when they are not into a social emergent engendering process, and latent powers, manifested and exercised only when they are into a social emergent engendering process. For example Durkheim’s collective conscience, meaning the commonality of beliefs in the individuals of social groups, is a weak emergent feature in which participate both individual manifest powers (biological features, first of all) and latent powers (agents’ beliefs and attitudes, that is individual conscience). The latter activated only by a diachronic process of interactions. Then it is a case of nonvacuous weak emergence.

Another example could be what happens in organization, where formal and informal powers create specific relations between superordinates and subordinates. Formal organization rules are manifest. They establish power relations that have effects on the organization roles, which in themselves are neither rules or behaviour, and affect social relations between superordinates and subordinates giving rise to informal powers, which are latent powers.

And if we agree with Sawyer (2005) that “[...] emergent social structure may constrain individuals, apart from any consideration of the subjective states of actors, even though that structure emerges from those very same individuals”, then we have a coherent and illuminating explanation of how social structures (the emergent properties) and social actors (the composing elements showing manifest and latent features) determine each other. Through a diachronic process that rises nonvacuously weak emergent features, where reflexive downward causation is consistent.

Thus, the variety of weak emergence defended in this paper provides: (a) a hybrid explanation of social emergent structures in terms of social actors (where manifest and latent powers are activated); (b) a nonreductive ontological account of social emergent structures; and (c) a support to the claim that causal powers of social structures are non-reducible to the causal powers of the mere individuals, and thus there are causal power possessed by the isolated individuals which are distinct from causal powers exercised by the social structure.

## 5 Conclusions

An ontology amenable to the possibility of emergent social properties, contrary to mere physicalism, allows to progress more easily in the social scientific enquiry. The nonvacuously weak emergence (maybe unfortunate in its name, but I had not better ideas to choose from) seems to be an attractive solution to this aim. It originates firstly in a stance previously proposed by Shoemaker (2002), claiming that composing elements at the lower level have manifest powers, exercised in all contextual situations, and latent powers, manifested only in specific contextual situations. It allows to defend the possibility of emergence, both on the explanatory and the ontological level, with no incoherent consequences, neither in the usually problematic downward causation. And when applied in the social level, it explains how and why social structures are explanatory dependent on, and ontologically autonomous from, the individual agents level.

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**Part III**  
**New Perspectives in Quantitative Theories**  
**and Models**

# Fuzzy Sets and Algebraic Hyperoperations to Model Interpersonal Relations

Šárka Hošková-Mayerová and Antonio Maturo

**Abstract** In Social Sciences propositions and descriptions of interpersonal relationships are given by means of linguistic expressions, which cannot be formalized with the classic binary logic. Then a necessary tool are fuzzy sets that give the possibility to measure the degree of belonging of an element to a set described by a linguistic property or the degree of a relation between individuals. Moreover many times there is uncertainty on the result of an aggregation operation and we can have the necessity to consider together many possible results of the interaction of any ordered pair of elements, e.g. individuals. We propose the algebraic hyperoperations as very useful instruments to manage these types of uncertainty. We show as fuzzy relations and hypergroupoids permit to have an efficient representations of many aspects of social phenomena.

**Keywords** Social relations · Fuzzy relations · Hypergroupoids · Mathematical models for social sciences

## 1 Introduction

Social Relations are described with mathematical models by many authors (e.g. Moreno 1934, 1951). A more complete description can be obtained if we utilize instruments to manage semantic uncertainty. At this aim we propose to introduce models based on *fuzzy sets* and *algebraic hyperoperations*. The first one give the possibility to measure the degree of belonging of an element to a set described by a

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linguistic property or the degree of a relation between individuals, the second one permit to consider together many possible results of the interaction of any ordered pair of elements. In Social Sciences these aspects are very important and the instrument we propose can be very efficient for modelling the complexity of social phenomena.

The paper is organized as follows:

Firstly, in Sect. 2, we review some basic definitions on fuzzy sets and fuzzy relations and discuss the modelling of social relations with fuzzy sets.

In Sect. 3, we give an introduction to the theory of algebraic hyperstructures, its history and motivation, and discuss the formalizing social relations with this mathematical tool. In particular we introduce some particular social relations and the correspondent associated algebraic hyperstructures for modelling these relations.

In Sect. 4, we study some mathematical properties of the introduced relations and hypergroupoids and their social meanings.

Finally, in Sect. 5 we present some conclusions and perspective of research in modelling problems of social behaviors, and coalitions, with fuzzy relations and hypergroupoids.

## 2 Modelling Social Relations with Fuzzy Sets

### 2.1 Basic Definition on Fuzzy Sets and Fuzzy Relations

Let us recall some basic results on the fuzzy relations that we use in the following.

Let  $U$  be a nonempty set (in Social Science it can be, e.g., a set of individuals, or a set of media, or a set of social conditions, etc.).

A fuzzy set  $\mu$  on  $U$  is a function  $\mu: U \rightarrow [0,1]$ . The meaning of such a function is that it represents a *linguistic property* in the set  $U$ , (e.g., the property of individuals to be clever, old, educated, etc.), and for every individual  $x \in U$ ,  $\mu(x)$  is the degree to which the property holds. If  $\mu(x) = 1$ , then the individual  $x$  has the property in the maximum possible degree. If  $\mu(x) = 0$  then the individual does not meet the property at all. Let us denote by  $F(U)$  the set of all fuzzy sets on  $U$ .

Zadeh, in many papers (1965, 1975a, b, c), managed to impose the theory of fuzzy sets, showing significant and consistent applications. Some important books on fuzzy sets and fuzzy logic are (Klir and Yuan 1995; Ross 1995; Dubois and Prade 1988). Some interesting applications of fuzzy sets to Social Sciences are considered by Ragin (2000).

A fuzzy relation  $R$  on  $U$  is a fuzzy set on  $U \times U$ , i.e., a function  $R: U \times U \rightarrow [0,1]$ . For every  $(x, y) \in U$  we write also  $x R y$  to denote  $R(x, y)$ . The



meaning of a fuzzy relation is the mathematical representation of a linguistic relation in the set  $U$ , (e.g., the property of the individual  $x$  to be friend, trustful, relative, to the individual  $y$ , or dominated by  $y$  etc.). If  $x R y = 1$ , then the individual  $x$  has the relation with  $y$  in the maximum possible degree. On the contrary, if  $x R y = 0$  then the individual  $x$  does not have the relation with  $y$  at all. We denote by  $R(U)$  the set of all fuzzy relations on  $U$ .

## 2.2 Fuzzy Relations in Social Sciences

One of the bases of Social Sciences are the relations among persons. Usually a relation is described by a linguistic proposition and fuzzy sets are a tool to represent in mathematical form concepts expressed in a imprecise form. If  $U$  is a set of individuals (the universal set to consider), usually it is not possible to affirm that for an ordered pair  $(x, y)$  of persons belonging to  $U$  a relation  $R$  given in a linguistic form holds or not at all, as happens in a binary context.

For instance, let us consider one of the linguistic relations “friendship”, “co-operation between colleagues”, “affection for a person”, “confidence in a person for a job” and other interpersonal relations. A correct and overall complete modeling of each of these relations is obtained only if we assign to every pair  $(x, y) \in U \times U$  a real number  $R(x, y) = x R y$  belonging to interval  $[0,1]$  that measures the extent to which a suitable decision maker (e.g. a mediator) believes the relation holds.

This leads us to model the relation, as a fuzzy set with domain  $U \times U$ , that is a function:

$$R: (x, y) \in U \times U \rightarrow R(x, y) \in [0, 1]. \quad (1)$$

Another important aspect consists in a fuzzy relation between a set  $U$  of persons and a set  $\Omega$  of objects. It is formalized by a fuzzy set with domain  $U \times \Omega$ , i.e. a function:

$$\rho : (x, \omega) \in U \times \Omega \rightarrow \rho(x, \omega) \in [0, 1]. \quad (2)$$

For instance, let  $U$  be a set of children and  $\Omega$  a set of media. Some example of media that transmit information to children and then are in relation with children are books, television, internet, cinemas, parents, teachers, and so on. Some possible fuzzy relations are: “confidence in the media”, “dependence on the media”, “concentration in the use of the media”, and so on. If  $\rho$  is one of these fuzzy relations,  $\rho(x, \omega)$  means the degree to which  $x$  is in the relation  $\rho$  with  $\omega$ .

### 3 Modelling Social Relations with Algebraic Hyperstructures

#### 3.1 Basic Definition on Hyperstructures

The first paper on the hyperstructures date back to 1934 (Marty 1934). Thereafter there are some works on the subject (Eaton 1940; Grifit 1938), but the theory has developed especially since the book (Prenowitz and Jantosciak 1979) and was consolidated with the publication of the book (Corsini 1993). Since then he has developed impetuous (Corsini 1994, 2003, 2006; Corsini and Tofan 1997; Corsini and Leoreanu 2003; Cristea 2007, 2009). (Cristea and Hoskova 2009; Hoskova and Chvalina 2009; Hoskova 2012). In order to propose some applications for Social Sciences let us introduce the necessary basic concepts.

A *hypergroupoid* is a non-empty set  $G$ , together with a multivalued function  $\alpha: G \times G \rightarrow G$ , sometimes called the *multiplication* on  $G$ , i.e. a function  $\alpha: G \times G \rightarrow P^*(G) = P(G) - \{\emptyset\}$ , that to every ordered pair of elements of  $G$  associates a nonempty subset of  $G$ . Usually, we write  $a \alpha b$ , or sometime simply  $ab$  (if there is no possibility of misunderstanding), instead of  $\alpha(a, b)$ . Furthermore, if  $a \alpha b = \{c\}$ , then we use the abbreviation  $a \alpha b = c$ .

An example in the Euclidean plane:  $\alpha$  can be the function that to every pair of points associates the segment joining them (Dresher 1938); an example in a group of students:  $\alpha$  is the function that to every pair  $(a, b)$  of students associates the students with an age between the ages of  $a$  and  $b$  (including  $a$  and  $b$ ).

Given a hypergroupoid  $(G, \alpha)$ , the multiplication “ $\alpha$ ” induces a binary operation (also written  $\alpha$ ) on  $P(G)$ , the powerset of  $G$ , given by  $A \alpha B = \cup \{a \alpha b \mid a \in A, b \in B\}$ . As a result, we have an induced groupoid on  $P(G)$ . Instead of writing  $\{a\} \alpha B$ ,  $A \alpha \{b\}$ , and  $\{a\} \alpha \{b\}$ , we write  $\{a \alpha B\}$ ,  $\{A \alpha b\}$ , and  $\{a \alpha b\}$ , respectively.

From now on, when we write  $(a \alpha b) \alpha c$ , we mean “first, take the product  $\alpha$  of  $a$  and  $b$  via the multivalued binary operation on  $G$ , then take the product of the set  $a \alpha b$  with the element  $c$ , under the induced binary operation on  $P(G)$ ”.

A hypergroupoid  $(G, \alpha)$  is said to be:

- *commutative* if  $a \alpha b = b \alpha a$  for all  $a, b \in G$ ;
- a *quasi-hypergroup*  $G$  if  $aG = Ga = G$  for all  $a \in G$ ;
- *associative* if  $(a \alpha b) \alpha c = a \alpha (b \alpha c)$ .

A hypergroup is an associative quasi-hypergroup.

*Remark 3.1* Obtaining associativity of “ $\alpha$ ” on  $G$ , however, is trickier. Then, given a hypergroupoid  $(G, \alpha)$ , always we have to consider some feeble types of associativity. We may define:

- *right associativity*  $(ab)c \subseteq a(bc)$ ;
- *left associativity*  $a(bc) \subseteq (ab)c$ ;
- *weak associativity*  $(ab)c \cap a(bc) \neq \emptyset$ .

*Example 3.2* Let  $G$  be a group and  $H$  a subgroup of  $G$ . Let  $M$  be the collection of all left cosets of  $H$  in  $G$ . For  $aH, bH \in M$ , set  $aH \alpha bH := \{cH \mid c = ahb, h \in H\}$ . Marty has proved that  $M$  is a hypergroup with multiplication “ $\alpha$ ”.

Let  $G$  be a hypergroupoid. An element  $e \in G$  is said to be an identity if for all  $a \in G$ ,  $a \in ea$  and  $a \in ae$ . Moreover, if  $ea = ae = a$  for all  $a \in G$ ,  $e$  is said to be an absolute identity. Let us remark that if  $e, f \in G$  are both absolute identities, then  $e = ef = f$ , so  $G$  can have at most one absolute identity.

Suppose  $G$  is a hypergroupoid with an identity  $e$ . An element  $b \in G$  is said to be an inverse of  $a$  with respect to  $e$  if  $e \in ba$  and  $e \in ab$ . If  $e$  is an absolute identity we simply say that  $b$  is an inverse of  $a$ .

Sometimes it is necessary to generalize the concept of hypergroupoid allowing the multiplication result will be the empty set. Then the following definition is introduced.

A partial hypergroupoid is a nonempty set  $G$  together with a partial hyperoperation  $\alpha$ , i.e. a function  $\alpha: G \times G \rightarrow P(G)$ , where  $P(G)$  is the set of all subsets of  $G$ .

Of course, a partial hypergroupoid is a hypergroupoid if the image of the function  $\alpha$  is contained in  $P^*(G)$ , the set of all nonempty subsets of  $G$ .

### 3.2 *Modelling Social Relations with Algebraic Hyperstructures*

Some important issues in Social Science are the “formalization” of concept as: “are between”, “are individuate by two elements”, “are in particular subset containing two elements”, “are in a coalition individuate by two elements” and so on (Hoskova-Mayerova and Maturo 2013; Maturo et al. 2008, 2010; Vougiouklis 2011).

These concepts can be considered as “geometric concepts” because they generalize traditional geometric constructions as “the segment of a line as the set of points that are between two points”, “the line as the set of points individuate by two points”, “the vector space generated by two independent vectors”, and similar.

These “geometric concepts” can be efficacious formalized by introducing models based on algebraic hyperstructures, that are functions that to every ordered pair of elements of a set  $U$  associates a subset of  $U$ .

There are many links between the concepts of fuzzy relations and hyperstructures. From a fuzzy relation  $R$  we can obtain in many ways hyperstructures called “associated” to  $R$  or “generated” by  $R$  (Hoskova-Mayerova and Maturo 2013; Maturo et al. 2008, 2010; Vougiouklis 2011).

In the sequel we deal with a social context. We show how some social relations can be formalized as fuzzy relations, we introduce some associated hyperstructures and finally we interpret their meaning from a social point of view. Moreover, we propose a modeling with algebraic hyperoperations of coalitions of individuals.

Let  $R$  be a fuzzy relation on a set  $U$  of individuals (e.g. students, professors, players, etc.). In various social contexts  $xRy$  may make sense that  $x$  “likes (or prefers) for something”  $y$ , for example,  $x$  likes  $y$  for friendship,  $x$  prefers  $y$  for an

activity,  $x$  choose  $y$  to a party. Namely  $x$  plays an active role in decision-making, and  $y$  a passive role.

If  $R$  is a crisp relation, then  $x R y = 1$  ( $x$  like  $y$ ) or  $x R y = 0$  ( $x$  does not like  $y$ ): for example  $x$  chooses or does not choose  $y$  for a party. If  $R$  is a fuzzy relation, then  $x R y \in [0,1]$  and represents the *extent to which*  $x$  likes  $y$  for something, such as, for example, friendship or to perform an activity together.

We have the following possible intersection:

- $R(x, z) \wedge R(y, z)$  is the extent to which  $x$  and  $y$  agree in liking or preference of  $z$ , for example,  $\{x, y\}$  form a committee and  $z$  is a candidate;
- $R(z, x) \wedge R(z, y)$  is the measure wherein  $z$  considers  $x$  and  $y$  are similar;
- $R(x, z) \wedge R(z, y)$  could be the extent to which  $x$  agrees  $y$ , assuming  $z$  as an intermediary.

In this context, we can introduce the following meaningful partial hypergroupoids associated to  $R$ :

- *liking partial hypergroupoid*  $(U, \lambda)$  defined as  
 $\lambda: (x, y) \in U \times U \rightarrow x \lambda y = \{z \in U \times U: R(x, z) \wedge R(y, z) > 0\}$ ;
- *receiving partial hypergroupoid*  $(U, \rho)$  defined as  
 $\rho: (x, y) \in U \times U \rightarrow x \rho y = \{z \in U \times U: R(z, x) \wedge R(z, y) > 0\}$ ;
- *intermediate partial hypergroupoid*  $(U, \iota)$  defined as  
 $\iota: (x, y) \in U \times U \rightarrow x \iota y = \{z \in U \times U: R(x, z) \wedge R(z, y) > 0\}$ .

The conditions for these partial hypergroupoids to be hypergroupoids have very important social meanings.

The *liking partial hypergroupoid* is a hypergroupoid if the following property of “*liking convergence*” holds:

*“for every pair of individuals  $(x, y)$  of the set  $U$  there exists at least an element  $z \in U$  that receives some liking by both  $x$  and  $y$ , i.e.  $x$  and  $y$  agree to offer at least a minimal consideration on an individual  $z$  of the social group  $U$ .”*

If such condition is not valid we say that the social group has a “*disconnected liking agreement*”, i.e. there are “*opposing views in liking*”.

Similarly, the *receiving partial hypergroupoid* is a hypergroupoid if the following property of “*receiving convergence*” holds:

*“for every pair of individuals  $(x, y)$  of the set  $U$  there exists at least an element  $z \in U$  that gives some liking to both  $x$  and  $y$ , i.e. there exists an individual  $z$  of the social group  $U$  that have at least a minimal consideration on both  $x$  and  $y$ .”*

If such condition is not valid we say that the social group has a “*disconnected receiving agreement*” or “*opposing views in receiving*”.

Finally, the *intermediate partial hypergroupoid* is a hypergroupoid if the following property of “*intermediate convergence*” holds:

*“for every pair of individuals  $(x, y)$  of the set  $U$  there exists at least an element  $z \in U$  that  $x$  gives some liking to  $z$  and  $z$  to  $y$ , i.e. there exists an individual  $z$  of the social group  $U$  that creates, as an intermediate, at least a minimal consideration of  $x$  to  $y$ .”*

If such condition is not valid we say that the social group has a “*disconnected intermediate agreement*”.

In the sequel we assume that the social group we consider satisfy properties of liking, receiving, intermediate convergence, respectively.

In this case  $(U, \rho)$  and  $(U, \lambda)$  are commutative hypergroupoids.

### 3.3 Geometric Hypergroupoid Associated Social Relations

In the social context, let us call “*geometric hypergroupoid*” a hypergroupoid  $(U, \alpha)$  commutative and such that  $x \in x \alpha x$ . The choice of this name is due to the fact that, under the above conditions, it is possible to give some geometric representations.

Some very significant hyperstructures associated to social relations are the following. Let  $R$  be a fuzzy relation. We can introduce:

- the hyperstructure of “*between like relation*” defined  $\forall(x, y) \in U \times U$  as:  
 $x \alpha y = \{u \in U: \forall z \in U, R(x, z) \leq R(u, z) \leq R(y, z) \text{ or } R(y, z) \leq R(u, z) \leq R(x, z)\}$ ;
- the hyperstructure of “*between receiving relation*” defined  $\forall(x, y) \in U \times U$  as  
 $x \beta y = \{u \in U: \forall z \in U, R(z, x) \leq R(z, u) \leq R(z, y) \text{ or } R(z, y) \leq R(z, u) \leq R(z, x)\}$ .

For every  $x, y \in U, \{x, y\} \subseteq x \alpha y$  and  $\{x, y\} \subseteq x \beta y$ , then  $(U, \alpha)$  and  $(U, \beta)$  are hypergroupoids. The commutative property is evident. We can prove that they are commutative hypergroups.

*Example 3.3* To illustrate the concepts we give an example of “*between like relation  $\alpha$* ” and “*between receiving relation  $\beta$* ” associated to a fuzzy relation  $R$ .

Let us define the fuzzy relation  $R$  by the table:

R	a	b	c
a	0.1	0.3	0.3
b	0.2	0.4	0.7
c	0.1	0.4	0.6

Than we have

$$a \alpha b = \{a, b, c\}, a \alpha c = \{a, c\}, b \alpha c = \{b, c\}.$$

$$a \beta b = \{a, b\}, a \beta c = \{a, b, c\}, b \beta c = \{b, c\}.$$

## 4 Some Additional Mathematical Formalization for Social Groups

Let  $U$  be a set of individuals and let  $R$  be a reflexive fuzzy relation on  $S$ , i.e., for every  $x \in U$ ,  $x R x = 1$ . Moreover we assume  $R$  represents a meaningful linguistic relation in social sciences as “friendship”, “likes”, “loves”, etc. We denote with  $R^*$  the relation  $R \cup R^{-1}$ , called the *symmetric closure* of  $R$ , where  $R^{-1}$  is the inverse of  $R$ , i.e., for every  $x, y$  in  $U$ ,  $x R^* y = \max\{x R y, y R x\}$ .

For some social problem the following concepts of topological type can be useful. They describe, in some way, the areas of influence of individuals in the social group.

### 4.1 Neighborhoods Associated to a Reflexive Fuzzy Relation

**Definition 4.1** Let  $R$  be a reflexive fuzzy relation on  $U$ . Then we define

- the *active  $R$ -neighborhood of order 1* of  $x \in U$  as the set

$$A^R(x) = A_1^R(x) = \{z \in U: x R z > 0\};$$

- the *active  $R$ -neighborhood of order  $n > 1$*  of  $x \in U$  as the set

$$A_n^R(x) = \{z \in U: \exists x_1, x_2, \dots, x_{n-1} \in U: x R x_1 > 0, \\ \forall i < n - 2, x_i R x_{i+1} > 0, x_{n-1} R z > 0\};$$

- the *passive  $R$ -neighborhood of order 1* of  $x \in U$  as the set

$$P^R(x) = P_1^R(x) = \{z \in U: z R x > 0\};$$

- the *passive  $R$ -neighborhood of order  $n > 1$*  of  $x \in U$  as the set

$$P_n^R(x) = \{z \in U: \exists x_1, x_2, \dots, x_{n-1} \in S: z R x_1 > 0, \\ \forall i < n - 2, x_i R x_{i+1} > 0, x_{n-1} R x > 0\}.$$

**Definition 4.2** Let  $R$  be a reflexive fuzzy relation and let  $R^*$  its symmetric closure. Then we define

- the *global  $R$ -neighborhood of order 1* of  $x \in U$  as the set

$$G^R(x) = G_1^R(x) = \{z \in U: z R^* x > 0\};$$

- the *global R-neighborhood of order n > 1* of  $x \in U$  as the set

$$G_n^R(x) = \{z \in U: \exists x_1, x_2, \dots, x_{n-1} \in U: z R^* x_1 > 0, \\ \forall i < n - 2, x_i R^* x_{i+1} > 0, x_{n-1} R^* x > 0\}.$$

*Remark 4.3* From a social point of view, if R reduces to a crisp relation, an active neighborhood of order 1 of x can be seen as the set of all people that x chooses according to the rules given by the relation R, with the condition that he/she chooses also itself, while an active neighborhood of order 2 is the set of choices or by x or by an intermediary z. Moreover a passive neighborhood of order 1 of x is the set of people that choose x. A passive neighborhood of order 2 of x is the set of people who choose z either directly or through an intermediary.

A global neighborhood of order 1 of z is the union of the set of all people that z chooses and the set of all people chosen by z, according to the rules.

If R is a reflexive fuzzy relation, then an active neighborhood of order 1 of x can be seen as the set of all people z that x chooses with a positive agreement or a positive probability, etc. Analogous interpretations can be given for passive neighborhood or global neighborhood.

We can also define the areas of influence of a coalition X, as follows. For every  $n \in \mathbb{N}$ ,  $X \subseteq U$ , we put

$$A_n^R(X) = \bigcup_{z \in X} A_n^R(z), \quad P_n^R(X) = \bigcup_{z \in X} P_n^R(z), \quad G_n^R(X) = \bigcup_{z \in X} G_n^R(z).$$

## 4.2 $\vee$ -hyperoperations Associated to Fuzzy Relations

In addition to the hyperoperations defined in the previous section, there are many others that can be very useful to investigate the behavior or attitudes of a social group. Let us limit, by way of example, to the following, which we call  $\vee$ -hyperoperations.

**Definition 4.3** Let R be a reflexive fuzzy relation on U. For  $x, y \in U$  we define the  $\vee$ -hyperoperations:

- “*right directed*”,  $\sigma_1^r: (x, y) \in U \times U \rightarrow \{z \in U: x R z \vee z R y > 0\}$ ;
- “*left directed*”,  $\sigma_1^l: (x, y) \in U \times U \rightarrow \{z \in U: y R z \vee z R x > 0\}$ ;
- “*active*”  $\sigma_1^a: (x, y) \in U \times U \rightarrow \{z \in U: x R z \vee y R z > 0\}$ ;
- “*passive*”  $\sigma_1^p: (x, y) \in U \times U \rightarrow \{z \in U: z R x \vee z R y > 0\}$ .

These  $\vee$ -hyperoperations are not commutative. For example  $\sigma_1^r(x, y) = A^r(x) \cup P^r(y)$ , in general different from  $\sigma_1^r(y, x) = A^r(y) \cup P^r(x)$ . We can obtain a commutative  $\vee$ -hyperoperation if we replace R with  $R^*$ .

**Definition 4.4** Let  $R$  be a reflexive fuzzy relation and let  $R^*$  be its symmetric closure. Then we define *symmetric  $\vee$ -hyperoperation* associated to  $R$  the hyperoperation  $\bar{\sigma}_1^R$  as follows:  $\bar{\sigma}_1^R: (x, y) \in U \times U \rightarrow = \{z \in S: x R^* z \vee z R^* y > 0\}$ .

We have  $\bar{\sigma}_1^R(x, y) = G^R(x) \cup G^R(y) = \bar{\sigma}_1^R(y, x)$ , then  $\bar{\sigma}_1^R$  is commutative and so  $(U, \bar{\sigma}_1^R)$  is a geometric (eventually partial) hypergroupoid.

## 5 Conclusion and New Perspective of Research

We can introduce many other hyperoperations associated to a fuzzy relations. For example, by analogy with the  $\vee$ -hyperoperations we can introduce the  $\wedge$ -hyperoperations. More generally it can be considered a t-conorm “ $\oplus$ ” or a t-norm “ $\otimes$ ” and define  $\oplus$ -hyperoperations or  $\otimes$ -hyperoperations associated to a relation  $R$  on the set of individuals  $U$ . If  $\sigma$  is one of these hyperoperation, the most important aspect to consider is that  $x \sigma y$  is the result of a joint action between  $x$  and  $y$ , for example, a coalition.

If the relation  $R$  is symmetric then  $\sigma$  is commutative and the role of  $x$  and  $y$  is equal. If  $R$  is not symmetric one of the two is at different level than the other, for example, has a different power.

The hypothesis that  $(U, \sigma)$  is a hypergroupoid is equivalent to saying that the interaction between  $x$  and  $y$  produces at least the adhesion of an individual.

The associativity corresponds to the fact that, in the agreement between three individuals  $x, y, z$ , in order, the result is not determined on the pair of individuals that accords first, and then agree with the third individual. Typically, in social relations, that is only a weak associativity.

$(U, \sigma)$  is a quasi—hypergroup, if, for every  $x, y$ , there exist  $z, u$ , such that  $y \in x \sigma z$ , and  $y \in u \sigma x$ , i.e.  $y$  belongs at least to a coalition formed by  $x$  as first element and to one in which  $x$  is the second element. If it does not, we say that  $x$  can marginalize  $y$ .

In conclusion we can say that the condition that  $(U, \sigma)$  is a commutative hypergroup is equivalent to require conditions of social equity in forming coalitions  $x \sigma y$ , i.e.  $x$  and  $y$  have an equal role (commutativity), coalitions do not depend on the order in which three individuals make agreements, no one is marginalized by another.

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# Fuzzy Events, Fuzzy Probability and Applications in Economic and Social Sciences

Antonio Maturo and Fabrizio Maturo

**Abstract** In the subjective approach to the theory of probability, conditional events are always considered as propositions in a three valued logic (De Finetti in *Teoria delle probabilità*. Einaudi Editore, Torino, 1970; Coletti and Scozzafava in *Probabilistic logic in a coherent setting*. Kluwer Academic Publishers, London, 2002). Assuming a particular algebraic representation, we propose a definition of fuzzy event that generalizes the concepts of conditional event. Moreover we present some applications of fuzzy events in Social Science, e.g. in Decision Making under uncertainty. Generalizing the subjective approach to conditional probability by De Finetti, we propose some possible subjective definitions of fuzzy probability that are coherent with the axiomatic approach by Dubins to the finitely additive conditional probability. We propose some interpretations of fuzzy probability in Social Sciences, e.g. as an extension of a utility function. Finally, we explore some possible extensions of such concepts, defining fuzzy event and fuzzy probability of type 2 and we look for possible applications in Social Sciences, in particular in fuzzy decision making.

**Keywords** Fuzzy events · Subjective conditional probability · Subjective fuzzy probability · Decision making under uncertainty · Fuzzy decision making · Fuzzy events and fuzzy probability of type 2

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# 1 Fuzzy Events and Applications to Decision Making

There are many possibilities to introduce the concept of fuzzy event. In this paper we choose an approach that permits to consider a fuzzy events as an extension of the concept of conditional event considered by the scholars of subjective probability (De Finetti 1970; Coletti and Scozzafava 2002) and finitely additive conditional probability (Dubins 1975). Moreover a practical and interesting application of our definition is interpreting the vector of the scores of an alternative, in a problem of decision making in condition of uncertainty, as a fuzzy event.

Then, let us give the following definition:

**Definition 1.1** Let  $\Pi$  be a partition of the certain event. A *fuzzy event* with *domain*  $\Pi$  is a function  $X: \Pi \rightarrow [0, 1]$ . The union of the elements  $a \in \Pi$  such that  $X(a) > 1/2$  (resp.  $X(a) < 1/2$ ,  $X(a) = 1/2$ ) is said to be the *true part* of  $X$ , denoted with  $T_X$  (resp. *false part* of  $X$ , denoted with  $F_X$ , and *undetermined part* of  $X$ , denoted with  $U_X$ ).

The event  $D_X = T_X \cup F_X$  is the *determined part* of  $X$ . The *contrary* of  $X$  is the fuzzy event  $X^c: \Pi \rightarrow [0, 1]$  such that,  $\forall a \in \Pi$ ,  $X^c(a) = 1 - X(a)$ .

**Definition 1.2** A fuzzy event  $X: \Pi \rightarrow [0, 1]$  is said to be a *conditional event*, in functional form, if the range  $X(\Pi)$  is contained in  $\{0, 1/2, 1\}$ , in particular  $X$  is said to be an *event* (in functional form) if  $X(\Pi) \subseteq \{0, 1\}$ .

Let us denote with  $\Omega$  (called the *totally true event*),  $\emptyset$  (*totally false*), and  $U$  (*totally undetermined*), the fuzzy events with  $X(\Pi) = \{1\}$ ,  $X(\Pi) = \{0\}$ , and  $X(\Pi) = \{1/2\}$ , respectively.

Let  $V_X$  be the set of values assumed by the fuzzy event  $X: \Pi \rightarrow [0, 1]$ . For all  $v \in V_X$ , the union of the  $a \in \Pi$  such that  $X(a) = v$  is called *part at level*  $v$  of  $X$ , denoted  $X_v$ . The fuzzy event  $X^*: \{X_v, v \in V_X\} \rightarrow [0, 1]$  that associates to  $X_v$  the number  $v$  is said to be the *normal form* of  $X$ . Using a slight modification of the notations introduced by Zadeh and alii (Zadeh 1965, 1968, Klir and Yuan 1995), we write  $X = \{X_v/v, v \in V_X\}$ .

For each fuzzy event  $X: \Pi \rightarrow [0, 1]$  with set of values  $V_X$ ,  $X = \{X_v/v, v \in V_X\}$ , we put  $X^+ = \{X_v/v, v \in V_X, v > 1/2\}$ ,  $X^- = \{X_v/v, v \in V_X, v < 1/2\}$ .

If  $X$  is a conditional event then we write also  $X = (T_X, U_X, F_X)$ , where  $(T_X, U_X, F_X)$  is called *algebraic form* of  $X$ . If  $D_X \neq \emptyset$ , we can identify  $X$  with the conditional event, in usual form,  $T_X|D_X$ .

Let  $X$  be a fuzzy event. The conditional event  $X_0 = (T_X, U_X, F_X)$ , i.e. with domain  $\Pi$  and such that  $X_0(a) = 1, 1/2, 0$  depending on which  $X(a) > 1/2$ ,  $X(a) = 1/2$ ,  $X(a) < 1/2$ , is said to be the *crisp approximation* of  $X$ .

Two fuzzy events are said to be *equivalent* if they have the same normal form. In particular two conditional events, in functional form, are equivalent if and only if they have the same algebraic form.

Previous definition starts from the idea that, if  $a \in \Pi$  is verified, we assume intuitively that:

- (a) X is more true than false if  $X(a) > 1/2$ ;
- (b) X is more false than true if  $X(a) < 1/2$ ;
- (c) X is equally true or false if  $X(a) = 1/2$ , and in this case it remains undetermined the possibility of favoring one of two values: *true* or *false*.

A possible practical interpretation of the concept of fuzzy event is in the theory of decision making in condition of uncertainty.

We assume that there is an objective O that a decision maker D want to achieve. In condition of uncertainty there is a partition of the certain event,  $\Pi = \{\Theta_j, j \in J\}$ , with at least two elements, whose element are called the *states of nature*. The decision maker D must choose an alternative  $A_i$  in a set  $A = \{A_i, i \in I\}$  of alternatives. Moreover, we suppose that, with a suitable procedure, to every pair  $(A_i, \Theta_j)$  is associated a number  $a_{ij} \in [0, 1]$  that represents the extent to which the objective O is satisfied if the alternative  $A_i$  is chosen and there is the state of nature  $\Theta_j$ . For every  $i \in I$ , the manner in which the alternative  $A_i$  is consistent with the objective O is represented by the *score function*  $X_i: \Theta_j \in \Pi \rightarrow a_{ij} \in [0, 1]$ .  $X_i$  is a fuzzy event, that we call the *fuzzy event associated* to  $A_i$ .

If mixed alternative are allowed, then the fuzzy events associated to the decision making problem are all the convex linear combinations of the fuzzy events  $X_i$ .

## 2 Subjective Fuzzy Probability and Applications in Decision Making

Suppose, from now on, that the domains of fuzzy events considered are finite. We introduce an approach to the fuzzy probability based on a bet. In this way we get an extension of the subjective conditional probability considered in (De Finetti 1970; Coletti and Scozzafava 2002; Maturo 2000).

Let  $X: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$  be a fuzzy event,  $X(E_i) = x_i$ . We assume the following steps of the bet:

1. a decision maker D assigns an increasing “utility function”  $g: [0, 1] \rightarrow [-1, 1]$ , satisfying the conditions  $g(0) = -1, g(1/2) = 0, g(1) = 1$ ;
2. the decision maker pays the sum  $p S$  (the bet), where  $p = p(X)$  is the fuzzy probability of X, to be determined, and receives the sum:

$$G = \begin{cases} [(1 - p) g(x_i) + p] S & \text{if } x_i > 1/2 \\ p S & \text{if } x_i = 1/2 \\ [p g(x_i) + p] S & \text{if } x_i < 1/2 \end{cases}$$

G is an increasing function with domain  $\{x_1, x_2, \dots, x_n\}$  and co-domain  $[0, S]$ . Considering, for every event  $E_i$ , the characteristic function  $[E_i]$ , we assume the gain of the bettor D is the random number:

$$G = [(1 - p)\Sigma\{g(x_i)|E_i: x_i > 1/2\} + p\Sigma\{g(x_i)|E_i: x_i < 1/2\}] S.p'(X) = p(X) \cap [0, 1], \tag{2.1}$$

Some desirable conditions on  $g(x)$  are:

- (a)  $g(x) = -g(1 - x)$  (symmetry);
- (b)  $g(x) \neq 0$  for  $x \neq 1/2$  (non-null utility);
- (c)  $g(x)$  is strictly increasing;
- (d)  $g(x)$  is continuous.

From now on we assume that at least the properties of symmetry and non-null utility hold.

The bet is coherent if and only if the prevision of G is null. If  $p^*: \Pi \rightarrow [0, 1]$  is a probability in the algebra of events generated by  $\Pi$  we obtain the formula:

$$[\Sigma\{g(x_i)p^*(E_i): x_i > 1/2\} + \Sigma\{-g(x_i)p^*(E_i): x_i < 1/2\}] p = \Sigma\{g(x_i)p^*(E_i): x_i > 1/2\}. \tag{2.2}$$

The property of non-null utility imply that we obtain a single coherent value for p if and only if  $p^*(D_X) \neq 0$ .

Precisely, if we put

$$Q_X^+ = \Sigma\{g(x_i)p^*(E_i): x_i > 1/2\}, \tag{2.3}$$

$$Q_X^- = \Sigma\{-g(x_i)p^*(E_i): x_i < 1/2\}, Q_X = Q_X^+ + Q_X^-,$$

we have formulae:

$$p(X) = Q_X^+ / Q_X. \tag{2.4}$$

Then we introduce the following definition.

**Definition 2.1** Let  $X: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$  be a fuzzy event,  $X(E_i) = x_i$ ,  $p^*: \Pi \rightarrow [0, 1]$  a probability in  $\Pi$  such that  $p^*(D_X) \neq 0$ , and  $g: [0, 1] \rightarrow [-1, 1]$  an increasing function satisfying the conditions  $g(0) = -1$ ,  $g(1/2) = 0$ ,  $g(1) = 1$ ;  $g(x) = -g(1 - x)$ ;  $g(x) \neq 0$  for  $x \neq 1/2$ . We define  $(g, p^*)$ —*subjective fuzzy probability* of X the number  $p(X)$  obtained by the above formulas (2.3) and (2.4).

*Remark 2.2* If the range of X is contained in  $\{0, 1/2, 1\}$  then  $p(X)$  is independent on g and reduces to conditional probability if  $U_X \neq \emptyset$  and to the (unconditional) probability of the event  $X^{-1}(1)$  if  $U_X = \emptyset$ .

**Definition 2.3** We define *crisp approximation* of  $p(X)$  the probability of the conditional event  $X_0$ , crisp approximation of  $X$ . Precisely, if we put  $Q_{X_0} = p^*(D_X)$ ,  $Q_{X_0}^+ = p^*(T_X)$ ,  $Q_{X_0}^- = p^*(F_X)$ , we have:

$$p(X_0) = Q_{X_0}^+ / Q_{X_0}, \tag{2.5}$$

the usual formula of the conditional event.

*Example 2.4* Two particular cases of functions  $g$  satisfying the conditions of the definition 2.1 are:

1. The *crisp function*:  $g(x) = -1$  for  $x < 1/2$ , and  $g(x) = 1$ , for  $x > 1/2$ .  
The function  $g(x)$  satisfies the conditions of symmetry and non-null utility, but it is neither strictly increasing nor continuous. Formula (2.4) reduces to the classical one of the conditional probability:

$$p(X) = p(X_0) = p^*(T_X) / p^*(D_X). \tag{2.6}$$

2. The *linear function*:  $g(x) = 2x - 1$ .  
The function  $g(x)$  is also strictly increasing and continuous. We have:

$$\begin{aligned} Q_X^+ &= 2 \sum \{x_i p^*(E_i) : x_i > 1/2\} - p^*(T_X), \\ Q_X^- &= p^*(F_X) - 2 \sum \{x_i p^*(E_i) : x_i < 1/2\}. \end{aligned} \tag{2.7}$$

*Remark 2.5* Of course we can find many functions satisfying the conditions (a), (b), many of which also meet (c), (d). The choice of function depends on the context and the meaning that should be given to the  $(g, p^*)$ —subjective fuzzy probability. Hereinafter, for brevity, we will use the notation *subjective fuzzy probability* to indicate a  $(g, p^*)$ —subjective fuzzy probability.

A possible practical interpretation of the concept of subjective fuzzy probability is in the theory of decision making in condition of uncertainty. Let  $O$  be the objective and let  $\Pi = \{\Theta_j, j \in J\}$  be the set of states of nature. Then, to every alternative  $A_i, i \in I$ , is associated the fuzzy event  $X_i: \Theta_j \in \Pi \rightarrow a_{ij} \in [0, 1]$ .

Let  $g: [0, 1] \rightarrow [-1, 1]$  be a “utility function”, satisfying the conditions  $g(0) = -1, g(1/2) = 0, g(1) = 1$ , and the of symmetry and non-null utility. For every  $i \in I$  we can define:

- (a) the *utility* or *positive impact* of  $A_i$ , as  $Q_{X_i}^+ = \sum_j \{g(a_{ij}) p^*(\Theta_j) : a_{ij} > 1/2\}$ ;
- (b) the *disutility* or *negative impact* of  $A_i$ , as  $Q_{X_i}^- = \sum_j \{-g(a_{ij}) p^*(\Theta_j) : a_{ij} < 1/2\}$ ;
- (c) the *total impact* of  $A_i$ , defined as  $Q_{X_i} = Q_{X_i}^+ + Q_{X_i}^-$ .

The subjective fuzzy probability  $p(A_i) = Q_{X_i}^+ / Q_{X_i}$  is the fraction of positive impact in relation to total impact. In suitable contexts, a possible criterion of choice among multiple alternatives can be to prefer the alternatives  $A_i$  that maximize  $p(A_i)$ .

### 3 Operations on Fuzzy Events and Properties of the Subjective Fuzzy Probability

Now we prove some properties of the subjective fuzzy probability introduced in Sec. 2. In particular, we show that, with particular conditions, the subjective fuzzy probability satisfies a suitable extension of the axioms given in (Dubins 1975) for the conditional probability. At this aim we introduce some definitions, that are extensions of the correspondent definitions for conditional events. Without loss of generality, considering, eventually, refinements of the domains of fuzzy events, we can assume that each pair of fuzzy events considered have the same domain.

**Definition 3.1** Let  $X: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ ,  $Y: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ , be two fuzzy events,  $X(E_i) = x_i$ ,  $Y(E_i) = y_i$ . We say that  $X$  and  $Y$  are:

- *strictly homogeneous*, if  $x_i = y_i$  or  $x_i = 1 - y_i$ ;
- *homogeneous*, if  $D_X = D_Y$ ;
- *disjoint*, if  $x_i + y_i \leq 1$ , i.e.  $E_i \subseteq T_X \Rightarrow E_i \subseteq F_Y$ ;
- *exhaustive*, if  $x_i + y_i \geq 1$ , i.e.  $E_i \subseteq F_X \Rightarrow E_i \subseteq T_Y$ .

The strict homogeneity is equivalent to the fact that the values  $x_i$  and  $y_i$  are equidistant from  $1/2$ . In particular ( $X$  and  $Y$  strictly homogeneous)  $\Rightarrow$  ( $X$  and  $Y$  homogeneous), and, if  $X$  and  $Y$  are conditional events then we have also ( $X$  and  $Y$  homogeneous)  $\Rightarrow$  ( $X$  and  $Y$  strictly homogeneous).

**Proposition 3.2** *Let  $X$  and  $Y$  be two homogeneous fuzzy events. Then they are:*

- *disjoint if and only if  $T_X \cap T_Y = \emptyset$ ;*
- *exhaustive if and only if  $F_X \cap F_Y = \emptyset$ .*

**Definition 3.3** Let  $X: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ ,  $Y: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ , be two fuzzy events,  $X(E_i) = x_i$ ,  $Y(E_i) = y_i$ . We define:

- the *union*  $X \cup Y: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ , as  $(X \cup Y)(E_i) = \max\{x_i, y_i\}$ ;
- the *intersection*  $X \cap Y: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ , as  $(X \cap Y)(E_i) = \min\{x_i, y_i\}$ ;
- the *implication*  $X \rightarrow Y: \Pi = \{E_1, E_2, \dots, E_n\} \rightarrow [0, 1]$ , as  $(X \rightarrow Y) = X \cup Y$ .

From previous definition, it follows:

**Proposition 3.4** *Let  $X$  and  $Y$  be two fuzzy events. If they are homogeneous (resp. strictly homogeneous), then also  $X^c$ ,  $Y^c$ ,  $X \cup Y$ ,  $X \cap Y$ ,  $X \rightarrow Y$  are homogeneous (resp. strictly homogeneous) with  $X$  and  $Y$ .*

**Proposition 3.5** *Let  $X$  and  $Y$  be two fuzzy events. The following properties are equivalent:*

- $X$  and  $Y$  are strictly homogeneous;
- $X \cup X^c = Y \cup Y^c$ ;
- $X \cap X^c = Y \cap Y^c$ .

**Proposition 3.6** *Let  $X$  and  $Y$  be two homogeneous fuzzy events. Then they are:*

- *disjoint if and only if  $T_{X \cap Y} = \emptyset$ ;*
- *exhaustive if and only if  $F_{X \cap Y} = \emptyset$ .*

**Definition 3.7** Let  $K$  be a nonempty subset of  $[0, 1]$ . We say that  $K$  is *symmetric* if  $x \in K \Rightarrow (1 - x) \in K$ .

**Proposition 3.8** *Let  $\mathfrak{J}(\mathbf{E}, K)$  be the family of the fuzzy events  $X: \Pi \rightarrow K \subseteq [0, 1]$  with the domain  $\Pi$  contained in an algebra of events  $\mathbf{E}$  and range contained in  $K$ . If  $K$  is symmetric then  $(X \in \mathfrak{J}(\mathbf{E}, K), Y \text{ strictly homogeneous with } X) \Rightarrow Y \in \mathfrak{J}(\mathbf{E}, K)$ .*

**Definition 3.9** Let  $K$  be a symmetric nonempty subset of  $[0, 1]$ ,  $\mathbf{E}$  an algebra of events and  $\mathfrak{J}(\mathbf{E}, K)$  the family of the fuzzy events  $X: \Pi \rightarrow K \subseteq [0, 1]$  with the domain  $\Pi$  contained in  $\mathbf{E}$  and range contained in  $K$ . We define *finitely additive fuzzy probability* on  $\mathfrak{J}(\mathbf{E}, K)$  every function  $p: X \in \mathfrak{J}^*(\mathbf{E}, K) = \mathfrak{J}(\mathbf{E}, K) - \{U\} \rightarrow p(X) \in [0, 1]$  such that:

- (PF1)  $\forall X, Y \in \mathfrak{J}^*(\mathbf{E}, K), (T_X \cap T_Y = \emptyset, X \cup X^c = Y \cup Y^c) \Rightarrow p(X \cup Y) = p(X) + p(Y)$ ;
- (PF2)  $\forall X \in \mathfrak{J}^*(\mathbf{E}, K), (F_X = \emptyset) \Rightarrow p(X) = 1$ ;
- (PF3)  $\forall X, Y, Z \in \mathfrak{J}^*(\mathbf{E}, K)$ ,

$$(X^+ = Z^+, (X \cup X^c)^+ = Y^+, Y \cup Y^c = Z \cup Z^c) \Rightarrow p(X) p(Y) = p(Z). \quad (3.1)$$

*Remark 3.10* Let  $\mathbf{C}(\mathbf{E})$  be the family of the conditional events  $X: \Pi \rightarrow [0, 1]$  with the domain  $\Pi$  contained in an algebra of events  $\mathbf{E}$ . Then  $K = \{0, 1/2, 1\}$  and, for every  $X, Y, Z \in \mathbf{C}^*(\mathbf{E}) = \mathbf{C}(\mathbf{E}) - \{U\}$ , properties (PF1), (PF2), (PF3) reduce to the:

- (PC1)  $\forall X, Y \in \mathbf{C}^*(\mathbf{E}), (T_X \cap T_Y = \emptyset, D_X = D_Y) \Rightarrow p(X \cup Y) = p(X) + p(Y)$ ;
- (PC2)  $\forall X \in \mathbf{C}^*(\mathbf{E}), (F_X = \emptyset) \Rightarrow p(X) = 1$ ;
- (PC3)  $\forall X, Y, Z \in \mathbf{C}^*(\mathbf{E}), (T_X = T_Y, D_X = T_Y, D_Y = D_Z) \Rightarrow p(X) p(Y) = p(Z)$

Then, in this case, the definition (3.9) reduces, with an appropriate change of symbolism, to the classical axiomatic definition of finitely additive conditional probability given in (Dubin 1975).

We prove that the  $(g, p^*)$ —subjective fuzzy probability, defined in Sect. 2, satisfies the conditions (PF1), (PF2) and (PF3) of the definition 3.9 and then, according to this definition, it is a finitely additive fuzzy probability on  $\mathfrak{J}(\mathbf{E}, K)$ .

From now on, we assume  $K$  is a symmetric nonempty subset of  $[0, 1]$ ,  $\mathbf{E}$  is a finite algebra of events, and  $p^*$  is a probability on  $\mathbf{E}$  such that, for any  $A \in \mathbf{E}$ ,  $p^*(A) = 0 \Rightarrow A = \emptyset$ .

**Proposition 3.11** *Let  $\mathfrak{J}(\mathbf{E}, K)$  be the family of the fuzzy events  $X: \Pi \rightarrow K \subseteq [0, 1]$  with the domain  $\Pi$  contained in the algebra of events  $\mathbf{E}$ . If  $p$  is a  $(g, p^*)$ —subjective fuzzy probability (as defined in Sect. 2), then for all strictly homogeneous and disjoint fuzzy events  $X, Y \in \mathfrak{J}^*(\mathbf{E}, K)$ , we have:*



$$p(X \cup Y) = p(X) + p(Y). \tag{3.2}$$

*Proof* Considering possibly a refinement, you can always assume that  $X$  and  $Y$  have the same domain  $\Pi = \{A_1, A_2, \dots, A_n\}$ . Let  $X(A_i) = x_i$ ,  $Y(A_i) = y_i$ . From the condition of strictly homogeneity,  $x_i = y_i$ , or  $x_i = 1 - y_i$ . Let  $g: [0, 1] \rightarrow [-1, 1]$  be an increasing function satisfying the conditions  $g(0) = -1$ ,  $g(1/2) = 0$ ,  $g(1) = 1$ ;  $g(x) = -g(1 - x)$ ;  $g(x) \neq 0$  for  $x \neq 1/2$ , and  $p^*$  a probability on  $\mathbf{E}$ . Then  $|g(x)| = |g(1 - x)|$  and so:

$$\begin{aligned} Q_X &= \Sigma\{|g(x_i)|p^*(A_i): x_i \neq 1/2\} = \\ Q_Y &= \Sigma\{|g(y_i)|p^*(A_i): y_i \neq 1/2\} = Q_{X \cup Y} \neq 0. \end{aligned}$$

Let  $(X \cup Y)(A_i) = t_i$ . Since  $t_i = \max\{x_i, y_i\}$  and  $X$  and  $Y$  are disjoint, we have:

$$Q_{(X \cup Y)}^+ = Q_X^+ + Q_Y^+. \tag{3.3}$$

Then formula (3.2) follows from (2.4) and (3.3). □

**Proposition 3.12** *Let  $\mathfrak{J}(\mathbf{E}, \mathbf{K})$  be the family of the fuzzy events  $X: \Pi \rightarrow \mathbf{K} \subseteq [0, 1]$  with the domain  $\Pi$  contained in the algebra of events  $\mathbf{E}$ . If  $p$  is a  $(g, p^*)$ -fuzzy probability, then for every fuzzy event  $X \in \mathfrak{J}^*(\mathbf{E}, \mathbf{K})$ , we have:*

$$(F_X = \emptyset) \Rightarrow p(X) = 1. \tag{3.4}$$

*Proof* If  $F_X = \emptyset$  then  $Q_X = Q_X^+$ . Since  $X \neq U$ ,  $Q_X \neq 0$  and then  $p(X) = Q_X^+/Q_X = 1$ . □

**Proposition 3.13** *Let  $\mathfrak{J}(\mathbf{E}, \mathbf{K})$  be the family of the fuzzy events  $X: \Pi \rightarrow \mathbf{K} \subseteq [0, 1]$  with the domain  $\Pi$  contained in an algebra of events  $\mathbf{E}$ . If  $p$  is a  $(g, p^*)$ -fuzzy probability, then, given three fuzzy events  $X, Y, Z \in \mathfrak{J}^*(\mathbf{E}, \mathbf{K})$ , such that  $X^+ = Z^+$ ,  $(X \cup X^c)^+ = Y^+$ ,  $Y \cup Y^c = Z \cup Z^c$ , we have:*

$$p(X)p(Y) = p(Z). \tag{3.5}$$

*Proof* From formula (2.4) it follows:  $p(X) = Q_X^+/Q_X$ ,  $p(Y) = Q_Y^+/Q_Y$ ,  $p(Z) = Q_Z^+/Q_Z$ . Since the equalities  $X^+ = Z^+$ ,  $(X \cup X^c)^+ = Y^+$ ,  $Y \cup Y^c = Z \cup Z^c$ , imply  $Q_Z^+ = Q_X^+$ ;  $Q_Y^+ = Q_X$ ;  $Q_Y = Q_Z$ ; then (3.5) holds. □

As a consequence of the previous theorems we can enunciate the following “extension theorem”:

**Theorem 3.14** *Let  $\mathbf{E}$  be a finite algebra of events and let  $p^*$  be a finitely additive probability on  $\mathbf{E}$  such that, for any  $A \in \mathbf{E}$ ,  $p^*(A) = 0 \Rightarrow A = \emptyset$ . Then, if  $\mathbf{K}$  is a symmetric nonempty subset of  $[0, 1]$ , there exists a finitely additive probability  $p$  on the family  $\mathfrak{J}(\mathbf{E}, \mathbf{K})$  of the fuzzy events on  $\mathbf{E}$  and range contained in  $\mathbf{K}$  such that  $p$  is an extension of  $p^*$ .*

## 4 Fuzzy Events and Subjective Fuzzy Probability of Type 2

In recent papers and books on decision making theory and game theory (see, e.g. Mares 2001), it is assumed the possibility of uncertainty in the scores of the alternatives (or strategies). Then they are assumed to be fuzzy numbers. This leads us to generalize the concept of fuzzy event, assuming that the elements of the codomain can be normal fuzzy numbers contained in  $[0, 1]$ .

We recall (Klir and Yuan 1995) that a *normal fuzzy number* is a function  $u: \mathbb{R} \rightarrow [0, 1]$  such that:

1. there exists  $a, b \in \mathbb{R}$ ,  $a \leq b$ , such that  $x \in (a, b) \Rightarrow u(x) > 0$ ,  $x \notin [a, b] \Rightarrow u(x) = 0$ ;
2. for every  $\alpha \in (0, 1]$ , the set  $u^\alpha = \{x \in [a, b]: u(x) \geq \alpha\}$  is a nonempty closed interval, called the  $\alpha$ -cut of  $u$ .

The set  $S(u) = \{x \in (a, b): u(x) > 0\}$  is said to be the *support* of  $u$ , and  $C(u) = u^1 = \{x \in [a, b]: u(x) = 1\}$  is the *core* of  $u$ . Let  $C(u) = [c, d]$ . The intervals  $[a, c)$  and  $(d, b]$  are the *left part* and the *right part* of  $u$ , respectively. The numbers  $a$  and  $b$  are the *left endpoint* and the *right endpoint*, respectively.

The fuzzy number  $u$  is said to be *simple* if  $c = d$ , i.e.  $C(u)$  is a singleton. Moreover,  $u$  is said to be *degenerate* if  $a = b$ , i.e.  $S(u) = \{c\}$ ,  $c \in \mathbb{R}$ . In this case  $u$  is identified with the real number  $c$ . The real numbers  $L(u) = c - a$ ,  $M(u) = d - c$ , and  $R(u) = b - d$  are the *left*, *middle*, and *right indeterminateness* (or *spreads*) of  $u$ , respectively.

We assume the following notations:

- (*endpoints notation*)  $u \sim (a, c, d, b)$  stands  $u$  is a normal fuzzy number with endpoints  $a, b$  and core  $[c, d]$ ;  $u \sim (a, c, b)$  for  $u \sim (a, c, c, b)$ ;
- (*spreads notation*)  $u \sim [c, d, L, R]$  denotes that  $u$  is a fuzzy number with core  $[c, d]$  and left and right spreads  $L$  and  $R$ , respectively;  $u \sim [c, L, R]$  denotes  $u \sim [c, c, L, R]$ ;

We say that the fuzzy number  $u \sim (a, c, d, b)$  is a *trapezoidal fuzzy number*, denoted  $u = (a, c, d, b)$ , if:

$$\begin{aligned} x \in [a, c), a < c &\Rightarrow u(x) = (x - a)/(c - a); \\ x \in (d, b], d < b &\Rightarrow u(x) = (b - x)/(b - d). \end{aligned} \tag{4.1}$$

A simple trapezoidal fuzzy number  $u = (a, c, c, b)$  is said to be a *triangular fuzzy number*, denoted  $u = (a, c, b)$ . A trapezoidal fuzzy number  $u = (c, c, d, d)$ , with support equal to the core is said to be a *rectangular fuzzy number* and is identified with the interval  $[c, d]$  of  $\mathbb{R}$ .

Afterwards we will use the notation “fuzzy number” to indicate a normal fuzzy number. Let us introduce the following definition:

**Definition 4.1** Let  $\Pi$  be a partition of the certain event. A *fuzzy event of type 2*, with domain  $\Pi$ , is a function  $X: \Pi \rightarrow F([0, 1])$ , where  $F([0, 1])$  is the set of simple normal fuzzy numbers with support contained in  $[0, 1]$ . The union of the elements  $a \in \Pi$  such that  $C(X(a)) > 1/2$  (resp.  $C(X(a)) < 1/2$ ,  $C(X(a)) = 1/2$ ) is said to be the *true part* of  $X$ , denoted with  $T_X$  (resp. *false part* of  $X$ , denoted with  $F_X$ , and *undetermined part* of  $X$ , denoted with  $U_X$ ). The event  $D_X = T_X \cup F_X$  is the *determined part* of  $X$ .

**Definition 4.2** A fuzzy event  $X: \Pi \rightarrow [0, 1]$  is said to be a *conditional event of type 2* if  $C(X(a)) \in \{0, 1/2, 1\}$ , for every  $a \in \Pi$ ; in particular  $X$  is said to be an *event of type 2* if  $C(X(a)) \in \{0, 1\}$ .

Starting from the above definitions, we can extend the concept of  $(g, p^*)$ —subjective fuzzy probability to fuzzy events of type 2, noting that in this case the values  $g(x_i)$  are fuzzy numbers contained in  $[-1, 1]$ .

Let us put

$$\begin{aligned} Q_X^+ &= \Sigma\{(g(x_i) \cap [0, 1])p^*(E_i): C(x_i) > 1/2\}, \\ Q_X^- &= \Sigma\{-(g(x_i) \cap [-1, 0])p^*(E_i): C(x_i) < 1/2\}, \end{aligned} \tag{4.1}$$

where  $[0, 1]$  and  $[-1, 0]$  are rectangular fuzzy numbers.

We assume  $Q_X = Q_X^+ + Q_X^-$ , and we can prove that  $Q_X^+$ ,  $Q_X^-$ , and  $Q_X$  are fuzzy numbers with support contained in  $[0, 1]$ . If  $Q_X^+ \sim (a^+, c^+, d^+, b^+)$ ,  $Q_X^- \sim (a^-, c^-, d^-, b^-)$ , then  $Q_X \sim (a^+ + a^-, c^+ + c^-, d^+ + d^-, b^+ + b^-)$ .

In order to obtain an extension of the concept of  $(g, p^*)$ —subjective fuzzy probability of  $X$ , with  $X$  fuzzy event of type 2, let us consider the formula:

$$p(X) = Q_X^+ / Q_X. \tag{4.2}$$

The condition for  $p(X)$  is a fuzzy number is  $a^+ + a^- > 0$ . It is usually verified: it is sufficient that, for at least one of the fuzzy numbers  $g(x_i)$ , 0 does not belong to the closure of  $S(g(x_i))$ , i.e.  $1/2$  does not belong to the closure of  $S(x_i)$ . In this case  $p(X) \sim (a^+/(b^+ + b^-), c^+/(c^+ + c^-), b^+/(a^+ + a^-))$ . The left endpoint and the core of  $p(X)$  are contained in  $[0, 1]$ , while the right endpoint is contained in  $[0, 1]$  if and only if  $b^+ \leq a^+ + a^-$ . Since a fuzzy probability must be a normal fuzzy number contained in  $[0, 1]$ , we define the  $(g, p^*)$ —subjective fuzzy probability of  $X$  as the fuzzy number:

$$p'(X) = p(X) \cap [0, 1], \tag{4.3}$$

where  $[0, 1]$  is a rectangular fuzzy number.

## 5 Conclusions and Perspectives of Research

In this paper we have shown that the most important properties of a finitely additive conditional probability may be extended to a  $(g, p^*)$ —subjective fuzzy probability of fuzzy events (of type 1). Some properties can also be extended to a  $(g, p^*)$ —subjective fuzzy probability of fuzzy events of type 2. We have sketched some important applications in the social sciences, especially in reference to applications of decision making theory and game theory.

Perspectives of research, both theoretical and applicative are significant. Especially in a future work we propose a study of the properties and meanings of the  $(g, p^*)$ —subjective fuzzy probability of fuzzy events of type 2 in decision making and in cooperative games with vague expectations.

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# Fuzzy Regression Models and Alternative Operations for Economic and Social Sciences

Fabrizio Maturo and Šárka Hošková-Mayerová

**Abstract** The economic and social research is often based on assumptions that have little to do with reality, because all scientific knowledge of the Western world is based on the Aristotelian binary logic. Often researchers use rigid conventions and treat things as if they were black or white, but the world around us is nuanced, in other words, is fuzzy. In particular, problems inherent the inaccuracy of measurements and the vagueness of linguistic attributes has led many scholars to consider the fuzzy theory during the recent decades. In this paper we face a particular aspect of fuzzy logic, that is, fuzzy regression. After a brief review of the recent studies about this topic, we focus on some limitations of the previous approaches and suggest some possible solutions. Specifically, we propose the use of alternatives operations to solve some problems of addition and multiplication between fuzzy numbers in fuzzy regression models.

**Keywords** Fuzzy regression models · Alternative operations · Economic and social research · Bounded operations · Linguistic variables

## 1 Introduction

Often researchers use very rigid conventions that are not suitable to interpret real phenomena. This is because the scientific knowledge of the Western world is totally influenced by the Aristotelian logic, which is based on the principles of the binary logic, according to which everything is “black” or “white”. Prof. Lotfi A. Zadeh,

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director of the Department of Electrical Engineering at UC Berkeley, is recognized as the main proponent of the development and the applications of fuzzy logic. In 1965 he presented the article “Fuzzy Sets” in the journal “Information and Control” and proposed for the first time the concept of “degree of membership”.

Fuzzy logic challenges and changes the concept of binary logic, according to which a predicate can have only two alternative states: *true* or *false*, *black* or *white*; the latter is the basis of computers operations but anyone can evaluate how inaccurate and not consistent with the reality it could be. Fuzzy logic solves these issues by eliminating sharp edges, blurring the boundaries, overcoming the paradoxes due to the fact of having to choose whether an element belongs to a group rather than to another. Specifically, it refers to all those cases in which preferences, assessments and judgments can not be expressed in a precise manner so that using linguistic terms do not lead to a clear and unambiguous interpretation of a choice (Zadeh 1975, 1968). Fuzzy sets, fuzzy numbers and linguistic variables are excellent tools to manipulate what appears to be the major source of imprecision in decision-making (Zadeh 1965; Ventre 1983; Klir 2006; Hošková-Mayerová et al. 2013; Talhofer et al. 2013). The main advantage of fuzzy logic is that it could solve the problem of vagueness of human language, enabling humans to talk to machines keeping their original language, without adapting the way they communicate. Indeed, fuzzy logic allows to treat vague attributes such as quantitative variables. Very often, in the economic and social scientists they are forced to work with linguistic variables. In these cases, treating these variables as a single value or range of values is a strong limit. For example, if we consider the risk propensity of an entrepreneur, how could we possible ways alternatives low, medium or high. In particular, when there are people on the borderline between one mode and the other, how can we decide which class they belong unambiguously? In cases like this, the best solution is to consider the statistical units, in part belonging to a class and in part to another; here is that the transition between a state and another takes place gradually, without clear demarcation between different modes. Thus, an entrepreneur may have in part a low propensity for risk and partly a high risk tolerance, with different degrees of truth of the statement.

The utility of this approach is not limited to qualitative variables but it is also reflected in the use of quantitative ones, especially when the measured variables are affected by indeterminacy. From the statistical point of view, the indeterminacy can derive from imprecision related to measurement of phenomena, vagueness of language, total or partial ignorance of the values of a phenomenon or the theoretical assumptions underlying or from the link between the observed data and the universe of possible data. Although the last of them fall within the usual probability theory, it should be noted that, in the context of fuzzy logic, the proposed solutions in this regard tend to overcome all the limitations that are typical of the classical approach, such as those relating the need to introduce very restrictive assumptions about the nature and distribution of the data. It is true that in fuzzy logic prevails a degree of subjectivity but it is equally true that this possibility gives a high degree of adaptability to real situations; furthermore, in statistics we often have cases in which prevails a certain degree of subjectivity, such as the choice of the model or

the covariates in a multiple regression model, the choice of the kind of sampling or the weights to assign to the inclusion probabilities. Thus, it is very common to measure quantitative variables in terms of single-values, but you can not always have precise values, because very often the phenomena of the measurements are affected by inaccuracy. An important source of inaccuracy is in the phase of data processing, that consist in computing an estimate on the basis of the results of direct measurements (Hošková-Mayerová and Talhofer 2010).

The results of the data are never 100 % accurate; however, if there is an information about the error of the result data, then it is known that the value of the measure falls within a specific range of values. On the other hand, there are some variables that for their own nature are better described by a pair of ordered value, like daily temperatures (in terms of minimum and maximum) or financial data (in terms of opening and closing daily prices). By summarizing this measurement with a single value, there is a loss of information. In these situations data are better described by interval values rather than by single values. This margin of error in the value of measurement, that refers to the lack of knowledge about the value of a parameter, is known as “imprecision”. Interval arithmetic studies and analyzes this type of imprecision. If the intervals has no sharp boundaries, for example, because, in addition to the results of measurements and observations, there are expert estimates formulated in terms of natural language, we obtain another kind of imprecision: the “vagueness”. Fuzzy set theory is the tool for a good representation of vague concepts expressed in natural language (Cristea and Hošková-Mayerová 2009; Maturo and Maturo 2013). If there is a lack of knowledge about the occurrence of some event whose result is not known before, we have random variables; in this case we talk about “randomness” and “uncertainty” (Klir 2006). From the foregoing, it is evident that, depending on the nature of the information, the analysis of the data could be conducted using interval analysis, fuzzy theory, or the probabilistic approach. In the social field (Ragin 2000) and in business many scholars have proposed models using fuzzy logic to estimate various parameters of companies like the terminal value of a firm (Taliento 2008) or to propose models for the management of complexity (Bagnoli 2007).

Fuzzy logic may be a useful tool, as an alternative or complement to the calculation of probabilities, to broaden the knowledge of the real phenomena and assist in reducing conditions of vagueness. The approximated approach and the use of linguistic variables and rules, rather than mathematical constructs, are the characteristics that make the fuzzy systems approach similar to human thinking. It is obvious that the fuzzy logic does not have the accuracy of the analytical tools, and is not so useful if the mathematical model of a process is clear with precision and safety; but it's safe that, when the factors leading to uncertainty increases, amplifying the complexity of the problem, analytical models start to show their limits, and fuzzy systems are more suitable.

Our research focuses on a particular aspect of the wide literature concerning fuzzy theory, namely fuzzy regression models. Many studies have been carried out in recent decades on this topic (Maturo and Maturo 2013; Gonzales-Rodriguez et al. 2009; Ferraro et al. 2011; Tanaka and Guo 1999; Puri and Ralescu 1986; Maturo

2016); however, few studies have actually managed to solve the limitations of classical operations between fuzzy numbers that lead to big problems in the field of regression (Maturo 2009b; Diamond 1988; Peters 1994; Kim et al. 1996). Several researchers (Klir 2006; Klir and Yuan 1995; Ban and Bede 2003; Bede and Fodor 2006; Maturo 2009b; Grzegorzewski and Mrowska 2005) highlighted various drawbacks of such operations and it was shown that there are several possible alternatives to the usual operations of addition and multiplication on the fuzzy numbers. The main drawbacks of the classic operations are the following: first there are semantic issues because Zadeh's operations bring rapidly to high degrees of uncertainty; second there are algebraic problems because many important properties fail. In particular, even if we perform addition and multiplication between triangular fuzzy numbers, we get a sharp increase in the spreads and, therefore, big uncertainty; furthermore, their product does not provide a triangular fuzzy number. These circumstances imply that this model is difficult to apply in real cases and not significant. In this paper we introduce alternative operations to overcome these issues.

This paper is composed of three sections. The first one is the introduction that presents a description of the different types of inaccuracies that can afflict the data; in particular, the reasons that lead to the use of fuzzy logic are introduced. The second section introduces the limitations of classical regression models and presents a brief review of the different fuzzy regression models proposed in literature. The third section introduces some alternative operations in order to solve some drawbacks of classical operations between fuzzy numbers that bring to great problems in fuzzy regression models. The paper ends with the conclusions and some possible lines of future development.

## 2 Fuzzy Linear Regression Models (FLR): A Possible Solution to Overcome the Limitations of Classical Regression Models

Classical linear regressions models offers a possible solution to study the dependence between variables; it take the form (Stock and Watson 2009):

$$y_i = b_0 + b_1x_{i1} + b_2x_{i2} + \dots + b_jx_{ij} + \dots + b_Px_{iP} + u_i \quad (1)$$

where

- $i = 1, \dots, N$  is the  $i$ th observed unit;
- $j = 1, \dots, P$  is the  $j$ th observed variable;
- $y_i$  is the dependent variable, observed on  $N$  units;
- $x_{ij}$  are the  $P$  independent variables observed on  $N$  units;
- $b_0$  is the crisp intercept and  $b_j$  are the  $P$  crisp coefficients of the  $P$  variables;
- $u_i$  are the random error terms that indicate the deviation of  $Y$  from the model;



- $y_i, x_{ij}, b_j, u_i$  are all crisp values.

In matrix form the classical regression model is expressed as:

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \mathbf{u} \tag{2}$$

The aim of statistical regression is to find the set of unknown parameters so that the model gives a good prediction of the dependent variable. The most widely used regression model is the Multiple Linear Regression Model (MLRM), as well as the Ordinary Least Squares (OLS) (Kratschmer 2006a) is the most widespread estimation procedure. Under the OLS assumptions the estimates are BLUE (Best Linear Unbiased Estimator), as stated by the famous Gauss-Markov theorem. LS is based on the minimization of the sum of squared deviations:

$$\min_b (\mathbf{y} - \mathbf{X}\mathbf{b})'(\mathbf{y} + \mathbf{X}\mathbf{b}) \tag{3}$$

The optimal solution of the minimization problem is the following vector:

$$\hat{\mathbf{b}} = (\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{y} \tag{4}$$

The OLS model is comfortable but its assumptions are every restrictive. In a lot of phenomena these assumptions are violated almost surely, causing biased and inefficient estimators (Gujarati 2003). The OLS regression assumptions are the following:

- the conditional expectation of the error term is equal to zero

$$E(\mathbf{u}|\mathbf{X}) = 0$$

- $(\mathbf{X}_j, \mathbf{Y}) i = 1, \dots, N$  are independent and identically distributed;
- absence of perfect multicollinearity between independent variables;
- the error term must be homoskedastic

$$VAR(\mathbf{u}) = \sigma^2\mathbf{I}$$

In particular, the assumptions  $E(\mathbf{u}|\mathbf{X}) \approx \mathbf{N}(0, \sigma^2\mathbf{I})$  is very strong and rarely it is respected in real phenomena. Moreover in case of “quasi” multi-collinearity (many highly correlated explanatory variables), although this does not violate OLS assumption, there is a bad impact on the variance of B. In these circumstances the OLS estimators are efficient and unbiased but have large variance, making estimation useless from a practical point of view. The effects of the quasi multi-collinearity are more evident when the sample size is small (Achen 1982). The generally proposed solution consists in removing correlated exploratory variables. This solution is unsatisfying in many applications fields where the user would keep all variables in the model. In general we can observe that classical statistical

regression has many useful applications but presents issues in the several situations (Shapiro 2005) such as small data set, difficulties verifying distribution assumptions, vagueness in the relationship between input and output variables, ambiguity of events or degree to which they occur. Furthermore, there are many variables that, for their own nature, are better described by a pair of ordered values and summarizing this measurement with a single value, there is a loss of information. In these cases, data are better described by interval values rather than by single values. In particular, if the intervals has no sharp boundaries, fuzzy set theory comes to our assistance. Specifically, fuzzy regression models are able to overcome some typical limitation of classical regression because they don't need the same strong assumptions.

Fuzzy linear regression models (FLR) could be classified in partially fuzzy linear regression models (PFLR) and totally fuzzy linear regression models (TFLR). PFLR models can be further divided into PFLR with fuzzy parameters and crisp data, and PFLR with fuzzy data and crisp parameters. On the contrary, TFLR models are characterized by the presence of data and parameters that are both fuzzy.

## 2.1 *Partially Fuzzy Least Squares Linear Regression (PFLR)*

In literature there are two different approaches to fuzzy regression: *fuzzy possibilistic regression* (FPR) (Tanaka and Guo 1999) and *fuzzy least squares regression* (FLSR) (Kratschmer 2006b). In this context, we focus only on the second approach. The line of thought of fuzzy least squares regression is more close to the traditional statistical approach. Indeed the aim is to minimize the distance between the observed and the estimated fuzzy data (Shapiro 2005). In case of one independent variable the model take the form:

$$\tilde{y}_i = b_0 + b_1 \tilde{x}_i + \tilde{u}_i \quad i = 1, 2, \dots, N \quad (5)$$

where

- $i = 1, \dots, N$  is the  $i$ th observed unit;
- $y_i$  is the dependent fuzzy variable, observed on  $N$  units;
- $x_i$  is the independent fuzzy variable, observed on  $N$  units;
- $b_0$  and  $b_1$  are the crisp intercept and the crisp regression coefficient;
- $u_i$  are the fuzzy random error terms;

The error term can be expressed as follows:

$$\tilde{u}_i = \tilde{y}_i - b_0 - b_1 \tilde{x}_i \quad i = 1, 2, \dots, N \quad (6)$$

Therefore, from a least square perspective, the problem becomes:

$$\min \sum_{i=1}^N [\tilde{y}_i - b_0 - b_1 \tilde{x}_i]^2 \quad i = 1, 2, \dots, N \tag{7}$$

Many criteria for measuring this distance have been proposed over the years; however, the most common are the Diamond’s approach and the Celmin’s one.

**FLSR Using Distance Measures.** The fuzzy least squares regression using distance measures is also known as Diamond’s approach (Diamond 1988). This is the overtures closest to the traditional statistical approach. Following the least squares line of thought, the aim is to minimize the distance between the observed and the estimated fuzzy data, by minimizing the output quadratic error of the model. Since the model contains fuzzy numbers the minimization problem considers specific distances between them. Let us denote with  $(c, l, r)$  a fuzzy set with mode  $c$ , left and right spread  $l$  and  $r$ , respectively. Diamond defines an  $L^2$ -metric between two triangular fuzzy numbers  $u_1 = (c_1, l_1, r_1)$  and  $u_2 = (c_2, l_2, r_2)$  and measures the distance between two triangular fuzzy numbers based on their modes, left and right spreads as follows:

$$d[(c_1, l_1, r_1), (c_2, l_2, r_2)]^2 = (c_1 - c_2)^2 + [(c_1 - l_1) - (c_2 - l_2)]^2 + [(c_1 + r_1) - (c_2 + r_2)]^2 \tag{8}$$

This method is rigorously justified by a projection-type theorem for cones on a Banach space containing the cone of triangular fuzzy numbers, where a Banach space is a normed vector space that is complete as a metric space under the metric  $d(x, y) = \|x - y\|$  induced by the norm (Shapiro 2004).

Focusing on the case of crisp coefficients and fuzzy variables, the problem becomes:

$$\min_b \sum_{i=1}^N d[\tilde{y}_i^* - \tilde{y}_i]^2 \quad i = 1, 2, \dots, N \tag{9}$$

where  $\tilde{y}_i^* = b_0 + b_1 \tilde{x}_i$ ; therefore the optimization problem can be written as:

$$\min_b \sum_{i=1}^N d[b_0 + b_1 \tilde{x}_i - \tilde{y}_i]^2 \quad i = 1, 2, \dots, N \tag{10}$$

Using Diamond’s difference in this minimization problem we can find the parameters. If the solutions exist, it is necessary to solve a system of six equations in the same number of unknowns; of course, these equations arise from the derivatives being set equal to zero.

**FLSR Using Compatibility Measures.** The second method adopts compatibility measures; it is best known as the Celmins’s approach (Celmins 1987). A compatibility measure can be defined as:

$$\gamma(\tilde{A}, \tilde{B}) = \max_x \min\{\mu_A(x), \mu_B(x)\} \tag{11}$$

This index is included in the interval [0, 1]. A value of “0” means that the membership functions of the fuzzy numbers A and B are mutually exclusive. A value of “1” means that the membership functions A coincides with that one of B.

The basic idea is to maximize the overall compatibility between data and model; thus, the objective function may be formulated as follows:

$$\min \sum_{i=1}^N [1 - \gamma_i]^2 \quad i = 1, 2, \dots, N \tag{12}$$

## 2.2 *Totally Fuzzy Linear Regression (TFLR)*

Totally fuzzy linear regression models (TFLR) deal with data and parameters that are both fuzzy. In case of P independent variable the model take the form:

$$\tilde{y}_i = \tilde{b}_0 + \tilde{b}_1 \tilde{x}_{i1} + \tilde{b}_2 \tilde{x}_{i2} + \dots + \tilde{b}_j \tilde{x}_{ij} + \dots + \tilde{b}_P \tilde{x}_{iP} + \tilde{u}_i \tag{13}$$

where

- $i = 1, \dots, N$  is the  $i$ th observed unit;
- $j = 1, \dots, P$  is the  $j$ th observed variable;
- $y_i$  is the dependent fuzzy variable, observed on N units;
- $x_{ij}$  are the P independent fuzzy variables, observed on N units;
- $b_0$  is the fuzzy intercept and  $b_j$  are the P fuzzy regression coefficients measured for the P fuzzy variables;
- $u_i$  are the fuzzy random error terms;

The main issues of totally fuzzy linear regression models (Maturo 2009b; Maturo and Maturo 2013) are that the addition and the multiplication among fuzzy numbers lead to a considerable increase of the fuzziness and, the multiplication between two triangular fuzzy numbers does not provides a triangular fuzzy number. These circumstances imply that this model is difficult to apply in real cases and not significant. A possible solution is given by the introduction of alternative operations.

### 3 Alternative Operations for Addition and Multiplication

In the previous section it is admitted that the operations of addition and multiplication of fuzzy numbers are those based on the Zadeh extension principle. Several researchers (Klir 2006; Klir and Yuan 1995; Ban and Bede 2003; Bede and Fodor 2006; Maturó 2009b; Grzegorzewski and Mrowska 2005) highlighted various drawbacks of such operations and it was shown that there are several possible alternatives to the usual operations of addition and multiplication on the fuzzy numbers. The main drawbacks of the classic operations are the following: first there are semantic issues because Zadeh’s operations bring rapidly to high degrees of uncertainty; second there are algebraic problems because many important properties fail.

**Drawbacks of the Zadeh Additions and Multiplications.** The major issues given by Zadeh’s addition and multiplication are:

- (D1) The spread of the sum of two fuzzy numbers is the sum of the spreads. Then if sum acts as aggregator, it produces a fast increasing indeterminateness. This is, in many cases, in contradiction with the intuitive idea and the experience that many uncertainties can compensate each other the spreads of the sum of two fuzzy numbers is the sum of spreads
- (D2) If  $u_i = (c_i, l_i, r_i)$ ,  $i \in N$  is a sequence of fuzzy numbers such that  $\sum c_i$  converges, usually  $\sum l_i$  and  $\sum r_i$  are not convergent
- (D3) The product of two non-degenerate trapezoidal (in particular triangular) fuzzy numbers is not a trapezoidal (resp. triangular) fuzzy number
- (D4) The product of two non-degenerate symmetric fuzzy numbers is not a symmetric fuzzy number
- (D5) The left and right spreads of the product depends not only by the spreads of the factors, but they strongly increase as the modes of the factors raise
- (D6) The Zadeh’s multiplication is subdistributive with respect to the Zadeh’s addition, i.e., for every fuzzy numbers  $u, v, w$ , the product  $(u + v)w$  is a fuzzy set contained in  $uw + vw$ . Equality holds if and only if  $u$  and  $v$  are both positive or both negative fuzzy numbers or  $w$  is a degenerate fuzzy number (Maturó 2009a; Maturó and Maturó 2013).

#### 3.1 Alternative Additions

A fuzzy number  $u$ , in spread notation, is characterized by its r-cuts

$$u^h = (c(u), l^h(u), r^h(u))$$

where  $h \in [0, 1]$ , and  $c(u), l^h(u), r^h(u)$  are the mode, the left spread, and the right spread of the h-cut of  $u$  respectively. The mode not depends on  $h$ . In particular for

$h = 1$ ,  $l^1(u)$  and  $r^1(u)$  are the spreads of  $u$ , noted with  $l(u)$  and  $r(u)$ , respectively. If  $u$  and  $v$  are two fuzzy numbers, the Zadeh addition  $u +_z v$  is defined by the formulae:

$$c(u +_z v) = c(u) + c(v); \tag{14}$$

$$l^h(u +_z v) = l^h(u) + l^h(v); \quad r^h(u +_z v) = r^h(u) + r^h(v). \tag{15}$$

An addition alternative  $+_a$  alternative to that of Zadeh should satisfy the following properties:

$$c(u +_a v) = c(u) + c(v); \tag{16}$$

$$l^h(u +_a v) = f(l^h(u), l^h(v)); \quad r^h(u +_a v) = f(r^h(u), r^h(v)), \tag{17}$$

where  $f : [0, +\infty) \times [0, +\infty) \rightarrow [0, +\infty)$  is a function such that,  $\forall x, y, x', y', z$ , non-negative real numbers:

- (P1)**  $x \leq x', y \leq y' \Rightarrow f(x, y) \leq f(x', y')$  (increasing w.r. every variable);
- (P2)**  $f(x, y) = f(y, x)$  (symmetry or commutativity);
- (P3)**  $f(f(x, y), z) = f(x, f(y, z))$  (associativity);
- (P4)**  $f(x, 0) = f(x)$  (0 is the neutral element).

Let  $S$  be the set of fuzzy numbers utilized. In order to avoid the problems (D1) and (D2) it would be appropriate for the function  $f$  satisfy the following additional conditions:

- (P5)**  $\exists M > 0 : x \leq M, y \leq M \Rightarrow f(x, y) \leq M$  ( $f$  is bounded)
- (P6)**  $\forall u \in S, \max\{l(u), r(u)\} \leq M$ .

The addition of Zadeh satisfies the conditions (D1)–(D4), but not the (D5) and (D6). Some types of addition between fuzzy numbers that meet all the conditions (D1)–(D6) are:

- (FU)** *fuzzy union*,  $+_u$ , defined assuming  $f(x, y) = \max\{x, y\}$ ;
- (DS)** *drastic sum*,  $+_d$ , with  $f(x, y) = M$  if  $0 < x, 0 < y$ , and  $f(x, y) = \max\{x, y\}$ , if  $x = 0$  or  $y = 0$ ;
- (BS)** *bounded sum*,  $+_b$ , with  $f(x, y) = \min\{x + y, M\}$ ;
- (AS)** *algebraic sum*,  $+_s$ , with  $f(x, y) = x + y - (xy)/M$ .

The fuzzy union has very good algebraic and semantic properties (Maturo 2009a, b). The Zadeh addition can be considered as a good approximation of the bounded sum or the algebraic sum if  $M$  is “much greater” than numbers  $x$  and  $y$ .

### 3.2 Alternative Multiplications

The Zadeh multiplication  $u \bullet_z v$  is defined by the formulae:

$$c(u \bullet_z v) = c(u) \cdot c(v); \tag{18}$$

$$l^h(u \bullet_z v) = c(u)l^h(v) + c(v)l^h(u) - l^h(u)l^h(v) \tag{19}$$

$$r^h(u \bullet_z v) = c(u)r^h(v) + c(v)r^h(u) + r^h(u)r^h(v) \tag{20}$$

These formulas are asymmetric, indeed in Eq. (19) you subtract the product of left spreads and in Eq. (20) the product of right spreads is added. Moreover, the spreads of the product depends not only from those of  $u$  and  $v$ , but also by the modes of  $u$  and  $v$ . To build regression models easy to handle we have to replace Eqs. (19) and (20) with formulas symmetric and simpler.

If we want the product spreads between two fuzzy numbers do not depend on their modes, in analogy to the addition, an alternative multiplication  $\bullet_a$  can be obtained assuming the following properties:

$$c(u \bullet_a v) = c(u) \cdot c(v); \tag{21}$$

$$l^h(u \bullet_a v) = f(l^h(u), l^h(v)); r^h(u \bullet_a v) = f(r^h(u), r^h(v)), \tag{22}$$

where  $f : [0, +\infty) \times [0, +\infty) \rightarrow [0, +\infty)$  is a function satisfying properties (P1)–(P6).

In particular, if we assume the same function for the spreads of addition and multiplication, the algebraic structure  $(S, +_a, \bullet_a)$  has very important properties. For example,  $f(x, y) = \max\{x, y\}$  then  $\bullet_a$  is distributive w.r. to  $+_a$ .

Some variants are achieved by replacing the property (P4) with the property (P4B)  $f(x, 1) = f(x)$ , where “1” is the neutral element. This can be useful if the researcher wants the spreads is combined with rules similar to those of a multiplication.

## 4 Conclusion and Perspectives of Research

In this paper we have proposed alternative operations in order to overcome some problems connected to the addition and the product between fuzzy numbers in fuzzy linear regression models. In summary, some of the main issues of Zadeh’s operations with this model are:

1. the addition and the multiplication between fuzzy numbers lead to a considerable increase of the spreads;
2. the multiplication of two symmetric fuzzy numbers does not provide a symmetric fuzzy number or at least a fuzzy number with equal spreads;
3. spreads of Zadeh’s product depend heavily on the modes of the numbers;
4. some important algebraic properties, such as the distributive property, are valid only in particular circumstances;

5. the product of two triangular fuzzy numbers does not provide a triangular fuzzy number.

Although the last of them could be annoying, this issue is less important, because you can always replace a fuzzy number  $w$ , obtained as a result of an operation between triangular numbers, with a triangular fuzzy number approximating  $w^*$  with the same mode and the same spreads. The set of operations based on fuzzy t-norms or t-conorms is very wide, thus it is possible to get operations with assigned desirable properties. Meanwhile, the formulas (19)–(22) show that the drawbacks 1 and 3 are overcome. Moreover, if  $L = R$ , as usually is supposed, even the inconvenience 2 is exceeded. Finally, for various t-conorms and t-norms, it is possible to work with very important algebraic properties. In particular, special algebraic properties, suited to particular circumstances, can be obtained with appropriate choices of t-conorms or t-norms. It does not seem very relevant the requirement of having a triangular fuzzy number as product of two triangular fuzzy numbers, because we can replace the non-triangular result with its triangular approximation. It seems rather interesting to investigate whether, with operations based on t-conorms or t-norms, it might be interesting and significant to introduce new classes of fuzzy numbers different from triangular fuzzy numbers, or some appropriate extensions of the class of triangular fuzzy numbers.

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# Some Connections Between Binary Block Codes and Hilbert Algebras

Cristina Flaut

**Abstract** In this paper, we will study some connections between Hilbert algebras and binary block-codes. With these codes, we can easily obtain orders which determine supplementary properties on these algebras. We will try to emphasize how, using binary block-codes, we can provide examples of classes of Hilbert algebras with some properties, in our case, classes of semisimple Hilbert algebras and classes of local Hilbert algebras.

**Keywords** BCK-algebras · Hilbert algebras · Block codes

## 1 Introduction

Over the last years, codes have experienced a significant development. Using codes, an impressive quantity of data can be transmitted. They have important applications in various domains with implications in social life. Using codes, data are transformed into a form which can be easily understood by computer software and can be represented in a form which is more resistant to errors in data transmission or data storage. In this way, data, in their quantitative or qualitative forms, are classified to facilitate some analysis.

Coding Theory is a mathematical domain with many applications in Information Theory. Various types of codes and their connections with other mathematical objects have been intensively studied. One of these applications, namely connections between binary block codes and BCK-algebras, was recently studied in Jun and Song (2011), Flaut (2015) and Borumand Saeid et al. (2015). Starting from these results and since a positive implicative BCK-algebra is a Hilbert algebra, in this paper we will study some connections between Hilbert algebras and binary

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block-codes. Even if in Borumand Saeid et al. (2015) and Chajda et al. (2002) it was remarked that a BCK-algebra and a Hilbert algebra can be obtained on any ordered set with a greatest element  $\theta$ , using codes we can easily obtain orders which determine supplementary properties of these algebras. In the following, we will try to emphasize how, using binary block-codes, we can provide examples of classes of Hilbert algebras with certain properties, in our case, classes of semisimple Hilbert algebras (Theorem 3.11) and classes of local Hilbert algebras (Theorem 3.12). Hilbert algebras were first introduced at the middle of the 20th century and they are an important tool for some investigations in intuitionistic logics and other non-classical logics (see Piciu and Buşneag 2010).

## 2 Preliminaries

**Definition 2.1** An algebra  $(X, *, \theta)$  of type  $(2, 0)$  is called a *BCI-algebra* if the following conditions are fulfilled:

1.  $((x * y) * (x * z)) * (z * y) = \theta$ , for all  $x, y, z \in X$ ;
2.  $(x * (x * y)) * y = \theta$ , for all  $x, y \in X$ ;
3.  $x * x = \theta$ , for all  $x \in X$ ;
4. For all  $x, y, z \in X$  such that  $x * y = \theta$ ,  $y * x = \theta$ , it results  $x = y$ .

If a BCI-algebra  $X$  satisfies the following identity:

5.  $\theta * x = \theta$ , for all  $x \in X$ , then  $X$  is called a *BCK-algebra*.

A BCK-algebra  $X$  is called *commutative* if  $x * (x * y) = y * (y * x)$ , for all  $x, y \in X$  and *implicative* if  $x * (y * x) = x$ , for all  $x, y \in X$ . A BCK-algebra  $(A, *, \theta)$  is called *positive implicative* if and only if

$$(x * y) * z = (x * z) * (y * z), \quad \text{for all } x, y, z \in A.$$

The partial order relation on a BCK-algebra is defined such that  $x \leq y$  if and only if  $x * y = \theta$ .

*Remark 2.2* The following BCK-algebra  $(X, *, \theta)$

$$\begin{aligned} \theta * x &= \theta \quad \text{and} \quad x * x = \theta, \quad \forall x \in X; \\ x * y &= \theta, \quad \text{if } x \leq y, \quad x, y \in X; \\ x * y &= x, \quad \text{otherwise} \end{aligned} \tag{2.1}$$

is a non-commutative and a non-implicative algebra (see Diego 1966 and Flaut 2015).

**Definition 2.3** A *Hilbert algebra* is a triplet  $(H, *, 1)$  in which  $H$  is a non-empty set,  $*$  a binary operation on  $H$  and  $1 \in H$  is a fixed element such that the following relations hold, for all  $x, y, z \in H$ :

1.  $x * (y * x) = 1$ ;
2.  $(x * (y * z)) * ((x * y) * (x * z)) = 1$ ;
3.  $x * y = 1$  and  $y * x = 1$  imply  $x = y$ .

**Proposition 2.4** (Dudek 1999, Theorem) *An algebra  $(H, *, \theta)$  is a Hilbert algebra if and only if its dual algebra  $(H, \cdot, \theta)$ , where  $x \cdot y = y * x$ , is a positive implicative BCK-algebra.*

**Definition 2.5** Let  $(H, \cdot, \theta)$  be a Hilbert algebra. A subset  $L$  of the algebra  $H$  is called a *filter* (or implicative filter) of  $H$  if we have  $\theta \in L$  and if for all  $x, y \in L$ , from  $x \in L$  and  $x \cdot y \in L$  it results that  $y \in L$ .

**Definition 2.6** (see Buşneag 1987) Let  $H$  be a Hilbert algebra.

1. Let  $L$  be a filter of the algebra  $H$ .  $L$  is called *maximal* if for a proper filter  $F$  of  $H$  if  $L \subseteq F$ , we have  $L = F$ .
2.  $H$  is called a *semisimple* Hilbert algebra if the intersection of all maximal filters of  $H$  is  $\{\theta\}$ .
3.  $H$  is called a *local algebra* if and only if the algebra  $H$  contains only one maximal filter.

For other details about Hilbert algebras, the reader is referred to Buşneag (1987), Dan (2008).

### 3 Main Results

**Proposition 3.1** *BCK-algebra  $(X, *, \theta)$  defined by the relation (2.1) is a positive implicative algebra.*

*Proof* We must prove that  $(x * y) * z = (x * z) * (y * z)$ , for all  $x, y, z \in X$ .

Case 1: at least one element is  $\theta$ .

- (i)  $(\theta * x) * z = \theta * z = \theta$  and  $(\theta * z) * (x * z) = \theta * (x * z) = \theta$ ;
- (ii)  $(x * \theta) * z = x * z = x$  and  $(x * z) * (\theta * z) = x * \theta = x$ ;
- (iii)  $(x * y) * \theta = x * y = x$  and  $(x * \theta) * (y * \theta) = x * y = x$ ;

Case 2: one element is comparable with another.

- (i)  $x \leq y$ ;  $(x * y) * z = \theta * z = \theta$  and  $(x * z) * (y * z) = x * y = \theta$ ;
- (ii)  $x \leq z$ ;  $(x * y) * z = x * z = \theta$  and  $(x * z) * (y * z) = \theta * y = \theta$ ;
- (iii)  $z \leq y$ ;  $(x * y) * z = x * z = x$  and  $(x * z) * (y * z) = x * y = x$ ;
- (iv)  $y \leq x$ ;  $(x * y) * z = x * z = x$  and  $(x * z) * (y * z) = x * y = x$ ;
- (v)  $z \leq x$ ;  $(x * y) * z = x * z = x$  and  $(x * z) * (y * z) = x * y = x$ ;
- (vi)  $y \leq z$ ;  $(x * y) * z = x * z = x$  and  $(x * z) * (y * z) = x * \theta = x$ ;

Case 3: two elements are comparable with the third.

$x \leq y$  and  $z \leq y$ ;  $(x * y) * z = \theta * z = \theta$  and  $(x * z) * (y * z) = x * y = \theta$ , etc.  $\square$

*Remark 3.2* Let  $v_x = x_1x_2 \dots x_n$  and  $v_y = y_1y_2 \dots y_n$  be two codewords belonging to a binary block-code  $V$ . We define an order relation  $\leq_c$  on the set of codewords belonging to a binary block-code  $V$ , as follows (see Jun and Song 2011):

$$v_x \leq_c v_y \Leftrightarrow y_i \leq x_i \quad \text{for } i = 1, 2, \dots, n. \tag{3.1}$$

**Definition 3.3** (Jun and Song 2011)

- (i) A mapping  $f : A \rightarrow X$  is called a *BCK-function* on  $A$ . A *cut function*  $off$  is a map  $f_r : A \rightarrow \{0, 1\}$ ,  $r \in X$ , such that  $f_r(x) = 1$ , if and only if  $r * f(x) = \theta$ ,  $\forall x \in A$ .  
A *cut subset* of  $A$  is the following subset of  $A$ ,  $A_r = \{x \in A : r * f(x) = \theta\}$ .
- (ii) Let  $A = \{1, 2, \dots, n\}$  and let  $X$  be a BCK-algebra. For each BCK-function  $\tilde{A} : A \rightarrow X$  a binary block-code of length  $n$  was defined. A codeword in a binary block-code  $V$  is  $v_x = x_1x_2 \dots x_n$  such that  $x_i = j$  if and only if  $A_x(i) = j$ , for  $i \in A$  and  $j \in \{0, 1\}$ .

Let  $X$  be a BCK-algebra. Let  $V$  be a binary block-code with  $n$  codewords of length  $n$ . We consider the matrix  $M_V = (m_{ij})_{i,j \in \{1,2,\dots,n\}} \in \mathcal{M}_n(\{0, 1\})$  with the rows consisting of the codewords of  $V$ . This matrix is called *the matrix associated to the code  $V$* .

Let  $C$  be a binary block code with  $n$  codewords of length  $m$ . From Proposition 3.8 and Theorem 3.9 from Flaut (2015), we find a BCK-algebra  $X$  such that the obtained binary block-code  $V_X$  contains the binary block-code  $C$  as a subset. In the following, we briefly present this procedure.

Let  $V$  be a binary block-code,  $V = \{x_1, x_2, \dots, x_n\}$ , with codewords of length  $m$ . We consider the codewords  $x_1, x_2, \dots, x_n$  lexicographically ordered,  $x_1 \geq_{lex} x_2 \geq_{lex} \dots \geq_{lex} x_n$ . Let  $M \in \mathcal{M}_{n,m}(\{0, 1\})$  be the associated matrix with the rows  $w_1, \dots, w_n$  in this order. We can extend the matrix  $M$  to a square matrix  $M' \in \mathcal{M}_p(\{0, 1\})$ ,  $p = n + m$ , such that  $M' = (m'_{ij})_{i,j \in \{1,2,\dots,p\}}$  is an upper triangular matrix with  $m_{ii} = 1$ , for all  $i \in \{1, 2, \dots, p\}$ . For this purpose, we insert in the left side of the matrix  $M$  (from the right to the left) the following  $n$  new columns of the form  $\underbrace{00 \dots 01}_n, \underbrace{00 \dots 10}_n, \dots, \underbrace{10 \dots 00}_n$ . A new matrix  $D$  with  $n$  rows and  $n + m$

columns results. Now, we insert at the bottom of the matrix  $D$  the following  $m$  rows:  $\underbrace{00 \dots 010 \dots 00}_n, \underbrace{00 \dots 001 \dots 00}_{n+1}, \dots, \underbrace{000}_{n+m-1}$ . We obtain the required

matrix  $M'$ . If the first line of the matrix  $M'$  is not  $\underbrace{11 \dots 1}_p$ , then we insert the row  $\underbrace{11 \dots 1}_{p+1}$  as a first row and the column  $\underbrace{10 \dots 0}_p$  as a first column. We obtain a new code

$W = \{\theta, w_1, \dots, w_{n+m}\}$ . Using relation (2.1), we define on  $(W, \leq_c)$  a binary relation “\*”. It results that  $X = (W, *, \theta)$  becomes a BCK-algebra.

**Proposition 3.4** *Let  $C$  be a binary block code with  $n$  codewords of length  $m$ . With the above notations, we have that  $\{\theta, w_{n+1}, \dots, w_{n+m}\}$  determines a filter in the Hilbert algebra  $(X, \cdot, \theta)$ , obtained in Remark 3.2.*

*Proof* It is obvious.

**Definition 3.5** A mapping  $\tilde{A} : A \rightarrow X$  is called an *H-function* on  $A$ , where  $A$  and  $X$  are a nonempty set and  $X$  is a Hilbert-algebra, respectively.

**Definition 3.6** A cut function of  $\tilde{A}$ , for  $q \in X$ , where  $X$  is a Hilbert algebra, is defined to be a mapping  $\tilde{A}_q : A \rightarrow \{0, 1\}$  such that for all  $x \in A$  we have  $\tilde{A}_q(x) = 1$  if and only if  $q * \tilde{A}(x) = 0$ .

**Definition 3.7** Let  $A = \{1, 2, \dots, n\}$  and let  $X$  be a Hilbert-algebra. A codeword in a binary block-code  $V$  is  $v_x = x_1x_2 \dots x_n$  such that  $x_i = i$  if and only if  $\tilde{A}_x(i) = j$  for  $i \in A$  and  $j \in \{0, 1\}$ .

**Proposition 3.8** *Let  $C$  be a binary block code with  $n$  codewords of length  $m$  and let  $X$  be the associated Hilbert algebra, as in the above. Therefore, there are the sets  $A$  and  $B \subseteq X$ , the H-function  $f : A \rightarrow X$  and a cut function  $f_r$  such that*

$$C = \{f_r : A \rightarrow \{0, 1\} / f_r(x) = 1, \text{ if and only if } r * f(x) = \theta, \forall x \in A, r \in B\}. \quad \square$$

**Proposition 3.9** (Flaut 2015, Remark 3.6) *If  $\mathfrak{R}_n$  is the number of all finite non-isomorphic BCK-algebras with  $n$  elements, then  $\mathfrak{R}_n \geq 2^{\frac{(n-1)(n-2)}{2}}$ .*

**Proposition 3.10** *If  $\mathcal{N}$  is the number of all finite non-isomorphic Hilbert algebras  $(X, \cdot, \theta)$  with  $n$  elements, then  $\mathcal{N} \geq 2^{\frac{(n-1)(n-2)}{2}}$ .*

*Proof* From Remark 2.2, we know that the multiplication “ $*$ ” given in relation (2.1) defines on the  $(X, *, \theta)$  a structure of a positive implicative BCK-algebra. Since to each positive implicative BCK-algebra corresponds a Hilbert algebra, we will use Proposition 2.4 and we obtain the required result.  $\square$

**Theorem 3.11** *Let  $V$  be a binary block-code with  $n$  codewords of length  $n$ ,  $V = \{x_1, x_2, \dots, x_n\}$ . We consider the codewords  $x_1, x_2, \dots, x_n$  lexicographically ordered,  $x_1 \geq_{lex} x_2 \geq_{lex} \dots \geq_{lex} x_n$  such that  $x_1 = \underbrace{11\dots 1}_n, x_2 = \underbrace{010\dots 0}_n, x_3 = \underbrace{001\dots 0}_n, x_n = \underbrace{000\dots 1}_n$ . With the above notations, the Hilbert algebra  $(X, \cdot, \theta)$ , obtained as in Remark 3.2, is a semisimple Hilbert algebra.*

*Proof* The algebra  $X$  has the following elements  $X = \{(\theta = x_1), x_2, \dots, x_n\}$ . Using the construction of this algebra, we obtain that  $x_i \cdot x_j = x_j$ , for all  $i, j \in \{1, 2, \dots, n\}$ ,  $i \neq j$ , therefore, for each  $i \neq 1$ , we have that  $L_i = \{x_j \in X \mid j \neq i\}$  is a maximal proper filter in  $X$ . Since  $\bigcap_{i \neq 1} L_i = \{\theta\}$ , it results that  $X$  is a semisimple Hilbert algebra.  $\square$

**Theorem 3.12** *Let  $V$  be a binary block-code with  $n$  codewords of length  $n$ ,  $V = \{x_1, x_2, \dots, x_n\}$ . We consider the codewords  $x_1, x_2, \dots, x_n$  lexicographically*

ordered,  $x_1 \geq_{lex} x_2 \geq_{lex} \dots \geq_{lex} x_n$ . If the associated matrix  $M_V = (m_{ij})_{i,j \in \{1,2,\dots,n\}} \in \mathcal{M}_n(\{0,1\})$  of the code  $V$  is upper triangular, with  $m_{ii} = 1$ , for all  $i \in \{1,2,\dots,n\}$ , and the last column is equal to  $\underbrace{11\dots 1}_n$ , with the above nota-

tions, the Hilbert algebra  $(X, \cdot, \theta)$ , obtained as in Remark 3.2, is a local Hilbert algebra.

*Proof* The algebra  $X$  has the following elements  $X = \{(\theta = x_1), x_2, \dots, x_n\}$ . Using the construction of this algebra, since  $x_i \cdot x_j = x_j$  or  $\theta$ , and  $x_n \cdot x_j = \theta$ , for all  $j \in \{1,2,\dots,n\}$ , we obtain that  $L = \{\theta, x_2, \dots, x_{n-1}\}$  is the only maximal proper filter in  $X$ , therefore  $X$  is a local Hilbert algebra.  $\square$

### 4 Examples

*Example 4.1* (i) Let  $C = \{0000, 0001, 0010, 0011\} = \{w_6, w_7, w_8, w_9\}$  be a linear binary block code and let  $X = \{\theta, w_2, w_3, w_4, w_5, w_6, w_7, w_8, w_9\}$  be the obtained BCK-algebra. The multiplication “\*” of this algebra is given in the table below (see Borumand Saeid et al. 2015):

*	$\theta$	$w_2$	$w_3$	$w_4$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$
$w_2$	$w_2$	$\theta$	$w_2$	$w_2$	$w_2$	<b><math>w_2</math></b>	<b><math>w_2</math></b>	$\theta$	$\theta$
$w_3$	$w_3$	$w_3$	$\theta$	$w_3$	$w_3$	<b><math>w_3</math></b>	<b><math>w_3</math></b>	$\theta$	<b><math>w_3</math></b>
$w_4$	$w_4$	$w_4$	$w_4$	$\theta$	$w_4$	<b><math>w_4</math></b>	<b><math>w_4</math></b>	<b><math>w_4</math></b>	$\theta$
$w_5$	$w_5$	$w_5$	$w_5$	$w_5$	$\theta$	<b><math>w_5</math></b>	<b><math>w_5</math></b>	<b><math>w_5</math></b>	<b><math>w_5</math></b>
$w_6$	$w_6$	$w_6$	$w_6$	$w_6$	$w_6$	$\theta$	$w_6$	$w_6$	$w_6$
$w_7$	$w_7$	$w_7$	$w_7$	$w_7$	$w_7$	$w_7$	$\theta$	$w_7$	$w_7$
$w_8$	$w_8$	$w_8$	$w_8$	$w_8$	$w_8$	$w_8$	$w_8$	$\theta$	$w_8$
$w_9$	$w_9$	$w_9$	$w_9$	$w_9$	$w_9$	$w_9$	$w_9$	$w_9$	$\theta$

The multiplication table for the obtained Hilbert algebra is

$\cdot$	$\theta$	$w_2$	$w_3$	$w_4$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$\theta$	$\theta$	$w_2$	$w_3$	$w_4$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$w_2$	$\theta$	$\theta$	$w_3$	$w_4$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$w_3$	$\theta$	$w_2$	$\theta$	$w_4$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$w_4$	$\theta$	$w_2$	$w_3$	$\theta$	$w_5$	$w_6$	$w_7$	$w_8$	$w_9$
$w_5$	$\theta$	$w_2$	$w_3$	$w_4$	$\theta$	$w_6$	$w_7$	$w_8$	$w_9$
$w_6$	$\theta$	<b><math>w_2</math></b>	<b><math>w_3</math></b>	<b><math>w_4</math></b>	<b><math>w_5</math></b>	$\theta$	$w_7$	$w_8$	$w_9$
$w_7$	$\theta$	<b><math>w_2</math></b>	<b><math>w_3</math></b>	<b><math>w_4</math></b>	<b><math>w_5</math></b>	$w_6$	$\theta$	$w_8$	$w_9$
$w_8$	$\theta$	$\theta$	$\theta$	<b><math>w_4</math></b>	<b><math>w_5</math></b>	$w_6$	$w_7$	$\theta$	$w_9$
$w_9$	$\theta$	$\theta$	<b><math>w_3</math></b>	$\theta$	<b><math>w_5</math></b>	$w_6$	$w_7$	$w_8$	$\theta$

Using above notations, for  $B = \{w_6, w_7, w_8, w_9\}$  and  $A = \{w_2, w_3, w_4, w_5\}$ , we remark that we obtain the initial code. We remark that

$$L_1 = \{\theta, w_2, w_3, w_4, w_5, w_6, w_7, w_9\}, L_2 = \{\theta, w_2, w_3, w_4, w_5, w_6, w_7, w_8\},$$

$$L_3 = \{\theta, w_2, w_3, w_4, w_5, w_6, w_8, w_9\}, L_4 = \{\theta, w_2, w_3, w_4, w_5, w_7, w_8, w_9\},$$

$$L_5 = \{\theta, w_2, w_3, w_4, w_6, w_7, w_8, w_9\}, L_6 = \{\theta, w_2, w_3, w_5, w_6, w_7, w_8, w_9\}$$

are all maximal filters. Since  $\bigcap_{i=1}^6 L_i = \{\theta, w_2, w_3\}$ , it results that this algebra is not semisimple and it is not local.

*Example 4.2* We consider the binary block code

$$C = \{11111, 01011, 00111, 00011, 00001\}.$$

Since the codewords are lexicographically ordered, the obtained BCK algebra is  $H = \{\theta, a, b, c, d\}, (H, *)$ , the obtained Hilbert algebra is  $(H, \cdot)$  and have the multiplication given in the tables below.

*	$\theta$	$a$	$b$	$c$	$d$
$\theta$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$
$a$	$a$	$\theta$	$a$	$\theta$	$\theta$
$b$	$b$	$b$	$\theta$	$\theta$	$\theta$
$c$	$c$	$c$	$c$	$\theta$	$\theta$
$d$	$d$	$d$	$d$	$d$	$\theta$

$\cdot$	$\theta$	$a$	$b$	$c$	$d$
$\theta$	$\theta$	$a$	$b$	$c$	$d$
$a$	$\theta$	$\theta$	$b$	$c$	$d$
$b$	$\theta$	$a$	$\theta$	$c$	$d$
$c$	$\theta$	$\theta$	$\theta$	$\theta$	$d$
$d$	$\theta$	$\theta$	$\theta$	$\theta$	$\theta$

The proper filters are  $L_1 = \{\theta, a\}, L_2 = \{\theta, b\}, L_3 = \{\theta, a, b\}, L_4 = \{\theta, a, b, c\}$ .

$L_4$  is the only maximal filter, therefore  $(H, \cdot)$  is a local Hilbert algebra (see Theorem 3.12).  $H$  is not a semisimple algebra.

*Example 4.3* We consider the binary block code  $C = \{1111, 0100, 0010, 0001\}$ .

Since the codewords are lexicographically ordered, the obtained BCK algebra is  $H = \{\theta, a, b, c\}, (H, *)$ , the obtained Hilbert algebra is  $(H, \cdot)$  and have the multiplication given in the tables below.

*	$\theta$	$a$	$b$	$c$
$\theta$	$\theta$	$\theta$	$\theta$	$\theta$
$a$	$a$	$\theta$	$a$	$a$
$b$	$b$	$b$	$\theta$	$b$
$c$	$c$	$c$	$c$	$\theta$

$\cdot$	$\theta$	$a$	$b$	$c$
$\theta$	$\theta$	$a$	$b$	$c$
$a$	$\theta$	$\theta$	$b$	$c$
$b$	$\theta$	$a$	$\theta$	$c$
$c$	$\theta$	$a$	$b$	$\theta$



The proper maximal filters are  $L_1 = \{\theta, a, b\}$ ,  $L_2 = \{\theta, b, c\}$ ,  $L_3 = \{\theta, a, c\}$ .  $L_1, L_2, L_3$  are maximal filters and  $L_1 \cap L_2 \cap L_3 = \{e\}$ , therefore  $(H, \cdot)$  is not a local Hilbert algebra but it is a semisimple algebra (see Theorem 3.11).

## 5 Conclusions

In the papers Jun and Song (2011), Flaut (2015), Borumand Saeid et al. (2015), some connections between BCK-algebras and binary block codes were described. In this paper we made some connections between Hilbert algebras and binary block codes via BCK-algebra defined by relation (2.1). In this way, using codes, we found examples of classes of semisimple Hilbert algebras and classes of local Hilbert algebras. As further research, we will try to find answers to the reverse problem, namely, how properties of BCK-algebras, BCI-algebras, Hilbert algebras can influence the properties of binary block codes.

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# Questionnaires in Linguistics Using the Bar and the $H_v$ -Structures

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**Abstract** The class of hyperstructures called  $H_v$ -structures has been studied from several aspects as well as in connection with many other topics of mathematics. Here we present applications obtained from social sciences mainly the ones used questionnaires, as in the Linguistics. We present the procedure of the filling the questionnaires, using the bar instead of Likert scale, on computers where we write down automatically the results so they are ready for research. We formulate the results in order to become  $H_v$ -structures. Finally, one studied the associated  $H_v$ -structures can reconsider some problems in linguistics for advance study.

**Keywords** Hyperstructures ·  $H_v$ -structures · Hopes · Questionnaires

**AMS Subject Classification** 20N20 · 16Y99

## 1 Basic Definitions

We deal with the theory of hyperstructures introduced by Marty (1934). For basic definitions and applications on the related theory one can see the books (Corsini 1993; Corsini and Leoreanu 2003; Davvaz and Leoreanu 2007; Vougiouklis 1994) and related papers as the (Davvaz 1998, 2003) and e.g. (Ameri et. al 2016), (Chvalina and Hoskova-Mayerova 2013, 2014). We focus on the large class of hyperstructures called  $H_v$ -structures introduced in 1990 (Vougiouklis 1991), which

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satisfy the *weak axioms* where the non-empty intersection replaces the equality. Basic definitions on the topic are the following:

In a set  $H$  equipped with a hyperoperation (abbreviation, *hyperoperation* = hope)  $\cdot : H \times H \rightarrow P(H) - \{\emptyset\}$ , we abbreviate by

WASS the *weak associativity*:  $(xy)z \cap x(yz) \neq \emptyset, \forall x, y, z \in H$  and by

COW the *weak commutativity*:  $xy \cap yx \neq \emptyset, \forall x, y \in H$

The hyperstructure  $(H, \cdot)$  is called  $H_v$ -*semigroup* if it is WASS, it is called  $H_v$ -*group* if it is reproductive  $H_v$ -semigroup, i.e.,  $xH = Hx = H, \forall x \in H$ . The hyperstructure  $(R, +, \cdot)$  is called  $H_v$ -*ring* if both  $(+)$  and  $(\cdot)$  are WASS, the reproduction axiom is valid of  $(+)$  and  $(\cdot)$  is weak distributive with respect to  $(+)$ :

$$x(y+z) \cap (xy+xz) \neq \emptyset, (x+y)z \cap (xz+yz) \neq \emptyset, \forall x, y, z \in R.$$

**Motivations** (Vougiouklis 1994)

1. The quotient of a group with respect to an invariant subgroup is a group.
2. The quotient of a group with respect to any subgroup is a hypergroup.
3. The quotient of a group with respect to any partition is an  $H_v$ -group.

The main tool to study hyperstructures are the fundamental relations  $\beta^*, \gamma^*$  and  $\varepsilon^*$ , which are defined, in  $H_v$ -groups,  $H_v$ -rings and  $H_v$ -vector spaces, resp., as the smallest equivalences so that the quotient would be group, ring and vector space, resp. The relation  $\beta^*$  was introduced by Koskas (1970) and was mainly studied intensively and in depth by Corsini (1993). The relations  $\gamma^*$  and  $\varepsilon^*$ , were introduced by Vougiouklis (1987, 1991, 1994, 1995) and he named them Fundamental. A way to find the fundamental classes is given by theorems as the following (Vougiouklis 1994).

**Theorem 1** *Let  $(H, \cdot)$  be an  $H_v$ -group and denote by  $U$  the set of all finite products of elements of  $H$ . We define the relation  $\beta$  in  $H$  by setting  $x\beta y$  iff  $\{x, y\} \subset u$  where  $u \in U$ . Then  $\beta^*$  is the transitive closure of  $\beta$ .*

An element is called *single* if its fundamental class is singleton (Vougiouklis 1994).

Fundamental relations are used for general definitions. Thus, an  $H_v$ -ring  $(R, +, \cdot)$  is called  $H_v$ -*field* if  $R/\gamma^*$  is a field.

Let  $(H, \cdot), (H, *)$  be  $H_v$ -semigroups defined on the same set  $H$ .  $(\cdot)$  is called *smaller* than  $(*)$ , and  $(*)$  *greater* than  $(\cdot)$ , iff there exists an

$$f \in \text{Aut}(H, *) \text{ such that } xy \subset f(x * y), \forall x, y \in H.$$

Then we write  $\cdot \leq *$  and we say that  $(H, *)$  contains  $(H, \cdot)$ . If  $(H, \cdot)$  is a structure then it is called *basic structure* and  $(H, *)$  is called  $H_b$ -*structure*.

**Theorem 2 (The Little Theorem)** *Greater hopes than the ones which are WASS or COW, are also WASS or COW, respectively.*

This Theorem leads to a partial order on  $H_v$ -structures and mainly to a correspondence between hyperstructures and posets. The determination of all  $H_v$ -groups and  $H_v$ -rings is very interesting but hard.

To compare classes we can see the small sets. The problem of enumeration and classification of  $H_v$ -structures, or of classes of them, was started very early but recently we have interesting results by using computers. The problem is complicate in  $H_v$ -structures because we have great numbers. The partial order introduced in  $H_v$ -structures restrict the problem in finding the minimal, up to *isomorphisms*,  $H_v$ -structures (Bayon and Lygeros 2008).

**Definition 1** (Vougiouklis 1996, 1999). Let  $(H, \cdot)$  be hypergroupoid. We remove  $h \in H$ , if we consider the restriction of  $(\cdot)$  in the set  $H - \{h\}$ .  $\underline{h} \in H$  absorbs  $h \in H$  if we replace  $h$  by  $\underline{h}$  and  $h$  does not appear in the structure.  $\underline{h} \in H$  merges with  $h \in H$ , if we take as product of any  $x \in H$  by  $\underline{h}$ , the union of the results of  $x$  with both  $h, \underline{h}$ , and consider  $h$  and  $\underline{h}$  as one class with representative  $\underline{h}$ .

In 1989 Corsini and Vougiouklis introduced a method to obtain stricter algebraic structures from given ones through hyperstructure theory. This method was introduced before of the  $H_v$ -structures, but in fact the  $H_v$ -structures appeared in the procedure.

**Definition 2** The uniting elements method is the following: Let  $G$  be a structure and  $d$  be a property, which is not valid, and it is described by a set of equations. Consider the partition in  $G$  for which it is put together, in the same class, every pair of elements that causes the non-validity of  $d$ . The quotient  $G/d$  is an  $H_v$ -structure. Then quotient of  $G/d$  by the fundamental relation  $\beta^*$ , is a stricter structure  $(G/d)/\beta^*$  for which  $d$  is valid.

An application of the uniting elements is if more than one property is desired. The reason for this is that some of the properties lead straighter to the classes: commutativity and the reproductivity are easily applicable. One can do this because there is the following theorem (Vougiouklis 1994):

$$\begin{array}{ccc}
 R & \xrightarrow{\rho_m} & R/\sigma_m \xrightarrow{\phi_m} R_m \\
 \downarrow \rho & & \downarrow \rho_n \\
 R/\sigma & & R_m/\sigma_n \\
 \downarrow \phi & & \downarrow \phi_n \\
 (R/\sigma)/\gamma^* & \xrightarrow{\cong} & (R_m/\sigma_n)/\gamma^*
 \end{array}$$

where all the mappings  $\rho, \phi, \rho_m, \phi_m, \rho_n, \phi_n$  are canonical ones.

The Lie-Santilli *isotopies* born to solve Hadronic Mechanics problems. Santilli proposed (Nikolaidou and Vougiouklis 2014; Santilli and Vougiouklis 1996; Vougiouklis 2012, 2013) a ‘lifting’ of the trivial unit matrix of the normal theory into a nowhere singular, symmetric, real-valued, new matrix. The original theory is reconstructed such as to admit the new matrix as left and right unit. The *isofields*

needed correspond to  $H_v$ -structures called *e-hyperfields* which are used in physics or biology.

Most of  $H_v$ -structures are used in Representation (abbreviate by rep) Theory. Reps of  $H_v$ -groups can be considered either by generalized permutations or by  $H_v$ -matrices (Vougiouklis 1987, 1994, 1999, 2015). Reps by generalized permutations can be achieved by using translations. In the rep theory the singles are playing a crucial role.

The rep problem by  $H_v$ -matrices is the following:

$H_v$ -matrix is called a matrix if has entries from an  $H_v$ -ring. The hyperproduct of  $H_v$ -matrices  $A = (a_{ij})$  and  $B = (b_{ij})$ , of type  $m \times n$  and  $n \times r$ , respectively, is a set of  $m \times r$   $H_v$ -matrices, defined in a usual manner:

$$A \cdot B = (a_{ij}) \cdot (b_{ij}) = \left\{ C = (c_{ij}) \mid c_{ij} \in \bigoplus \sum a_{ik} \cdot b_{kj} \right\},$$

where  $(\bigoplus)$  denotes the  $n$ -ary circle hope on the hyperaddition, i.e. take the union of all sums by putting parentheses in all possible ways.

**Definition 3** Let  $(H, \cdot)$  be an  $H_v$ -group,  $(R, +, \cdot)$  an  $H_v$ -ring and  $M_R = \{(a_{ij}) \mid a_{ij} \in R\}$ , then any map

$$T : H \rightarrow M_R : h \rightarrow T(h) \text{ with } T(h_1 h_2) \cap T(h_1)T(h_2) \neq \emptyset, \forall h_1, h_2 \in H,$$

is called  $H_v$ -matrix rep. If  $T(h_1 h_2) \subset T(h_1)T(h_2)$ , then  $T$  is an inclusion rep, if  $T(h_1 h_2) = T(h_1)T(h_2)$ , then  $T$  is a good rep.

Hopes on any type of matrices can be defined, these are called helix hopes (Davvaz et al. 2011; Vougiouklis 2011).

## 2 The $\partial$ -Hopes

In Vougiouklis (2005, 2008a, b, 2011) it is defined a hope, in a groupoid with a map  $f$  on it, called *theta* ( $\partial$ ).

**Definition 4** Let  $(G, \cdot)$  be groupoid (resp., hypergroupoid) and  $f : G \rightarrow G$  be a map. We define a hope ( $\partial$ ), on  $G$  as follows

$$x\partial y = \{f(x) \cdot y, x \cdot f(y)\}, \forall x, y \in G.$$

$$(resp. \ x\partial y = (f(x) \cdot y) \cup (x \cdot f(y)), \forall x, y \in G)$$

If  $(\cdot)$  is commutative then  $(\partial)$  is commutative. If  $(\cdot)$  is *COW* then  $(\partial)$  is *COW*.

Let  $(G, \cdot)$  be groupoid (resp., hypergroupoid) and  $f : G \rightarrow P(G) - \{\emptyset\}$  be any multivalued map. We define the  $(\partial)$ , on  $G$  as follows  $x\partial y = (f(x) \cdot y) \cup (x \cdot f(y))$ ,  $\forall x, y \in G$ .

Let  $(G, \cdot)$  be groupoid  $f_i : G \rightarrow G, i \in I$ , be a set of maps on  $G$ . The  $f_{\cup} : G \rightarrow P(G) : f_{\cup}(x) = \{f_i(x) | i \in I\}$ , is the *union* of  $f_i(x)$ . We have the *union theta-hope*  $(\partial)$ , on  $G$  if we take  $f_{\cup}(x)$ . If we take  $\underline{f} \equiv f \cup (id)$ , then we have the *b-theta-hope*.

**Proposition 1** *If  $(G, \cdot)$  is a semigroup, then:*

1. *For every  $f$ , the  $(\partial)$  is WASS*
2. *If  $f$  is homomorphism and projection, i.e.  $f^2 = f$ , then  $(\partial)$  is associative.*
3. *For every  $f$ , the b-theta-hope  $(\partial)$  is WASS.*
4. *Reproductivity. If  $(\cdot)$  is reproductivity then  $(\partial)$  is also reproductivity.*
5. *Commutativity. If  $(\cdot)$  is commutative then  $(\partial)$  is commutative. If  $f$  is into the centre of  $G$ , then  $(\partial)$  is commutative. If  $(\cdot)$  is COW then,  $(\partial)$  is COW.*

**Proposition 2** *Let  $(G, \cdot)$  be a group, then for all maps  $f : G \rightarrow G$ , the  $(G, \partial)$  is an  $H_v$ -group.*

**Motivation.** For the definition of the theta-hope is the map *derivative* where only the multiplication of functions can be used. Therefore, in these terms, for two functions  $s(x), t(x)$ , we have  $s\partial t = \{s't, st'\}$ , where  $(t)$  denotes the derivative.

There is connection between  $\partial$ -hopes and other hyperstructures:

*Example P-hopes* (Vougiouklis 1994). Let  $(G, \cdot)$  be a commutative semigroup and  $P \subset G$ . Consider the multivalued map  $f$  such that  $f(x) = P \cdot x, \forall x, y \in G$ .

Then we have  $x\partial y = x \cdot y \cdot P, \forall x, y \in G$ .

So, the  $\partial$ -hope coincides with the well known class of  $P$ -hopes Vougiouklis (2008a, b).

One can define  $\partial$ -hopes on rings and other more complicate structures, where more than one  $\partial$ -hopes can be defined. Moreover, one can replace structures by hyper ones or by  $H_v$ -structures, as well.

### 3 The Bar in Questionnaires

During last decades hyperstructures seem to have a variety of applications not only in other branches of mathematics but also in many other sciences including the social ones. In several papers, such as (Chvalina and Hoskova 2007; Davvaz 1998; Nikolaidou and Vougiouklis 2014; Vougiouklis and Vougiouklis 2005), one can find numerous applications; similarly, in the books (Corsini and Leoreanu 2003; Davvaz and Leoreanu 2007) a wide variety of applications is also presented.

A new application, which combines hyperstructure theory and fuzzy theory, is to replace in questionnaires the scale of Likert by the bar of Vougiouklis and Vougiouklis. The suggestion is the following (Kambaki-Vougioukli and Vougiouklis 2008).

**Definition 5** “In every question substitute the Likert scale with ‘the bar’ whose poles are defined with ‘0’ on the left end, and ‘1’ on the right end:

$$0 \text{-----} 1$$

The subjects/participants are asked instead of deciding and checking a specific grade on the scale, to cut the bar at any point they feel expresses their answer to the specific question”.

The final suggested length of the bar, according to the Golden Ratio, is 6.2 cm, see Vougiouklis and Kambakis-Vougiouklis (2011, 2013).

There are several advantages of the bar of Vougiouklis and Vougiouklis, one of them is the time of filling the questionnaire (Kambaki-Vougioukli et al. 2011). The only disadvantage of the bar is to transfer the data collection to a computer for elaboration. We present an implemented application to overcome the problems raised during the transferring the data.

We present now a program of filling a questionnaire on a computer such that the results automatically can be transferred for research elaboration (Nikolaidou and Vougiouklis 2012). This application overcomes the problem of inputting data from questionnaires to processing and eliminates time of data collection, transferring data directly for any kind of elaboration.

The application has been implemented using Visual Basic and the data is being saved on a Microsoft Access Database. The application is based on “events” and an OleDbConnection is used to connect the program with the database.

Filling-in such questionnaire can be easily achieved by using this application, as it is based on a very simple user interface. The participants have to “click” on the bar, in order to indicate the point that satisfies their answer on the question made. The user has the opportunity to change his answer by “clicking” on another point anytime before submit.

The results are being saved on a simple database (Microsoft Access Database) indicating the exact point each participant has “cut” the bar.

## 4 Applications

One problem in research is to use mathematical models. Such a problem is the following (Kambaki-Vougioukli et al. 2011; Nikolaidou and Vougiouklis 2012, 2014; Vougiouklis and Kambakis-Vougiouklis 2011, 2013):

**Problem 1** In the research processing suppose that we want to use Likert scale dividing the continuum  $[0, 1]$  both by, first, into equal steps (segments) and, second, into equal-area spaces according to Gauss distribution. If we consider both types of divisions into  $n$  segments, then the continuum  $[0, 1]$  is divided into  $2n - 1$

segments, if  $n$  is odd number and into  $2(n - 1)$  segments, if  $n$  is even number. We can number the segments and we can consider as an organized devise the group  $(Z_k, \oplus)$  where  $k = 2n - 1$  or  $2(n - 1)$ . Then we can obtain several hyperstructures using  $\partial$ -hopes as the following way: We can have two partitions of the final segments, into  $n$  classes either using the division into equal steps or the Gauss distribution by putting in the same class all segments that belong (a) to the equal step or (b) to equal-area spaces according to Gauss distribution. Then we can consider two kinds of maps (i) a multi-map where every element corresponds to the hole class or (ii) a map where every element corresponds to one special fixed element of the same class. Using these maps we define the  $\partial$ -hopes and we obtain the corresponding  $H_\nu$ -structure.

An application on this direction is the following construction:

**Construction 1** Consider a group  $(G, \cdot)$  and suppose take a partition  $R : G_i, i \in I$ , of the  $G$ . Select and fix an element  $g_i$  of each partition class  $G_i$ , and consider the map

$$f : G \rightarrow G \text{ such that } f(x) = g_i, \forall x \in G_i,$$

then  $(G, \partial)$  is an  $H_\nu$ -group. Moreover, the fundamental group  $(G/R, \cdot)/\beta^*$  is (up to isomorphism) a subgroup of the corresponding fundamental group  $(G, \partial)/\beta^*$ .

We remark in the above construction that, if one of the selected elements is the unit element  $e$  of the group  $(G, \cdot)$ , otherwise, if there exist an element  $z \in G$  such that  $f(z) = e$ , then we have  $(G/R, \cdot)/\beta^* = (G, \partial)/\beta^*$ .

Moreover, suppose  $(G, \cdot)$  is a group and  $G_i, i \in I$  is a partition of  $G$ . For any class we fix a  $g_i \in G_i$ , and take the map  $f : G \rightarrow G : f(x) = g_i, \forall x \in G_i$ . If for the unit element  $e$ , in  $(G, \cdot)$ , we have  $f(e) = e$ , i.e.  $e$  is any fixed element, then  $e$  is also a unit element of the  $H_\nu$ -group  $(G, \partial)$ . Moreover  $(f(x))^{-1}$  is an inverse element in the  $\partial$ -  $H_\nu$ -group  $(G, \partial)$ , of  $x$ .

An example of the above Construction is the following:

*Example 1* (Kambaki-Vougioukli et al. 2011; Nikolaidou and Vougiouklis 2012) Suppose that we take the case of the Likert scale with 5 equal steps:  $[0 - 1.24 - 2.48 - 3.72 - 4.96 - 6.2]$  and the Gauss 5 equal areas:  $[0 - 2.4 - 2.9 - 3.3 - 3.8 - 6.2]$  we have 9 segments as follows

$$[0 - 1.24 - 2.4 - 2.48 - 2.9 - 3.3 - 3.72 - 3.8 - 4.96 - 6.2]$$

Therefore, if we consider the set  $(Z_9, +)$  and if we name the above segments by 0, 1, 2, ..., 8 then if we consider the Gauss partition:  $\{0, 1\}, \{2, 3\}, \{4\}, \{5, 6\}, \{7, 8\}$  we take, according to the above Construction, the map  $f$  such that  $f(0) = 0, f(1) = 0, f(2) = 2, f(3) = 2, f(4) = 4, f(5) = 5, f(6) = 5, f(7) = 7, f(8) = 7$ , then we obtain the following table:



$\partial$	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>0</b>	0	0, 1	2	2, 3	4	5	5, 6	7	7, 8
<b>1</b>	0, 1	1	2, 3	3	4, 5	5, 6	6	7, 8	8
<b>2</b>	2	2, 3	4	4, 5	6	7	7, 8	0	0, 1
<b>3</b>	2, 3	3	4, 5	5	6, 7	7, 8	8	0, 1	1
<b>4</b>	4	4, 5	6	6, 7	8	0	0, 1	2	2, 3
<b>5</b>	5	5, 6	7	7, 8	0	1	1, 2	3	4, 3
<b>6</b>	5, 6	6	7, 8	8	0, 1	1, 2	2	3, 4	4
<b>7</b>	7	7, 8	0	0, 1	2	3	3, 4	5	5, 6
<b>8</b>	7, 8	8	0, 1	1	2, 3	4, 3	4	5, 6	6

Remark that, for the  $H_\nu$ -group  $(Z_9, \partial)$ , the elements 0 and 1 are unit elements.  $(Z_9, \partial)$  is cyclic where the elements 2, 3, 4, 5, 6, 7 and 8 are generators with period 6, 7, 6, 9, 6, 7 and 7 respectively.

## 5 In Progress: Questionnaires in Linguistics Research

The application described above is used in a survey that took place in three schools in Komotini, Greece. 400 students, 14–15 years of age, participated. There were two main ethnic groups, one with Greek first language (MT) and one with Turkish MT, half males and half females.

The purpose of the survey was to investigate their employment of learning strategies while learning a foreign language, English more specifically. The tool used was the 50-item Strategy Inventory Language Learning, questionnaire, widely known as SILL (Oxford 1990). There were six categories of strategies, namely mnemonic, cognitive, compensatory, metacognitive, affective and social and all participants had to specify (a) how often they use each strategy on a 62 bar, and (b) how confident they feel that the application of each strategy facilitates their learning on another 62 bar. In other words the specific participants had to answer not only 50 questions counting the frequency, which is the widely used practice, but 50 more questions, counting their confidence, too, a rather tiring, even boring process, one should expect.

By contrast to widely used surveys in Greek schools where questionnaires are mainly filled in on paper, the students were happy to work on the computer and although they had to actually answer 100 questions, or twice the same question, they finished the test in 11–12 min than the 18–20 min normally demanded for the 50-item paper version!

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# Strategies for a Sociological Diagnosis of Communicational Environment of Students

Fiorella Paone

**Abstract** The paper starts with a presentation of one of the latest community orientations about education and training. In particular, it focuses on need to use systems of analysis able to supervise socialization processes experienced at school, specifically focusing on the influence that new communication technologies has on way of knowledge construction, elaboration and transmission of students. The hypothesis, indeed, is that such a cultural change could modify the most common dynamics of thought and action among students. Starting by the importance teachers have to know about media habits and preferences of their students due to direct their interventions for school wellness, this paper shows a mathematical model of formalization of the mean influence rate of each communicational standard on cultural system of students. So, the quantitative elaboration of these influences is the basis for construction of a sociological diagnosis of the cultural situation of students considered as fundamental requirements to select effective teaching strategies and supports for decision processes. The paper finishes with the presentation of the definition of a class cultural situation on which the model has been tested with the goal of a formal validation.

**Keywords** School · New media · Socialization · Childhood · Model of formalisation · Education · Communication

## 1 Introduction: The Influence of Media Change on Class

Since several years (Lisbon European Council 2000) community orientations recognize the relevant role of education and training on international and national growth and development asking to reflect about concrete future goals of education systems and point out the need to improve quality and efficiency in order to support the weakest segments of school population (OECD 2012). We need, therefore,

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programs of evaluation and actions adapted to contemporary needs complexity to have the focus moved from final results certification to quality of teaching-learning process (Council of the European Union 2012). Besides, international orientations recommend to consider the transformation that the increasing influence of new virtual learning environment on socialization processes of young introduced on the *everyday life* at school (Becta 2008). In fact, one of the most confirmed orientation is the scientific one according to which the traditional category of Childhood is passing away (Postman 1982) in order to give space to *digital natives*<sup>1</sup> (Prensky 2001, 2012), the one to which those born and grown up with new media technologies (considered as new standard of cultural construction, elaboration and transmission) belong. The influence of new communicative technologies, indeed, can activate different communicational processes of person-construction compared with the ones of passed generation, defined *digital immigrants*, triggering new theoretical-behavioural paradigm, that is to say new ways of encoding/decoding of environment and new cognitive styles which become new possible precondition for the action (Ferri 2011; Jenkins 2006, 2009).

For this reason, even if the need to elaborate instruments of evaluation and action on quality of school socialization processes in terms of effectiveness and efficiency is already present in the sociological research and not only, the absence of a strengthened and shared tradition by the scientific community about media influence on such a process can make the matter of this paper as still emerging (Hošková-Mayerová 2011a, b). The present work, indeed, focuses on media habits and preferences of students of a class considered as important field in order to study and better comprehend the common dynamics which characterize their socialization process (Morcellini 2007). The latter, in fact, is more and more characterized by a partial/missed positive outcome of functional interpenetration between school culture and students one which are often distant, independent and discordant (cfr. Jenkins 2006, 2009). The above-mentioned influence neo-media have on process of knowledge construction and on nature of learned *literacies* competences can make these competences more and more distant from the preparatory ones that would enhance positive school success<sup>2</sup> (Infante 2000; Ferri 2011; Banzato 2011). The latter highlights the importance of owned and used expressive codes (Bernstein 1961) as well as the cultural aspect (Bourdieu 1966) on scholarization effects of students. Media habits can, effectively, modify owned

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<sup>1</sup>Choice to use the expression *digital natives* has been taken on awareness that (Ferri 2011: 7) *such a concept is currently object of scientific debate and considering risks that its acritical use mean (...) However, differently from Jenkins, we think that effectiveness of this expression and clarity of metaphor are a good reason to use it.* Jenkins's reflection, as well, has been taken in consideration since he underlines how such acritical use of this expression could bring both to underestimate differences of entries to new technologies, of competence compared to its use and differences of belonging and origin compared to social-cultural capital of each person, underestimating generational component (cfr. Jenkins 2009, tr. it. 2010).

<sup>2</sup>School success represents (Besozzi 2006: 271): an "*indicator*" of ability to adapt to school culture and its demands in term of performances.

cultural standards, pointing out the fact that very often difficulty of contact between educators and being educated is due to a communicative distance (Morcellini 2007). An ecological perspective that examines the social context in which each relational dynamic takes place makes easier understand how such a distance can influence school experience of students and contribute, in several cases, to impede the reach of those grassroots school results both from a learning and behavioural point of view. This kind of analysis leads to consider communicational difficulties within the class as possible cause of influence of school problems of students. These difficulties would be related to different standards of knowledge construction between students and teachers that would create a symbolic *communicational wall* which would become a trait of school socialization process and limit of schoolarization one.

For that matter, the definition of communicational traits of a class is very important for the decoding of school socialization process. The decoding, indeed, could be the basis for the construction of leading criteria for a school offer sociologically-oriented to class wellness since able to appraise communicational peculiarities of each group of students. Underlining the importance of communicational nature would not expel School from its institutional obligations but ease them throughout school experts who develop capacity of qualitative selection of communicative strategies nearer to the class, according to methodological criteria which value *communicational difference* of each group.<sup>3</sup> In order to select more effective teaching communicational strategies according to quality and equity goals school reaches to, school experts should be in the preliminary condition to build a sociological definition of the communicational situation of class in order to both recognize and enhance its functional aspects and correcting dysfunctional ones.

That being so, a model of formalisation of classes media habits and appreciation has been selected, both qualitative and quantitative, which stands for a possibility of definition of the mean influence rate of each communicational standards on classes culture.

From a scientific validation point of view (cfr. Cipolla and Agnoletti 2011), the application of this model aims to highlight the concrete communicational needs of class, improving planning of action strategies able to fulfill needs of multifaceted users and appraise quality of acted processes (Allulli 2000). The so built diagnosis, effectively, could make teachers able to orientate their own decision process helping them in selection of effective communicational strategies able to contribute facilitating positive results of socialization process of students. Finally, results related to definition of mean influence rate of each communicational standards on class the researcher tested the model on (May, 2013) due to validate the formal accuracy will be presented.

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<sup>3</sup>For example, if way of knowledge constructing had an hypothetical-experimental feature and organised through the *bricouler* learning model, it would be important planning guided experiences based on abductive inferential modalities (Turkle 1995).

## 2 The Model for Mean Media-Influence Rate on Class

The nature of communicational traits of cultural situation of a common class of any school context can be defined according to different influence that each standard of knowledge elaboration and transmission (oral, neo-oral and typographic) has on it. Students culture means system of communicative-relational routine, habits and practices they have; we specify that each cultural context is considered in relation with medium it is connected to.

In order to make this definition concrete and understandable, a set of communicational school and extra-school activities is specified and considered expression of standard of knowledge construction and transmission that characterizes respectively oral, neo-oral and typographic culture. Each activity was weighted according to its representativeness in relation to connected medium.

Communicational activities and related weights of oral culture (O) are:

- $O_1$ : playing alone or with peers for sport, walking, bicycle...,  $w(O_1) = 1/3$ ,
- $O_2$ : staying with adults of family,<sup>4</sup>  $w(O_2) = 1/3$ ,
- $O_3$ : playing with non-eletronic toys (i.e.: machines, dolls, balls, etc.),  $w(O_3) = 1/3$ .

Communicational activities and related weights of neo-oral culture (NO) are:

- $NO_1$ : using pc to surf the web, chat, play, etc.,  $w(NO_1) = 2/7$ ,
- $NO_2$ : watching TV,  $w(NO_2) = 1/7$ ,
- $NO_3$ : using cellular/smartphone,  $w(NO_3) = 2/7$ ,
- $NO_4$ : video-games,  $w(NO_4) = 2/7$ .

Communicational activities and related weights of typographical culture (T) are:

- $T_1$ : staying at school,  $p(T_1) = 2/5$ ,
- $T_2$ : doing homeworks,  $p(T_2) = 2/5$ ,
- $T_3$ : reading tales, comics, picture books, etc.,  $p(T_3) = 1/5$ .

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<sup>4</sup>While for variables which determination of a specific medium it's easier, the collocation of variable *staying with adults of family* in cultural activities that characterize a specific media environment is not definable a priori since connected to social-cultural status of native family. The perspective that tries to collect peculiarities of each family context is adopted (Morcellini and Cortoni 2007) asking each student to point out job and education of each parent before elaboration of data starts (cfr. section c of questionnaire "school and extra-school activities of children", p. 5 of current paper).

This was done in class on which the model was tested too and it emerged that families belonged to a low social-cultural status as shown in the following paragraphs. For these reasons and to make explanation of the model easier, it was chosen to put family variables to oral culture category in order to make it in compliance with features of selected class and make it appropriate for a further check.

Before using the model for future researches, a selection on standard of thought that family variables represent has to be made once again, collecting data about social-cultural belonging and origins of each nucleus.

The above-mentioned communicational activities are to be analyzed according to a double aspect:

- Time dedicated to each communicational activity (K);
- grades of Appreciation of each communicational activity (Z).

Indeed, the relevance of each standard of knowledge elaboration and transmission on class is calculated considering both Times and Appreciations above-mentioned.

Called K time dedicated to communicational activities, KO has been defined as the sum of weighted mean time that students dedicate to activities related to oral culture:

- $k_1$ : time dedicated to play alone or with peers for sport, walking, bicycle...  
 $w(k_1) = 1/3$ ,
- $k_2$ : time dedicated to stay with adults of family,<sup>5</sup>  $w(k_2) = 1/3$ ,
- $k_3$ : time dedicated to play with non-eletronic toys (i.e.: machines, dolls, balls, etc.),  $w(k_3) = 1/3$ .

KNO has been defined as the sum of weighted mean time that students dedicate to activities related to neo-oral culture:

- $k_4$ : time dedicated to use pc surfing the web, chatting, playing, etc.,  $w(k_4) = 2/7$ ,
- $k_5$ : time dedicated to watch TV,  $w(k_5) = 1/7$ ,
- $k_6$ : time dedicated to use cellular/smartphone,  $w(k_6) = 2/7$ ,
- $k_7$ : time dedicated to video-games,  $w(k_7) = 2/7$ .

KT has been defined as the sum of weighted mean time that students dedicate to activities related to typographic culture:

- $k_8$ : time dedicated to stay at school,  $w(k_8) = 2/5$ ,
- $k_9$ : time dedicated to do homeworks,  $w(k_9) = 2/5$ ,
- $k_{10}$ : time dedicated to read tales, comics, picture books, etc.,  $w(k_{10}) = 1/5$ .

Called Z the appreciation of different communicational activities, ZO has been defined as the weighted average of the mean appreciation assigned to activities related to oral culture of a students class:

- $z_1$ : grade of appreciation of playing alone or with peers for sport, walking, bicycle...,  $w(z_1) = 1/3$ ,
- $z_2$ : grade of appreciation of staying with adults of family,<sup>6</sup>  $w(z_2) = 1/3$ ,
- $z_3$ : grade of appreciation of playing with non-eletronic toys (i.e.: machines, dolls, balls, ecc.),  $w(z_3) = 1/3$ .

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<sup>5</sup>Cfr. nota n. 5.

<sup>6</sup>Cf. note n. 5.



ZNO has been defined as the weighted average<sup>7</sup> of the mean appreciation assigned to activities related to neo-oral culture of students of a class:

- $z_4$ : grade of appreciation of using pc to surf the web, chat, play, etc.,  $w(z_4) = 2/7$ ,
- $z_5$ : grade of appreciation of watching TV,  $w(z_5) = 1/7$ ,
- $z_6$ : grade of appreciation of using cellular/smartphone,  $w(z_6) = 2/7$ ,
- $z_7$ : grade of appreciation of video-games,  $w(z_7) = 2/7$ .

ZT has been defined as the weighted average<sup>8</sup> of the mean appreciation assigned to activities related to typographic culture of students of a class:

- $z_8$ : grade of appreciation of staying at school,  $w(z_8) = 2/5$ ,
- $z_9$ : grade of appreciation of doing homeworks,  $w(z_9) = 2/5$ ,
- $z_{10}$ : grade of appreciation of reading tales, comics, picture books, etc.,  $w(z_{10}) = 1/5$ .

This definition allows to ask to students themselves an evaluation of time and appreciation of each communicational activities throughout three media-cultures are performed. Indeed, students are considered the main experts since they experience those activities on their owns.

In order to do this and reveal social-cultural status of native family of students,<sup>9</sup> the following questionnaire named “*school and extra-school activities of children*” has been created:

A. How much time do you dedicate to following activities in regular non-working day during all school year?

	0 h	1 h	2 h	3 h	4 h	5 h	6 h
Time dedicated to play alone or with peers for sport, walking, bicycle, etc.							
Time dedicated to play with non-eletronic toys (machines, dolls, balls, etc.)							
Time dedicated to stay with adults of family							
Time dedicated to use pc surfing the web, chatting, playing, etc.							
Time dedicated to watch TV							

(continued)

<sup>7</sup>The mean appreciations of each activities related to neo-oral culture was weighted according to weight assigned to each of above-mentioned activities in the previous definition of class media-culture.

<sup>8</sup>The mean appreciations of each activities related to typographic culture was weighted according to weight assigned to each of above-mentioned activities in the previous definition of class media-culture.

<sup>9</sup>Cf. note n. 5.

(continued)

	0 h	1 h	2 h	3 h	4 h	5 h	6 h
Time dedicated to use cellular/smartphone							
Time dedicated to videogames							
Time dedicated to stay at school							
Time dedicated to do homeworks							
Time dedicated to read tales, comics, picture books...							
Time dedicated to sleep and rest							

B. Give a grade of appreciation, from a minimum of 1 to a maximum of 5, to following activities?

	1	2	3	4	5
Playing alone or with peers for sport, walking, bicycle, etc.					
Playing wit non-eletronic toys					
Staying with adults of family					
Using pc to surf the web, chat, play, etc.					
Watching TV					
Using cellular/smartphone					
Videogames					
Staying at school					
Doing homeworks					
Reading tales, comics, picture books, etc.					

C. Social-cultural status of family

	Job	Education
Mother		
Father		

Data collected by means of this questionnaire have to be elaborated in order to obtain the definition of the mean influence rate of each communicational standards on media culture of class.<sup>10</sup>

To do this, first of all it is necessary calculate:

<sup>10</sup>It's important o specify that starting from observed data by means of the mentioned questionnaire, an evaluation on a single student could be done in order to observe influence of each media standard on each member of class, even if this possibility is not implemented by the present research.

- weighted average of mean appreciation of students class in terms of oral (ZO), neo-oral (ZNO) and typographic culture (ZT) activities,
- sum of weighted mean times that students everyday dedicate to oral (KO), neo-oral (KNO) and typographic culture (KT) activities.

Second step, we consider above-mentioned Times (KO, KNO, KT) as variables of the phenomenon “class mean culture” and Appreciations (ZO, ZNO, ZT) as related weights. Weighting variables with their weights, three absolute values of mean influence of each communicational standards on class culture are given (I.O, I.NO, I.T). For convenience, we can translate these results in percentage, thus, mean influence rate of each standard (I.O %, I.NO %, I.T %).

### 3 Criteria of Selection of Testing Group

The group the mean influence rate of each communicational standard of class culture to be calculated belonged to urban part of City of Pescara, since school reality has not been analyzed in the past in term of media influence on socialization processes of students. Besides, researcher has already had previous professional experiences with several teachers and directors so she has knowledge and expertise and network of relations that made the observation easier and more effective. The class was selected on the basis of utility and significance criterion of research given by the presence of the following conditions:

- teachers availability to learn new strategies to facilitate schoolarization process of students;
- school operators notification of a problematic situation;
- high numbers of school failures related to attendance, management of class and insufficient school results;
- not notified results of differential selection of students on the basis of social belonging in primary school phase.

The researcher had telephonic interview with 25 experts—14 teachers and 11 social-cultural operators<sup>11</sup>—selected by means of nonprobability sampling (“snow-ball sampling”),<sup>12</sup> asking them to select what primary school district had difficulties in terms of attendance, behaviours and school results. For the beginning of interviews, an employee of Abruzzo District was chosen. She was responsible of children library service at Cultural Promotion Agency of Pescara. Thanks to her professional role she has regular contacts with every school of Pescara and several teachers,

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<sup>11</sup>Every interviewed social-cultural operators are enrolled to Operators Register of Municipality of Pescara as professional or representative of cultural or social promotion associations.

<sup>12</sup>Experts themselves suggested others experts working in school field of Pescara. So interviewees were contacted: *by means of persons who know other persons who know what cases can be interesting for research aims.*

educators and social-cultural operators working in the urban area of the city. Thus, she is able to better know social-educational environment dealing with the research and she has daily contacts both with children and school operators. After this first telephonic interview, we had the interviewees themselves to choose new contacts for the research to be continued. Interviews pointed out that there are the most relevant difficulties in *Don Milani* primary school-district n. 1. So, we asked teachers working there both to confirm those difficulties and their availability to know new helping strategies. In order to make this, the researcher called the project responsible teacher and got a meeting. During the meeting (held the 20th of October, 2012) the researcher observed teachers' difficulties to make students get basic school results. Availability to test new helping strategy emerged too. Besides, information emerged by telephonic interviews were confirmed by means the consultation of some school documents (class-books). During school year 2011/2012, for example, discontinuous attendance was observed: 28 % of students exceeded the absence limit out of the school year (25 % of absence hours—50 days) imposed by the law. Among this percentage, besides, 15 % of it exceeded 90 absence days, that is almost the half of the whole school days; moreover, 12 % of total students repeated a year once at least. In terms of basic learning results, high problems were observed for each year of the whole primary school grades. With regard to this, 6 % of children has assistants teacher and other teachers express that other students needed them, though families deny this. At the end of the year, 5 % of students failed to pass to the following year. Moreover, teachers complain for class discipline management. A relevant factor is the presence of foreign cultures children origins. Indeed, there are 44 Rom, 6 Romanian, 1 Chinese, 3 Pakistani, 1 Kosovan, 1 Croatian, 2 Brazilian out of 100 (42 Italian). Teachers complain problems to minorities integration. Moreover, they point out a poor social-cultural-economic context of students families. With regard of this, 2 % of parents has a degree and 6 % has a social assistant. Teachers themselves denounce high level of school dispersion. They observe that a relevant number of students doesn't even get middle school nor high school, once primary school is over.

As well as all conditions for selection of the school were confirmed, testing class selection for the model to be presented started. The researcher followed teachers suggestion to choose a III class due to two reasons. First, III class already has significant time passed at school so it has got those habits, routines and dynamics which help the culture of class emerging. Secondly, it's useful having two years remaining so that there are other data to be collected and give them to teachers for planning, experimentation and evaluation of data-based educational actions.

Selected class is composed of 17 students (9 males and 8 females), 1 disabled with assistant teacher.<sup>13</sup> Among them, there are 7 Rom, 3 Pakistani, 5 Italian, 1 Chinese and 1 Kosovan. During school year 2012/2013 no male students failed to pass the year while one female did because of exceeding absences.

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<sup>13</sup>To specify that this female student doesn't join regular activities of class and it was impossible to the research to have her filling the questionnaire. Therefore, her point of view is not represented and exposed in the present work.



At this stage, mean time of each activities practice by the side of the class was calculated:  $K_{(1,10)_{Mc}}$ . The Average of time dedicated to each activities was weighted to related weight and the sum of weighted mean times that III class students of “Don Milani” dedicate to different activities was calculated. The mentioned activities are those related to:

- oral culture:  $KO = 2.40$ ,
- neo-oral culture:  $KNO = 1.82$ ,
- typographic culture:  $KT = 2.55$ .

Data point out that students dedicate the most part of time to activities related to typographic culture, secondly to oral culture. Time dedicated to activities related to neo-oral culture considering a regular non-working day of school year is low.

Then the students were asked ( $s_{1,16}$ ) to give their evaluation about appreciation variables ( $z_{1,10}$ ) of each communicational activities, using the following value scale: 1 = none, 2 = low, 3 = neutral, 4 = sufficient, 5 = high. Data are summarized in the chart below:

APPRECIATION																
Z	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
z1	5	4	5	5	4	4	3	4	5	4	4	4	5	3	5	4
z2	5	4	5	4	4	4	3	4	4	4	4	5	4	3	4	4
z3	5	4	5	4	4	4	4	5	4	4	4	4	4	4	4	3
z4	4	3	4	4	4	3	5	5	5	3	4	4	4	5	4	5
z5	5	4	5	5	5	4	5	5	5	4	4	5	5	5	5	5
z6	4	4	4	3	4	4	4	4	4	4	4	4	4	5	4	5
z7	4	4	4	4	4	4	5	4	3	4	4	4	4	4	5	4
z8	2	4	3	3	2	3	1	2	3	4	4	2	3	2	2	2
z9	1	3	1	2	2	2	1	1	1	3	2	1	1	1	1	1
z10	1	4	3	1	2	3	1	1	1	4	3	3	2	1	2	1

At this stage, the mean appreciation of each activities by the side of the class was calculated:  $Z(1,10)_{Mc}$ . The average of each activities appreciation was weighted to related weight and the average of weighted mean appreciations that III class students of “Don Milani” expressed in relation to different activities was calculated. The mentioned activities are those related to:

- oral culture:  $ZO = 4.15$ ,
- neo-oral culture:  $ZNO = 4.18$ ,
- typographic culture:  $ZT = 2.06$ .

Appreciation variable shows that students mainly appreciate activities related to neo-oral and oral culture (the latter distant only 0.03 from the first). On the other hand, they have a negative evaluation to activities related to typographic culture.

It’s interesting how times and appreciations aren’t directly proportional, but activities that students dedicate much time to (typographic culture related) are those

they appreciate less. The matter of this could stay in the compulsory schooling; indeed, the only one Time variable which has a high and constant value, among those of activities related to typographic culture, is time dedicated to stay at school ( $k_{8Me} = 5$  ore). In effect, students declare to dedicate less time to other activities related to typographic culture as doing homeworks ( $k_{9Me} = 0.9$  h) and reading tales, picture books, comics ( $k_{10Me} = 0.9$  h), not compulsory by the law. In the same way, among those activities they appreciate more, there are some they dedicate less time: for example, they use cellular/smartphone less than 1 h per day ( $k_{6Me} = 0.6$ ), even if its appreciation is high ( $z_{6Me} = 4.06$ ). The explanation is that no student has his/her own cellular/smartphone, even if some of them has the chance to use adults one, as children themselves declared.

At this stage, in order to get the mean influence rate of each communicational standard on media culture of class, mean times (KO, KNO, KT) were used as variables and mean appreciations (ZO, ZNO, ZT) as related weights. Weighting these variables to related weights, three absolute values of mean influence of each communicational standard (I.O = mean influence of oral culture, I.NO = mean influence of neo-oral culture, I.T = mean influence of typographic culture) on culture of class are given. Finally, mean influence rates (I.O %, I.NO %, I.T %) are calculated, as shown in the chart below:

MEAN INFLUENCE					
ZO	KO	I.O		I.O %	
4.15	2.40	9.93		44%	
ZNO	KNO	I.NO		I.NO %	
4.18	1.82	7.61		33%	
ZT	KT	I.T		I.T %	
2.06	2.55	5.26		23%	
		<b>TOTAL</b>	<b>23</b>	<b>TOTAL</b>	<b>100%</b>

Data show us how the standard of knowledge construction and transmission that has a mean influence on culture of students is the oral one (I.O = 44 %). Neo-oral has a strong influence too (I.NO = 33 %), while low influence level is observed for typographic standard (I.T = 23 %).

Therefore, it would seem that the cultural model of students is the one related to orality (probably transmitted by family) supported by neo-orality (probably transmitted by media and/or among peers). According to what exposed, it would seem that school culture (related to typographic standard) could not be able to influence the socialization process of students at all, putting them in school problematic situations, as teachers pointed out.

## 5 Discussion and Conclusion

The proposal of the presented model application arises from awareness that quality of communicational dynamics experienced in class often has an influence on scholarization results more than planning and institutional guidelines. Knowing the influence that different standard of knowledge elaboration has on class group allows educational planning to be based on a scientific diagnosis of communicational situation of class culture. This can enhance school operator to build bridges between learning processes, media languages and educational strategies, so that a more effective personalization of educational program can be guaranteed. The success of school offer, indeed, is more and more based on communicational competence of school operators and on selection of engaging codes able both to catch the attention and the interest of students and value their inclinations and strengthen their weaknesses (Besozzi 2006).

In summary, the application of the proposed model could make school staff:

- strengthening teachers capabilities of self-evaluation of cultural standards of students by means of the quantitative definition of communicational factors which characterize the class;
- having scientific data starting from which they can plan communicational strategies for effective actions, being able to select and complete expressive codes and different educational and learning styles more functional compared with peculiarities of single classes;
- moving with a preventive perspective of school unease, acting on requirements that can cause distance and misunderstanding between students and teachers;
- reinforcing the effectiveness of cultural mediation function school plays in order to support its students to recreate, complete and give sense to different contents and knowledge construction processes they get in touch with in different, fragmentary and sometimes conflicting socialization contexts they experience.

It's important to highlight how the model is applicable to analysis and intervention of class group as well as on individual student, if needed. This is a significant aspect since it is often necessary to plan and achieve sociological interventions both on individuals and groups at the same time.

As shown, the model was tested on sample class, selected as analysis unit, in order to prove methodological accuracy of the model itself and formalise the communicational situation of selected students group by a quantitative point of view. Currently, we are working to make the model applicable on analysis units having in common four fundamental traits previously used to select the class. In this way, we want to compare many contexts, pointing out possible common trend, in order to systematize elaborated considerations into a generalization.



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# Press Portrayals of the Psychological Experiences of People Involved in Organ Transplantation

Andrei Holman and Adina Karner-Huțuleac

**Abstract** The media represents an important source of information on organ donation and transplantation for the general public, affecting people's relevant attitudes and behaviors. These topics are frequently represented in a narrative manner in the media, through stories of people personally involved in such situations. Consequently, the audience's mental transportation through emotional involvement in these narratives contributes to the media influences. In turn, the transportation effects stem, in part, from the explicit depictions of the protagonists' psychological states experienced during the events narrated. This study is focused on the Romanian press portrayals of the psychological experiences of people who had been involved in organ transplant cases, either as recipient, donor or as one of their family members. The sample includes 319 articles published from 2010 to 2011 in 8 newspapers. The thematic analysis reveals 11 types of psychological experiences depicted, mainly organized according to the moment in the transplant story (pre- or post-transplant) and to the main character to whom they pertain (recipient or donor). Overall, psychological states are represented as multilayered and frequently polarized across the narration and the protagonists, focusing on the organ recipient as the main protagonist of the psychological journey that the transplant entails.

**Keywords** Organ donation · Organ transplantation · Mass media · Press portrayals

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## 1 Introduction

Given the worldwide discrepancy between the demand and the supply of organs for transplantation, the identification of the factors that could be put to use in order to increase organ donation rates represents an important task for social scientists. One such factor is the mass media, which has an important role in the creation of a positive social atmosphere regarding organ transplantation, some authors arguing that it should be actively involved in the public education on this topic (Rady et al. 2012).

Previous research has investigated the manners in which mass media communicates on the topic of organ donation and transplantation, focusing on its positive or negative portrayals (Kalra and Bhugra 2011), frames (Moloney and Walker 2000; Morgan et al. 2007), narratives (Morgan et al. 2008), patterns of representation (O'Neill 2006), etc. In addition, past investigations have revealed the relationship between the mass-media representations of these issues and organ donation attitudes in various cultures: USA (O'Neill 2006; Morgan et al. 2010), Australia (Moloney and Walker 2000), Spain (Rios et al. 2010), Poland (Misterska et al. 2010), Holland (Copen et al. 2010) etc.

Among other psychological phenomena mediating these influences of media messages, studies have revealed the importance of transportation (Green and Brock 2000), conceived as the emotional involvement in a narrative. First, organ transplantation is a topic which easily lends itself to dramatization, given the succession of events with strong emotional charge that it usually encompasses. Hence, organ transplantation tends to be represented in a narrative manner not only in the entertainment media (Morgan et al. 2007), but also in the news (Harrison et al. 2008). Since the purpose of the latter is not merely to inform, but to generate controversies through stories (Lupton 1994), news reports on transplantation frequently focus on human-interest narratives.

Second, previous research has documented the significant effects of narrative communication on the receivers' acceptance of the story-based arguments (Green and Brock 2000; Green 2004) and on the subsequent changes in behavioral intentions. The audience becomes "transported" into the storyline, mentally absorbed and focused on the plot; consequently, their abilities of critical processing and counterargument are partially suspended. The degree of transportation generated by a narrative depends on the emotional involvement it can instigate, as a catalyst of the cognitive processes which the narrative absorption relies on. In the area of organ donation, Morgan et al. (2009) show that the emotional involvement in TV dramas narratives on this topic predicts the likelihood of becoming an organ donor. Furthermore, emotional responses to media stories can be differentiated into sympathy and empathy with the former denoting a lesser degree of internalization of the target's affective state. Empathy refers to the experiencing of another's feelings, the recipient's empathic responses to the story protagonist's emotional experiences having a significant role in persuasion (Shen 2010). Sympathy denotes the awareness of another's affective reactions to the situation and the emotional

state stemming from this awareness; previous results (Bae 2008) show that both emotional phenomena predict one's issue involvement and, consequently, one's intention to register as organ donor.

## 2 The Present Study

One of the sources of emotional involvement in the media stories in general, and in particular in the organ transplantation—related narratives may be the portrayals of the psychological experiences of the people involved in such events. The transplant involves a series of separate events with distinct psychological charge, such as the illness of the future organ recipient's, the actual transplant, his recovery, as well as the death of the donor and his family consent—in the cases of deceased donors. The explicit descriptions of the psychological reactions of the various protagonists (organ recipient and donor and their families) to these events could stimulate the audience's sympathetic and empathic responses, which, in turn, facilitate their narrative absorption. Both types of responses to the media stories are conceived as primarily stemming from the explicit depictions of the characters' psychological experiences; for instance, in the case of empathy, “the affective responses from the recipients are going to be the same as, or similar to, what is portrayed in the message” (Shen 2010, p. 401). Thus, the “psychological explicitness” of the media portrayals could affect the overall impact of the media reports on organ transplantation. Our study focuses on these descriptions of the psychological experiences of the people involved in organ transplantation cases reported by the Romanian press. Given the dramatic nature of the organ transplant issue, we expect the media discourse to be concentrated on certain focal psychological elements, anchored in the various situations that the protagonists of these events go through. Furthermore, although we expect the emotional array to be the one most frequently depicted, the complexity of the organ transplant situation suggests that other types of psychological experiences are also likely to be represented.

## 3 Data Collection

The newspapers sample includes eight daily publications of three types: three national broadsheets—*Gandul*, *Evenimentul Zilei* (EVZ) and *Adevarul*, tree tabloids (*Click*, *Cancan* and *Libertatea*) and two regional newspapers—*Ziarul de Iasi* (ZI) and *Foia Transilvană* (FT), selected in order to investigate the effects of proximity to a large regional medical center on the relevant content. The period under study covers the twelve months between 1 March 2010 and 28 February 2011. We scanned the online archives of these newspapers with the keywords “organ transplant”, “organ donation” or “organ donor”, retrieving all articles containing one of these expressions. The sample consists of 319 articles: 143 from the

three tabloids, 131 from the three broadsheets and 45 from the two regional newspapers.

## 4 Data Analysis

In our thematic analysis, the selected articles were first distributed across the two coders, who identified all depictions of psychological experiences of the people involved in transplant—related events in each article. Each coder elaborated a coding scheme to subdivide these experiences into distinct categories. These two sets of codes were then discussed and synthesized into an initial coding scheme through which all the articles were re-analyzed by both coders, who proposed, discussed and agreed upon its further modifications through this process. Each coder used this final scheme—summarized in Table 1—to recode each article on its 11 dimensions of interest, noting the psychological experiences depicted in it. Each article was paired with a category only once. The Kappa inter-rater reliability statistic was computed for each dimension, ranging from a low of 0.75 to a high of 0.98, with a mean kappa of 0.88, indicating high levels of agreement.

## 5 Results

Most of the articles (167, representing 52.35 %) report cases of performed transplant surgery, while 127 (39.81 %) concern potential transplants, that were not already done either because of the lack of an compatible organ or of the necessary

**Table 1** Psychological experiences in the coding scheme and their frequency

Part of transplant narrative	Protagonist	Category	Frequency
Pre-transplant	Recipient	Suffering	65 (20.38 %)
		Hope	58 (18.18 %)
		Willpower	32 (10.03 %)
		Organ availability happiness	22 (6.90 %)
		Pre-surgery anxiety	18 (5.64 %)
	Donor	Living: ease of donation consent	20 (6.27 %)
		Deceased: difficulty of donation consent	21 (6.58 %)
Post-transplant	Recipient	Gratefulness	50 (15.67 %)
		Subjective well-being	42 (13.12 %)
		Quality of life enhancement	35 (10.97 %)
	Donor	Deceased: family's suffering	32 (10.03 %)

financial resources—as in the case of bone marrow transplants—, focusing solely on their prospective recipients. Another type of article in this category is that reporting cases of organs retrieved from deceased donors that are to be found a recipient in the near future. The remaining 7.84 % of the articles report either on general issues regarding the Romanian organ transplantation system (13, representing 4.08 %), without any reference to particular cases of either past or potential transplant surgery, or on criminal investigations of suspected organ trafficking networks (12, representing 3.76 %). Thus, the vast majority of the press reports concern actual people directly involved in this issue at least on one of the transplantation sides, as recipient or donor. Their focus is on certain events relevant for the organ transplantation issue involving these protagonists, the number of these events varying from one—as in the articles focusing only on deceased people whose organs were retrieved—to the whole series of events making up the performed transplantations: the illness of the recipient, the organ donation event (either from a deceased or a living donor), the actual transplant surgery, his recovery process. Consequently, the same narrative manner identified in the depictions of organ transplantation in other types of media (Morgan et al. 2007; Harrison et al. 2008) is also prevalent in the Romanian press reports on this topic.

This “transplant plot” employs a temporal frame centered on the main event in its course, the transplant surgery. In the cases of performed transplant surgeries, it splits the narration in two parts, distinct not only in the actual events encompassed, but also in the overall psychological dynamics that are represented. As the transplant brings a dramatic change in one’s objective (medical) state, it also generates an evident shift in the reported psychological experiences of those involved. Hence, our coding scheme, accommodating this temporal frame centered on the organ transplant event, splits the psychological categories coded in two parts: pre-transplant and post-transplant experiences. The reports of potential transplants differ only in their narrative breadth (encompassing more events in the “transplant plot”) from those on performed transplants. Otherwise, the psychological experiences depicted in the two types of reports and generated by the events in their common timeframe are similar. Also, there are some differences in the coding scheme pertaining to the two types of reports defined by the donor’s status (living or deceased). The scheme relevant for the articles on organ transplants from living donors includes a supplementary psychological category (the ease of donation consent), while two such categories are specific to the reports on transplants from deceased donors (the difficulty of donation consent and the family’s suffering). Except these variations, segmenting the sample of articles into distinct categories, most of the coding scheme is applicable to all articles focused on people involved in some way in the organ transplantation issue, representing the vast majority (92.16 %) of the selected sample.

The frequencies of each of the psychological categories in the coding scheme, organized according to the part of the transplant narrative and to the protagonist which they are relevant to are presented in Table 1. The comparisons between the three types of publications revealed no significant differences in the frequency of the various psychological categories under scrutiny.

a. *Pre-transplant psychological experiences*

a.i. *The prospective recipient's experiences*

a.i.1. *The psychological suffering*

Together with the physical suffering, the psychological one is mostly common in the articles focused on patients in need of an organ, many of which represent humanitarian calls. The two compose a multidimensional picture of the misery of patients on the transplant waiting list; on one hand, the depictions of such experiences provide information concerning the implications of terminal organic insufficiencies, while on the other they may sensitize the public, inducing sympathetic and empathic responses. Moreover, the depictions of psychological suffering could be interpreted as a “price paid” by the patient, legitimizing his potential organ recipient status. Thus, in the journalists’ ethical frame on organ transplantation, it counterbalances the sudden and acute suffering of the deceased donor’s family.

Apart from its association to the physical illness, the dramatic character of the patient’s psychological state is accentuated in certain distinctive manners. One such manner is the emphasis on the chronicity of the protagonist’s intense negative feelings, suggesting the affective magnifying effect of waiting, for example: “The agony is not the pain, but the wait for the miracle, which for this patient came after 12 years of torture” (). In other articles, the suffering is aggravated by multiplying its sources, apart from the actual physical state, such as the autonomy impairments it generates (for example: “It’s hard to sit and wait for somebody to bring you a cup of water”), or the current medical treatments (“The 4-years patient is a soul tormented by transfusions, perfusions and files”). Also, sometimes the psychological suffering is displayed at its maximum height, the article focusing on the shock of being diagnosed with the respective illness (“the drama began when she was diagnosed with acute lymphoblastic leukemia. From that moment, her whole universe was shattered”). As illustrated here, this psychological shock restructures one’s relationship to the world; it also provides a counterpoint for the other essential moment in the narration, opposite as valence, namely the transplant.

a.i.2. *The hope of finding a compatible donor*

A compatible graft represents, for the people portrayed, the only way to reestablish their quality of life, if not to save their life; hence, hope is part of the universal psychological experiences of those in such situations. Nevertheless, since most of the times it can only be fulfilled by retrieving the necessary organ from a deceased donor, it becomes a somewhat uncomfortable issue for the journalists. Consequently, its occurrence in the articles is not ubiquitous; also, when depicted, its object is either covert, all references to the actual organ being eliminated (for example: “His wife trusted that her man will live a normal life after the transplant”), or disguised in some manner, such as the divine intervention (“We have prayed

to God to find him the bone tissue”). In the perspective of the recipient and his family, the organ hoped for is, thus, an independent object, separated from the donor’s body, which conceals the direct link between saving the recipient’s life and the death of another person (“I wish for a kidney to fall out of the sky so that my husband would stop suffering”), leaving the former as the single character of the transplant psychological drama.

The patient’s optimistic outlook on the future is sometimes accompanied by positive post-transplant projections, concerning behaviors that will become possible after the transplant and that are part of a scheme of existential normality, intrinsically attractive but currently censored: “I can’t wait to go out, take a walk [...] go fishing”. In other articles, the positive projections are less specific; they may concern the regaining of “normality”, comprising the array of behaviors available before the occurrence of illness (“I want to have a normal life again”), or as a return to one’s natural life course (“After the kidney transplant I will live my life”). In any case, the present appears as temporarily suspended, as a hiatus in one’s existential journey, the only escape from this psychological captivity being the transplant.

#### a.i.3. *The potential recipient’s willpower*

Willpower represents, in the media discourse, the personal trait that explains one’s resistance to physical and psychological sufferings, a valuable weapon in the long-term “passive war” that waiting for an organ entails (“She is small but strong. She fights illness as an adult”). Sometimes will is accompanied by the anticipation of its rewards, by positive post-transplant projections (“Then, he decided to go through no matter how any hardships just to be able to kiss the little girl again”). Willpower is an important quality in this context because one’s medical evolution doesn’t depend only on the physical corporeal phenomena, but also on the psychological ones. The main battle is the wait for the organ, making one’s self-control abilities and resistance essential: “All I want now is to be healthy and to have the power to get over this”).

When the medical issues are understood, and the role of patient on the transplant waiting list is adequately assumed, this resistance earns the nuance of dignity: “She glues to your soul not because she’s a suffering child, but due to the dignity with which she accepts an anguish hard to endure even by an adult”).

#### a.i.4. *The happiness generated by finding about the availability of a compatible organ*

Psychologically, the key moment of the pre-transplant interval is when the patient and his family receive the news about a compatible organ being available for him. It reverses the characters’ emotional polarity, being contrasted with the distress accumulated so far (“You can’t imagine the happiness of the family now, after they were told that the older son was found a compatible donor”). As in the case of the other psychological



experiences, the media portrays an intricate relationship between this positive state and the long wait that the organ recipient had endured, which potentiates its affective intensity: “She waited for her husband to come home to tell him the news; he was so shocked that he had to lie down”. The recipient’s happiness in these moments, as depicted in the press, is complete and self-centered, with no concern for its objective source—the donor’s decease—, in sharp contrast with the portrayals of the similar experiences of those receiving an organ from living donors. The source of the positive emotions in this latter case is the organ compatibility diagnostic, which is explicitly mentioned in the text units describing them (“An aunt offered to be a donor. The analyses were ok. When I found out, I jumped for joy”). Conversely, such references to the donor are missing in the portrayals of happiness when the organ is to be retrieved from a deceased donor. Similar to the other pre-transplant psychological experiences, the depictions of happiness are also focused on the recipient’s person; it’s only after the transplant that the psychological dynamics open towards the donor and his family.

Moreover, this self-absorption implies, as in the case of hope, analyzed above, the objectification of the organ to be transplanted. The press discourse represents it as an independent object which the recipient’s emotions are focused on and, consequently, as detached from the donor’s body, imposing a mechanical perspective which depicts organs as spare parts that the recipient can “benefit” from: “I was just provided with a kidney. I received the news with great joy, and now I’m waiting to see the results”.

a.i.5. *The pre-surgical anxiety*

Following the positive shock of organ availability news, the pre-transplant recipient’s psychological evolution ends with his anxiety about the surgery (“I’m very nervous. I have waited for this moment for so long, but now I’m afraid”), shared with his family members (“The mother recalls that during the three-hours surgery she climbed up and down the stairs so that time would go faster”). Frequently, the recipient is depicted during these moments as experiencing opposite states: on one hand, the long-term desire for the transplant to occur, and on the other, his anxiety (“I’ve been waiting for this for five months. But I’m also dreadful scared”). This pairing implies that the latter is not limited to the universal anxiety about surgery, in general, but it also concerns the recipient’s personal investment (in terms of suffering and hardships endured) that he had made so far.

a.ii. *The donor’s/his family’s experiences*

a.ii.1. *The living donors’ ease of donation consent*

This psychological category is prevalent in the articles reporting cases of organs transplanted from living donors. Since the donor and the recipient are close relatives, the main motivation of donation is emotional (“I would had also given him my heart!”). The personal relationship between the two “transplant partners” puts forth the significance of donation as a “help in

need”, with a lower dramatic charge compared to the “life-saving” frame assigned to organ transplantation from deceased donors (“I didn’t need to think about it, I just made the decision. I knew that was what I had to do [...]. We’re there for each other in hard times”).

a.ii.2. *The difficulty of donation consent experienced by the deceased donor’s family*

The intense pain generated by the death of a family member hinders on the donation consent, a fact acknowledged—after the actual transplant—by the recipient (“It was probably a difficult decision for the family, and I respect them for what they’ve done”), and by the medical actors involved. In their perspective, beyond the emotional reasons, the Romanians are not yet prepared for this decision, mainly due to their lack of understanding of brain death (“The first step of the discussion with the family is trying to make them understand that although the heart is still beating, the loved one is, in fact, dead”) and of the general lack of information on this topic (“It’s very hard to consent if you’ve never heard about this issue before”).

b. *Post-transplant psychological experiences*

b.i. *The organ recipient’s experiences*

b.i.1. *Gratefulness*

The post-transplant period is generally characterized by a psychological opening, the most frequent manner of which is the expression of gratefulness to the deceased donor’s family. The fact that if not for their consent, the transplant would not had been possible is fully acknowledged. This awareness is accompanied by the empathic concern for their suffering: “I know it’s a great pain for them, but I promise I will never forget that I live thanks to him”). The deceased donor appears as the savior of the recipient’s life and, through their consent, his family not only ends his suffering, but also makes him the gift of life. Thus, the value of medical change that the transplant brings is amplified from the pre-transplant period (where the focus is on the health recovery) to the post-transplant moments (where it is portrayed as a “re-birth”). This shift in press discourse probably aims at balancing the two sides, fully legitimizing the donor’s death, which becomes more than a source of health for the recipient, even a source of life (“My child lives because of them and their son, and we’re extremely grateful”). Sometimes the transplantation consent is also depicted as indicating the superior moral qualities of the deceased donor’s family (“You must be a very wise man to think about others when your child is dead”). Although less frequently, the recipient’s gratefulness is also directed towards the medical team who performed the transplant surgery. Together with the donor’s family, they are acknowledged the key status in the existential shift that the transplant entails: “I want to thank the medical staff and the family who consented to donate their child’s heart so that my girl would have a chance for life”.

### b.i.2. *Subjective well-being*

The depiction of positive post-transplant affective states represents an almost ubiquitous ingredient in the composition of press reports (“I’m extremely happy right now, when I learned that the surgery was a success”). The dramatic tension previously accumulate received its expected counterpoint. As the pre-transplant emotions, it also a socially shared emotion, the transplant success becoming a reason to celebrate the familial unity: “We are all very happy. Yesterday, little S. had his birthday, celebrating together with the whole family”. Sometimes, the post-transplant positive emotions are depicted as a marker of the recipient’s regaining of his “true personality”, by abandoning the patient role he had been playing so far. Thus, the transplant appears as the end of a negative temporal loop that affected not only the recipient’s body, but also his soul: “They hadn’t lost their cheerfulness and joy of life, on the contrary”.

### b.i.3. *Quality of life enhancement*

The recipient’s positive psychological state stems from his positive assessments of the important areas of his life, such as his physical functioning (“Six months after surgery, the patient completely recovered his physical abilities”) or his social functioning (“After one month of hospitalization, the girl feels good and she is ready to play with her brother again”). Again, such media contents suggest the idea of the transplant as a re-opening of the patient towards the world. On the other hand, the references to the quality of life consequences are generally vaguely formulated, lacking any operational definition, similar to many portrayals of “normality” hoped for by the patient before his transplant.

### b.ii. *The suffering of the deceased donor’s family*

Given the nature of most deaths following which transplantable organs are retrieved—sudden, accidental deaths—the donor’s family is going through an emotional shock, frequently labeled as “drama” (“One family’s drama saves four children from certain death”). Yet, even in these circumstances of sudden and intense circumstances, the psychological openness to donation consent is still possible. Some articles frame this consent in a manner going beyond a mere helping hand, lent to a stranger and, consequently, difficult to offer; it is also conceived as a way to diminish the suffering: “They convince the relatives of brain death patients that in all the drama they go through they can still find some comfort by saving others’ lives”.

As illustrated above, the suffering of the donor’s family is sometimes reflected through the recipient’s family expressions of gratitude. In some other cases, the press discourse explicitly contrasts it from the opposite state experienced by the recipient and his family (“Agony in the V. family, overwhelming joy in the C. family”).

## 6 Discussion

The depictions of psychological experiences represent a substantial part of the Romanian media reports of organ transplantation cases. The area receiving most coverage is the emotional one, with a composition that reflects the epic deployment of the transplant scenario. The psychological states of the protagonists change dramatically from the pre-transplant period to the post-transplant moments. In both these time intervals, the experiences depicted are mixed in valence: before the transplant, the conflict is intra-psychic, the press discourse opposing the recipient's suffering and anxiety to his hope and resilience. After the transplant, the contrast is interpersonal, between the suffering of the deceased donor's relatives and the positive affective states of the recipient and his family. Across the whole narration, these psychological oppositions increase its dramatic charge, and subsequently enhance the appeal of the articles for the general public, an important quality of the media output dealing with organ donation (Kalra and Bhugra 2011).

The psychological dimension enriches the press narratives on organ donation and transplantation, adding a universally human dimension to the strictly medical—scientific issues reported. It transforms the medical cases presented into “human spectacles”, with complex and frequently contradictory psychological dynamics, raising organ transplantation from the strictly corporeal and mechanical level, of body parts moved from one body to the other, to the spiritual one. Moreover, this psychological layer diminishes the perceived distance between the characters and the reader, enhancing the relatedness of the media reports. While the objective events that the protagonists go through (being an organ recipient or donor, or having a family member experiencing such events) are statistically rare, the psychological underpinnings of these events (suffering, hope, happiness) are universal. Hence, the press depictions of these psychological states and their dramatic arrangement, in terms of oppositions and transitions along the narrative line, call for sympathy and empathy for the protagonists' hardships and contribute to potential transportation effects (Green and Brock 2000).

The organ recipient is the main character of the transplant narrative; the story deployment follows his medical and mental journey from the pre- to the post-transplant period. Although some psychological depictions also concern the experiences (of opposite emotional valence) of the donor's family, the spotlight is still mainly on the recipient. As the transplant represents, in his psychological evolution, the end of self-focalization, the negative emotions and consent difficulties experienced by the donor's relatives frequently occur as reflected in his own words or concerns. Moreover, the recipient's states are frequently represented as shared with similar intensities by those close to him, conveying a systemic outlook on the illness and the transplant as fundamental events not only in the individual's life, but also in the collective history of one's family. This focus on the recipient's psychological experiences across the narrative could amplify the influence of the press reports on people's attitudes toward organ donation, as previous research

(McIntyre 1990) indicate that the organ recipient represents the most efficient source of persuasive messages on this topic.

The articles analyzed are relevant not only for the media choices in portraying organ donation and transplantation, but also for the psychology on the actual people involved in these events, especially as they provide access to their testimonials through the interview excerpts they include. Nevertheless, their validity in this regard is disputable, since they are selected by the journalists in accordance to their own frames (Hornig 1993), which impose a certain order of priorities on the reported issues. Consequently, our results inform less on the psychology of those involved in transplant-related events than on the ways the press represents this issue.

The degree in which these patterns of media representation of the psychological experiences affect people's attitudes and intentions concerning organ donation is an issue that remains to be investigated. Future research could also further explore certain frames suggested by our results as structuring the press discourse on organ donation and transplantation, going beyond the layer of the protagonists' mental states, such as the objectification of the organs to be transplanted or the legitimization of organ reception through physical and mental suffering.

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# Trends in Demographic Evolution of Romania in the Beginning 21st Century

Adrian Netedu

**Abstract** The last census from 2011—recently held in Romania—confirmed that the decrease of population in our country continues to occur due to the negative growth of the population and the specific migration trends. Other statistical data are unsettling: a low level of birth rate or fertility, great infant mortality rate, general trend of aging of population and other events and processes that are negatives for the evolution of population in Romania. For example, with the process of the aging of the population we expect to have an increasing pressure for the active population and significant changes on the labor market and in social benefits sector. Some pessimistic predictions assume that after 20 years we will have serious problems with paying the pensions for the elderly population. In this article we intend to present some considerations about the evolution of demographic phenomenon in Romania and to estimate these evolutions on short and long term. To be more precise, we intend to identify if there are some specific demographical situations or if we are integrated in an East European demographic model with the same threats and weaknesses.

**Keywords** Census · Birth rate · Fertility · Aging population · Demographical model

## 1 Introduction

The measurement of population has a long tradition in Romania, beginning in 1838, when the first population census was made. The second population census from 1859 was the first one made in the reunited provinces of Moldavia and Walachia. In a period of 140 years, from 1838 to 1977, ten population censuses were made in Romania (Trebici 1979)—not so many compared with other developed countries. These censuses were diversified in time with the counting of buildings (from 1966

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until today) or with the specific measurements in agriculture (1948). After the Second World War, the censuses were made every 10 years, in 1948, 1956, 1966, 1977, 1992, 2002 and 2011 approximately. In many cases these population censuses were accompanied by important sociological studies (Trebici 1999). The Romanian population went through a continuous increase from 14,280,729 (in 1930) to 22,810,035 (in 1992). Between 1992 and 2002 censuses the population was decreased with 1,111,954 people and between 2002 and 2011 censuses was decreased with 1,576,540 people. The main causes of this decline were the negative natural growth and migration. A little difference was made by the methodology because of exclusion of the Romanian citizens that leaved the country more than one year before and, of course, by adding the foreigners living in Romania for more than one year.

In this study the focus is on the evolution of the population after the 1989 Revolution, taking into account the main demographic phenomena during the communist regime 1948–1989 which influenced the actual situation.

## 2 Method

For this study I used documentation and secondary analysis of the data from the official statistics. Documentation is related to the main contributions of the Romanian authors in the field of demography. The analysis of data was made by means of official statistics and by time series posted to the site of INS Romania (National Institute of Statistics).

## 3 Results

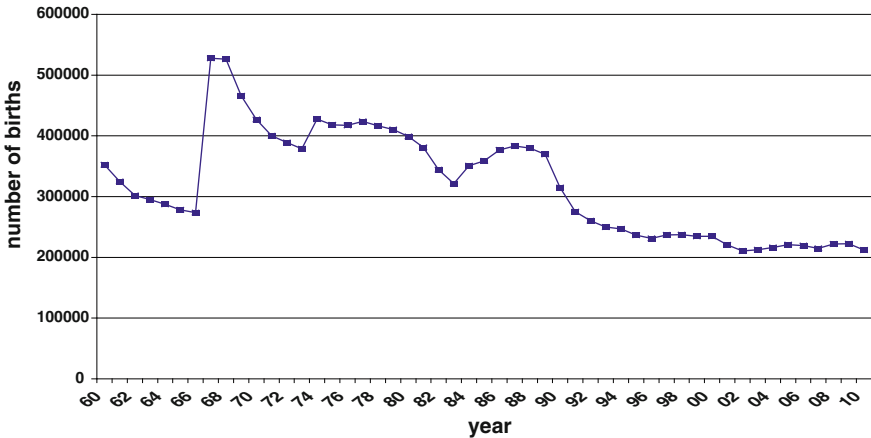
### 3.1 *Population Features and Demographic Transition*

The actual evolution of the demographic processes had a lot of explanation in the evolution of demographic phenomena in Romania during the communist regime. This period was split in three distinct stages (Zamfir 1999):

- Accelerated Transition 1 (1957–1966)
- Braked Transition (1967–1989)
- Accelerated Transition 2 (after 1990).

The first period was marked by the liberalization of abortion (the Decree no. 463/1957) and had in the background one rapid economic development specific to



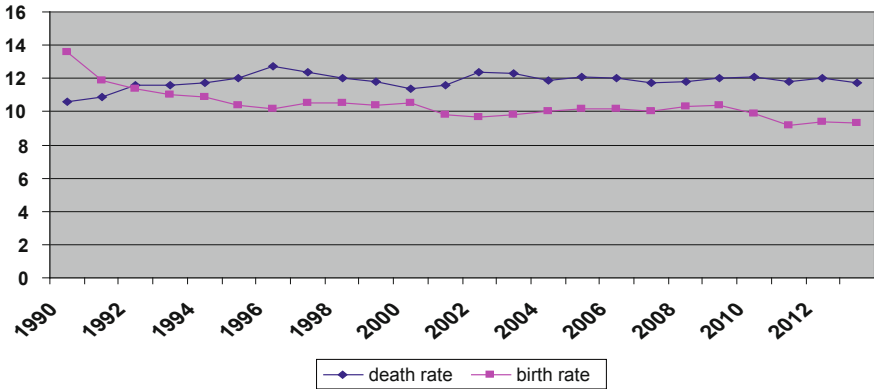


**Graph 1** Number of births since 1960 until today

the beginning of the communist regime. In terms of population the result was the sharp decrease of the fertility rate.

During the second period, the braked transition, the involvement of the Communist Party in the demographical politics had important and tragic consequences (Trebici 1991). First of all it was promulgated the Decree no. 770/1966 which regulates the interruption of pregnancy (interruption was able just for special cases: diseases, women over 45 years, those who had more than 4 children etc.). This act was followed by the Decree no 1086/1966 (concerning the increase of tax on the income of persons without children). Last but not least, the Decree no. 779/1966 was promulgated concerning the amendment of some legal provisions related to the divorce (with a consequences in official statistics that stipulated in 1967 in Romania—“zero” divorces!). All these measures have generated a very rough evolution of the number of births during the communist regime and after (Graph 1).

We can observe the spectacular increase of the number of births due to the Decree no. 770/1966. After that, despite the control of the pregnant women, the number of births has decreased constantly. The social costs of the decree no. 770 were unpredictable and many studies have mentioned the critical situation of legal or illegal abortion between 1967 and 1989, or the death of around 10,000 pregnant women after illegal abortions (Trebici 1991; Kligman 2000; Dobos 2010). At that time, the determination of the Romanian communist leaders to control the reproduction was difficult to moderate. In an official paper of PCR from 1984 the leaders of Central committee was astonished about the decrease of the rate of births (from 19.7 in 1975 to 14.3 in 1983) and the ratio of 1.3 abortion to the 1 live birth. In this case the measures concerning the control of reproduction were very much tightened (Dobos 2010).



**Graph 2** The evolution of the birth rate and death rate in Romania after 1990

At the same time the total rate of fertility has decreased and confirmed the end of demographic transition in Romania (Mureşan 1999) and the entry in a fifth phase with low mortality and deaths exceeding births, conform of the Blacker theory (1947) and visible in the next graph.

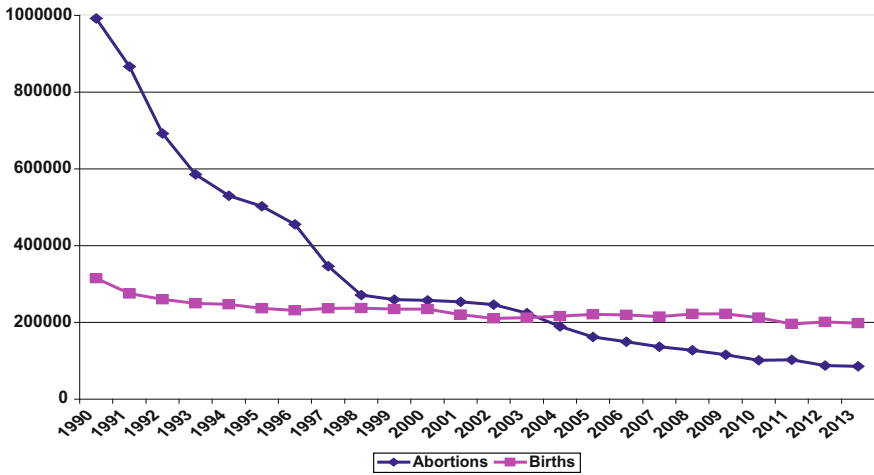
This trend was similar for some European country in 2013: Estonia, Latvia, Lithuania, Germany, Belarus, Bulgaria, Hungary, Ukraine, Bosnia-Herzegovina, Croatia, Greece, Italy, Portugal and Serbia (Pison 2013). The causes of these phenomena are different for every country: economic problems, emigration, geopolitical conflicts, abortions, infant mortality, family planning etc. In our country the evolution seen in Graph 2 was encouraged by the Law nr. 1/1989 that liberalized the interruption of pregnancy (it was the beginning of the third stage already mentioned by C. Zamfir).

In the case of Romania we can define the decrease of fertility as a primitive one, because of the great number of abortion (Graph 3).

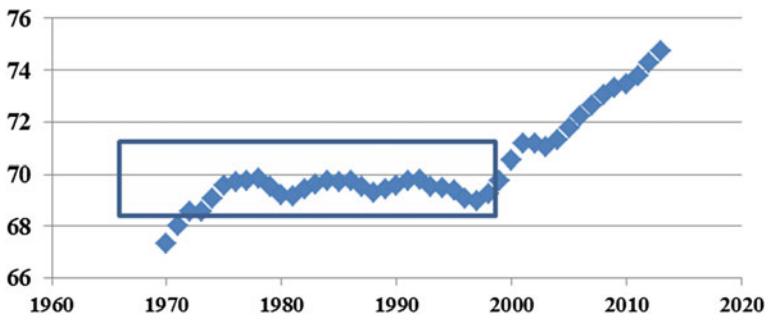
After 2004 we can observe a lower level of abortions but, at the same time, a lower level of the number of live births. This situation occurs despite the fact that in Romania there is a great rate of marriage (5.4/1000 inhabitants) and a low rate of divorces (1.6/1000 inhabitants) [data from 2012 according Eurostat].

With respect to life expectancy we observed a specific feature of Romania: the stagnation lasting for almost 30 years, situation related with a delay of implementation of newest modern medical procedures (Rotariu 2000) (Graph 4).

Life expectancy increased after 2010 to 70 years for male and 77 years for women (Pison 2013), but these values are lower than the values from all European developed countries as the differences are lower for the life expectancy at the older ages. Nevertheless, the process of population ageing is underway with some critical consequences for the next generation and for the future active population and also on the Romanian pension system. In this case it is important to establish the average life expectancy at the retirement moment: in this case the values are greater than the estimated values in the mortality conditions of the retirement moment (Ghetau



**Graph 3** The evolution of the number of births and abortions in Romania after 1990

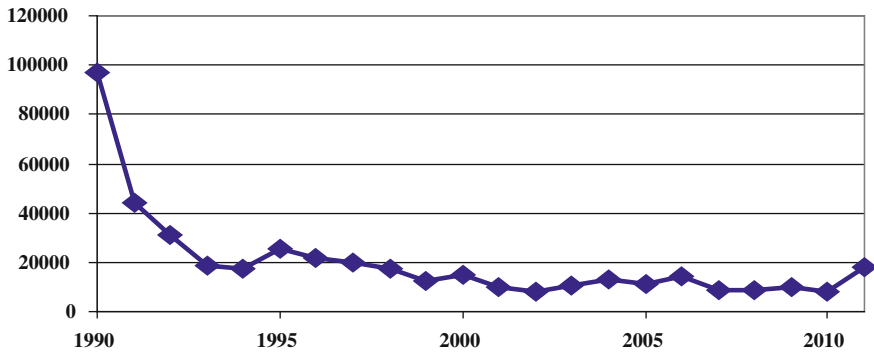


**Graph 4** Life expectancy evolution

2010). Many studies analyzed the expected pressure to the pension system at the retirement moment of the generation born after the Decree 770 with a critical decrease of the level of payments.

### 3.2 Migration Tendencies

According to the report of OECD (2014; 290), Romania remains an emigration country with a low rate of immigration, but with “new responsibilities” due to irregular migration for one country with Schengen borders. The evolution of the official number of emigrants is indicated in the next graph (data until 2011) (Graph 5).



**Graph 5** Number of Romanian emigrants

The number of emigrants has decreased after 1990, but an exact number is difficult to establish. After the last census from 2011, the number of temporary emigrants was 385,729 people, and the countries of destinations were: Italy (44 %), Spain (18.4 %), Germany (7.5 %), France (5.6 %), UK and North Ireland (4.9 %) Hungary (3.7 %), Greece (2.7 %), Belgium (2.1 %), Austria (2 %), other country (9.2 %). In the same census the number of emigrants that left Romania for more than a year was 727,540 people and the countries of destinations were: Italy (46.9 %), Spain (23.5 %), UK and North Ireland (5.5 %), Germany (4.5 %), France (3.2 %), Greece (2.7 %), SUA (1.9 %), Belgium (1.6 %), Hungary (1.4 %), other country (9.2 %). Circulatory and definitive migration cumulated in 2011 give a total of 1.1 million of Romanian emigrants. These data are an evaluation for 2011, but the total number of Romanian emigrants in an estimation of World Bank in 2010 was 2,769,053 people and the distribution by countries was: Italy (29.4 %), Spain (29.3 %), Hungary (6.8 %), Israel (6.6 %), USA (6.2 %), Germany (4.9 %), Canada (3.5 %) etc. (see Istvan 2012). All that data are approximated even for the volume of remittances (over 2 billion Euro by year) which aided the local (national) economy. Social phenomena, such as the emigration, had the tendency to continue due to already established migrant social networks and forms of capital involved (Sandu 2003).

After 1990, the migration growth was negative all the time and the great majority of the emigrants (over 60 %) had ages between 26 and 40 years (this people can have children outside Romania!).

### 3.3 *Projecting Romanian Population*

The evolution of the Romanian population was an important issue in the political action of the Romanian Communist Party (PCR). In a Program of PCR from 1975 (apud Trebici 1979; 467) we found an official purpose to increase the birth rate and

**Table 1** Differences between projected and real population

Year	Projected population from the '70 years	Real number of population
1970	20,253,000	20,252,541
1975	21,245,000	21,245,103
1980	22,418,000	22,201,387
1985	23,853,000	22,724,836
1990	25,484,000	23,206,720
1995	27,464,000	22,680,951
2000	29,828,000	22,435,205

to aid the families with many children. The official estimation until 2000 was very optimistic. Here we note the differences between real population and the estimations of the PCR (Table 1).

If this evolution established theoretical was very optimistic, it is not the case for the actual state of the population projections. Ghetau (2004) estimated future evolution of the Romanian population in four scenarios: *low*, *medium*, *high*, plus another one named *landmark*. This projection has focused on the fertility's evolution connected with mortality and migration. One of the conclusions of the author is important: "Maintain current levels of fertility and average length of life (which means fertility and mortality rates by age from the last years) would result in an acceleration of a catastrophic population decline" (Ghetau 2004). In this respect a recovery of fertility became an obligation. The *medium* and *high* scenarios proposed a total fertility rate of 2.1 reached in 2050. Another projection of the Romanian population was made by INS (2014) for the evolution of population until 2060. INS proposed three scenarios: a reference scenario, with the conservation of the demographic values from 2011, an optimistic scenario, with an increasing value of fertility, and a pessimistic scenario, with lower values. These scenarios were placed in two contexts: with or without external migration. Unfortunately, in all six scenarios the population of Romania will decrease until 2060 in variable proportions and predict the stabilization of the total rate of fertility at the lower values in the next years and of the same level of migration.

## 4 Discussion

For Romania, the demographic transition started in the middle of the 18th Century and encouraged a specific transition of mortality (today the rate of mortality is stabilized to the European average but the rate of infant mortality remain higher), transition of fertility (with a continuous decrease of the total fertility rate to 1.4 children per woman) and the transition of the age structure of the population (Romania is not exempted from the general European trend of ageing of the population). After 1990, and at the beginning of 21st Century the demographic

situation of Romania is characterized by some features collaterally related with social inequalities and risks. The specialists have established some additional risks: internal remigration from urban to rural area due to reduction of social costs, a growing number of the young minor mothers, a growing number of children born outside marriage, inconsistencies of the laws that sustain birth rate and the public implication in building nurseries and kindergartens, a growing value of the dependency ratio (the population under 15 years and greater than 65 years dependent by the active population) that claim the urgent need to improve the pension system, the social costs of migration, the low rate of employment for the people born after 1989 (Preda 2009).

All that critics can emphasise the complexity of the pro-life policies that can increase the fertility and birth rate. On short and long term this aim should be in the centre of our attention.

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# Urban Mediactivism in Web 3.0. Case Analysis: The City of Chieti

Vanessa Russo

**Abstract** The passage from the birth of the Web and the 3.0 has been signed by a series of technical innovations, which are the result of a new concept of sharing knowledge. 2.0 theorists speak about a new intelligence which is coordinated in real time on the Web and which generates a real mobilization of the users both in the virtual and the material realities (Ryan in *Storia di Internet e il futuro digitale*. Piccola Biblioteca Einaudi, Torino, 2011). Paradigms are born in relation to this principle: Lovink's Mediactivism, Castells' Network affinities and Levy's Collective Intelligence and Barabasi's model of Small World aristocratic. The aim of this project is: to analyse the affinities networks which are related to the theme "città di Chieti", which are the movements of discussion that are created by the network and to understand how the social sciences could study their social form, content and function. The research methodology used for the analysis is the lurking that is an invisible and not participant observation of the virtual communities in a period of time going from January 2014 to September 2014. The lurking is part of a range of analysis instruments called Digital Ethnography (Underberg and Zorn in *Digital Ethnography: Anthropology, narrative and New Media*. University of Texas Press, Austin, 2013; Kozinets in *Netnography: Doing Ethnography Research On Line*. Sage Pubns Ltd, London, 2010). All these three typologies of structure which have been analysed before reflect the «little aristocratic worlds» model described by Barabasi and the forms of mediactivism vary according to the structure of virtual teams and hubs are the elements that influence public opinion and the viral content of the group.

**Keywords** Big data · Digital ethnography · Mediactivism · Social network analysis · Small word theories

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## 1 Background

In 1995 Nicholas Negroponte wrote the first essay of history, which illustrated how the diffusion of computer and the birth of the Web and digital structures as well were changing and would have changed our concept of reality (Ciotti and Roncaglia 2010).

Being digital meant to begin to think about a new world made up of not only atoms but also of bits and consequently communication mediated by the Web was to be imagined as «an highway that could bring weightless bits at speed of light» (Negroponte 1995: 1).

Web system has become in the last decades a kind of parallel and interactive continent in comparison with reality.

In this way the birth of Social Networks represents the joining link between real and virtual since they are platforms, which give the possibility to create, a social space through which is it possible to share a personal space.

In 2007 O'Reilly (2007), on the basis of the analysis of social change and Social in the Network, theorized the coming of a new digital era and described it as a system based on an organic structure which is able to use the collective intelligence that is distributed everywhere, is continuously praised, in real time and leads towards activism. Castells (2006) defined this virtuous cycle “Social Hackerism” which was intended as the active role of users, in connection among them, in the continuous definition of the system itself.

So, if Web (1.0) has led to a revolution in the way we conceive reality, Web 2.0 has produced a revolution through the social sharing of knowledge. The Network has been facing in the last years its third great revolution since its birth: the emancipation of Internet from pc.

The first artefacts of this new revolution were the smartphones and the birth of Iot (Internet Of Things). The advent of mobile devices has brought a new way of using Network which is characterized by immediacy.

Therefore, this immediacy of access to Network and to Social platforms in particular, redefine the quotidian life of people.

So, if Web 1.0 represented a communication revolution (Mattelart 2002) and Web 2.0 a revolution of sharing (Levy 2002), Web 3.0 defines the revolution of being digital (Lee 2001).

The Web revolution that is intended as a revolution to build a subjective identity in the Network gives many ideas of analysis since various are the aspects of identity and the digital platforms offered by Network to define it.

### *1.1 Virtual Communities, Active Communities and Mediactivism*

The Mobile Network Society archetype defined by Castells is structured on a series of social tendencies:



- Communication autonomy of both the individual and the community linked to the space/time dimensions but also to socio-cultural dimensions. «The fact is that the subject of communication strengthens his/her control on the communicative process» (Castells 2008; Castells et al. 2008: 265).
- No limits connection; the WiFi systems and the 3G technologies make Internet accessible everywhere and at any time;
- Network which is intended as the possibility of modifying constantly the reference network and in this way networks develop, overlap and are modified by the effect of a decentralized communication structure which monitors multiple enters/exits. «As a consequence, the communicative structure results very malleable and influenced by the attitudes of the participants in the communicative process.» [Ibidem]
- Instantaneous active communities which consist of social groups born in real time with a political, professional, cultural, social, ideological value and which can refer to formal or informal dimensions. «The characteristic of these communities is to be created on affinity.» [Ibidem]
- Transformation of language: the development of the web first and then of the Mobile Web has brought a change in the form of the language, in fact the bit-communication is composed by multimedia characters (texts, images, films, emoticons). Moreover multimedia messages have been enriched in Tags and Hashtags.

Instantaneous active Web communities identify interaction systems which are called virtual communities, intended as social groups that rise in the network when some people participate constantly in public debates and create interpersonal relationships in the cyberspace which is considered the intellectual space where words, human relations, data, wealth and power are expressed through telematics (Rheingold 1994). Mediactivism is when virtual communities become a mean of information and anti-information about a specific theme. Geert Lovink was one of the founders of Mediactivism, which was interpreted as a socio-political movement spreading information and anti-information all over the Web. Hacktivism instead is when all these actions result in the construction of technological devices as independent servers or peer-to-peer systems.

Mediactivism in 2.0 has been developed through three stages:

1. Netactivism that is a kind of communication within the movement itself, which is based on mailing lists and Web sites which aim at creating a virtual community whose dynamic is not so different from offline communities, apart from the fact that their participants do not need to meet physically.
2. The second level of net-activism is the participation in campaigns and to link people from different contexts thus to create a motivating ambient where to elaborate new kind of actions.
3. Virtual movements. The third level is to use Internet as a platform for virtual protests, which are not related to any of the offline reality that can produce uncontrollable movements (Lovink 2002, 2004, 2008, 2012).

Lovink analyses information websites that he defines “strategic media”.

«This is what happen when low cost media are used by groups or individuals which feel damaged or excluded by the leading culture. Strategic Media—not only report the events but are also not impartial since they participate and this separate them from the traditional media» (Lovink 2002: 202, 203).

## 1.2 Instruments

Networks study is within a scientific sector named “complexity theory” which is inspired by Social Network Analysis (Higgins 2012; Kadushin 2011) rules and it is oriented toward the analysis of complex systems which have inter-disciplinary relations with sociology, biology, physics and communication theory that are defined “little worlds”.

The concept of “little world” was developed by Watt and Strogatz (1998) but it has important precedents in the works of Milgram and Granovetter.

Milgram found out that the diameter of a social network, even of a wide one, is very short, only six degrees of separation. Granovetter noticed that the six degrees of separation, instead of social links that seem to be strong and necessary to keep networks together, are not strong and that the most important relationships are the weak relations, in particular those which he defined “social bridges”.

In 1996 Duncan Watt reviewed Granovetter’s theories and Steve Strogatz who found out that the networks made up of strong and weak links were networks, which were both structured graphs and random graphs. This kind of network have a strong aggregation degree due to the random links which create “social shortcuts” that shorten the separation among the bonds of the circle without altering the degree of separation of the graph itself. Therefore, the real strong point of the little worlds in in the weak links, which rise within the system.

The structure difference between the little world model and the Internet system is the presence of particular bonds named hub that link many elements in the network.

Moreover, Internet Network follows a particular kind of distribution named “power law”, according to which each time the number of connections doubles; the number of bonds with that number of connections decreases five times. This relation is valid for both bonds with few and hundreds connections (Cristakis and Fowler 2011).

Barabasi and Albert suggested studying the process of growth of this particular kind of network, simulating through computer a series of networks with different forms of connections. The growing networks showed the same basis structure in different moments: they were little worlds with few degrees of separation and a high aggregation with the hubs of the real networks. Barabasi and Albert by analysing the distribution of the elements according to that number of connections derived the power law: each time the number of the connections doubles, the elements with that number of connections decreased eight times.

Therefore, the presence of the hubs as aggregation centres of multiple connections and the power law are the two characteristics which make the network structure a little world that is different from Watt and Strogatz's little world. One of the most important law regulating the growth of these particular networks is the principle of "the riches who become more and more rich" or "preferential aggregation law", according to which the hubs that are present in the network acquire more links instead of the bonds with a lower degree; in fact the most popular websites are the most visited instead of the less popular and acquire more links than the others (Gladwell 2012).

We can deduce that Internet is a little aristocratic world (Buchanan 2004).

## 2 Research Project

This research aims at analysing a particular kind of Mediactivism in the network, which develops from the need of users to create an independent information network and new socialization paths related to the urban space of a city. This phenomenon is named civic Mediactivism (Sguglio 2011).

The survey analyses and studies the strategic media, which are born on the urban dimension of the city of Chieti and its structure, content and influential elements.

Social Network presents a fertile structure for the birth of discussion movements, which are well structured; in fact it is composed by five sub-structures that are connected among them.

The user's personal profile, which could be more or less visible to internal or external users. Public Groups that are created by one or more users on the basis of a specific theme, which is later, shared by the community members. Closed Groups have the same structure but their contents are visible only to their members (Ardvisson 2013).

Secret Groups which are exclusive and visible only to their members.

At last Likes Pages which are the brand new structure introduced by Facebook in 2010 as a direct evolution of the Fan Page. It has promotional aims even though there are several pages of virtual communities. The main difference between Like Pages and groups is that the founder and the administrator of the page is anonymous and is the only one who can control its contents.

Eighteen not official affinity networks have been found in the city of Chieti, within the Social Network dimension. They are created and monitored by citizens who are interested in discussing themes related to their own city and in creating new virtual links which can become real and be organized in three Like Pages made of 8 public groups and 7 closed groups.

The characteristic of these networks is that they are connected among them thanks to their members who are registered in more groups simultaneously, thus creating a connected affinities network system (Fig. 1).

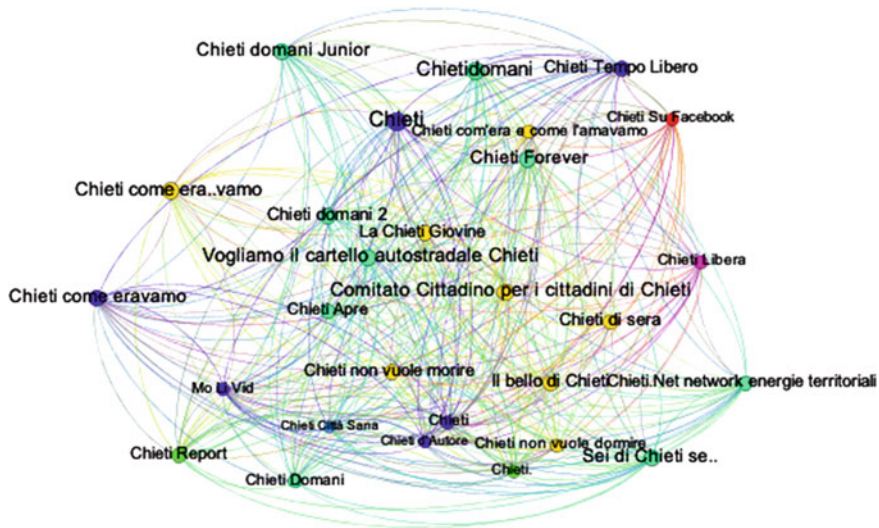


Fig. 1 Virtual communities graph

### 3 Methodology

The methodology used to analyse the sexuality theme related to Social Network (Russo 2015) is based on the invisible and not participating observation (Corbetta 1999) of the contents which were analysed in the period from February 2014 to August 2014.

It was created a fake Facebook Profile a month before the begin of the observation which had a positive confirmation since the X profile entered easily in all the closed and open groups which were taken into consideration.

It was not necessary to create a fake profile for other Social networks since their profiles and contents were visible to external users.

The Lurker experience was very important to reveal in real time the spontaneous contents of the users without the researcher mediation who runs the risk of contaminating the analysis field. Anyway lurking cannot go beyond what is observed. The desire of the observer of examining in depth could led him or her to march and this could generate negative reactions.

### 4 Conclusions

#### 4.1 Structure and Rules of Communication

The results of the research state that the closed groups have a specific connotation registered by the administrators of the groups, which can manifest itself in guise of behaviour rules.

Public groups instead present specific rules and description of the groups only in five cases and in the same modality of the closed groups. Moreover, the community rules are defined by the founders of the group who establish also the behaviour rules within the group, as in the case of the closed groups.

However, the behaviour of the users and the content of the groups are defined by the administrators only in recent times; in fact older groups are less under the social control of their founders and in this case it happens that one group is invaded by external promotional links or by news from on line newspapers. Then an active group generates a new order with its internal leaders who have not the possibility of defining the contents of the page since they are not administrators.

The interaction analysis of Facebook groups explains that both in the closed and open groups communication varies from horizontal and democratic contests to more strict contests as in the case of “Chieti Libera” where it is warned that insulting posts or Troll will be removed or of the group “Il bello di Chieti” where each user has a limited daily number of posts.

The structure of Facebook like pages gives the possibility of inserting a brief description and a long description. However, the description which are present within the analysed pages are related to literal or music quotes which give the user an idea of the content of the page.

The necessity to not specify the rules is due to the structure of the like pages that do not allow users who are not the administrators to decide the contents and whose administrators’ identity is not revealed, a part from “Mo Li Vid” administrators.

## ***4.2 Discussion Topic***

The study of the posts contents has put in evidence nine macro areas of conversation:

1. Urban and structure situation of the city with a particular reference to the maintenance of the city streets, of the fountains and of the architectural and historic buildings. These posts are usually enriched by amateur images of the object of discussion and by critics against the urban and local administration.
2. Civic Mobilization that is represented by those groups which aims at promoting useful projects for the city as in the case of the “Comitato Cittadino Per i cittadini di Chieti” group.
3. Taxes: Some posts within the network inform the citizens about the local taxation and this represent an occasion to discuss about it.
4. Other posts are related to the local administration policy and are ascribable to sharing newspapers excerpts or official documents and posts from the Facebook or Twitter mayor page.
5. news sections comments by sharing digital newspapers excerpts which are then interpreted by the members of the group in a period of time.
6. Nostalgic images and discussion about the past of the city.

7. Reassess the city. In this section are gathered all the contents that celebrate the city, they are in great part artistic photos of the historic centre or news about the most important buildings of Chieti.
8. Job, purchase and buying alerts.
9. Spontaneous promotion of events and of new pubs or clubs from the singular citizen.

### 4.3 Structure

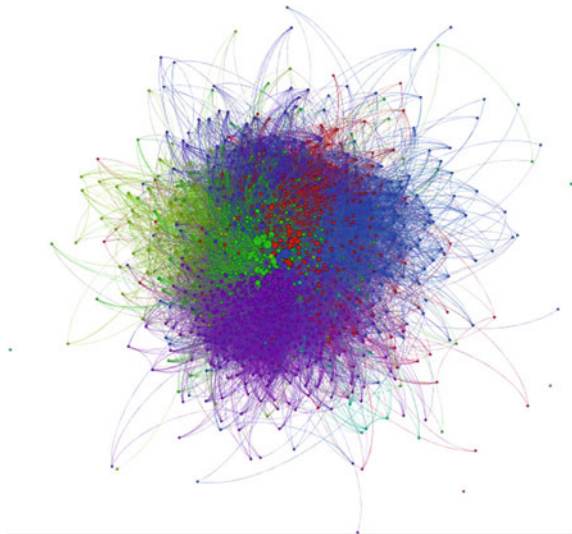
From the structure analysis of the closed and public groups result 18 graphs with an average of 22.88 connections for each user; however the connections are not equally distributed among the elements of the network but have a low average of bonds which have a preferential quantity of connections (Fig. 2).

In the image is represented the graph of Chieti Forever. The biggest bonds are those of the hubs of the network while the different colours indicate the various sub communities within the network.

The diameter of the networks varies from 3 to 7, with an average of 5.12 which represents the average of the uttermost of the degrees of separation among the users. The clustering coefficient varies from 0.93 to 0.71 and presents an average value of 0.22.

Therefore it is possible to affirm that the analysed groups present a structure, which follows the model of the Little Aristocrat Worlds, described by Barabasi and

**Fig. 2** Chieti forever graph



Albert (Barabási (2004a, b)). In fact the presence of bonds, the short diameter and the clustering coefficient between 0 and 1 and tending to 0, reveal the structures of the Little World.

Moreover, the study of the graphs has revealed in each network the presence of connected sub constituents, which become a kind of sub communities within the hosting community.

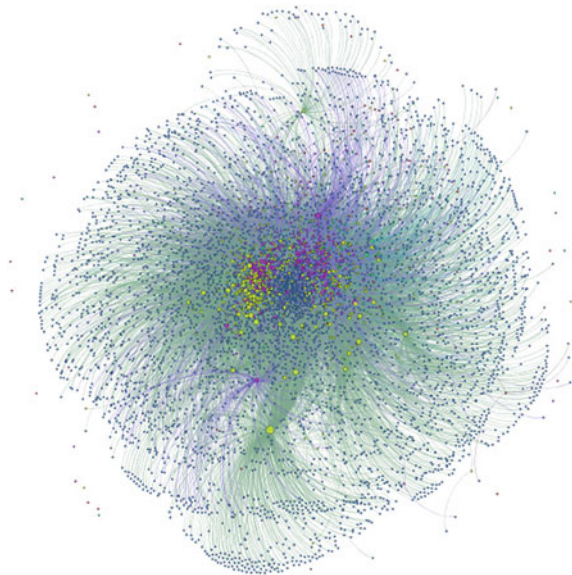
It has been identified, regarding the modularity degree, an interval between 0.105 and 0.516 within the graph, with an average of 0.25, which defines a low modularity and so sub networks well connected among them.

The structure characteristic of the graph cliques is that of representing networks with an high density, a diameter of 2 and a clustering coefficient tending to 1, so highly connected among them but not with the rest of the network.

The Like Pages present instead a structure which is completely different, in fact they constitute mixed graphs whose bonds are represented by the users of the networks and by the posts inserted by the administrators and the connections are out degree from the users toward the posts so that the connection elements are not the users but the contents inserted by the founder of the page which are the most clicked by the users.

In the graphs is described the example of the “Mo Li Vid” graph, the blue bonds represent the users of the page and have the same dimension. The other bonds represent the content of the page and differ according to the type, in fact the yellow bonds represent photo and images, the fuchsia bonds the status the green bonds the videos and the red bonds external links (Fig. 3).

**Fig. 3** Like page Mo Li Vid graph



#### 4.4 *Social Actors*

The study of the administrators' profile of the groups within this research has revealed an active adult audience, between 30 and 60 years, mainly a male audience, in fact among 54 administrators, only 7 are women.

The study of the social behaviour and of the contents of the most active actors within the system of the civic virtual groups has revealed the identification of some social types.

1. *The informer* who insert the news taken from other media in the form of links or screenshot from the local newspapers. He is not a professional but an amateur.
2. *The journalist* a professional who shares news from his or her own pieces to promote his or her newspaper.
3. *The polemic* who develops debates on the basis of social denounce. The contents of this type are usually pieces from external newspapers or links, videos and photos made by him or her and then shared within the group.
4. *The satirist* who has mainly a passive role, in fact he or she comments the contents of the informer and of the polemic and rarely his or her role is active.
5. *The nostalgic*, a user whose activity is oriented toward the celebration of the past of the city of Chieti through photos, historical hints, posts related to historic characters who lived in the city and old register screenshot.
6. *The evaluator* who is an active user in the evaluation of the city through posts, amateur photos of cultural and folklore events.
7. *The politician* who belongs to a precise politic group but who does not hold an institutional place. The politician is a polemic, a satirist and evaluator at the same time and his/her activities aim at politic promotion
8. *The blogger* is a way between the informer and the journalist, in fact he or she is not a journalist but uses Facebook to share pieces of newspaper on his/her blog.
9. *The cicerone* who receive the new members of the groups and explain to them the rules and the aims of the group itself; his or her role is developed mainly through private messages and public posts.
10. *The activist* who plans interventions in civic and social field and uses virtual groups to promote initiatives
11. *The fan* who is concerned with the update of the group about his or her team sharing video, photos and news;

## 5 Conclusions

The study of the spontaneous contents of the users in the affinities network is: an important element to understand the behaviours system of the social actors regarding a specific topic, it is part of a new concept of Web seen as a database rich of significant information which is named Web 3.0, it is a useful instrument to project strategic interventions.



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**Part IV**  
**Integrative Theories and Models**

# Notes on Some Diplomatic Cryptosystems Used in the 17th and 18th Centuries

Cristina Flaut and Daniel Flaut

**Abstract** In this short survey, we present some diplomatic ciphers from the 17th and 18th centuries, particularly used in the Romanian Principalities, emphasizing their similarities with the ciphers used in Europe in that period.

**Keywords** Diplomatic ciphers · Information · Information security

## 1 Introduction

It is said that we live in the Information Age, since the Internet has enabled the massive distribution of any kind of information. These new waves of information constantly require new technologies to allow us to send an increasing amount of data. Moreover, we all also want high transmission fidelity, increased security for the data delivered, guaranteed confidentiality and security as well as access to an increasing data memory capacity. There is an actual race for quantity, quality and safety as regards the information we send and receive, especially if the data sent is of major importance, as is the case of diplomatic, military and similar kinds of information.

There is therefore a question that springs to mind quite naturally: what did this picture look like from this point of view several hundred years ago? What did quantity, quality and security entail in those times?

In this short article, we aim to cast our eyes back in time and to highlight certain aspects that have essentially stayed the same, except for their manifestation. We will illustrate this by means of references to certain cryptographic systems and ways

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of delivering information used in the Romanian space in the 17th and 18th centuries. We will also draw a comparison between the cryptographic systems employed in the Romanian space and those used in the Europe of those times, observing the similarities and pointing out the differences.

## 2 Some Diplomatic Cryptosystems Used in the Romanian Principalities in the 17th and 18th Centuries

Cryptography represents for the more recent ages of humankind what writing itself was for primitive eras (Grigoraş 1924, 6).

Until modern times, cryptography referred almost exclusively to *encryption*, the process of transforming an ordinary text (a plain text) into an unintelligible text (*ciphertext*) (Khan 1967).

When they were not used for diplomatic or military purposes, cryptograms provided the cryptographer with a certain sense of satisfaction and an air of cultural superiority. They showed he knew something accessible only to few. Encrypted texts could also be regarded as a game, in which the author tried to capture the attention of the readers, arousing their curiosity and thus heightening the mystery surrounding the text (Virtosu 1966, 262).

The first important cryptography treatises appeared in the 16th and 17th centuries. There were approximately 10, considered a high number for those times. We mention a few of them, as for example *Libri paleographiae* by Johann Trithemius, Oppenheim, 1518; *De furtivis literarum notis* by Giambattista della Porta, Naples, 1563; *Traité des chiffres* by Blaise de Vigènere, 1586; *De dignitate et augmentis scientiarum*, libri VI, by Francis Bacon, 1623; *Cryptomenytices et cryptographiae libri* by Gustavus Selenus (Duke of Brunswick-Lüneburg), Lüneburg, 1624 (Grigoraş 1924, 5).

Medieval cryptography generally made use of three distinct ways of creating the secret alphabets employed in encoding messages:

1. The letters used were ordinary ones, only replaced by others:
  - (i) either two letters were interchanged, for example “b” was replaced by “e” and “e” was replaced by “b”;
  - (ii) or a letter was replaced by the one following it or by one to be found at a  $k$  distance in the alphabet;
2. Use was made of a foreign alphabet, unknown to those around.
3. New alphabets were created, the so called steganograms, consisting of signs invented by the authors.

These systems were not used in combination. At least, in the Romanian space mixed alphabets were not used until the 17th century, when they started to feature in cryptograms of a political nature (Pava 1959, 365).

We will next refer to several ciphers employed in particular in diplomatic correspondence in the Romanian space in the 17th and 18th centuries.

Șerban Cantacuzino was the Prince of Wallachia between 1678 and 1688. He participated in the campaign against the Ottoman Empire, culminating with their defeat in the Battle of Vienna (Hitchins 2014, 44–45). Șerban Cantacuzino died under mysterious circumstances and was followed to the Wallachian throne by his nephew, Constantin Brâncoveanu (1688–1714) (Giurescu and Nestorescu 1981, 175–176).

In the 17th century, diplomacy, in the modern sense of the world, started to take shape and the great powers also perfected political espionage. As a direct consequence of the uncertainty characterising those times, the use of cryptography became increasingly widespread in Europe. France even witnessed the appearance of a cipher service, run by professional cryptologists such as Vimbois and De la Tixère. All European chancelleries had in those days a bureau known as a “Black Chamber” which employed cryptographers whose main activities included code breaking and mail tampering. This activity was also pursued by the Romanian ruler Constantin Brâncoveanu (Pava 1960, 508).

Given the troubled nature of those times, cryptography maybe was never more justified to exist than in the late 17th and early 18th centuries (Pava 1960, 507). The Habsburg Empire initiated the Holy League, uniting the Austrians, the Polish and the Venetians against the Ottoman Empire (Cernovodeanu 1997, 7). On the other hand, France renewed the alliance with the Turks. Russia, Sweden and Prussia were emerging as powers on the European stage and, in an attempt to protect their trade, England and Holland were making considerable efforts for peace (Pava 1960, 507; Demény and Cernovodeanu 1974, 187–207).

Although cryptography had become a routine procedure in the Romanian space, it must be noted that there are few examples of ciphered writing preserved in the archives. An explanation can be found in the care taken by the respective correspondents to immediately destroy any documents regarded as compromising (Pava 1960, 508).

An example of a cipher used in diplomacy can be found in two acts of the Wallachian Chancellery from 16 April 1687 and 5 December 1687 respectively. These documents were addressed by Șerban Cantacuzino to Emperor Leopold I (1640–1705) and were encrypted by means of a method called the Pigpen cipher. These acts are stored in the Ministry of the Interior archives in Vienna. This is where the transcription made at that moment by the imperial chancellor, who also possessed the key of the cipher, is kept (Mareș 2007, 114).

This kind of cipher employs symbols (conventional signs) instead of letters and was particularly used in the 18th and 19th centuries by the Freemasons to encrypt their documents (Singh 2005, 350). It must be noted that Constantin Brâncoveanu’s secretary, Anton Maria del Chiaro, was the first person who established a Masonic Lodge called *Loggia di Galazzi* in Galați (a town in Moldavia) in 1734 (Russell and Cohn 2012; Flaut and Flaut 2015, 114).

The key of the cipher is:



	А	Б	В	Г	Д	Е	Ж	З	И	К	Л	М	Н	О	П	Р	С	Т	Ѧ	Ф	Х	Ц	Ч	Ш	Ъ	Ѣ	Ю
Г	4	5	3	θ	λ	z	-	g	и	6	5	с	у	2	0	g	h	m	8	f	-	д	з	±	-	ε	d
И	4	φ	-	5	-	v	-	о	±	-	m	-	λ	и	8	δ	-	λ	z	у	-	g	-	3	а	-	-

Fig. 2 Pava (1960, 510)

+ (C) ει *гумни* *пвкнз.*  
 у *кусуи* бз +δ5±m8m 789=  
 дуа оз .□. ζи 5+855+м ζиоз  
 уз3 348 у i гуиτ Cε 452:  
 42ζ fuuyr g±952ds

Fig. 3 Pava (1960, 512)

The cipher was changed for the first time in 1695, when the Austrian general Federigo Veterani (who exchanged ciphered messages with Brâncoveanu) was defeated and subsequently killed by the Turks in the battle of Lugoj and his luggage fell into the hands of the victors. The second change involving the cipher key took place in the autumn of 1707, when the Cossack Hetman Ivan Mazepa sided with the Swedes in the war with Russia. Since he was one of the few people who knew the key of the cipher used by Brâncoveanu in his correspondence with Peter the Great and other Moscow personalities, Brâncoveanu feared Mazepa might communicate the key to the Turks (Dulciu).

Mention must be made of the fact that each of the important personalities that Brâncoveanu had dealings with featured in his code with an individual symbol. For example, in a 15 September 1695 cryptogram in which Brâncoveanu was told, by his informer from Sibiu, of the fate of General Veterani in the fight between the Habsburgs and the Ottoman Empire, the general's name is encoded by means of the □ symbol (see Fig. 3). This procedure (of using special symbols for the personalities of the age) had been known since the 14th century and features, for example, in reports written by Venetian ambassadors, as well as in the Greek correspondence of 1700 received by Tsar Peter the Great from Wallachia (Pava 1960, 513).

Ten letters, sent by Stolnic (High Steward) Constantin Cantacuzino (Constantin Brâncoveanu's uncle) to some Russian officials, date back to 1695. In these letters use is made of a combined diplomatic cipher with the following correspondences between the symbols employed and the letters they replace: 2 = α, 4 = β, ∟ = γ, ι = ε, β = δ, δ = ζ, υ = η, ο = θ, γ = ι, ∪ = κ, ρ = λ, x = μ, c = ν, ϕ = ξ, ε = ο, 6 = π, 9 = ρ, z = ζ, σ, + = τ, u = υ, 3 = φ, > = χ, v = ψ, 8 = ω, h = ει, e = αυ, 5 = ευ, ∞ = οι, ω = ου, ϕ = κ αι. In the case of these letters, use was made of special symbols to refer to certain personalities of the age: for example Peter the Great was assigned the symbol ☆ (Mareş 2007, 119–120).

Another diplomatic cipher was used in a letter written in Latin by Constantin Cantacuzino on 14 June 1708 in Târgoviște (Wallachia) and addressed to Francis II Rákóczy, Prince of Transylvania (1704–1711). This cipher has the following key: A = o, B = 2, C =  $\text{ш}$ , D = 3, E = 6, F = d, G =  $\gamma$ , H =  $\varphi$ , I = e, L = h or m, M =  $\varepsilon$ , N =  $\delta$ , O = 5, P =  $\kappa$ , Q = y, R =  $\rho$ , S = g, T =  $\text{Б}$ , U = +, V = T, X =  $\text{И}$ . Three special symbols, namely  $\varphi$ ,  $\gamma$ , + and the numbers 2, 3, 5, 6 were also used. It is important to note in this cipher the encryption of the letter X as  $\text{И}$ . Since the Cyrillic letter  $\text{И}$  is specific to the Romanian and Serbian Cyrillic alphabet, it is possible to conclude that this cipher was created by a Romanian cryptographer (Mareş 2007, 94; Flaut and Flaut 2015, 115).

Another diplomatic cipher was a numeric one used in the correspondence carried out in Greek by the officials of Wallachia and the Russian Chancellery between 1707 and 1709. The key to this cipher is provided by the following correspondences between the symbols employed in the cipher and the letters they replace: 33 =  $\alpha$ , 42 =  $\beta$ , 58 =  $\gamma$ , 82 =  $\delta$ , 95 =  $\varepsilon$ , 22 =  $\zeta$ , 28 =  $\eta$ , 37 =  $\theta$ , 72 =  $\iota$ , 85 =  $\kappa$ , 15 =  $\lambda$ , 26 =  $\mu$ , 35 =  $\nu$ , 80 =  $\xi$ , 75 = o, 12 =  $\pi$ , 18 =  $\rho$ , 99 =  $\varsigma$ ,  $\sigma$ , 52 =  $\tau$ , 4 =  $\upsilon$ , 8 =  $\phi$ , 3 =  $\chi$ , 2 =  $\omega$ , 200 =  $\alpha\iota$ , 150 =  $\alpha\upsilon$ , 120 =  $\varepsilon\iota$ , 16 =  $\varepsilon\upsilon$ , 92 =  $\omicron\iota$ , 7 =  $\omicron\upsilon$ . It can be observed that these equivalences were entirely random, each letter being encoded by means of a single-digit or two-digit number and each diphthong by means of a group of three digits. It appears that this was a new cipher received by Stolnic (High Steward) Constantin Cantacuzino. It appears that this is the cipher the Russian Chancellor Golovin was referring to when he asked Cantacuzino to make use of the new cipher in his letters (Mareş 2007, 132).

Nine enciphered documents issued by the Chancellery of Prince Constantin Brâncoveanu date back to 1710 and 1713. They were written partly in Polish and in Latin and addressed to Polish officials. The messages were encoded by means of a numeric cipher. The letters were encoded by means of Arabic numerals, each letter, with the exception of “e”, was encoded by means of a two-digit number. In some of the messages, a full stop was placed after each set of digits, making it easier to identify them but rendering the cryptosystem weaker. The 24 letters Latin alphabet was used, and the key was provided by the association of a set of digits to each letter, a distinction being made between vowels and consonants. Thus, in the case of vowels A = 19, E = 9, I = 29, O = 39, U = 49, Y = 59, and in the case of consonants B = 60, H = 61, P = 62, X = 63, G = 64, W = 65, C = 66, K = 67, Q = 68, Z = 69, D = 70, F = 71, N = 72, S = 73, L = 74, R = 75, M = 76, T = 77 (Mareş 2007, 135–136).

The equivalences between letters and groups of digits seem to have been chosen in an entirely random manner by a cryptographer, but certain symmetries were usually employed or certain geometrical figures were used, either to organise the numbers or to render the code. If we analyse Table 1 we can observe, for example, that the groups of digits were chosen in the same way as in Fig. 4, or according to a pattern that can be easily noted in Table 2.

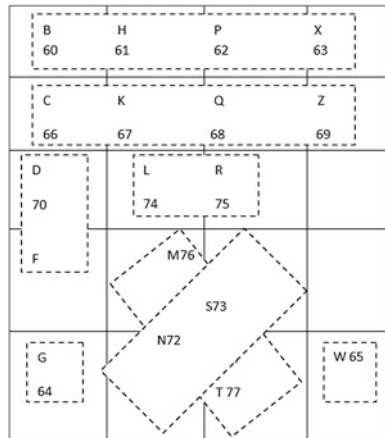
In Table 2, we consider the cells as squares with edges of length 1 and the triangles with vertices in the centres of these squares. We denote with ABC a right-angled triangle with B as the right angle, where  $AB = 2$  and  $BC = 1$ . We



**Table 1** Mares (2007, 137)

Letter	Corresponding numbers					
	I	II	III	IV	V	VI
B	60	–	–	–	–	–
C			66	–	–	–
D				70	–	–
F				71	–	–
G		64	–	–	–	–
H	61	–	–	–	–	–
K			67	–	–	–
L					74	–
M						76
N				72	–	–
P	62	–	–	–	–	–
Q			68	–	–	–
R					75	–
S				73	–	–
T						77
W		65	–	–	–	–
X	63	–	–	–	–	–
Z			69	–	–	–

**Fig. 4** Mares (2007, 138)



consider DE a segment of length 1 and FGH an isosceles triangle with  $FH = 2^{1/2}$  and  $FG = GH = 5^{1/2}$ . We split the table in two parts (separated by a thick line) with columns I, II, III on the left side and IV, V, VI on the right side. With these notations, if we note that we can't have a number label in the right angle, the triangles are inserted from left to right, AB is always in a horizontal position and if we alternate the left side with the right side, starting from the left, we have the key: ABC, DE, FGH, FGH, ABC, FGH, FGH.

**Table 2** Mareş (2007, 139)

Letter	Corresponding numbers					
	I	II	III	IV	V	VI
B	60	-	-	-	-	-
C			66	-	-	-
D				70	-	-
F				71	-	-
G		64	-	-	-	-
H	61	-	-	-	-	-
K			67	-	-	-
L					74	-
M					76	-
N				72	-	-
P	62	-	-	-	-	-
Q			68	-	-	-
R					75	-
S				73	-	-
T					77	-
W		65	-	-	-	-
X	63	-	-	-	-	-
Z			69	-	-	-

This encryption system is monoalphabetic, each letter being assigned the same label, which makes it sensitive to frequency analysis applied on the text. This represents its first weak point. Another weak point resides in the fact that using two characters for each letter practically results in a double number of symbols, rendering the message to be delivered too lengthy (Mareş 2007, 138–139).

### 3 Conclusions

Sometimes diplomatic documents were insufficiently well-secured, frequent mistakes including: using well-known forms of address, only partially encoding the message, not encoding the recipient’s name, etc. However, there were also measures that resulted in increased message security, such as using special signs for the people involved in the correspondence, rendering the date (day and month) in the letter in Cyrillic to deceive about the alphabet used. Another security measure taken to ensure the messages were not intercepted entailed carefully choosing the routes and messengers, usually recruited from the ranks of merchants. In the case of Russian correspondence the letters were sometimes sent to the Russian ambassador in Vienna who then forwarded them to Moscow (Mareş 2007, 143–144). Another method employed to secure the ciphers entailed changing them after a short (for that age) period of time, as for example 4 years, 8 years, 9 years, etc. (Mareş 2007, 145).

Unlike the ciphers used in diplomatic letters, the codes used for public and private documents, correspondence, cryptograms used on manuscripts or inside the books, did not necessitate such changes.

A good example in this respect is provided by some cryptograms written on several church books dating back to 1737 found in the Dejeni church, the cryptogram of Father Ion of Iași on the Gospel published in Bucharest in 1682, also kept in the Dejeni church, or the cryptogram of Father Dănilă on an old church book dating back to 1640, kept in the same Dejeni church (Literat 1934–1935, 185–186). They were written in the Cyrillic alphabet and were encrypted by means of the same cipher (same key) rendered below:

А = Ѧ; Б = Ж; В = И; Г = З; Д = С; Е = Ъ and Ё; Ж = Б; С = А; З = Г;  
 И = К; Ї = Ч; К = П; Л = О; М = Ъ; Н = Ф; О = Л; П = К; Р = Ц;  
 С = В; Т = Ш; Ш and В = Х; Ф = И; Х = Ш and В; Ш = Т; В = С; Ц = Р;  
 И = Ш; Ш = И; Ч = Ї; Ъ = Ъ and И; К = К; Ъ = Ъ and Ё; Ѧ = Ѧ; ѧ = ѧ;  
 Ъ = М; Ѧ = А; В = Х.

It can be noted that the letters were either interchanged (each being replaced by a letter located 1 letter away, as for example И and Ш), or replaced by letters located 3 letters away, for example Д is encoded as С (and С as Д), or replaced by letters located 5 letters away, for example Б is encoded as Ж (and vice versa), or left unchanged, as is the case of Ъ, for example (Literat 1934–1935, 188).

It can be also noted that this code was used for almost 100 years, without anyone feeling the need to change it.

We can also note that all the ciphers used in diplomacy in that period were monoalphabetic ciphers, each letter being encoded by means of a single letter, although polyalphabetic ciphers (such as the Vigenère cipher) were already in use in the Europe of those days. In such ciphers, a letter could have several encodings or a letter could be used to encode several other letters, which meant that the text in question was no longer vulnerable to attacks such as frequency analysis applied on the text.

However, there are situations in which documents exist that relate the use of a way to encrypt certain letters in short texts, notes within books or manuscripts, inscriptions on walls, similar to the technique used in the Vigenère cipher. Such examples can be found in the book *Evangeliarul de la Londra (The London Gospel)*, copied by Radu of Mănicești in 1574, or in some ciphered inscriptions on the walls of Humor Monastery (placed in the North of Moldavia) (Bals 1965). In these instances, there are small cryptograms in which, for example, the Cyrillic letter И was substituted with the Cyrillic block letters ДД. That means ДД = 4 + 4 = 8 = И (Mareș 2005, 376–378; Flaut and Flaut 2014, 30). Therefore the same technique of adding labels to the letters was used as in the Vigenère cipher.

Another example was found in a princely act from Wallachia, written in Bucharest with Cyrillic letters and dated 5 January 1549. At the end of the cryptogram, the copyist rendered their name, using a similar technique to the one mentioned above. For example, the substitution of the letter А, whose label is 1, was made with the following group of letters ПО^ПО^ = half + half = an entire

(the abbreviation of the word половина = *half* in Russian) (Mareş 2007, 57; Flaut and Flaut 2015, 112).

The above cryptosystem is called the *Arithmetic Key*. This cryptographic system makes use of the values of the labels associated with each letter from the Cyrillic alphabet and writes them as a sum of several numbers which can represent the labels of other letters. The *Arithmetic Key* is a kind of homophonic substitution cipher, sometimes combined with the Greek Key and used especially by the Slavs (Kostić 1913, 31–34; Iliev 2012).

In the Romanian Principalities, the first cryptograms which employed this encryption system date from the early 16th century (1511) and are to be found in the Moldavian songbooks of Brother Evstatie from Putna Monastery (Constantinescu 1967; Pennington 1971).

After our knowledge, there is no evidence that this type of encryption system (the *Arithmetic Key*) was used in diplomatic correspondence.

After the instauration of the Phanariot regime (in 1711 in Moldavia and in 1716 in Wallachia), all information regarding the use of ciphers in the international relations of Wallachia and Moldavia was totally banned (Mareş 2007, 20).

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# The Logos from Reason to the Wonder of Mind

Rodica Pop

**Abstract** The terms of Logos used by John Apostle has, without doubt, reverberations in stoic philosophy, at Plato and it was already used by Philo of Alexandria. Can it be said that the Christian theology assumed, simply, one Greek philosophical concept and it bunk of concept of God? Has Christianity somehow absorbed the Greek teachings from pragmatic reasons, thus giving a direction to Christian dogmatists who initially did not have a plan and which they could not change it following? In this paper I try to show that this does not happen—the proof is the Gnosticism condemnation by the Church Fathers—and that the concept of Logos was used in philosophical interpretation of the Christian faith, being a constituent of faith. When the Saint John says that Jesus is the Logos, this isn't a philosophical statement, but one religion.

**Keywords** Logos · Philosophy · Theology · Plato · Plagiarism

## 1 Introduction

The particularity of the Greek spirit lies in the way the sought the Truth, way which transcends history. Then, in the unity between the intelligible world (*noita*), the thinking spirit (*nous*) and the being (*einai*)<sup>1</sup>—three elements that led them to a meaning of extraordinary significance of the term *cosmos* (κόσμος), as a blend of harmony and beauty. Within this unit lies the Truth, which for Plato was identical to Virtue (*areti*), Beauty (*to kalon*), the Good, identity ensured by the *logos* (λόγος) (*Menon* and the *Republic*). “This is the reason why, to the Greeks, the Truth was

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<sup>1</sup>See also Plato, Parmenide (128b), Clement of Alexandria, Stromata VI. 2

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firstly a matter of cosmology. As a result of this way of thinking, the place of history itself became problematic in Greek ontology. The historical events had to be explained via a certain *logos*, that was attributed to a certain reasoning that was to either be held responsible for them or to be investigated for justifications. [...] Both during the classical period as well as neoplatonists shared the same ontological assumption that the being represents one indivisible unit, a closed circle made up of *logos* or *nous*. Both history and matter had to either conform to this unity or fail the being altogether” (Zizioulas 2007, pp. 63–64).

Plato’s philosophy and that of the Christian mysticism—the former having a major role in defining the latter—are marked by the tension between what can be conveyed and what goes beyond the human’s power of defining or comprehending. Only an intimate dialogue with God, solely the contemplation can lift the soul of man to the divine space, to the Realm of Ideas, to that place where it can visualise Beauty in itself; this is a concrete example of Christian pre-apophatism in Plato, for what the soul can contemplate cannot be confined to a definition, to a *logos* (λόγος): “it is neither born, nor does it die; it never grows nor does it diminish; it is free from any relativity as to its nature, duration or place; it cannot be represented neither by image (*phantasia*—φαντασία), nor by definition (*logos*), it does not manifest itself in anything as it is unique in its self” (Louth 2002, p. 33).<sup>2</sup>

## 2 Platonism

### 2.1 *Is There a Theory of Platonist Logos?*

The present study deals with the problem of the *logos* in Plato, in Christianity, passing through the Jewish philosophy of Philo of Alexandria. There are many connections between Platonism and Christianity in order to place ourselves from the very onset, within certain frameworks that are slightly different from the majority of to the critics of the Greek philosopher’s works, who saw the Platonist *logos* as a question related chiefly to language or rhetoric. We believe that the things are much more complex than this.

The Brice Parain’s book (1998) excels in rigour and in detailed analysis of the significance language has in Plato’s works. El anticipates (Parain 1998, p. 10) in his

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<sup>2</sup>Here is the correspondent of Maximus the Confessor: “By hiding himself secretly among reasons, the Word offers itself to understanding, proportionally, and through each of the visible things, as through letters, whole and entire in all and full in all land undiminished, the Undiscernable and always the same within the discernables, the Simple and whole in all parts, he One with no beginning among the things begun, the invisible among the visibles, the Untouched among the touched. [...] so that in all these to gather us around Him, us, who are His followers, uniting us in spirit to lift us to His simple understanding and freed from contact with them, concentrating our attention towards uniting with Him the same way He differentiated Himself by coming down on earth for us” (*Ambigua*, P.G., 91, 1285).

introduction to the book that, by the investigation that he intends to perform, he wishes to bring the Greek spirit in its religious climate. From our point of view, Brice Parain succeeds in accomplishing his goal only in part because he sticks to the meaning of *logos* as a mere linguistic device and does not even mention the contribution that Eros has to comprehending the Realm of Ideas through *logos*. Also, he ignores the fact that the search for virtue (*arety*) is a guiding line, one of the major themes of Platonist thinking, and that the *logos* is related to the problem of knowing and committing. In equal measure, he does not associate the *logos* to Immortality (Bres 2000, p. 291), which to Plato represented knowing reality, in other words, the absolute knowledge of the Realm of Ideas, endeavour that is possible here on Earth only in the form of the pretasting,<sup>3</sup> that the soul receives during contemplation. What we propose is an understanding of Plato's *logos* from the perspective of the mysticism of the ineffable (that because it represents "the first major moment of an intellectual history of interiority" (Baghiu 2006, p. 50), while the other moment belongs to the Christian mysticism); and, by taking into account the essential attribute the Theory of Ideas, that of mystical ontology.

## 2.2 *Word. To Speak. To Name*

Despite the dimension the significance the *logos* would acquire in Christianity, it is quite difficult at a first glance to tell that we are dealing with a theory on Plato's *logos* that is concrete and obvious, as we have been taught in the meantime by the system philosophy. This is especially because the term *logos* was an everyday word for the Greeks—as Bres (2000, p. 132) remarked. *Logos* is the noun of the verb *legein* (to speak, to say), and its meanings revolve around language terms such as definition, discourse, argument or reasoning. In Plato it is barely noticeable, for one has to look for it in every corner and throughout the entire maze in the dialogues Socrates invites his interlocutors to. When it lets itself discovered, we conclude that what we find in Plato's *logos* is a dynamic, invasive, complex conceptual construction, a fine, strong web Plato wove as a linking bridge and the role of the *logos* is to mediate between the sensible world and the intelligible one.

In *Theaitetos*, Plato wishes to provide a progressive explanation to the *logos* and proposes a preliminary stage in realising the supreme knowledge, *επιστήμη* (*epistimi*), for which an important aspect is the openness to *λόγον* (*logon*—word)—to "give and receive word" (*Theaitetos* 206d). Thus, the *Logos* represents conveying the intellect through words, *διάνοια* (*dianoia*), it is "thinking of speaking as images", as *Theaitetos* put it in the dialogue with the same title (208c). Then, Socrates tried to define it through its constituents (the same way we define the sentences as

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<sup>3</sup>We shall see that the philosopher intends just that: to live the state of grace in the realm of ideas via a philosophical life: "if we all live a life truly dedicated to philosophy, we shall all know God with the clarity illuminated people are really capable of" (Plato, *The Letter Vth* 323d).



verbs and nouns) (Parain 1998, p. 10), but it seemed to him a superficial approach: “If it seems to you too, my friend and, if you accept that going all the way through the element means, in the case of each thing, meaning, whereas a segment or even a larger portion, lack of meaning, tell me what this thing (word) is and we shall investigate it” (*Theaitetos* 207c). Another description would have to do with emphasising the particular inside the whole that is either the definition, nature or essence “to name a sign by which the object of the question distinguishes itself from all the others” (*Theaitetos* 208c).

In Christian theology, we find a striking resemblance in explaining the language as a result of thinking: “If we can also think about things it is because they are plasticised manifestations of the reasons of a supreme personal Reason. If we can express them through words, It is because they are plasticised from the Word (the *Logos*) addressed to us, adapted to our level. We think rationally and we speak because we are partners of the Person who is Himself The Personal Word and presented us with His thinking, or the manifestation of His plasticised thinking, at the level of our thinking and created the power of conveying, using a creative power that we do not have” (Staniloae 1997, II, p. 9).

### 2.3 *What Does Socrates Want?*

The originality of Socrates as a being human extended to the special way he understood to practise philosophy. In comparison to the sophists who offer their services in exchanges for an substantially remuneration, Socrate’s preoccupation for wisdom was naturally, philosophy was to him a *modus vivendi*. Socrates was interested in knowing himself, thus learning the truth of things. He encouraged others to do the same. That was the secret, the key and the motor of his entire philosophy: in knowing oneself, he could see the opportunity to know reality. But Socrates did not understood reality as what is palpable or susceptible of scientific experimenting. The reality Socrates yearned for, driven by love for the Beautiful in itself, the Good itself and the Truth of things was the Realm of Ideas.

The sensations generated by the body enslave reason and hinder us from true learning in communion with others and from grasping meanings inaccessible to the sensors it possesses (*Phaidon* 65bc). The eyesight and the hearing have the ability to transmit information to the intelligible part of the soul but they are altered, defiled, fragmented and tainted by the filter of the flesh. Considering the eyes and the ears are treacherous instruments of learning, Socrates spoke again of the body’s lacks in abilities and of the danger of being misled. The body represents an obstacle in a philosophers path as it hinders the hunt for reality, the thinking itself and the revealing of the truth. Salvation comes from the soul as it alone possesses the instruments necessary to set out on “hunt for reality” (*Phaidon* 66c).

## 2.4 About Midwifery, a Way of Using the Logos

This phrase, “hunt for reality” naturally arouses interest and curiosity. For reality seems something that must be conquered and not something simply taking place in front of the human’s eyes, with or without his volition. If we investigate the matter, we shall discover that the logos is the weapon that Socrates uses in this film of the hunting, which Plato also describes along several dialogues. We learn that the *logos* is the bridge between the two worlds, some kind of a catapult that sends the soul from the world of senses into the Realm of Ideas which is, in Plato’s opinion, Reality itself.

What Socrates proposed as a path to knowledge passes through the logos and it is called *maieutike* (maieutics), translated in his own terms as: “the job of a midwife” (*Theaitetos* 210b) practised by those skilled in helping women give birth to their babies and in helping recent mothers (*The Politics* 268b); “The art to help deliver the spirit” (*Theaitetos* 150b), techniques compared by Socrates to the process of gaining knowledge and representing discerning “the truth from the untruth” (*Theaitetos* 150b). The desire to know was for Socrates as tormenting as the pains of accouchement (*Theaitetos* 150d,e, 210b), and he, born from a midwife mother, considered himself be to a kind of a midwife, except he practised his skill not on women, but on men, whom he assisted in flourishing their spirit. If midwives did that, says Socrates, “the greatest and the most beautiful work for the midwives would be to separate the truth from the untruth” (*Theaitetos* 150b).

The technique of midwifing the spirit consisted in addressing questions that help the interlocutor arrive to discovering the truth himself. For Plato, the success of this method was an argument to support his theory of reminiscing, according to which the man does not actually learn anything new, his effort focussing on remembering (*anamnesis*) the things the soul knew even before entering the body, from the Realm where it used to contemplate eternal truths.

We insist on this matter of the dialogue practised by Socrates because, in Plato’s Akademia, this was fundamental grounds, for it had at least one great quality: it taught the students to think. Once a student stated a hypothesis, other students were taught to ask questions while the first was to provide answers to them. What is important about the Akademia is that Platonist dialectics surpassed the level of a purely logical exercise. the dialogue representing a truly mental exercise, that trained the interlocutors into a deep process of inner transformation, through empathising, paying attention to the other, patience and respect for another opinion than their own. It was a common effort to “establish an agreement with the rational exigences of the meaningful discourse, of the *logos*” (Hadot 1995, p. 90).

By making use of this asceticism, that is the exercise to give up the selfish belief that what you said represents the ultimate truth, by making a move where each interlocutor transcends to something beyond themselves, by subjecting themselves to the *logos* as to a superior authority, they will overcome their personal points of view and will discover a truth independent from themselves (Hadot 1995, p. 95).

What we should keep in mind when we approach this form of *logos* is that the dialogue is not only important for its final goal, that of knowing, but also for the preliminary stage towards this target: the ethics, the rules that had to be observed. The participants to the dialogue experienced deep changes in their souls. This entire phenomenon is possible thanks to the *logos* which, by, blending ideas into the dialogue, turns the speaker into participants in the Realm of Ideas, “the only fixed place where the truth could dwell” (Parain 1998, p. 124).

## 2.5 To Utter and to Know

It is important to pay attention to Brice Parain’s remark (1998, p. 41) on Aristotle’s disdain (*Metaphysics* 8, 1050b, 35) towards neoplatonists, whom he called *logicians* sau *dialecticians*, in the sense of ‘chatters.’ What he reapproached them was they talked too much as they were seduced by the words at the expense of finding a solution. Although we have seen the justification for Socrates’s long discussions with his friends or occasional interlocutors, what we should also notice in Aristotle’s gossip is that, for Plato, the word was of great importance, having spiritual reverberations upon the life of man.: “the bad use of words is not only a linguistic mistake, but also a way to hurt the souls” (*Phaidon* 115e). So, in this case, which is the good use of words?

In the process of learning, Socrates considered that naming things had to do with the religious component of life: that is why he dug at the roots of the *logos*, as he was very preoccupied with the role of language in the universe or with the way thinking comes to be or how the most elementary *logos* is created or if uttering names is relevant to the things named, whether they contain the body, the meaning or the essence of those things. In order to find the answer, to look for the truth of things, Socrates took refuge in *logoi* (reasoning—*Phaidon* 99e), as there was this belief that “it is from Gods the energy that drives one to discuss arguments” (*Parmenide* 135d). The neglect of the role of the *logoi* have dire consequences on the soul and that is why, upon his death, Socrates warned his friends, leaving them with these last words: “Nothing worse can happen to someone than getting to hate arguments (*logois*)” (*Phaidon* 89d).

Leon Robin translates *logoi* as Ideas, and Parain (1998, p. 42) agrees, even though, from the point of view of grammar, it is not accurate but he admits to this twisting of meaning because in Plato’s metaphysics, there is a connection between Ideas and *logos*: “The same way one captures in one species a multitude of existences, so he also designates a plurality of knowledge inside one formula”, Socrates advises Theaitetos (*Theaitetos*, 148d). The truth must be contained in the language (*logos*); as it is one of the ways man has access to the truth, and that is why we must rule out the idea that Plato could have admitted that what we have in language is simply a product of convention (Parain 1998, p. 9). Brice Parain remarks the fact that Plato, like all Greeks, “believed in the right combining of words”, idea that imposed a certain impression about truth and knowledge, different from what we have today (Parain 1998, p. 7).

### 3 The Meeting of Greek Philosophy with Jewish Religion

#### 3.1 *Perceiving a Similarity Between Concepts*

The use of the word *logos* by the Greeks is so diversified that, even the understanding and mastering its meanings become very complicated. However, Plato's merit consisted in reducing the *logos* to its essential constituents (Parain 1998, p. 149). For instance, he did not give it the sense of human reasoning in the way we see it today, that is identical to the ability to think logically, although it obviously has this meaning, too. But Plato takes us deeper than that. He attributes the *logos* the meaning of a word, phrase, sentence, discourse or language in general with the help of which man materialises into phrases the products of his reasoning and by means of which he is led towards real knowledge. By *logos*, man conveys the essence of things because, in the world perceivable by senses, things are named according to the intelligible world, the language (*logos*) thus becoming a communicating channel between worlds. "The accord of words in our language corresponds to the Ideas' blending with the intelligible world" (Parain 1998, p. 129), this meaning that any piece of information or sentence equals the truth, as words are not the same things as Ideas, but represent a shadow or a mirror of them. Ideas give meaning to words. We owe to the *Logos* everything we know for a fact about the being and the Divine Realm because, in language, in discourse as well as in dialogues (all the aforementioned representing the *logos*) Ideas pervade. This is the form by which man weaves this bridge connecting him to the World of Ideas by means of using the *logos*.

Exactly this is the most important detail that made accepting the notion of Platonist *logos* in Christianity, possible. Or, more accurately put, these meanings made John the Apostle admit to the *logos*-ul of Plato as to something familiar, something that reminds us of the Word of God. The description made by Father Staniloae to this phenomenon—which consists of the presence of the *Logos* throughout the inner and external manifestation of man—is relevant for everything we have said so far: "Each man is a meaningful word in dialogue with the Personal Godly Word and with other human individual words; each feeds itself on strength from the Godly Word, as well as from the strength of things, gathers reasonings in its thinking and this strength in his life, and communicates it to others and receives in return their communication, thus strengthening his bond with the Divine Logos, understanding their origin and meaning" (Staniloae 1997, II, pp. 7–8).

#### 3.2 *The Logos, as a Mediator Between God and the World*

Philo makes the distinction between God in Himself, the One Who Is and the God that connects Himself to man using His powers. Among these powers, he mentioned the *Logos*, whose understanding was inspired by the stoic idea about divine "reason",

which shapes and rules over everything (Roskam 2005, p. 210). But it is also influenced by Plato, since Philo sees *Logos* as a mediator between God and the world and characterised by transcendence and immanent: “This is the Book of the Genesis of the heaven and earth ever since they came to be” (Genesis 2, 4). Brehier (1932, pp. 83–111) just as Delumeau (1958, pp. 153–162) noticed the resemblance between this *Logos* and Plato’s Demiurge. It is in this respect that Philo had a negative impact on Christianity by inspiring Clement and Origen, thus leading to arianism.

To him, the *Logos* was neither the Messiah nor Jesus because, under the influence of Plato’s thinking, Philo could not accept the Embodiment as a possible fact. Charles Bigg concluded that, from this idea, the Jew from Alexandria separates himself from the belief of his people. Anyway, this is a matter still not completely clarified as the critics say that John the Apostle took the name of *Logos* from Philo, accepting to use a formula with a pagan component to convey an entirely Christian concept.

This *Logos* is the principle of giving birth to the intellect, situated among ideas as well as of coming to life of the intelligible sensation (*noete asisthesis*), if we may call it that, also ranked among ideas. *The alegorical comments* (I, 19) named this “the Word of God (*toi Theoi logon*), through which is revealed how all things came to be”. In yet another text, Philo clarifies the notion: “the world of ideas could not have had a more appropriate place (*topos*) than the divine *Logos*” (*De opificio mundi* 20). The terminology and the key in which the Jewish thinker expresses his thoughts is too evidently an imitation of Plato in *Parmenide* (132d): “These ideas (forms) are found in nature as models and the other things only resembles them and are images (copies) of these ideas; and this participation to ideas (forms) resides simply in the fact that they are but reproductions (copies) of ideas”.

Another meaning Philo gives to *logos* is that of reason, judgement, word. Under the same stoic influence we have mentioned, the term *logos* has a double perception: that of internal *logos* (the thinking) and the external *logos* (the language). “Philo takes this theme of the word-reason as inseparable and undiscernable from each other to the next level, turning it into a fact: the word is the expression, thus the embodiment of reasoning or, as Aristotle called it, the *entelechia* of reason” (Luca 2002, p. 22).

It is very important to mention that for Philo the *Logos* is not God Himself, but one of His creations, an interpretation or an understanding of it that Christianity will not accept.

## 4 And the Word Turned into Flesh

### 4.1 *The Meeting of Reason with Faith*

Christianity appeared as an extraordinary challenge to philosophers. In equal measure, we may also notice the challenges the apostles and the first apologists of Christianity had to face because, in order to make themselves understood, they had

to use a language equal to the standards of the pagan Athenian philosophers' requirements as they were "exceedingly self-assured" (Bădiliță 2007, p. 194) people but also curious about new ideas: "the only way all Athenians and foreigners living there spent their time was by saying or hearing something new" (Acts 17, 21).

Paul the Apostle was the first to take the risk of having a dialogue with these devourers of wisdom about Jesus as a creative reason and as a concept that goes beyond the abstract level and interacts directly to humans by embodiment. The event took place in Athens and it is recounted in the *Acts of the Apostles* (17). Bădiliță (2007, p. 192) compares Paul to Socrates who used to talk to people irrespective of the place this happened: "He would talk in the synagogue with the Jews and with the believers, and in the market place, every day, with everybody present" (Acts 17, 17). His message drew immediate attention from the stoics and the Epicureans who wondered "What does this *spermatologos* mean to tell?" (Acts 17, 18), after which they invited the Aeropagist to receive details about this "new teaching" (Acts 17, 19). But the news Paul had to share provoked laughter among its hearers (Acts 17, 32). Resurrection from the dead was already too much for those minds accustomed to reasoning and mastering information. It so happened that, after this failed attempt to convert the philosophers, in a letter addressed to the Corinthians, Paul would speak about the incredible impact of *Logos—Jesus* upon the mind. He represents madness to be reason "The Jews ask for signs, the Greeks crave for wisdom but we preach you Christ the Crucified: to the Jews, loss of reason; to the other peoples, plain insanity" (I Corinthians 1, 22–23).

The apostles paid special attention to philosophers. The repeated comebacks to dialogue with a view to converting and persuading them have an explanation. Paul and John felt familiar to the Greeks' wisdom. Even though in Paul's letters we notice a denunciation of Greek wisdom (I Corinthians 1), this does not imply a denial of the power of reason or a stigmatisation of it. The immortal Apostle emphasises the importance of natural knowledge of God and of moral laws: "since what may be known about God is plain to them, because God has made it plain to them. For since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that people are without excuse. For although they knew God, they neither glorified him as God nor gave thanks to him, but their thinking became futile and their foolish hearts were darkened" (Romans 1, 19–21). The idea that human reason is able to know God by means of external matter also appears in the *Book of Wisdom of Solomon* (3, 5–9), Paul's words (Gilson 2005, p. 12)—who will always be credited with undenied authority—will impose himself among Christians, who would always have fluctuating attitudes of rejecting the value and the contribution of reason within the relation with God, considering that only faith can eliminate the "stages of discourse reasoning, thus establishing a direct contact with the truth" (Bădiliță 2007, p. 193).

The aspect that we consider fascinating about this encounter between Christianity and Greek philosophy is, as we have mentioned before, Paul's and John's belief (later shared by Justin the Martyr and Philosopher, then by Clement of Alexandria, to mention only two of the many) that Greek wisdom is not separated from God, that it has in it the seeds of revealed truth, that they are of the same

family. As a result, they needed to speak the same language. Except philosophy couldn't stop searching, inquiring, initialising new topics while Christianity had the answer and was open to sharing it. Only in this way can we explain the ease with which the new religion could incorporate in it a domain claimed only by philosophers up to that point. This is the reason why Paul speaks to the Stoics about the identity between *sophia* and the believing in Christ; and John the Apostle tells them that the *logos* is the very Word of God, that is Jesus, The One by Whom all was created. Obviously, that exact piece of information came as a shock to the Greeks and Jews. It took them quite some time to understand that John was not speaking about power and domination, but about the true nature of God.

## 4.2 *From Reason to the Word*

To the philosopher, it is clear that the description of Jesus as being the *Logos* itself was something of a paradox. They wondered what John meant by: "In the beginning was the Word, and the Word was with God, and the Word was God. He was with God in the beginning. Through him all things were made; without him nothing was made that has been made. In him was life, and that life was the light of all mankind" (John 1, 1–4)? Was he using a metaphor to speak about the relationship between God and His creation? Or (Bădiliță 2007, p. 11) was it a Greek philosophical notion that replaced the Christian's God?

Was it possible that Greeks might have absorbed Christianity or was it the other way round?

History proved that the first alternative only occurred on a group level, within gnosticism. Things are as interesting as they are complex. Just because the *Logos* described by Philo of Alexandria bore other significances does not necessarily mean that John did not find inspiration in the Jewish philosopher. Yet, the Apostle recognised in Jesus the elements of the *logos* the stoics and Plato had spoken about. He recognised them not because they were necessary in the process of practising faith, but because this concept of *logos* helped explain the new religion. Thus, according to Etienne Gilson, "to say the He, the Christ, is the *Logos* is not a philosophical statement, but a religious one" (Gilson 2005, p. 11). We are witnessing a crucial moment in the "intellectual history of interiority" (Baghiu 2006, p. 50), which consists in this notion, fundamental for philosophy getting closer to Christian religion. We should also emphasise that the Christian Revelation even asked for this. "To state that Christ the *Logos* is God, that all were made by Him and through Him, that He is the life and the light of people means appealing beforehand, beyond the theology of the Word, to the metaphysics of divine Ideas and of noetics" (Gilson 2005, p. 11).

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# Morals as Social Therapy in Ștefan Odobleja's Vision

Eronim-Celestin Blaj

**Abstract** It is obviously that, in the present context of the world moral crisis, human being needs new referential points in the sphere of decision making. Especially, considering the expansion of the negative phenomena of our society, morals come to the fore by a necessary rethinking and bringing up to date certain values like: responsibility, dignity, freedom, truthfulness and generosity. The original work of the Romanian scientist Ștefan Odobleja, *Psychologie Consonantiste* (first published in 1938–1939, in Paris), offers us a moral conception grounded on the consonance, social solidarity consciousness, wisdom, equilibrium and respect. It stands for a veritable landmark in the effort of overcoming the nowadays ethical problems. This approach focuses on the theme of moral character as it has been conceived by the precursor of cybernetics, precisely throughout the laws formulated by Odobleja himself: the equivalence, compensation, consonance and reversibility laws.

**Keywords** Ștefan Odobleja · Morals · Therapy · Consonance · Equilibrium

Paging through some articles and manuscripts dating somewhere around 1930 I walked without my will into the delicate background of those times. The situation was delicate because of the political instability but also because of the great reforms made after the First World War. One of the articles that caught my eye is called “The Secondary Level Education Reform”, written by C. Rădulescu-Motru and published in “The Philosophy Magazine” as a criticism to the educational reform from 1928, where the author detects the circumstances and the background in which this reform was adopted. There the author claims that “the objective criteria by which we are to judge an educational reform is an action of conscience rather than science”.<sup>1</sup> In the same article I discovered, to my surprise, that not only the physical education but also the moral education were introduced in the educational program

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<sup>1</sup>Rădulescu-Motru (1930), p. 287.

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once with the voting of this law: “The moral education is one of the high school’s main preoccupations. Beside the general educational tendency of the educational specialities taught in high school, the moral education shall be done by special lessons which purpose is to cultivate the pupil’s moral characteristics making them to achieve how to live an honest, ordered and disciplined life needful for the man and the citizen”.<sup>2</sup>

So, we began this study because what we mentioned seems to be very important in the process of knowledge and understanding of what the Romanian scholar Ștefan Odobleja was to deepen ten years later in two different chapters focused on education and moral in his work *Psychologie Consonantiste*, printed in two volumes at Lugoj between 1938 and 1939 and published by the Parisian House of Edition called Maloine.

Ștefan Odobleja was born the 13th of October 1902 in a family of peasants from Izvorul Anestilor, Mehedinti County. He graduated the primary school from his native village and the “Traian” high school from Turnu Severin. Between 1922 and 1928 he studies medicine in Bucarest with a medico-military scholarship. During next years until 1946 Odobleja works as a doctor in different garrisons from the country: Brăila, Turnu Severin, Lugoj, Lipcani, dorohoi, Turda, Târgoviște, Cernavodă, Bucharest and Dej. He participated to The Second World War as regiment doctor and after that as ambulance chief. In 1946 he retires and goes to his home village and in 1961 he moves to Drobeta-Turnu Severin.

In 1929 he publishes the article “Thoracic Transonance Method” in *Medico-therapeutic newsletter*, the 1st of May 1929, p. 158, where he formulates for the first time the law of reversibility.

In 1935 he publishes *La Phonoscopie*, edited in Paris by Gaston Doin and rewarded with “General Doctor Papin Alexandru”, prize given to the worthiest works written by a military doctor. At The Military Medicine International Congress held between 8–12 of June 1937 in Bucharest, at which participated also a delegation of the US Navy lead by Doctor W. S. Bainbridge, Ștefan Odobleja presented a communication on phonoscopy and distributed the prospect that announced the release of his work *Psychologie Consonantiste*, printed in two volumes between 1938 and 1939 by the Parisian Publishing House Maloine as we already mentioned. The beginning of World War II the 1st of September 1939 followed by some restrictions and the interruption of the relations with the western countries made difficult the propagation of this work in the scientific mediums, the work presenting for the first time a unitary cybernetic conception of the psychological, biologic, social and economic phenomena. There were two reviews for this book: one made by C. Atanasiu in *Modern Military Spirit* magazine from January–February 1939, p. 60, and the second one by S. M. Strong in *Psychological Abstracts*—January 1941, pp. 59–60, but we must mention that the second author didn’t had access to the original work of Odobleja.

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<sup>2</sup><http://lege5.ro/Gratuit/gezdiobuga/legea-nr-79-1928-pentru-invatamantul-secundar>, [10.12.2013].

At The Third Cybernetics and Systems International Congress from Bucharest, 25–29 August 1975, Ștefan Odobleja presented the work *Cybernetics and Consonance Psychology*. Unfortunately, being sick he couldn't participate to the fourth edition of the same Congress from Amsterdam, 21–25 August, but his work, *Unity and Diversity in Cybernetics*, was published in the volume *Current Topics in Cybernetics and System*.<sup>3</sup>

Ștefan Odobleja passed away on the fourth of September 1978, Drobeta-Turnu Severin, at the age of 76. One month after this his work *Cybernetics and Consonance Psychology* was published by Romanian Writing Printing House of Craiova.<sup>4</sup>

In *Psychologie Consonantiste* the author dedicates a whole chapter to morals whose process he explains through the laws affirmed by himself as he did in all the other domains studied by him. In the 18 pages that this chapter counts he mostly insists on morals which he sees as a guide line for the individual, the family and the society. Ștefan Odobleja defines morals as

the science of good and happiness. It represents the philosophy, the physic and psychic energy of the social life. It is the science of the social equilibrium. It is the science of the agreement or consonance between the individuals' interests or between the interests of the individual and those of the society.<sup>5</sup>

A resembling definition, but much more limited conceptually, we can find in Herbert Spencer work, *Essays on education*:

Conduct is a whole; and, in a sense, it is an organic whole-an aggregate of inter-dependent actions performed by an organism. That division or aspect of conduct with which Ethics deals, is a part of this organic whole-a part having its components inextricably bound up with the rest.<sup>6</sup>

Analysing morals' definition given by Odobleja, which at a first look seems to be very schematic, we can't pass over the Romanian scholar thinking plurality and his wish to give us a guideline for the human conduct. Even more, we can observe in his work an encyclopaedic knowledge based on the human psychic and the experiments the scientist took as military doctor.

Even though during his life he passed through many ordeals the Romanian scholar realised his strong willing and his knowledge desire to transmit us what Carmen Cozma calls "the Romanian character", meaning "the depth of thinking and sensibility, of emotional living in utterance and action".<sup>7</sup>

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<sup>3</sup>Rose (1978), pp. 158–159.

<sup>4</sup>Drăgănescu et al. (1979), pp. 15–17.

<sup>5</sup>Ștefan Odobleja, *Psychologie consonantiste*. Romanian translation by P. Iacob: *Psihologia consonantistă*, Bucharest: Scientific and Encyclopedic Publishing House (1982), p. 533.

<sup>6</sup>Herbert Spencer, *Eseuri despre educație/Essays on Education*, Bucharest: Didactic and Pedagogic Publishing House (1973), p. 37.

<sup>7</sup>Carmen Cozma, *În deschisul filosofării morale românești/In the Opening of Romanian Moral Philosophizing*, Bucharest: Didactic and Pedagogic Publishing House (2008), pp. 35–36.

It is remarkable to see in Ștefan Odobleja's thinking the separation of morals: on one side we have the theoretical morals (the one that is receptive, cognitive, real, and descriptive) and on the other side the practical morals (applied, reactive, ideal); the general morals (synthetic, abstract and philosophic) and particular morals (analytic, concrete, empirical); there is a personal conduct based on a peremptory equilibrium of inner wishes and outside needs, and a social conduct founded on the equilibrium between your own wishes and the wishes of the other individuals.<sup>8</sup> We consider that it is very important to retain the idea that in order to attain a stable equilibrium in our human behaviour we need a strong conduct education and "a physical and psychic hygiene of the social life"<sup>9</sup> as Odobleja teaches us.

To accomplish this we must take into account a certain life discipline which means respecting some set of rules; actually, what are we talking about here is a process "attitude-response"<sup>10</sup> to a human necessity of the individual in search of protection and life guide-lining in the interior of the society. All these can be obtained by following some rules that man must accept and respect to acquire moral independence. "Morals contribute to the determination of health, conduct equilibrium, familial and social harmony, properness, culture, spirit of finesse and happiness; all these lead to morals and virtue".<sup>11</sup>

A very important role, as Ștefan Odobleja sees it, is played by the social solidarity conscience; he's referring to the conscience of resemblance or consonance with others, the conscience of relativeness with our kin, the conscience of similitude, equality and equivalence. Practically it is the sum or the assembly of the social virtues as the justice, altruism, charity, kindness, mercy, generosity, sympathy, love, sincerity and respect to our kind.

Virtue—says Aristotle—is a habitual disposition acquired voluntarily, consisting in the right measure in what concerns us, judgment determined by reason, more explicit, by the way that the owner of the practice wisdom determines it. [...] That's why, by her nature and by the concept that defines it virtue is something that mediates; still, in relation with the supreme good and the perfection it is the peak of all.<sup>12</sup>

Even though Ștefan Odobleja merely insists on defining or to get more in-depth of the virtue, and some critics consider this the poorness of his work, we must observe the strong wish of the doctor Odobleja to give us a complete receipt which effect is strong and efficient.

Conduct, claims the pioneer of the cybernetics, is the equilibrium between rights and obligations, the social health<sup>13</sup>; in the same chords of consonance with Immanuel Kant: "The concept of duty claims objectively from the action the agreement with the law, and for its maximum it claims that is subjectively the only

<sup>8</sup>Ștefan Odobleja, pp. 534–535.

<sup>9</sup>*Ibidem*, p. 533.

<sup>10</sup>Cozma (1997), p. 91.

<sup>11</sup>Ștefan Odobleja, *op. cit.*, p. 548.

<sup>12</sup>Aristotel (1998) *Etica Nicomahică*, II, 1107 a, București, Editura IRI.

<sup>13</sup>Ștefan Odobleja, *op. cit.*, p. 537.

way of determining the wish through law".<sup>14</sup> The supreme condition of morals is the moral law. This means that morally are good only those actions fulfilled by respect to the moral law, id est by duty. The moral law is universal and rational; its value doesn't depend on what it prescribes but on the actions done by respecting it. If to establish a common point between these two giants of the European culture, the law would be what we are in search for. If Immanuel Kant in *The Critic of Practical Reason* sets the law in two imperatives: hypothetical and categorical, Ștefan Odobleja proposes to our attention seven laws worthy of thinking at: "the law of equivalence" (based on human's moral equity), "the law of equilibrium" (action, equilibrium, peace), "the compensation law" (determines the personal aptitudes: the absences are compensated by qualities), "the law of reaction" (any action exercised on an individual gives birth to reaction from him), "the law of alternation" (based on prudence), "the law of reversibility" (the rights impose duties and vice versa) and the last one, not by its importance, "the law of consonance" which shows us the plurality of morals based on acts, age, social class, profession and personal character.<sup>15</sup>

As Aristotle claims, the *supreme good* that the man can accomplish, and by that also acquiring his happiness, is making himself perfect as a perfect being,

in the activity of the soul and in the acts that obey to the reason, and that appropriate for the perfect individual is to do all these good and beautiful by perfectly executing each act by the specific virtue [...] accordingly with the best and perfect one.<sup>16</sup>

The moral law, as Kant sustains it, is expressed by a command that is an imperative which one may be of two kinds: hypothetical and categorical. The hypothetical imperative is a command which obeys to a hypothesis and it has no moral value, whereas the categorical imperative is an unconditioned, a priori and moral value command. Kant expressed the categorical imperative as "you must action in the way to use the humanity in yourself and in every other individual always in the same time as a purpose, not only as a medium".<sup>17</sup> In contradistinction with Aristotle who thought that the aim of every action the person does is *happiness*, Kant claims disagreeing that the supreme good is the union between happiness and virtue.

After a short incursion through the thinking of these two titans of philosophy we can easily delineate Ștefan Odobleja's conception assuming which the moral attitude is the totality of reactions and behaviours of an individual looked from a moral point of view. "The human ideal consists in the most perfect equilibrium between the individual and the others, between the person and the society [...] it is the maximum of consonance, harmony, agreement between individuals, communities and between the individuals and the communities".<sup>18</sup> *The moral ideal* is "to confound himself

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<sup>14</sup>Kant (1995), p. 110.

<sup>15</sup>Ștefan Odobleja, op. cit., pp. 546–549.

<sup>16</sup>Aristotel 1998, I, 1098a, 15.

<sup>17</sup>Immanuel Kant, op. cit., p. 238.

<sup>18</sup>Ștefan Odobleja, op. cit., p. 537.

with the others".<sup>19</sup> The pioneer of cybernetics opens and practically exposes his heart communicating us the profoundness of the love he has for his neighbour; this love must be understood as the self-communicating of the good: it is the force that the good proves getting out from himself and transferring himself into another being, co-participating to the existence of another being and giving himself to another existence. Understanding love as an auto-communication of good we distinguish it from those destructive passions with which it is often mistaken for. All these misconceptions bring with them only great pain that buries our existence in regrets and harmful steps that lead us down the way of auto-destruction. We let illusions take the wheel of our lives thinking that somewhere, somehow we will be released by this suffering. But an illusion can only deepen these disastrous effects. Meanwhile, love wants to live and to give life as a present; it wants to offer the freedom of life. Love gives birth to life, it is creator as it makes the being to exist, the being that has a profound relation with God himself.<sup>20</sup> We can notice, in this context, the foundation on which the Romanian scholar built his entire life: the commandment of the love for the one like him, for his kin, for all the other individuals with which he resembles because through every one of them flushes the same blood, the same life, the same love. Love gives to the human being the force of creation and helps the individual rise himself in the morals and ethic plan. Love confers him the identity of the Christian and hence the force of dignity.

In the same consonances of intellectual passion and religious spirit Blaise Pascal highlights the individual's capacity of introspection to analyse and to be aware of what he is and what he must become. Besides, the ideal of becoming sits in his being:

It is good for a person to be able and to appreciate his own value. He must love himself because he is endowed with a nature capable of the accomplishment of good. But he must not love what is low in him. For that he must despise himself, otherwise all his power is worthless [...] He must hate himself in one way and he must love himself in another way. He is the depository of the power of knowing the truth and of being happy.<sup>21</sup>

Agreeing with Blaise Pascal, we consider very important that the contemporary person, after a sincere auto-analysis to proclaim the greatness of the self-abnegation and to print with golden letters in his spirit the supreme duties of the individual/citizen. And, continuing with the same harmonic rhythms to re-update the moral preoccupation, and most of all, to bend down over a morals *therapy* as Gilles Lipovetzky advises us to do. The research of values, the charity and the wish of knowing the truths made from the doctor Ștefan Odobleja a pioneer of cybernetics and a scientist of our nation.

Just as we might observe from the pages dedicated to conduct in his work *Psychologie consonantiste*, the entire conceptual scaffolding of the morals rises psychologically. The pioneer of cybernetics insists on morals as an applicability

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<sup>19</sup>*Ibidem*, p. 537.

<sup>20</sup>Moltmann (1991), p. 68.

<sup>21</sup>Blaise Pascal, *Provinciale. Cugetări*, Fragm. 423, București, Editura Științifică (1992).

domain of the consonance laws which, in his opinion, are universal, being extracted from the sphere of psychic, the standard expression of the harmonic organization. And even though in some places the description of the moral phenomenon suffers a certain uniformity this is a matter of course of the demarche of unification through dichotomist and antithetic ranking of the concrete cases, the effect of the reduction to the law, to what is repeatable, necessary and essential; only this way we can achieve the transformation of morals into a *quasi-mathematical science*, as the Romanian scholar used to say call it in his work.<sup>22</sup>

Despite a hard life, having a brilliant intelligence, the pioneer of the cybernetics gave us through his entire work a guide line trustful to be followed especially by us, the Romanians. Ștefan Odobleja managed, grace to his creative mind and his daily training to rise on the steps of the shrine of Romanian culture and to become an archeus of the Romanian kin.<sup>23</sup>

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<sup>22</sup>Ștefan Odobleja, *op. cit.*, p. 550.

<sup>23</sup>Carmen Cozma, *op. cit.*, pp. 17–39.

# Gnostic Libertinism?

## Gnostic Views on Ethics

Victor Alexandru Pricopi

**Abstract** Church heresiologists and many modern scholars believe that the members of the Gnostic movements do not give any importance to ethics in their systems. For them, Gnostics are either ascetic, or libertine. These statements are largely based on the heresiological works and they seem to ignore the Gnostic primary sources. The Coptic Gnostic texts from Nag Hammadi show us that some Gnostic movements give an important role to facts in the process of salvation. These original texts contradict the heresiological allegations; on the contrary, these texts show us that Gnostics give ethics an important place in their systems. A number of modern researchers have highlighted this aspect and have dismantled this stereotype. Therefore, in this paper we propose to expose some problems raised by the gnostic libertinism.

**Keywords** Morality · Ethics · Libertinism · Sin · Stereotype

## 1 Introduction

In this study we aim to discuss the new interpretations regarding the problem of gnostic determinism and the problems aroused by the ethics promoted by Gnostics. Church Heresiologists accused them that, because they would own the gnosis, they are saved, regardless of their deeds. Gnostic ethics is indissolubly linked with the anthropology developed by these religious-philosophical systems. Gnostics made a threefold of humanity and states that there are three classes of people: hylics, psychics and pneumatics. The latter have within them a spark of divinity and because of this they are saved by their very nature special. Therefore, the heresiologists accuses the Gnostics of committing immoral acts, practicing an absolute libertinism or that, on the contrary, they are accused of being ascetics and they hate their body. All these are committed to liberate themselves from the torment of body.

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Here, it seems that the Gnostics continue the Platonic tradition. Plato, as well as his followers, state an anthropological dualism, they argue that the body is a prison of the soul.

Returning to Gnostics, modern scholars start from heresiological statements and they try to find the specific features of Gnosticism and of Gnostic movements. To some extent, the problem of Gnostic libertinism/asceticism is closely related to the problem of defining the concept of Gnosticism. As time went on, scholars set out various typologies of Gnosticism. Although these features may differ slightly from one author to another, largely they consider that for the Gnostics is specific the idea of elitism. From this one emerges a doctrine of determinism which leads to an extreme libertine behaviour. Thus, in the following pages we will try to expose some issues raised by the alleged gnostic libertinism.

### ***1.1 Methodology***

Generally, throughout the history of research in the field of the gnostic phenomenon two methods were used: the genealogical approach and the typological or phenomenological approach. The last one is consecrated by Jonas' works, and as we shall see, nowadays this method can be criticized. It is difficult to approach the diversity of Gnostic texts with a monolithic uniformity, and that is why such texts or religious movements should be treated in the light of its own diversity. Textual hermeneutics, as a method of research, lead us to new results. The original gnostic texts from Nag Hammadi, interpreted without presuppositions, namely just in their own right, reveals that Church heresiologists and some modern scholars were wrong regarding the Gnostic ethics.

## **2 Typological Approach of Gnosticism**

With the modern times appear the first scientific studies about Gnostics movements. As a starting point, scholars dealt with the problem raised by the origin of Gnosticism. Responses were different and not infrequently contradictory; some authors have seen in Gnosticism an intra-Christian phenomenon, in other cases it was seen as an extra-Christian or even a non-Christian phenomenon. In the twentieth century, Gnosticism is approached in a different way, namely the typological approach. The supporters of this type of interpretation see Gnosticism an independent religion, different from Christianity. For them, Gnosticism have a stable doctrine and some well-defined social characteristics.

In this school of interpretation, Hans Jonas made a special figure, especially with his volume *Gnosis und spätantiker Geist*. In that work, German scholar provides a new answer to the question raised by the origin of Gnosticism. Jonas is influenced by Heidegger's philosophy and he finds the origins of Gnosticism, as well as its

essence, in the social and spiritual atmosphere of the first Christian centuries. Jonas (1964, 2001) argues that Gnostic has the feeling of alienation from the world, or in other words, he feels that he does not belong to this world. Gnosticism is seen as a unitary expression of “the spirit of Late Antiquity”, spirit defined by acosmism. Jonas’ interpretation gives a fresh breath in this field of research and, perhaps the most important thing, through him Gnosticism comes to be seen as a religion.

In the year 1966, is organized a conference at Messina, in Italia, where scholars seek to establish a universally accepted typology of Gnosticism. At this conference attended Hans Jonas, who proposed seven essential features of Gnosticism. (1) The idea of a saving knowledge; (2) Divine emanation leads to lower divine entities and to the world; (3) Gnostic thinking has a mythological character; (4) Gnostic vision of the world is dualistic; (5) An aggressive polemic against other religious currents; (6) Gnostic myths are not genuine; (7) The syncretic nature of this phenomenon (Jonas 1970).

In another study, Hans Jonas added to these seven characteristics and the fact that the Gnostics support an ethic based on determinism (Jonas 2001). At the same conference, another scholar, Th. P. Van Baaren finds 16 points that characterize Gnosticism. We must note that he talks about a gnostic doctrine of determinism and about an ethic who leads to a strong asceticism or libertinism. Here are Baaren’s (1970, p. 179) words: “Human beings are divided into three classes, according to whether they have gnosis or not. The pneumatics, who possess full gnosis, are by their nature admitted to full salvation. Those who have only pistis <<faith>> may at least attain a certain degree of salvation. Those who are fully taken up with the material world have no chance of salvation at all.” Also he notes that: “The essentially dualistic world-view leads as a rule to an extremely ascetic system of ethics, but in some cases we find an <<Unwertung aller Werte>> expressed in complete libertinism” (Baaren 1970, p. 179).

Concerning this typological approach, Brakke (2010, p. 21) notes that scholars get to say that members of the Gnostic movements “were dualists, that they believed in a lower creator god, that they hated the world and society, that they did not believe that Christ was truly human, and that their disdain for the body led them either to adopt extreme asceticism or to live as wanton libertines.” We notice how, almost all the time, researchers consider Gnostics be ascetics or libertines. Williams (1996, p. 139) detects that this divergent ethical program is “one of the most frequently repeated characterization of ancient <<Gnosticism>>”.

### 3 Heresiological Testimonies

How did modern scholars establish that such an ethical program is specific to Gnostics? As I already stated, heresiological testimonies support this characterization. It is worth to present the famous example given by Epiphanius of Salamis, in his *Panarion* II.26 (Williams 2009):

And once they recognize each other from this they start feasting right away—and they set the table with lavish provisions for eating meat and drinking wine even if they are poor. But then, after a drinking bout and, let us say, stuffing their overstuffed veins, they get hot for each other next. And the husband will move away from his wife and tell her—speaking to his own wife!—“Get up, perform the Agape with the brother.” And when the wretched couple has made love—and I am truly ashamed to mention the vile things they do, for as the holy apostle says, “It is a shame even to speak” of what goes on among them. Still, I should not be ashamed to say what they are not ashamed to do, to arouse horror by every means in those who hear what obscenities they are prepared to perform. For after having made love with the passion of fornication in addition, to lift their blasphemy up to heaven, the woman and man receive the man’s emission on their own hands. And they stand with their eyes raised heavenward but the filth on their hands and pray, if you please - the ones they call Stratiotics and Gnostics - and offer that stuff on their hands to the true Father of all, and say, “We offer thee this gift, the body of Christ.” And then they eat it partaking of their own dirt, and say, “This is the body of Christ; and this is the Pascha, because of which our bodies suffer and are compelled to acknowledge the passion of Christ.”

And so with the woman’s emission when she happens to be having her period—they likewise take the unclean menstrual blood they gather from her, and eat it in common. And “This,” they say, “is the blood of Christ.” And so, when they read, “I saw a tree bearing twelve manner of fruits every year, and he said unto me, “This is the tree of life,” in apocryphal writings, they interpret this allegorically of the menstrual flux.

But although they have sex with each other they renounce procreation. It is for enjoyment, not procreation, that they eagerly pursue seduction, since the devil is mocking people like these, and making fun of the creature fashioned by God. They come to climax but absorb the seeds of their dirt, not by implanting them for procreation, but by eating the dirty stuff themselves.

Also, Epiphanius tells us how the members of this gnostic group, also called Stratiotics, Phibionites, Zacchaeans or Barbelites, commit abortions. If that happened as a woman to get pregnant, they extracted the foetus out of her. From the dead foetus, they produced a kind of paste, to which they add honey, pepper and other spices, then each member of this group had to taste it. They commit this in order not to serve the Demiurge’s goals, who is evil. Thereby, by their refusal to give birth to children, they oppose the multiplication of light seeds of this world. Shocking is also the way in which the Gnostics described by Epiphanius practice this kind of ceremony, how they ate their emissions, in a sacramental ceremony. Some authors, as is the case of Eliade (1976), believes that information provided by Epiphanius are credible. For Eliade such rituals lead to an acceleration of the reintegration process in the precosmogonic phase and, on the other hand, they lead “to approach God through a progressive «spermatization»” (Eliade 1976, p. 111).

Other scholars believe, however, that Epiphanius’ statements must be treated with caution, since he always tend to exaggerate (Rudolph 1983). In addition, antinomianism and libertinism is assigned, in many times, to those who are not in agreement with Orthodoxy. In this regard, Wisse (1972, p. 137) writes: “this proves to be based not so much on observation as on dogmatic assertion”. This is caused by the fact that for heresiologists there is not necessary to exist an evidence of immorality, their heresy is the greatest proof. There is a direct causal link between doctrine and practice. With other words, for heresiologists a false doctrine inevitably lead to bad practices (Wisse 1972; Vallée 1981). But Epiphanius wasn’t the

only heresiologist who attacked the Gnostics, accusing them of immorality. Irenaeus (1992) also noted this fact in *Adversus Haereses* I.6.3:

Because of this doctrine, the most perfect among them shamelessly do all the forbidden things, about which the Scriptures give guarantee that those who do such things shall not inherit the kingdom of God. Food sacrificed to idols they eat without scruple, thinking they in no way defile themselves by it. And they are the first to assemble at every heathen festival held in honor of the idols for the sake of pleasure, with the result that some do not abstain even from the spectacle loathsome to God and men where men fight wild beasts and each other in homicidal fashion. Others give themselves up to carnal pleasures immoderately. Carnal things, they say, must be given to the carnal, and spiritual to the spiritual. Some secretly defile those women who are being taught this doctrine by them. The women who had often been seduced by some of them, but were afterwards converted to the Church of God, confessed that too, along with the rest of their errors. Some, even publicly and without any shame, took away from their husbands whatever women they loved passionately and took them as their own wives. Others, finally, who in the beginning feigned to dwell chastely with them as with sisters, were exposed as time went on when the “sister” became pregnant by the “brother.”

From Irenaeus, as we have seen, we find that the Gnostics commit immoral acts. However, He accuses them of immoral acts from a Judeo-Christian point of view. A number of allegations does not violate rules of Greco-Roman society, as is the case of food which is sacrificed to idols and then it is eaten by the Gnostics. In this respect, Gnostics are not against the moral norms of the Roman Empire. On the other hand, we must point out that the most often accusation that was brought to an enemy was the one regarding his immorality, but this strategy is very common in the ancient world. When a group wished to discredit their opponents, they appealed to such allegations, often, inventing them. Also, it should be recalled another aspect; a series of rituals which must be interpreted symbolically or allegorically are taken as such, leading to a misinterpretation of those actions. From such allegations have not escaped even Christians, which were often accused of cannibalism. At the beginning of Christianity, Roman intellectuals have associated Christians with criminals and said about them that they commit ritual murders, that they drink blood and eat human flesh, sacrifice children, commit incest or other illegal sexual activities (de Vos 2000). Some interpreters noted that the Gnostics could be misunderstood, as was the case of early Christians: “Moreover we can see in the case of Jews and Christians how some of the allegations might have arisen through misunderstanding or misrepresentation, and the same may hold for the Gnostics” (Wilson 1986).

## 4 Gnostic Views on Body and World

What would be the explanation of such acts? Researchers believe that Gnostics have such an attitude because of their dualistic vision of the world and body. Some Gnostic concepts are due to Greek philosophy, especially to Plato. Couliano (1990) notes that in the case of the Gnostics, there are a pneumatic consubstantiality

between man and the divine world, as it exists in the Platonic tradition, but which may be translated also into biblical language, by the fact that man was created in God's image, as is said in *Genesis*, 2,27. For Gnostics, as well as for Plato, there is a conflict between body and soul, but this idea is found for the first time in Orphism. Reale (1992) notes that by Orphism is born for the first time in the history of Western culture the dualistic conception of man, as a mixture of body and soul, two entities that are in conflict. The Italian historian says that without Orphism we could not explain the existence of Pythagoras, Heraclitus or Plato.

Plato has a negative attitude toward the body. This is stated without reservation in several of his dialogues. For example, Plato (1997) writes in *Cratylus* 400c: "some people say that the body (*sōma*) is the tomb (*sēma*) of the soul, on the grounds that it is entombed in its present life". And in the same fragment he writes that "the soul is being punished for something, and that the body is an enclosure or prison in which the soul is securely kept (*sózetai*)—as the name 'sōma' itself suggests—until the penalty is paid". In another dialogue, *Phaedo* 82e-83a, the greek philosopher notes "The lovers of learning know that when philosophy gets hold of their soul, it is imprisoned in and clinging to the body, and that it is forced to examine other things through it as through a cage and not by itself, and that it wallows in every kind of ignorance. Philosophy sees that the worst feature of this imprisonment is that it is due to desires, so that the prisoner himself is contributing to his own incarceration most of all." The incarnation is for Plato the result of the fall of soul into the bodies; the latter has the role of prison for the souls, which are unfortunate.

Gnostics claim that in man there is a part of the divine, and this is seen as an essential feature of these religious movements. Theodotus notes in *Excerpta ex Theodoto*. 78.2 that through gnosis we find the answers to the questions "who we were and what we have become, where we were and into what we have been thrown, where we hasten to and from what we have been redeemed, what is birth and what is rebirth." From this set of questions is understood that the Gnostic is alien to this world, that he fell in a world in which he actually was thrown. The Gnosis, Gnostic receives an answer to the problem of deliverance from incarceration status. Fragment 22.2–37 from *Gospel of Truth* tells us that those who have knowledge hold the answer of two questions; they know where they came from and where they are going; it reveals both origin and destiny of humans. The true origin of man is in the Pleroma, the world of eternal realities. A number of original gnostic texts or heresiological testimonials tell us that Sophia has put a divine spark in man, which is of the same nature with her. In this way, Gnostics say that man is superior to Demiurge, because he holds a divine seed, which is not present in the Demiurge.

Based on these arguments, Gnostics see the body as a prison or a tomb for the soul and they sustain that they do not belong to this world, but to Pleroma. Scholars believe that this is why they rebel against the body and the world. Church here-siologists consider that such an attitude as the one to devaluate body, associated with deterministic elitism, leads to deviant behaviour, one that violates the norms.

Also, Gnostics claim that humankind is divided in three parts. They say that there is a tripartition of the human beings as follows: hylics, psychics and pneumatics. The latter are saved without effort, the hylics live in ignorance, and psychics

can get salvation only through effort. Obviously, the Gnostics are the pneumatics. Although there are three different human natures, for they, there are only two destinies. In a situation we have the salvation, which is reserved for both spiritual and faithful souls, in the other case we have the perish intended to hylics and faithless souls (Dunderberg 2008).

However, what do the Christian authors tell us regarding this aspect? For example, Clement of Alexandria, in his *Stromateis*, III, writes the following lines: “I have passed on these statements to expose those followers of Basilides who do not lead upright lives, claiming that they have the authority actually to commit sin because of their perfection, or that they will in any event be saved by nature, even if they do sin, because of their ingrained election; their predecessors in the sect do not allow anyone to do the same as they are doing”. We can see clearly that for Clement this doctrine of “elitism” give Gnostics (in this case Basilides) a liberty to commit sin, without any repercussion in the process of salvation.

## 5 Modern Critics on Gnostic Libertinism

We have treated a number of features considered essential to Gnostics. An important episode in the history of research in this field is the publication of Michael Allen Williams’ work, *Rethinking Gnosticism* and then Karen King’s book, *What is Gnosticism?* Williams (1996) questioning the validity of the concept of Gnosticism and dismantle everything was thought to be characteristic to Gnosticism. Following the studies made by Williams and King, McGuire (2010, p. 205) notes that “the category of «Gnosticism» is an artificial construct, based on the anti-heretical writers’ efforts to unify their opponents under a single pejorative category («falsely so-called Gnosis»), that carries with it a set of misleading implications”. This implies a tendency to generalize some elements to all categories. The general idea of his work is that we cannot talk about a Gnosticism, in general. It is a modern construct, without a historical reality, and what appeared to be specific only to Gnosticism is also found in other religions or philosophies. Besides, under the Gnosticism’s umbrella are embedded a number of very different movements and texts. Williams’s critique does not miss the question raised by Gnostic ethics, which is considered to lead to libertinism or asceticism. The American scholar critics what is considered to be gnostic determinism.

Which has led to the establishment of features already listed above was that many researchers have ignored, to some extent, the original Gnostic texts. For example, Hans Jonas starts from Irenaeus’ testimony (*Adversus Haereses* 1.6.2) in order to assert that Gnostics are libertines (Jonas 1964; Williams 1996).

We cannot find in the original Gnostic texts any exhortations to a libertine behaviour. This aspect was also noticed by Rudolph (1983, p. 254) who notes “It is at any rate striking that thus far no libertine writings have appeared even among the plentiful Nag Hammadi texts. The witnesses for the libertine tendency are restricted to the Church Fathers and even here the evidence is uneven and in particular not

easy to put into chronological sequence”. Often, the spirituals, i.e. pneumatics, are urged to release desires of the flesh and to abstain from wickedness. Rather than a call to libertinism, we find an urge to sexual purity.

Concerning the Valentinian Gnostics, another important work on ethics is the one written by Desjardins (1990). Desjardins observed that, in this field, there is a consensus on the role played by sin in Gnostic thinking systems. About a scholarly consensus or a stereotype about gnostic ethics speaks King (2003), too. This consensus is based on four central ideas, as Desjardins notes in his conclusions: (1) Gnostics are saved by nature and not by their acts; (2) Acting right or wrong from a moral perspective has no relevance in the process of human salvation; (3) Valentinians belong to Gnostic movements and, in accordance with this, they must have a different understanding of sin. (4) This deduction is encouraged by heresiological, since they make little mention of sin when they speak about Valentinians. Then, Desjardins (1990, p. 117) writes that “scholarly reconstructions of Valentinianism tend to refer only briefly to ethics and to include no discussion of sin”. The scholar demonstrates that heresiologists only provides a caricature on the role played by sin in Valentinian Gnostic movement. Original sources do not confirm information provided by the Church Fathers, but they show us that sin is approached in a very close way in which St. Paul did. The problem of sin is a concern even for Pneumatics, who should reflect on the nature of their actions. Concerning the threefold of humanity, Desjardins makes an important observation. In *Excerpta ex Theodoto*, the most attention is paid to the psychics and not to pneumatics, saving them being the main concern of Theodotus. Also, a clear distinction between hylics, psychics and pneumatics occurs only in *The Tripartite Tractate*, but here too the main division is represented by “those on the left” who are the hylics and “those on the right” who are the psychics and the pneumatics. The author of this gnostic tractate focuses more on saving the ones from the right. Both psihics and pneumatics are treated as a single group, and the sin problem applies to both members of this group.

As regards sexual libertinism, worth to mention Williams’ observations, at least those about Epiphanius’ licentious sects described at the beginning of this paper. Williams (1996) observed that the ideology that underlies sexual practices invoked by Epiphanius aimed to stop the introduction of new people in this evil world. To support his claim, Epiphanius cites passages from *Gospel of Philip* and *Gospel of Eve*. Williams says that these quotes can be read rather in an encratic key, as a complete renunciation of sexual acts. Eating human secretions, Epiphanius’ Gnostics refer to the myth “of the stealing of divine power by cosmic forces, from whom the divine element or seed must then rescued” (Williams 1996, p. 180). This myth can be found in other Gnostic texts that are definitely encratic. In this way, Williams asks whether “Is Epiphanius’ account therefore truth that the same mythic themes could lead to either asceticism or sexual license? Or is it merely an example of how mythic things that these sectarians understood in ascetic terms could be misunderstood, garbled, and even intentionally misrepresented by their critics as doctrines condoning licentiousness?” (Williams 1996, p. 180).

The author states that although we can find many passages invoking the existence of a gnostic sexual behaviour, most of these testimonies are suspected. They are not reliable because, original text do not express such ideas. Another argument, refers to the fact that heresiologists never states that they were witnesses to such sexual orgies. There are serious arguments, as some scholars notes, “to suspect that such writings and slogans have very frequently been misinterpreted by the heresiologists, which is a pattern that is of course quite common in the treatment of new and/or minority religious movements by outsiders. Such misunderstanding is commonly transmitted and enlarged through the medium of rumor” (Williams 1996, p. 165). Likewise, some information was intentionally deformed, because heresiologists were defenders of the faith and did not record information in a disinterested way.

## 6 Conclusion

At the beginning of this paper I said that Gnostic texts disagree the viewpoint of the heresiologists. As an example, we offer several excerpts from Gnostic texts (Robinson 2000). The *Gospel According to Philip* comprises a series of statements concerning the ethics. In 82.26 we read: “When Abraham [...] that he was to see what he was to see, [he circumcised] the flesh of the foreskin, teaching us that it is proper to destroy the flesh”; without a doubt the fragment advise to avoid sexual pleasure.

Also, we find a very interesting fragment in *The Gospel of Truth* 32.35–33.33:

Speak of the truth with those who search for it, and (of) knowledge to those who have committed sin in their error. Make firm the foot of those who have stumbled, and stretch out your hands to those who are ill. Feed those who are hungry, and give repose to those who are weary, and raise up those who wish to rise, and awaken those who sleep. For you are the understanding that is drawn forth. If strength acts thus, it becomes even stronger. Be concerned with yourselves; do not be concerned with other things which you have rejected from yourselves. Do not return to what you have vomited, to eat it. Do not be moths. Do not be worms, for you have already cast it off. Do not become a (dwelling) place for the devil, for you have already destroyed him. Do not strengthen (those who are) obstacles to you, who are collapsing, as though (you were) a support (for them). For the lawless one is someone to treat ill, rather than the just one. For the former does his work as a lawless person; the latter as a righteous person does his work among others. So you, do the will of the Father, for you are from him.

In the fragment above the valentinian gnostics are urged to make Father’s will. Gnostics must give attention to others and to avoid devils temptations. In any case, love of neighbour theme stands out. An identical exhortation appears in the *Gospel of Thomas*, Saying 25: “Love your brother like your soul, guard him like the pupil of your eye”. The few examples offered, although the list goes on, proves that Gnostics tackles moral problems in different ways and that they are in no case indifferent to ethical issues.

Once the concept of Gnosticism was dismantled, a series of clichés about the Gnostics have been criticized. Gnostic Anthropology led to a misinterpretation of



their ethics and with the “help” of heresiological allegations, scholars thought for a long time that gnostic are either libertines or ascetics. The most used stereotype was the one who proclaims that Gnostics was antinomists and libertines. The gnostic texts from Nag Hammadi showed that the Gnostics are not some libertines without limits. Scholars as Williams, King or Desjardins have shown that most Gnostic groups treated ethic problems in a similar way in which early Christians did. In the gnostic texts from Nag Hammadi we can find a lot of exhortations about what is moral and immoral to do, and therefore what we have to do in order to comply the will of the Father. Also, in these texts we can find passages in which Gnostics are often exhorted to avoid flesh desires. Consequently, Gnostic ethics is not a libertine one, but rather it is very close to the Christian ethics.

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# Evaluation Research and Evaluativity in Social Planning: Towards a Fluent Evaluation Model

Camillo Stefano Pasotti and Francesca Pia Scardigno

**Abstract** Actually, evaluation research underlying social programming at a local level is oriented towards a participatory, consensual and mutually shared decisional dynamics regarding co-evolutionary social actors locally situated. The epistemological foundation of social planning can be quite well represented through its own engineering connotation, able to show the unmistakable link between the theoretical questions about social change, its analysis and interpretation, and the empirical nature of social intervention. Therefore, a new partially innovative theoretical dimension of decision making process is required to be built, with the aim to recognize a “residential identity” of individuals, communities and even institutions, allowing the best reciprocal communication about a desirable future for the necessary political response to emerging social needs. That’s why such a dimension is called “Evaluativity”, intended as a strategical environment containing visions, preferences and projections about what decision makers are able to represent and invoke as a good and plausible scenario for social planning. “Fluent Evaluation” is the proposal of this new way to read, analyze and operate through residential identity and reaching for the best efficacy on the new challenges of social policies.

**Keywords** Social policy · Evaluation research · Welfare · Participation · Social theory · Fluent evaluation

## 1 Theoretical Framing and Perspectives About Evaluation Research

Welfare policies all around Europe are actually facing a period of deep social, organizational, political and economical change; the common feature linking together different Countries is the necessity for an adequate coordination of such

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policies, underlining their evaluation in a innovative shape, in order to provide them the best empowerment in terms of better quality of social services to the welfare and social protection for citizens. For such reasons, since the Sixties, programming implementation of social policies have been increasingly integrated with “evaluative actions”, i.e. strategies and methods that allowing to verify whether the implemented actions have or haven’t matched with the standards of effectiveness, efficiency, economy and quality of service. Therefore, evaluation research becomes an essential tool in both terms of verification and improvement of the implementation design, intended mainly as a learning process for the implemented social policies.

Different Authors have spoken out about the evaluation assessment, considering it as a fundamental part of the social planning and programming; each of them produced different approaches and models of evaluation, anyway it’s still clearly shown that, as in J. Mondragon states as follows:

(...) no existe una única metodología de la evaluación, y dependiendo donde pongamos el punto de atención en la evaluación del programa nos inclinaremos por utilizar unos instrumentos u otros. La selección de los diferentes instrumentos por utilizar unos instrumentos de análisis es, por así decirlo, ad hoc; la combinación de métodos dependerá del aspecto de la actuación pública que deseamos investigar y de lo que queremos averiguar sobre él (Mondragón 2003: 9).

That is, method is given from the subject of analysis, and the evaluator is able to use every kind of methodology, although validated and verified through research support evidence, that allows him to reaching for a “merit judgement” upon the implemented social action or the one expected to be implemented. Such a methodology is revealing its powerful efficacy when the evaluation approach is mainly theoretically shaped; otherwise, to be working as an evaluator about specific social plans, programs or projects means to observe and analyze all the available elements, the relative context, every eventual points of strength and weakness and then, in order to express a “correct” judgment about the issue.

While working into social planning and programming, decision-makers are asked to solve problems and to adopt continuing verification strategies, in order to see how the work is going on as expected. Within the purpose to give a definition of evaluation program, we can say that:

Programming evaluation is the application of empirical social science research methods to the process of judging the effectiveness of public policies, programs, or projects, as well as their management and implementation, for decision-making purposes (Langbein and Felbinger 2006: 3)

The judgment is not only the conclusion of any program, just obtained through the observation of the context in which it has been implemented, but it is made of a complex and ongoing process, supported by a fluent action-research evaluation. Regarding to that, researchers pointed out that

Program evaluation uses controlled observational methods to come to defensible conclusions about the effectiveness of public programs. Measuring effectiveness is what makes program evaluation not purely scientific; it is the value or normative part of the program

evaluation enterprise. Programs can be evaluated according to many criteria of effectiveness. In fact, each social science subdiscipline has different core values that it uses to evaluate programs. Program evaluation, as a multidisciplinary social science, is less wedded to any single normative value than most of the disciplinary social sciences, but it is important for program evaluators to recognize the connection between particular normative values and various social science subdisciplines (Langbein and Felbinger 2006: 6).

In particular, it is useful to take into account the complexity and transversal nature of such a discipline, which is the reason why the main valuation models reflect the influences and the contributions coming from the empirical, linguistic, cognitive and procedural point of view, given from different socio-cultural fields.

It's useful here to bring the explanation of the assessment process provided by Claudio Bezzi, in which he doesn't barely speculate models from which to draw inspiration for the action, but he rather identifies in the evaluation research a real process of research, speaking in these terms:

La valutazione è principalmente (ma non esclusivamente) un'attività di ricerca sociale applicata, realizzata, nell'ambito di un processo decisionale, in maniera integrata con le fasi di programmazione, progettazione e intervento, avente come scopo la riduzione della complessità decisionale attraverso l'analisi degli effetti diretti ed indiretti, attesi e non attesi, voluti o non voluti dell'azione, compresi quelli non riconducibili ad aspetti materiali; in questo contesto la valutazione assume il ruolo peculiare di strumento partecipato di giudizio di azioni socialmente rilevanti, accettandone necessariamente le conseguenze operative relative al rapporto fra decisori, operatori e beneficiari dell'azione (Bezzi 2003: 60).

In this definition, the most interesting aspect is the inclusion and integration of evaluation research in all stages of social planning and social design, in order to clearly recognize: the general objectives and milestones to be reached; the actions to be taken and the purpose of the evaluation, which consist mainly of:

- Make a judgment on the merits of the program,
- Increase knowledge about the merit of the program,
- The improving function of increasing the learning skills and mindfulness for future actions.

Referring to a substantive judgement, within a process of social programming and planning, evaluation research should have a strategic value in the implementation and realization of a program; therefore it shows its usefulness into making decisions on the validity of a program or even its possible redesign and revision. Thus, we can state that the evaluation research determines and represents the social intrinsic value of any program, and could effectively assess both the real and potential results; such finality is strictly related to increasing knowledge of the program functionality:

Questa finalità connota gli studi valutativi che tendono a far riflettere i professionisti impegnati nella realizzazione di un programma sulle conseguenze del loro lavoro, la fine di migliorare la pratica professionale. Inoltre in tal modo si possono rimettere in discussione le consuetudini, i valori e i principi delle istituzioni pubbliche facendo anche emergere i conflitti e i problemi (Moro 2009: 25).

In summary, we ask the question in terms of a “reflective fluent evaluation”, whose aim is to promote a continuing organizational learning strategy of action-research.

Another Author faces the challenge of working upon evaluation in terms of research, but now, he indeed proposes a further distinction between evaluation research and evaluation itself. This distinction is punctuated by Mauro Palumbo as follows:

La valutazione, dunque, è essenzialmente un’attività di comparazione fra elementi, condotta secondo criteri predefiniti che implica la raccolta o comunque l’utilizzo di dati empirici, realizzata al fine di formulare un giudizio. (...). Ciò che distingue la valutazione dalla quotidiana attività di produzione di giudizi che orientano l’azione è il rigore procedurale con cui essa viene effettuata, che la rende assimilabile al procedimento scientifico. (...). Ma da questa impostazione deriva l’opportunità di distinguere tra valutazione e ricerca valutativa. Con “ricerca valutativa” intendo quella parte, principale e costitutiva, della valutazione incaricata di raccogliere e analizzare informazioni utili per esprimere giudizi valutativi (...). Mentre la valutazione è un’attività che può appartenere anche a persone non preparate sul piano scientifico, ma interessate ad esprimere giudizi informati, efficaci e utili, la ricerca valutativa viene a costituire l’attività prevalente o comunque ineludibile del Valutatore come professionista e come studioso; è nella ricerca valutativa, nella sua capacità di essere efficace e utile, ma specialmente affidabile e valida, che si produce il valore aggiunto della valutazione (Palumbo 2002: 51)

Furthermore, the evaluation always reveals itself like evaluation research, attaining the goal to obtain the increase in knowledge of the phenomenon taken into consideration, starting from some basic questions (positivistic matrix):

- (a) if the program has achieved the final objectives as defined in the programming place;
- (b) if the objectives or results of the program are to be attributed to the implementation of the program or some other intervention which allowed the program to achieve objectives as well in due time.
- (c) The evaluation is carried out through three specific steps such as:
  - *Ex-ante evaluation*: it focuses on the starting conditions, in reference to the analysis of a program considers the needs of the target population, are assumed objectives to be achieved;
  - *In itinere evaluation*: takes place in the course of implementation of the program in order to verify if work proceeds as predetermined, and possibly set up of corrective actions;
  - *Ex-post evaluation*: it is carried out at the conclusion of the program considering the quality of the interventions, in terms of effectiveness and efficiency, and assesses the impact of the intervention on the stated priorities.

These three phases present a circular setting, just because of the implicit purposes of evaluation; the final phase is the necessary input to set the requirements of a new social programming and policies assessment. We can therefore say that the circular setting is one of the basic requirements of the purposes of evaluation.

About the program improving function, this objective has been mainly held by constructive approaches, where it is believed that it is necessary to pay more attention to the implementation phase, that is in itinere, in which we collect information in order to identify what aspects need to be improved, and it looks strictly connected to methodological aspect that you decide to be useful.

Maria Bustelo Ruesta translates as follows the importance of improving function:

La primera función, la de *mejora* del programa o política evaluada, significa que la evaluación se concibe como un artefacto metodológico que permite la retroalimentación y el aprendizaje sobre la práctica. En este sentido, la evaluación resulta imprescindible como instrumento de mejora y perfeccionamiento y como garante de la calidad de un servicio o programa (Ruesta Bustelo 2003: 14)

According to the Author, such a function reinforces the attention that has to be given both to the planning context, and to the valuable feedback from recipients of the program, which are pro-active parts in the programmatic and evaluation action; in this sense, evaluation research reveals a further connection with the learning functionality and a typical form of reflection for future actions, namely it gains a “reflective” ability, through the continuing seeking for new strategies and new solutions to emerging problems.

There is a further aspect coming from evaluation research, logically distinct, interwoven in a web of variables pertaining to cognitive models, patterns of decisional convergences of social actors. It breaks away from the operational dimension of evaluation, since it occurs in anticipation in time and space: the *evaluativity*. There is, namely, a prior issue respecting to the process itself, made of the intertwining of variables, due to cognitive assonance and dissonance as the *connective*, *communicative* and *choral* environment of evaluation.

In arguing about participation, we come to distinguish two aspects of evaluation: a standardized one, and another not standardizable, because of the multiplicity of actors, the ideas involved in the process, the interaction and exchange of communication between the social actors and their relationships, namely all that not-formalized apparatus, but which nevertheless exists and involves individuals in the evaluation process, such as to lead to widening and improvement of the predictive power of the scenario that will then be used for social policies.

The evaluativity, intended as exploration, sharing and participation, becomes *deliberation* whenever all the actors involved in the evaluation process, through their knowledge proximities and differences, reach for a unified and global vision of the future that they were able to see:

La valutazione ispirata alla democrazia deliberativa è un ideale che vale la pena di perseguire, non qualcosa che sia raggiungibile una volta per tutte in ogni ricerca o che possa essere pienamente afferrato. Ma del resto, la raccolta, l'analisi e l'interpretazione dei dati secondo una modalità libera da distorsioni, e che permetta di giungere a risultati accurati, non è a sua volta perfetta. La mancanza di perfezione non è un motivo per smettere di tentare di fare del nostro meglio. Quando si fa riferimento al punto di vista della democrazia deliberativa, si può concludere che esistono modi migliori e modi peggiori di condurre delle ricerche (Stame 2007: 425)

In this sense, the role of the evaluator is to mediate and to include the greatest possible openness to dialogue and to the construction of a thoughtful and deliberative process that seeks to comprehend interests and values of all the involved stakeholders. The complexity of such an operation is due to the very nature of evaluation process that includes the starting conditions often coming from institutional, political, regulatory or economic needs; for that reason, from a procedural point of view, evaluation research should:

(...) aspirare ad essere rappresentazioni accurate dello stato di cose, non mezzi retorici per promuovere gli interessi di alcuni gruppi a scapito di altri (...). un processo di deliberazione realmente democratico richiederebbe che gli interessi di tutti i gruppi di stakeholder fossero collocati in una posizione centrale, e che gli interessi di tutte le parti rilevanti venissero rappresentati. Se non vengono considerati tutti gli interessi pertinenti, si è in presenza di un processo di deliberazione fittizio, dal quale alcune voci sono state escluse (Stame 2007: 420)

In its traditions and inheritances, as like in its recent development, but especially in its further evolution in the actual time, the Italian social welfare takes in account some characteristics related to the decisional dynamics of co-evolutionary actors locally situated. In such context, it appears necessary to analyze the main aspects of the features of welfare in Italy, by which follows a proposal from a theoretical evolutionary and relational dimension of decision-making, through the recognition of a residential identity of social actors and stakeholders who advance, through the free participatory dynamic of a Fluent Evaluation, their motions and advances of a desirable or plausible future for social policies. These are, in fact, relevant, according both to indications coming from the European Commission, intended as social service of general interest, and to the tradition of the Italian welfare system, compared to a multidimensional model that binds in a seamless continuity, the local policies relating to the centrality of the person, within the enhancement of the conceptions of need as the anthropological and social human existence, to which the new governance and evolutionary dynamics of interaction and negotiation of co-participatory communication is called upon to give a contribute.

General decrease of welfare policies around Europe are offering new challenges to theorization in social sciences towards the revision of social work's issues and interventions, along with the new social needs and rights of active citizenship, to promote a new evaluation research model, centered upon direct participation and involvement of territories in social programming and protection.

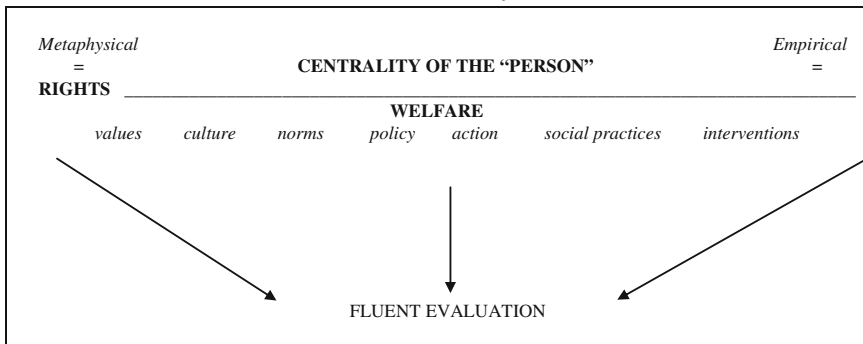
Now, the claim of collectability of social rights of citizenship, constitutionally established by a variety of political traditions in Europe, confirms the strategic importance of the emphasis in sociological terms such "person", "protection", "welfare", "inclusion", "discomfort", which are not limited to describing just the conditions of institutional legitimacy within which we expect public intervention, but represent and indeed, precisely identify the fundamental condition, both anthropological and social, of human existence.



As in the welfare (especially that designed in operative ideals of the Italian tradition), appear correlative elements that articulate the social policies of people protection (the so-called “trifocality”: individuals, groups/communities, institutions), it is as well possible to identify a triplicity and functional values of social work able to be acknowledged in the centrality of the person, rights and welfare. This reflection is made relevant, despite of the current trends about a very unilateral quasi-market policy, increasingly liberalized and somehow dissolving the fundamental trusting relationship between the necessary social public protection and the expectations flowing by the needs of different social strata of population, which is also a clear legacy of influent civic tradition of the Italian economics and history (Zamagni 2004). By such a perspective, the person must return to be the central anthropological and social identity, in a relational meaning, able to reconnect to the proper sense of the economic and political foundations of agency, all matters relating to the issue of rights, of their entitlement, their applicability empirical and environmental sustainability in terms of policies, interventions, production of goods and services.

Along with the perspective offered by the multidimensional sociology of Jeffrey C. Alexander, in whose area of scientific evidence and legitimacy the centrality of epistemological question about the nature of social action is assumed (Alexander 1990), here it is offered the vision of a seamless space of social work, as it is framed by the conceptual and epistemological dynamics expressed in this paper, represented by the centrality of the person, able to dynamically representing the two major dimensions: the rights dimension, which is symbolic, abstract, formal, and the welfare dimension, applicative, executive and relational. In this meaning, it’s possible to observe the elements of greatest interest, which is the epistemological conceptualization of this proposal, sliding and overlapping without interruption whatsoever. The following is a valuable scheme of the multidimensional model of social work resembling the building process of a fluent evaluation model:

*Multidimensional model of Social Work*



## 2 Towards a “Fluent Evaluation” Model for Social Policies

Social work may find a renewed theoretical and practical application of its possible further evolution through the identification of three epistemological correlations, determined in:

1. “empowering through sharing” the visibility of the local social needs in order to optimize the civil rights to a collective representation at a social level;
2. “socializing welfare’s costs” especially in its relational meanings (Donati 1991) through the increasing of productive relations between social actors, to find the best possible solutions for the emerging social needs;
3. integrated construction of a “residential identity”, able to promote social inclusion at a local community level.

Hereby we come to explain the reason for a new model proposal of a participatory social work in the system of governance and public policies, due to the same evolutionary feature of welfare, intended as the expression of consistent protection of rights and citizenship, towards a relational and communicational link between institutions and civil society, in the same meaning of the fundamental concepts for the sociological analysis such as those of “participation” and “social capital”, where the argumentative joint moves forward the analysis of the process of collective construction and negotiation of social identity and relationships, from a structural resource (for example, the classical Durkheim’s normativism of roles, rules and social functions able to trace, giving authority and voice to a subjective social actor) to a precious personal resource, based now upon a free and articulated interconnection of individuals and groups (Coleman 1990), according to the model of *bounded rationality* (Simon 1983) and incremental decisions frame that allows the logic of identity and community of civilized life, able to communicate and negotiate meanings, desires and suggesting future scenarios (Godet 1993; Godet and Durance 2008).

Moreover, this approach seems to rebuild and boost the space of communicative interaction in a horizontal direction, rather than a vertical and hierarchical one as in the traditional perspective, while a center and a periphery are replaced, in the new dialectical and polyphonic reality of multidimensional social actors locally situated, with different centers, legitimizing an explicitly inclusive purpose for social intervention and dynamic social work. That’s why the relational approach

is characterized by a reticular shape, in which there are many possible connections between the *horizontal* relations (social exchanges in goods and information, social interactions, flows of people and goods) and *vertical* relationships (ties into territorial conditions and pre-existing to the relationships with the horizontal relationships) (Bazzini and Puttilli 2008, p. 41).

The welfare development issue and the dynamics of residential identity are needed today, mostly because of deep changes in social, cultural and technological achievements that have helped us to redefine the focus of the scenario in which they

take place, both for the different representation of social actors, and for the extremely fuzzy, nuanced and complex social evolution.

In community welfare and in social work capabilities, the network as a concept and a practice as well is mainly important to activate citizenship awareness into both expertise and people, willing to build a social environment tailored to their needs, and a ecological way of sharing for individuals: in fact, there are European Countries where policy makers meet representatives of citizenship to decide together on some housing solution or a urban renewal project.

So we tried to propose, therefore, a new methodology, able to dynamically follow the change. A new type of governance, in which stakeholders can inclusively share knowledge and actions, and even the decision-making process, so that they make the desired transformation true and real. They could become co-protagonists of change, aware of the importance of the strategic choices of social policy and of appropriate social logics (for that reason, these actors are called now “co-evolutionary”). Only in this way it seems possible to overcome the “bond system” of network vertical and hierarchical system, where, once you create the rules, the actors involved appear to be decontextualized from their authentic position, with a sort of “de-localization of identity”.

### 3 Discussion and Conclusion

There's clearly need for a relational approach, due to the convergence of the material aspects of social work with intangible ones, i.e. properly social, related to persons and needs, in order to especially identify the fluency that certainly highlights the dynamics of communication, knowledge and agency, considered in their dual connotation, spatial and cognitive, in which environment the actors are always interacting (Pasotti and Venditti 2010; Di Zio et al. 2011): communication and reaching for consensus about social intervention projects, their social more than economical sustainability represent that fluent feature of the social evaluation, decision-making process and the structuring way for social actions adequate to achieve the welfare for the people, not just for the political point of view, towards the promotion of a local social development.

The decision-making variables in this fluent evaluation model, as a part of a multi-dimensional modeling of social work, result from the interaction of participative social actors, co-evolutionary situated in a multirelational environment, along with the innovative logic of residential identity, dynamically linked to the territory, such as allowing them to freely explore and produce, in the communicative not compulsory exchange (Habermas 1981; Pasotti 2008), perceptions and meanings approved as the most appropriate and converging in the likelihood of an anticipation, rather than the probability of a invaluable forecast (Kahn and Wiener 1967). Therefore, we have tried to highlight the importance of a relational approach to better promote a social work deeply attached to anthropological condition of “person”, according to ecological and evolutionary connotations which appear able

to reveal the dynamics of social protection and rights, through the process of participative construction of a Fluent Evaluation as a new Welfare, strictly related to the needs and desirable scenarios of a better society.

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# From Trajectory Modeling to Social Habits and Behaviors Analysis

Donatella Gubiani and Marco Pavan

**Abstract** In recent years, the widespread of mobile devices has made easier and popular the activities of recording locations visited by users and of inferring their trajectories. The availability of such large amount of spatio-temporal data opens new challenges to automatically extract information and get valuable knowledge. The many aspects of this issue have aroused the interest of researchers in several areas, such as information retrieval, data mining, context-aware computing, security and privacy issues, urban planning, and transport management. Recently, there has been a strong interest in understanding how people move during their common daily activities in order to get information about their behaviors and habits. In this paper we describe considerable recent research works related to the analysis of mobile spatio-temporal data, focusing on the study of social habits and behaviors. We provide a general perspective on studies on human mobility by depicting and comparing methods and algorithms, highlighting some critical issues related to information extraction from spatio-temporal data, and future research directions.

**Keywords** Trajectory modeling · Social habits and behaviors · Spatio-temporal data · Data mining

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## 1 Introduction

Nowadays, there are different tracking technologies, embedded into mobile devices, that allow to gather data about movements of people, vehicles, and even animals or general objects. The widespread use of this kind of technologies increased the interest in collecting and analyzing data in order to model users' trajectories and extract information about how they move, what kind of places they visit, and more recently, to understand their habits and behaviors. Several applications have been developed for this purpose, in particular for tracking users movements during their daily activities and to observe how they define their routines. The wide availability of these mobile applications allows to gather a big amount of information about human activities, useful to understand mobility patterns for both the individual and the community point of view.

The location data are often associated to several services in order to provide useful features to users. Common uses are related to user's current position, exploited to realize navigation systems, fitness applications, or even to add locations on social networks activities. Originally used as stand-alone information, users' positions have been then deeper analyzed often in combination with an history of places previously visited by the same users, or also by others in the same area, in order to improve location based services. This approach has led to make progress toward a more social direction, which takes care of the users perspective. A new set of mobile applications has began to spread, the so called personal assistants, which provides suggestions to users in several ways, such as textual messages, web pages to visit, and even other applications to download. To achieve this objective new methodologies and algorithms have been designed in order to get information about users' habits and behaviors.

By studying users' trajectories it is possible, for instance, to analyze how often places are visited, also with particular patterns, in order to understand which locations are the most important during a day or a week, or which are the locations visited for extended periods or for a few moments. With this kind of information it is possible to define a set of user behaviors that leads to a set of habits, useful to improve the algorithms used in mobile applications to provide location based services and suggestions to users. This methodology can be applied to a wide range of users in order to perform a community mobility analysis, for instance users who live in the same city, or movements in a delimited area during a particular event.

With these premises it is clear how important is the new information extracted about users for several research fields and also for industry. It can bring benefits to both the public and private sectors, for urban planning and transportation management, but also for security, privacy issues, and even marketing. Different research areas are affected by these applications: data mining, information retrieval, statistic studies, etc., are some of the main fields that can exploit this social approach and provide improved and more user oriented solutions.

The main contribution of the paper is a general state of the art of research work related to moving objects analysis, in particular users, by focusing on trajectories

modeling, and then highlighting recent interests on methodologies more user oriented, to analyze social habits and behaviors. We describe social approaches used to extract new semantic knowledge, combining those that are often separate literatures about the study of trajectories and the study of social habits and behaviors as a further step on trajectory modeling. In particular, we provide a general perspective on studies on human mobility by depicting and comparing methods and algorithms focusing on two significant aspects, namely, as important place recognition and destination prediction.

The paper is organized as follows. Section 2 illustrates how trajectories model movements in different ways, depending on different applications. Section 3 describes processing algorithms that allow us, from raw data, to obtain different trajectory descriptions. Then, in Sect. 4, we focus on social trajectories and we survey different research areas on human mobility and social habits and behaviors, with particular attention to the recognition of points of interest (POIs) and the prediction of future ones. Finally, conclusions are drawn in Sect. 5.

## 2 Tracking Spatial Data and Trajectory Modeling

Using different technologies integrated in mobile devices a wide amount of real life data can be collected. Nowadays mobile devices are usually provided with GPS receivers to deal with the Global Positioning System, a space-based satellite navigation system that allows us to detect their spatial location in specific temporal instants. These receivers are usually combined with other components. There are several situations in which GPS is not available or not usable, such as indoor applications or among tall buildings. For these reasons, hybrid positioning systems are used to replace, or estimate, GPS positions through different wireless networks (Liu et al. 2007). Moreover, even if they are considered not very accurate, accelerometers, gyroscopes, magnetometers, etc. have a limited cost and can be used to produce more precise data (Sun et al. 2014; Shoaib et al. 2015), in particular for a physical activity recognition.

Nowadays, academia and industry are very interested on both mobility data computation and related studies, due to their benefits in several applications. Tracking movements of objects in general can be useful to provide information for tasks such as monitoring or optimizing their paths. It is possible to perform this kind of analysis with every kind of object in movement: packages to deliver, vehicles to monitor, even with animals, and people, by using proper sensors and technologies. A lot of mobile applications have been developed with the aim to exploit information extracted from raw location data. The simplest ones track users current position in order to get information for navigation systems. Other applications, instead, track the entire users movement in order to get a history of visited locations, with related data, for instance about time, space and/or speed. Some of those exploit this kind of tracking during sport activities in order to monitor user's performance and provide information about the current training, and even to give

suggestions with the aim to help the user to obtain improvements. Also whole community decisions can exploit mobility knowledge. Understanding the most frequent movements in a city, and their temporal ranges, allows to support the design of new public connections in a transportation network or to identify traffic congestion situations where intervention strategies are required. These topics can be exploited also in environmental or marketing applications: areas where traffic is more intense are usually connected with pollution problems, and where advertising can be viewed by a large number of people.

A trajectory can be represented in different ways depending on what kind of application is needed, therefore, the same movement can be described with different properties necessary to provide the right information for the required purpose. In a similar way as described by Yan et al. (2010, 2013), an hybrid model, that includes several levels for trajectory description, can be used to divide the set of operations and analysis. The state of the art about trajectory modeling focuses on the following three levels:

- *raw trajectory level*: starting from raw data, i.e. sequences of positions associated with a timestamp, and applying cleaning and filtering algorithms, simple raw trajectories can be created;
- *structured trajectory level*: a first level of abstraction can be applied to raw trajectories to obtain a structured description of a movement. A structured trajectory can be described as a sequence of episodes, groups of sequential GPS points with common properties. A classical example is the segmentation in stops/stay points and movements;
- *semantic trajectory level*: trajectories can be enriched adding annotations that, associated to different granularity levels (from simple points to whole trajectories), allow us to motivate and describe each component of a movement.

These different levels represent sequential steps of operations to support the requirements of trajectory applications. In Sect. 3 we summarize several analysis and data processing related to each level. Several related works in literature do not use a strict breakdown of these levels, for instance, Marketos et al. (2013) focus on just two levels, ordering slightly differently the operations inside. They apply a preliminary structuring into the raw trajectory level, then they integrate the episodes definition into the semantic level. In Fig. 1 these levels are illustrated as layers 1, 2, and 3, and represent the stages of data processing, starting from the basic level composed only of raw data.

The widespread of tracking technologies embedded into mobile devices, and the large interest in developing algorithms and software solution to mine the data they gather, have led several companies to invest in that direction to better understand users' behaviors and habits. Some companies use location data as a feature for social network based applications, in order to give new services to users based on their check-ins. Well known examples are Foursquare, that bases its entire service on users location information to give suggestions about POIs, and Facebook and Twitter that allow users to add their location while posting a new message on their



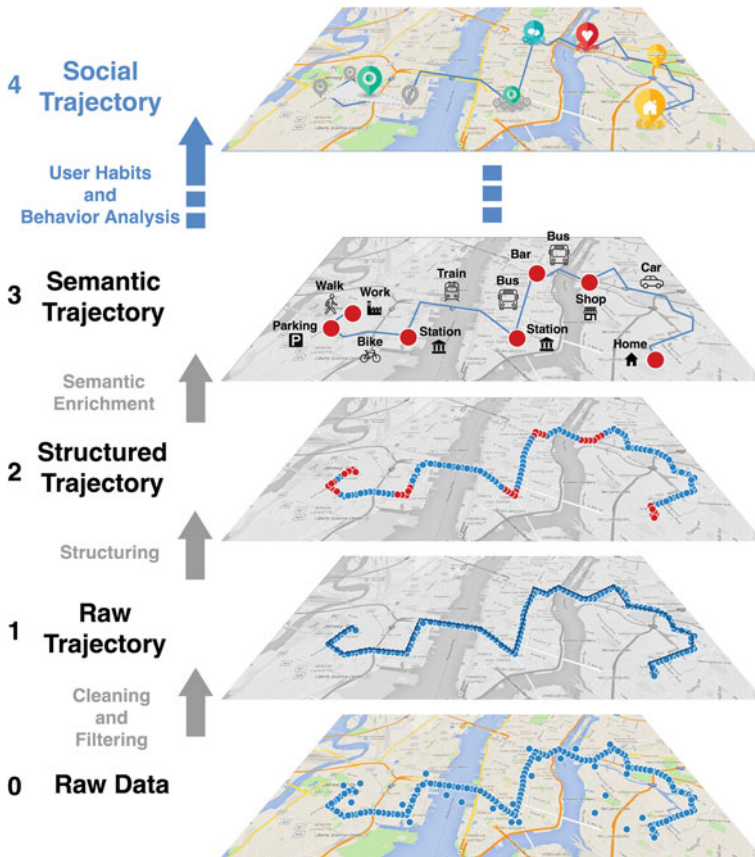


Fig. 1 Different levels in trajectory modeling

account, in order to add more information for users who read their statuses. This kind of mobile applications gives people the possibility to track their location data associated to several different services, and to share with their friends this increasingly important source of information. This activity of sharing data provides the additional advantage of improving the shared services offered to the community.

Focusing on these research areas and industrial applications, by starting from previous trajectory models, an additional extended level can be defined, namely, the social layer (Fig. 1, layer 4), in order to make a further step closer toward user modeling. It allows to define trajectories under a new point of view: by analyzing a set of user trajectories, or a group of users who share common properties, for instance, the same geographic area or the same hours of work, it is possible to extract new data about important places they visit, type of movements, and more complex information about common habits and behaviors. As depicted in the top layer of Fig. 1, personal important places (points, lines or areas) for different

purposes can be identified and described by extracting new information. For instance, some locations can delimit an area connected to a user activity (the leftmost pin, green) which involves some movements in semantically connected places. Other locations can be described by a large amount of time spent on them, such as a train station due to the waiting time, or a shopping mall where people walk. Some places may be important for more than just one person: a set of users can visit a place repeatedly (pin with a chat icon, blue) for meeting other people for talking or eating. It is possible to analyze user behaviors also associated to time and days to understand what locations can be suitable for spending free time, for instance entertainment venues (pin with a heart icon, red) such as bar, cinema, shopping mall, etc. Moreover, personal places, such as home (pin with a house icon, yellow) or roads where users use personal vehicles starting from their own houses (pin with a car icon, yellow), can be identified by observing what window of time users tend to enter or leave that locations.

On this basis it is clear how same locations can have different meanings for different users; indeed, a shopping center could be a work place for who has a job there, or a place for free time for other people. Likewise, a dwelling may be a place that users visit occasionally, such as a friend's house, or their own homes visited intensively. The features used to describe places in this new "social" way highlight the different semantics deriving from different users. In Sect. 4, we summarize main advances in trajectory mining based on social approaches and with focus on users' behaviors.

### 3 From Raw Data to Semantic Information

From raw data, depending on needs and aims of the specific application, several trajectory reconstruction algorithms can be defined. They integrate different processing steps that allow to obtain trajectories on the different modeling levels. As described in Sect. 2, and depicted in Fig. 1, it is possible to apply data mining to get only a structured trajectory, or to analyze data deeper to reach the semantic level. The following sections illustrate these steps.

#### 3.1 *Cleaning and Filtering Raw Data*

Datasets collected by mobile sensors are often imprecise and incorrect due to noise. Raw data are exposed to two different kind of errors (Jun et al. 2006): systematic errors derived from system positioning limitations (a low number of satellites while detecting position, a low accuracy due to signal problems, etc.) that affect the final quality of data; random errors due to external reasons as clock and receiver issues, atmospheric and ionospheric effects, etc. Usually, different methods based on several parameters as time, speed, etc., or geometrically regression models are used

to solve these problems. For instance, Yan et al. (2013) describe a data preprocessing layer to clean data that applies a speed threshold to remove points that do not give us a reasonable correlation with expected speed to solve systematic errors and a gaussian regression model is used to deal with random ones.

Working in a network (e.g., road and rail networks), different map-matching algorithms can be used to replace or clean GPS positions of an object by a point on the network. These algorithms can be divided into geometric, topological, probabilistic and advanced (Quddus et al. 2007; Velaga et al. 2010). While geometric and topological algorithms, that use geometric and topological information, are simple, fast and easy to implement in real-time, probabilistic and advanced ones, that use probabilistic information and more refined concepts as mathematical theory of evidence, fuzzy logic models, etc., offer an higher accuracy but, are generally slow and difficult to implement.

Data related to movements grow progressively and intensively as the tracking time goes by, and data compression is an essential task that can be applied directly to raw data. Working with raw data, the compression consists in a reduction of the points used to describe a trajectory. Different algorithms, trying to balance the trade-off between accuracy (and information loss) and storage size, consider different spatial and temporal parameters. Muckell et al. (2014), proposing a new approach to trajectory compression, called SQUISH-E, perform a comprehensive evaluation and a comparison of several of them: uniform sampling, Douglas-Peucker, opening window and dead reckoning.

### 3.2 Structuring Trajectories

Except for simple movement maps, raw trajectories are insufficient and usually not so useful for meaningful trajectory applications. For this reason, a first basic analysis can be performed to structure trajectories in episodes, sequences of GPS points with common properties.

This step, usually called segmentation, can be defined using different features associated to GPS points. A frequently used approach recognizes two states in a trajectory, in particular stops and movements. To obtain this segmentation, several works in literature exploit threshold based approaches in order to properly identify where the object is in movement or not. For instance, Yan et al. (2013) use time and speed to analyze each detected position in a trajectory. Li et al. (2008) identify two categories of stay points: points where a user remains stationary for a period of time and points where a user moves slowly within a certain spatial region for a time period. Other authors consider more properties of movements, in order to improve the analysis. Buchin et al. (2011) propose a framework composed of several algorithms which segment any trajectory into a minimum number of sub-trajectories by combining techniques based on different sets of thresholds. They exploit basic attributes as location, heading, speed, and other more sophisticated as curvature and sinuosity. Recently, Pavan et al. (2015) described how state of the art techniques

exploit threshold based approaches in order to refine the stay point identification, but highlighting several issues related to parameters which are too strict, such as acceleration, or which give low contribution during the computation, such as heading change.

The structuring phase may also include an additional segmentation of different sub-trajectories, in order to identify portions of path where the object may have movement related to a specific context, such as time periods or geographic areas. Different policies can be applied to divide trajectories based on the concerned application, for instance daily or weekly trajectories, if based on time, provincial or regional trajectories, if based on space. Usually, this process is applied as first step of trajectory structuring. Marketos et al. (2008) present a system where this process is adopted. They define a trajectory reconstruction algorithm, to divide the movement of an object in different sub-trajectories, which scans each point into the GPS detections list, in order to decide if the new series of coming data during the scan have to be appended to an existing trajectory or they contribute to the creation of a new one. This technique is based on thresholds, such as space, time and speed, that allow to properly apply this segmentation. Moreover, the thresholds help to remove noise and redundant raw data.

### ***3.3 Semantic Enrichment of Trajectories***

Semantic trajectories allow, through annotations, to enrich data with additional information depending on the specific aim of the application, and on the desired granularity level of information. To annotate each point is not usual because it can cause a big amount of redundant data. As described in (Parent et al. 2013), annotations are usually associated to episodes or to whole trajectories. Starting from contextual data repositories (e.g., OpenStreetMap and GoogleMaps), map-matching algorithms based on topological relationships allow to associate episodes of a trajectory with points (e.g., restaurants and shops), lines (e.g., walking streets and train rails) or regions (e.g., building and administrative areas) of interest (Yan et al. 2013). Moreover, depending on similar associations and additional observations, activities or transportation modes allow to motivate and describe episodes. More general annotations can characterize the whole trajectories (e.g., work and touristic trajectories).

In many applications moving objects are restricted to move within a given network (e.g., vehicles on the road network). Particular kinds of annotations can be defined in a network. For instance, Richter et al. (2012) define a semantic trajectory as a sequence of points localized in a transportation network annotated with specific events as origin, destination, intersections or stops. Several proposals combine map-matching algorithms on networks and data compression, in order to save only the interesting and significant points in a transportation network, losing only an acceptable amount of data which does not compromise the resulting information (Richter et al. 2012; Kellaris et al. 2013).

In a more abstract description, aiming for the user level, the spatial details about movements from one place to another one and the specific geographic positions of those locations can be lost mapping trajectories in a graph structure keeping just the relations between nodes and attributes for edges. Abandoning the bond with a geographical map led us to focus on the elements that define user behaviors and habits, in order to build a more generic model that allows to analyze users to find similarities, even if they live in different countries, but with same life style, i.e., same places and movement types. For instance, Zheng et al. (2009) and Xiao et al. (2010) build graphs among users' locations connecting nodes (i.e., clusters of positions with semantic annotations) with directed edges to study sequences of locations.

## 4 Towards Social Habits and Behaviors

The *social level* introduced in Sect. 2 opens new challenges in trajectory mining and leads researchers to work on new systems based on social approaches, with focus on users' behaviors, in order to define that new layer of information. It is clear how this new source of information, resulting from this new user oriented approach, could be important to exploit, and to improve current methodologies used in research to understand people and their behaviors. To design and implement an extraction process in an effective way, it is very important to get the right information from the collected raw location data. Also, a further refinement has considerable value to make deeper analysis, in order to infer additional knowledge about users.

Several researchers focus on recognizing patterns in mobile environments to analyze user communities. Karamshuk et al. (2011) present a survey on existing approaches to mobility modeling. Hui and Crowcroft (2008) propose a system for the analysis of human mobility considering the community structure as a network, in order to emphasize the relationships and improve the understanding of behaviors. Laxmi et al. (2012) present a study that analyzes the behavior of user patterns related to existing works of the past few years. In this direction other authors present their work on analysis of user communities, in order to build human mobility models. Noulas et al. (2011) analyze a large dataset from Foursquare to find spatio-temporal patterns and to observe how users make use of check-in feature provided by the social platform. Their results are useful for urban computing to study user mobility and urban spaces. Mohbey and Thakur (2013) propose a system based on mobile access pattern generation which has the capability to generate strong patterns between four different parameters, namely, mobile user, location, time and mobile service. They focus on mobile services exploited by users and their approach shows to be very useful in the mobile service environment for predictions and recommendations. Zheng et al. (2008, 2009, 2010) develop a brand new social network system, called GeoLife. It is based on user locations and trajectories, aiming to mine correlations between them.

The interest in these issues is strong, therefore some researchers also work on fundamental problems related to information extraction. A good starting point is to recognize important locations for the users, such places can tell a lot about their routine, namely, daily behavior and habits, thus, a sort of personal POIs. This process aims to identify places which have particular meaning for users, such as home, work, or any place where they spend a considerable amount of time during the day or which they visit with regularity.

#### ***4.1 Important Places Recognition***

One of the most important issues underlying the systems that analyze user behaviors and habits is the recognition of users' important places. Several studies focus on this topic to propose new approaches on this recognition process, and thus provide novel algorithms to use on more complex systems. Passing from raw information about coordinates to semantically enhanced data (e.g., shop, work, bar) is an important aspect in the task of discovering important places.

Kang et al. (2004) introduce a time-based clustering algorithm for extracting significant places from a trace of coordinates. They then evaluate it using real data from Place Lab (Schilit et al. 2003). Montoliu and Gatica-Perez (2010), Montoliu et al. (2013) propose a system based on two levels of clustering to obtain POIs: first, a time-based clustering technique which discovers stay points, then a grid-based clustering on the stay points to obtain stay regions. Isaacman et al. (2011) propose new techniques based on clustering and regression to analyze anonymized cellular network data usage in order to identify generally important locations.

Hightower et al. (2005) exploit WiFi and GSM radio fingerprints, collected by mobile devices, to automatically discover the places visited by people, associating semantics to coordinates, and detecting when people return to such locations. Their BeaconPrint algorithm, according to the authors, is also effective in discovering places visited infrequently or for short time. De Sabbata et al. (2008, 2009) provide an adaptation of the well-known PageRank algorithm, in order to estimate the importance of locations on the basis of their geographic features, focusing on aspects as contiguity, and the users movements. In particular, in the calculus of the importance score for each location, the speed can be used to highlight either places where the user has stopped or places where there is a high traffic density. Thus, the notion of importance of a location can be customized by considering the current needs or situation.

Many of these approaches base their algorithms on the number of user detected positions within a geographic area, and in some works with attention to the elapsed time between a detected position and the next one. For instance, Umair et al. (2014) introduce an algorithm for discovering PPOIs, exploiting a notion of "stable and dense logical neighborhood" of a GPS point. The latter is automatically determined using a threshold-based approach working on space, time and density of detections. To improve the recognition process, other factors and parameters are taken into

consideration to enhance the algorithms. Li et al. (2008) mine single user movements in order to identify stay points where users spend time; then, by analyzing space and time thresholds, they compute a similarity function among users based on important places that represent them. Xiao et al. (2010) add semantics to users' locations exploiting an external knowledge based on a database of POIs, in order to understand user's interests and compute a similarity function between two of them without overlaps in geographic spaces. Recently, Bhattacharya et al. (2012) extracted significant places exploiting speed and the bearing change during user movement. More recently, Pavan et al. (2015) proposed a novel approach based on a feature space for mapping stay points. They first identify locations where users remain stationary, with state-of-the-art algorithms, then they define a new space composed of features more related to users, by considering parameters which describe users' behaviors and habits. The feature space has, as dimensions, the area underlying the stay point, its intensity (the time spent in a location) and its frequency (the number of total visits). This approach allows to model aspects that are more semantically related to users and better suited to reason about their similarities and differences than, e.g., latitude, longitude, and timestamp.

Hang et al. (2013) adopt a different perspective presenting Platys, an adaptive and semisupervised solution for place recognition based on user labeling. It makes minimal assumptions about common parameters, such as types and frequencies of sensor readings, which are usually tuned up manually in other systems. Platys lets users to label the place at any time, assuming that important locations are those visited sufficiently often.

The results of these recent works have built the foundation for the next step in the direction of understanding users' behaviors, in order to predict their future interests in terms of destinations they would like to visit in the next future.

## ***4.2 Destination Prediction***

Destination prediction is an useful feature for a lot of mobile applications that nowadays provide services to users, in order to recommend sightseeing places and targeted advertising based on destination. A common approach to destination prediction is to derive the probability of a location being the destination based on historical trajectories. Other researchers, instead, with a user oriented approach, more focused on habits and behaviors analysis, explored and discovered new techniques, in some cases exploiting external knowledge sources.

Avasthi and Dwivedi (2013) propose a system for user behavior prediction based on clustering. They analyze simultaneously the different mobile behaviors among users and temporal periods in order to compute clusters of users with features in common, and then to find similarities. Scellato et al. (2011) propose NextPlace, a novel approach to location prediction based on time of arrival and time users spend in relevant places. Zheng and Xie (2011) perform travel recommendations by mining multiple users' GPS traces by analyzing the most interesting locations and

places which match user's travel preferences. Cheng et al. (2013) propose a method for POIs recommendation where the personalized Markov chains and region localization are used to take into account the temporal dimension and to improve the quality of recommendations. Liu et al. (2013) propose a novel recommendation model for destinations, exploiting the transition patterns of users' preferences over location categories, in order to improve the accuracy of location recommendation. Lv et al. (2012) exploit hierarchical clustering techniques, to extract visited places from GPS trajectories, with Bayesian networks, identifying temporal patterns and analyzing custom databases of POIs. With this approach they extract semantics for each location, and are able to discover in an effective way user's POIs. Gao et al. (2015) propose an approach based on content information related to different aspects of a user's check-in action. Usually, existing works about POIs recommendation on location-based social networks, discover the spatial, temporal, and social patterns of user check-in behavior, with no particular importance to the content information. They model this kind of information, such as POI properties, user interests, and opinion expressions, by modeling a framework that considers their relationship to check-in actions, in order to improve existing recommendation systems.

## 5 Conclusions

The widespread of tracking technologies embedded into mobile devices increased the interest in collecting and analyzing movements of people, vehicles, and even animals or general objects, due to its benefits in several applications. The ever growing mobility data introduced several research problems and challenges, such as storage and indexing issues, quality and uncertainty of data, querying methodologies, efficient retrieval and optimized data mining. Traditionally, several efforts have been applied to data modeling and management. Researchers designed different methods and algorithms that, starting from raw data, i.e., sequences of positions associated with a timestamp, obtain different descriptions of movements through trajectories. Nowadays, data mining, and in particular trajectory data mining, is one of the most important research areas which contributes to provide innovative methodologies to extract new information from data about movements, such as particular patterns, or representative and common trends.

The wide amount of human mobility data and the big interest on social studies have opened new challenges. It is possible to achieve knowledge about how users or groups of users move, what kind of places they visit, and to understand their habits and behaviors. In this paper, we underlined how, starting from trajectory modeling, current research is working to aim at an additional social layer that deals with this kind of knowledge, in order to make a further step closer toward user modeling. Data about movements and locations have been processed to extract new knowledge about user habits and behaviors, and made possible a deeper analysis to have information about user preferences. This approach helps to provide more



customized services to users, improves recommendation systems and personal assistants on mobile devices. The interest on these topics involves both academia and industry activities, due to their benefits that led to algorithms improvements, and effects on products for final customers.

As summarized in this paper, it is clear the importance of the social layer, the new layer added on classical trajectory modeling, to make improvements in various directions. Recent research works, focalized on important places recognition and destination prediction, highlight how currently researchers consider significant working on the extraction of this new knowledge, also to bridge the gap among different disciplines, e.g., computer sciences, civil engineering, sociology. The information fusion across heterogeneous data sources and integration of algorithms of different domains can be explored to achieve further improvements and discover new knowledge.

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# Clinical Method in Professional Pedagogy and in Social Sciences

Franco Blezza

**Abstract** The “clinical” method is one of the possible choices for the Pedagogy as a profession, as research for the Social Science and other sciences refer. It can also be called “casuistic method and situational”, and is an alternative exclusive to statistical and operational method in the community full of scientific rigor and technical applicability. It consists in the consideration of the individual case and the individual with all specific characteristic symptomatic and phenomenal, through the mediation of the case to the general practitioner within the small of number of cases where the general corpus makes science, profession and the scientific community and professional, and obtain direction to the help and service to the professional who addressed. Particular consideration given to the technical specification for the transition from the particular to the general provide only through the mediation of a professional, that is, the mediation of human according to the technique not tautological known the days of ancient Greece within the name “abduction” or “retroduction”, ἐπιχείρημα or “Reductio ad absurdum” of Zeno from Elea (489–430), ἄπαγωγή known to Aristoteles (384–322). We exemplify the four fields of application of the Pedagogy professional with strong preferences to interdisciplinary and inter professional, namely: the cases that the parental love and violence by di Erich Fromm; the search of Lebenssinn second Viktor Frankl, the orientation to the life, work and studies, and the Autogenic training second Johannes H. Schultz in specific determination of a propositional formula of educational interest alternative to those given by the founder.

**Keywords** Pedagogy • Professional Pedagogist • Social sciences • Methodology • Aid’s relationship

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## 1 Presentation

The purpose of this Invited Lecture will be to present a methodological proposal synthetically particular. It is, in the opinion of the writer, a strong relevance with reference to the subject of this international conference: relevance certainly not lower than it has in the profession of Pedagogist as, more generally, for the social, intellectuals, aid and culture professions, for its exercises, and related research.

The competence of the speaker is to a *Pedagogist*, which considers and treats Pedagogy as a Social Science discipline in its own right, and his profession like other social professions.

## 2 Clinic, No Therapy

The object of this Lecture is the so-called “clinical method”.

Our experience suggests that we start by saying the warning according to which when it comes to “clinical” and derivatives do not intend in any way to make direct reference to the field of medical or therapeutic procedures. Strictly speaking, it does not refer either to the size of health, except with regard to the very broad definition of health that was offered by the World Health Organization, that “*Health is a state of complete physical, mental and social well-being and Merely not the absence of disease or infirmity.*” The Pedagogist (or the Educator), for reasons essential to their culture, is not a therapist and do not mind then to fight diseases infirmities; probably, the same holds for the other social professions. It has its own essential task in achieving a deep and integral state of well-being, which are essential education, social relations, the relatedness, the value choices, and the search for the Sense of life or Lebensinn.

In any case, the Pedagogist does not attribute to itself the tasks related to the verb “to cure”, but rather sees its task expressed by the verb “to care of”. In Italian, the two verbs have the same translation and then often gives rise to misunderstandings and ambiguities: we should point out that the Pedagogist “is taking care of someone” and not “cure”.

When it comes to “clinical method”, he has the necessary importance speech etymological, which refers to the classic Greek. In the Greek classic that was also used by Ippokrates Kos (about 470–377) and Claudius Galenus of Pergamon (about 129–199), κλινικός adjective was reported to the intervention of the doctor on the bed or κλίνη was the patient: as if to say, clinical intervention is an intervention properly “in the situation.” Are not sostantive: the “clinical” today can match ἡ κλινική τέχνη, rather to “*clinical art*”, in general. Converges to this etymology an alternative derivation from the verb κλίνω, bow, closer, lean, and that is once again a dive by professionals in the problematic situation of the person who requested the work. The adjective “clinical” with its derivatives indicates, as in Pedagogy and in Social Sciences, a precise choice of method. Such a choice is

exclusive with respect to alternative statistical methodology-op, and also claiming that it has specific regard for the theme of this conference.

Are two choices of both scientific method and rigorous, it should be said with the utmost clarity, but exclusive alternatives to one another, in a sense complementary.

We might call the clinical method also “casuistic method”, or “situational approach” that is, that has respect for the primary logic of each situation, and do not look standard, medium, frequency, anniversaries, variances, deviations, correlations, and so on, in repeatable data collected between components of a population, or “individuals” or “elements”, with extensive use of mathematical, statistical, symbolic and graphical representations. The adjective “clinical” effectively sums up our choice, even as it has a value greatly wider in the context of Pedagogy and Education and related professions as more generally in the context of science and social professions.

Method “clinical case report” means first of all the centrality of each case, the approach to each case taking into account its primary specificity, its uniqueness, also its inviolability that is the inviolability of the human person involved. ‘Persona’ [Latin term, not translated!] is a technical term of Pedagogy and Social Sciences, indicating the human subject as a carrier of its own system of values, its own way of life, the subject of social and relational, node a network of communication with other people, in a very broad sense political entity.

This consideration takes into sufficient account the individual characteristics that are not suppressible nor negligible, and that are considered in their non-repeatability. Which is exactly reciprocal to what we are called to do when you work in Pedagogy, also in Social Sciences, also in the related professions, following any choice of method that has to do with the size of still-operational statistics.

Basically, the steps in the exercise training and job search with clinical method can be summarized in the following steps:

1. they are detected and carefully study the symptoms, phenomenology, the story of life and the other history, the problematic situation and so initially characterized each case;
2. the trader appeals to his knowledge, his professional competence, his experience;
3. the professional this particular case leads to a general case or a case series; for example, with regard to the work of the Surgeon clinical, he leads back to the individual patient to the diagnosis of precise diseases;
4. from this reunion to the general case, the trader may obtain the instructions and directions of the case, in the example of the Surgeon clinical prognosis, therapy; in the case of the Educator, the forms of aid because the other party can address the problem and devise its possible solutions.

Just with specific regard to the choice of method in the clinical sense, a fundamental problem is the how one can make the *transition from special cases, each separate and treated and valued for this, with its own peculiarities* that are insuppressible, to general cases. It must be borne in mind that no general case does

not give science (or Social Studies or Pedagogical Sciences nor Science of Nature or Science, properly so called otherwise) nor the corresponding higher intellectual professions.

On the other hand, no general cases not even give technical nor technical or technological professions, it would be another matter.

In short, so observing, evidently refers not only to the Pedagogy and related professions, and even though the large complex of social professions above: it refers to all the intellectual professions. Any type of profession has the necessity of its general cases, they do science, that make culture, which make the scientific community with the lexicon that it follows, with the problems that have a common meaning is shared by the members of the scientific community. There would Lawyer or no general laws, while being granted that he is human and social individual cases; there would Surgeon without diseases and general medical and physiological theories, although he granted that care patients and not diseases; there would Engineer or Architect without building science, despite being granted that he designs individual buildings and not abstractions; there would not Pharmacist without a pharmacopoeia general, although it is clear that he sells and, where appropriate, prepares individual drugs for individual consumers; and exemplifying way.

That said in the widest possible sense, now we will see some examples of large families of general cases which still have to get there starting from the consideration of each individual case, particularly in its uniqueness: we will see, to be precise, four examples of issues including who can lead us each a very wide range of general cases on which we all operate both as students and as professionals in operation, and over which the speaker could actually carry experience of professional practice and scientific research.

### 3 Fromm, Parental Love, Violence

We will bring first such studies of Erich Fromm (1900–1980) on family and parental love (“maternal” love that unconditional, “paternal” love that is conditioned), family education, the Partnership and parenthood, love in Western civilization; and also about violence and its social consequences, and so on. The great Sociologist and Psychoanalyst of Frankfurt gave great importance to the Pedagogical Sciences, because in dealing with its domains has left clear and readable at the pedagogical aspect to be discussed by the relevant authorities, from which he carefully abstained.

Many of the general cases brought by Fromm became current literature on professional practice specifically pedagogical: the love of couples consumer and closed, the excess of paternal love and the excess of maternal love, or the fault of both or of another, variously combined with regard to sons or daughters, the “Don Giovanni” as male and female, and we could go on with primary reference to *The Art of Loving* (1956) and many other works.

But similar importance also its general reflections on human violence and necrophilia, beginning with the fundamental *The anatomy of human destructiveness* (1972).

It is the general case to which you can bring specific cases of problematic situations in which there are those who turn to the Pedagogist in search of his relationship help. This is, therefore, one of the domains of general cases to which we refer. Among other things, it is also one of those to which he refers most often the author of this in his professional practice, as amply documented in the Bibliography.

#### 4 A Nod to Viktor Frankl

But you can bring other examples. Think of what we taught Viktor Frankl (1905–1997) about the search of Sinn and Lebenssinn, the *dereflexion* and the *paradoxical intention*.

Also in this context they are placed the general cases. It is for the professional due to them starting from particular cases, even considering each particular case in its specificity, uniqueness, particularity, with all the features that make it different from any other can present analogies.

It should just point out that in this specific regard to the exercise professional pedagogical inspired this author does not use terms that may overshadow an exercise professional medical and health, or psychotherapeutic. Who acts as Pedagogist or Educator has other principles. We will not speak then of “*logotherapy*”, nor of “*logoanalysis*” rather than “*dialogue or research philosophical and existential*,” or other expressions take us still have meaning specifically pedagogical. Then we employ the conceptual and operational Frankl tools as specifically Pedagogy Professional, they are fully entitled to citizenship and values statements absolutely fine. First of all, we consider strictly pertinent educational and pedagogical research also the Lebenssinn and its essential human need the orientation for life and for studies, typical pedagogical competence specially.

A third domain exemplary, and we understand to the example the variety of applications of our discourse, is made up of the so-called “orientation”: this, among other things, is also a domain which recognizes more directly and immediately to a specific skill Pedagogist.

Well, the orientation is just a transition from many individual cases, the subjects to be oriented to the life and studies, each with its own specificity, to a limited number of choices or general cases, whether the choice of a job and a social and existential, of a course in high school or college or even later, or in any case of higher education, or is it a more basic approach to life issues and fundamental choices.

In this regard, let us never forget that the orientation should be designed and implemented first of all to life, and only secondarily and consequently in regard to chose of the studies. It often tends to do the opposite, or even canceling the first and



most essential that the orientation for life, with or without consideration of orientation for the job, and to speak only of orientation for the school and for college, isolated from other life choices. This is a blunder that a Pedagogist would not commit, but above all it shows how the lack of Pedagogy can also affect the commitment, effort and application of human resources valuable for groped to solve the problems, especially the problems of people that are expensive and require help with full legitimacy.

However, special cases such as people to orient are millions, tens of millions; the choices to which guide them are vastly less with reference to the life, and reduced to a few dozen or a few units “general cases” i.e. of choices of jobs, at a university or other higher level, less still of school courses secondary. The real problem, which invests primarily professional operator, remains the transition from the particular to the general.

## 5 The Pedagogical Dimension in the Second Schultz Autogenic Training

Finally, a fourth order of exemplification, among the many that could lead, is constituted by the well-known Autogenic Training according Heinrich Johannes Schultz (1884–1970).

As Pedagogist and Educationalists, we are not referring to the six steps which make up this process, someone has come to consider a therapy but that from a pedagogical point of view it can be an alternative, it is feasible and can be used for other purposes: *Heaviness, Warmth, Heart Practice, Breathing calm, Solar plexus flowingly warm, Forehead pleasantly cool*. This sequence, correctly, is transposed from us by another science, that is not Pedagogy and cannot be changed.

We refer instead to the propositional formula, “*der Formel*”: “*Begonnen wird mit der Formel: ›Ich bin ganz ruhig‹ (“Ruhetönung”). Diese Ruhe wird dann in der Schwereübung körperlich geübt*”.

The alternative is to not specifically pedagogical follow a strict and absolute teaching of the founder in this specific context, and instead predicting a choice that takes into account the particularities and needs of the subject, and who directs the design and the inclusion at the beginning and end of the six stages, and not being able to exclude some influence even in their conduct, while respecting the basic procedure.

The building and the determination of this choice, the formula that precedes and that follows the six steps, on which is first of all brought the attention of the interlocutor to the top and to which it returns the focus to the end, can be considered a pedagogical problem in the strict sense.

Problematic situations with which those who come to us asking for help of Autogenic Training are as variable as the people themselves. Here are some examples of immediate relation with the experience of anyone he is busy:

- difficult in the study or work, or any other relevant human activities;
- need for greater concentration, more commitment, a more orderly life;
- Performance in Sports;
- deliverance from addictions, fighting habits and risk behaviors;
- difficulties in parental relationship, in family relationship, in the relationship of proximity;

and so forth for a series that is well known to social workers, and is rich. The answers are obviously flexible, but the propositional formulas refer to a relatively small number of basic ideas, which are exactly the equivalent of those general cases that we have seen to be a need for culture, so that it can give a science, so that it can give a higher intellectual profession.

The determination of the pedagogical propositional formula can change depending on the characteristics of the case that is being proposed, and for which we propose the use of Autogenic Training. Are dependent on the other person requires us, a helper according to educational culture can be determined with a propositional formula designed especially for him.

## 6 The Abduction and the Mediating Role of Professional

All this emphasizes strongly the importance of the essential professional in connecting and in bringing the cases to the general case in making an essential mediation.

There is a process of generalization or induction of thumb that allows this passage from the particular to the general, from the particular case to the general case? No, it does not exist, there is no kind of empirical induction, as Popper has taught and left us the most important methodological legacy of the twentieth century.

This transition is effected instead through the mediation of the professional, which he accomplished with his culture, with his professionalism and his experience, taking into account its clinical cases and the type of professional maturity that could make just addressing individual cases and each of them bringing back to a small number of general cases that belong to his culture and his knowledge: that is, man.

It is a remarkable way to revive the *anthropological principle*.

The term we use to make this transition from the particular to the general through the work or the mediation of a professional, that is of the man (or the mankind) is “abduction”. There are other terms that could be alternatively used with absolute rigor: it is a concept that was already present in the culture Greek-classical, Latin and its sequels. You can talk (also using Latin words corresponding) of “retroduction” ἐπιχείρημα or “Reductio ad absurdum” from Zeno of Elea (489–430), or ‘απαγωγή concept that was known to Aristoteles (384–322).

It is this is one of many cases that exemplify how we Pedagogists draw from that very historic location the first conceptual and operational tools for our culture and for our professional practice, and as a result we can count 2500 years of history and

over. Just take a few examples, however, each of enormous importance: ‘ρητορεία role and importance; Socrates and Plato διάλογος; πολιτεία as socialization and active participation in political life; classical *Logic* and its rules; γνῶθι σεαυτόν (*nosce te ipsum*), with the full awareness of his own potential and limits, and the ὕβρις condemnation; and so on.

Certain “tools of the trade” that originate in ancient Greece are employable and are still used today, and the Abduction is one of them.

The concept of Abduction was then taken up and made stricter in the nineteenth century by Charles S. Peirce (1839–1914) in a pragmatist vision, and has been further refined in years closer to us by Pavel Tichy (1936–1994), from that character which it is well known to all of us who have studied the epistemology of the twentieth century and in particular the development of the Critical Rationalism of Karl R. Popper (1902–1994) in the last years of his life, for the refutation of the basic logic of the idea that the evolution of scientific knowledge would be matched by an increase of verisimilitude, to which Popper himself has believed for decades and who has had to recognize to be false in the *Postscript to the Logic of Scientific Discovery*, he appeared about fifty years after the fundamental work.

As the Tichy theorem was instrumental in this, just the same character was essential to make even more rigorous concept of Abduction.

Among other things, these reflections enable us to grasp as random evidence that the first formulation of the idea of science as fallible know, the fundamental concept of the proposed Popper, was based precisely by Peirce decades before Popper was born.

In practice, we have the professional competence to say that a general case is characterized by a range of symptoms, and evidence of phenomena connected, as consequences. Our mediation consists in identifying in a whole series of evidence just the picture that refers to a general case, that is, the diagnostic hypothesis in the introduction, namely that the general case which constitutes the hypothesis more powerful, more simple, more direct and “canonical” and more comprehensive, to explain all the evidence of the particular case and, consequently, to detect the possible line of action resulting. You can present the case in which such a hypothesis, that this general case, is the only one able to allow this.

In the diagram:

<b>Rule</b>	the general case A presents (or can present) the B phenomenology
<b>Data</b>	the evidences B of a particular case repeat aspects that can be considered professionally experienced to include reference into the A general case, and no other reasonable hypothesis explains these evidences as well
<b>Clinical diagnosis</b>	the case we are studying, the B evidences, constitutes a particular case of A

A particular ability to connect to the framework phenomenal hypothesis of the general case with relative immediacy often takes the name of “*clinical eye*”, and this not only in the medical field.

The Abduction is a mediation on the particular case to the general case, accomplished through the indispensable work of the professional. This does not give the truth, it is not a syllogism tautological, on the contrary it was already known in ancient times and discussed that it could give is the truth that lies.

## 7 There Is No Truth, “Unended Is the Quest”

And in fact, we Pedagogists as all professionals of the social, as well to see also other categories of professionals, we are constantly through hypothesis: there are no certainties in our science and in our professional practice, there may be, if anything, beliefs or rules of method.

What are our certainties, or rather what the beliefs that may take place?

- We can work again.
- That education has no end.
- Popper, *Alles Leben ist Problemlösen*.
- We have rules of method to which we comply, but certainly we will never put the last word, the words “the end” in any discourse that concerns us.
- We have not the truth, absolutely not, and exercise in full awareness of not having it.
- We have to ask and help to pose problems, following the problematic situations that have led other people to turn to us and to our professional competence.
- We do not have solutions, and instead we can and must help the other person to create hypotheses for solutions, possible solutions.
- These solutions are always provisional solutions, ad interim, are always stamp, are always contextualized at the time, they can withstand at this time but nothing can be excluded that they fall at a later time.
- In fact, this fall as we await the hypothesis positive and progressive, there the hope, because thanks to this tomorrow and we will try to find the best hypothesis in some ways.

This also proceed from the particular to the general mediation is a fact typically human. It necessarily requires the intervention and the support of a qualified professional to that, it has the expertise and experience to translate the requests come from those who need help in a way to do the search.

This “research” the professional himself is an example and a component, he is part of the dialogue, it is an element.

Closely connected with humanity professional is his Fallibilism.

Again, it is the same party that has to be driven to act as a problem the problematic situation for which he addressed to the professional, and with the help of the

same professional, and must come up with possible options for solutions, which then will test. The investigation is ongoing and indeterminate, *Unended Quest* is the title of Popper's intellectual autobiography, and is the exercise of creativity: a creativity whose exercise is always regulated, is subject to rules.

There is no creativity without rules, as it was believed in the nineteenth century following the slogan "crazy genius", "genius and unruliness".

The role of the professional is a role to help: we help the person in performing all these operations and others, and in bearing the burden of all the difficulties.

## 8 Conclusion: A Professional Social Between Social Practitioners

Just as we might say, we may be, also other professionals: at least for professionals in social, but probably also from other areas.

The Pedagogist is also, and essentially, a methodologist.

The Pedagogy is also confirmed in this respect one of the Social Sciences which corresponds to a higher social profession, the profession of Pedagogist.

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# Expectations Towards Animal-Assisted Interventions and Improvement on Quality of Life: Triangulating Information from Different Actors and Levels of Analysis

María A. Perea-Mediavilla and Javier López-Cepero

**Abstract** Although Animal-Assisted Interventions (AAI) have gathered a solid empirical background as an effective complement to social, educational and health professions in order to enhance quality of life (QoL), Spanish-speaking countries are just starting to pay attention to possibilities they offer. Thereby, little is known about expectations held by students and professionals towards AAI. Present study was devoted to explore these expectations among two samples of  $N = 474$  university students ( $M = 22.7$ ;  $SD = 5.6$  year) and  $N = 207$  workers of elder nursing homes ( $M = 38.5$ ;  $SD = 9.7$  year) from Southern Spain. Participants completed the *Improvement of Quality of Life* inventory, an instrument that provides information on the changes that AAI may introduce on four fields of QoL (health and wellbeing, autonomy and adaptation, center climate, and social interaction), and a second inventory regarding formative background and intention of implementing AAI. Results shown high expectations among both samples, with means surpassing the scale midpoint ( $p < 0.001$ ) with big size effects ( $d > 0.80$ ) in all measures. In addition, 80 % of participants informed to have intention to develop AAI, although just 13 % had any formation in the field. Triangulation of information between different actors, as well as between two complementary levels of analysis, warranted solid conclusions that should serve as a guide to keep developing AAI in Spanish-speaking countries.

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## 1 Introduction

Animal assisted-interventions consist on the inclusion of an animal in an intervention context, such as therapy, education or any other, with the aim of helping the professional to improve effectivity through a stronger working alliance (Wesley et al. 2009) and the advantages derived from human-animal interaction (see Barker and Wolen 2008; Virués-Ortega and Buela-Casal 2006). Although literature present a myriad of definitions and classifications (Kruger and Serpell 2010), Pet Partner's (formerly Delta Society) proposal is probably the most cited (López-Cepero et al. 2014a). It distinguishes between Animal-Assisted Activities (AAA-activities designed to improve patients' quality of life trough utilization of the human/animal bond) and Animal-Assisted Therapy (AAT-using the human/animal bond in goal-directed interventions as an integral part of the treatment process; Gammonley et al. 1997).

Meta-analytic studies have so far demonstrated positive effects of AAI on emotional and physical wellbeing (Halm 2008), depressive symptoms (Souter and Miller 2007), conduct disorders (Nimer and Lundhal 2007) and problems associated to medical contexts (Halm 2008; Nimer and Lundhal 2007), among others, and there is ample evidence of the impact that AAI may have on quality of life (QoL; see Perea-Mediavilla 2013).

QoL have been defined as the perception that individuals have on their own existence, in their own cultural environment, related to their own aims and values, expectations and interests, including (among others) physical and psychological health, autonomy, social interaction and the links related to other essential elements of their surroundings (De la Fuente 2012; Moreno-Moreno 2004). Nevertheless, there are many definitions of QoL available in literature, a fact that may prevent researchers from having a clear view of the state of the art in the field. In a previous work, Schalock and Verdugo (2002) proposed a classification that separated QoL contents in eight theoretically-grounded dimensions: physical wellbeing, social inclusion, emotional wellbeing, personal development, interpersonal relationships, rights, material wellbeing, and self-determination, which may help to clarify and separate different constructs related to QoL, and which represent a common-use framework in Spanish-speakers countries.

However, constructs and classifications present in scientific literature may not match the constructions made by non-researchers and, to this regards, it is of importance to check if target populations (in our case, students and professionals) do differentiate among these fields, or if they share a different idea of what QoL is.

So far, different studies have addressed the expectative that professionals hold towards AAI. Summarizing, there is a solid evidence of positive effects of AAI are expected by occupational therapists, psychologists, psychiatrists, nurses, and social



workers, among others (Berget and Grepperud 2011; Black et al. 2011; Moody et al. 2002; Risley-Curtiss 2010; Velde et al. 2005). But, on the other hand, some studies have highlighted that these expectations may not be supported on training or actual experience (Berget et al. 2008; Black et al. 2011; Risley-Curtiss 2010), but on personal likes and dislikes (Berget et al. 2013; López-Cepero et al. 2014b).

Interest arose by AAI has increased in recent years in many Spanish-speaking countries but, so far, little is known about expectation, intention to use and formative background regarding AAI among professionals. Given this, present study has a double aim: to explore similarities and differences regarding expectation held by students and workers on impact AAI may have on QoL, triangulating information among actors; and to test the coherence between expectation and actual knowledge, triangulating information between two different analysis units.

## 2 Method

### 2.1 Participants

Two different samples were included in this study. First group gathered  $N = 474$  university students ( $M = 22.7$ ;  $SD = 5.6$  year), with an 80 % of females. Around a half of these were enrolled in courses related to Social Sciences (social work, education, sociology, etc.), and the other half, in Health Sciences (psychology and nursing). The second sample gathered  $N = 207$  workers of elder nursing homes ( $M = 38.5$ ;  $SD = 9.7$  year), of whom 84 % indicated to be females. Among these workers, 24 % indicated to work as technicians (psychologists, social workers, etc.), 50 % developed roles of assistance (clinical and nursing assistants), and 26 % developed other roles (managing, cleaning, etc.). Participants' ages ranged from 18 to 64 years old ( $N = 681$ ), and assented to take part of the study voluntarily. They were informed of the aims of the study and of the possibility to drop out at any moment.

## 3 Instruments

*Improvement of Quality of Life* inventory (Mejora de la Calidad de Vida, MCV) was administered to both samples. This instrument was created using Schalock and Verdugo's framework (2002) and validated in a previous study with Southern-Spanish university students (that is the same included in present study; Perea-Mediavilla et al. 2014). Exploratory Factor Analysis reduced the original set from 31 items to 29, grouped in four factors that reflected four fields where AAI was expected to help: health and wellbeing (i.e. *contact with animals may help to improve... mental health/the feeling of psychological wellbeing*), autonomy and adaptation (i.e. *making decisions/stimulating learning*), center climate (i.e. *create a*

**Table 1** Internal consistency for MCV scales in both samples

	N items	Students' alpha (N = 474)	Workers' alpha (N = 207)
Health and wellbeing	12	0.890	0.917
Autonomy and adaptation	9	0.877	0.920
Centre climate	4	0.794	0.831
Social interaction	4	0.764	0.819
Total	29	0.942	0.960

*better climate/get higher implication on center activities*), and social interaction (i.e. *higher frequency of interactions/seek help and support*). Each item was responded using a five level scale of agreement (from 1-totally disagree to 5-totally agree). In present study, MCV achieved adequate alphas for both samples (see Table 1).

In addition, participants answered some questions on their formative background (*Have you completed any formative courses on AAI field?* and *Have you ever read any book or paper on AAI?*), actual experience (*Have you ever participated in the development of AAI?*) and intention to implement AAI (*Would you be interested in participating in AAI in your work center?*). Responses to these questions were coded Yes/No.

## 4 Results

First, research team explored expectations held by both students and professionals towards the effects that AAI may have on QoL. In all cases, means found were higher than the midpoint of the scale (the product of multiplying 3, the center value of the response scale, by the number of items contented). A T-test was carried out, finding that these differences were statistically significant ( $p < 0.001$ ), with effect sizes considered big ( $d > 0.80$ ; Cohen, 1988; please refer to Table 2).

On a second step, means endorsed by both samples were compared for each scale of MCV. Provided that some scales shown differences regarding variance at Levene's contrast, research team decided to use the more restrictive values of T-test (without assuming variance similarities). Professionals endorsed more positive expectation on all scales when compared to students, although these differences only reached statistical significance in two measures (autonomy & adaptation, and social interaction), with small size effects. The complete breakdown is included in Table 3.

These results were consistent with findings regarding intent to participate of AAI programs. 83.3 % of students and a 74.2 % of workers reported being interested in taking part of these interventions, although less than a third part of them had ever read anything on the matter, less than a sixth part had completed any formative course, and even less participants had had any actual experience on this regards. The complete breakdown is included in Table 4.

**Table 2** Means contrast for four scales of MCV, in students and workers

Scale	Midpoint	Students				Workers			
		<i>M</i>	SD	<i>p</i>	<i>d</i>	<i>M</i>	SD	<i>p</i>	<i>d</i>
Health and wellbeing	36	52.12	6.42	0.000***	2.51 <sup>a</sup>	53.19	6.96	0.000***	2.47 <sup>a</sup>
Autonomy and adaptation	27	34.04	5.85	0.000***	1.20 <sup>a</sup>	35.46	6.81	0.000***	1.24 <sup>a</sup>
Centre climate	12	15.53	2.88	0.000***	1.23 <sup>a</sup>	15.75	3.94	0.000***	0.95 <sup>a</sup>
Social interaction	12	15.54	2.80	0.000***	1.26 <sup>a</sup>	16.38	2.80	0.000***	1.56 <sup>a</sup>

\*\*\**p* < 0.001

<sup>a</sup>Big size effect *d* > 0.80

Data from students reproduced with permission Perea-Mediavilla et al. (2014)

**Table 3** T-test for university students and workers

Scale	Total <i>M</i>	Total SD	Means difference	<i>p</i>	<i>d</i>
Health and wellbeing	52.43	6.60	1.07	0.073	0.16
Autonomy and adaptation	34.46	6.19	1.42	0.011*	0.23 <sup>a</sup>
Centre climate	15.60	3.07	0.22	0.445	0.07
Social interaction	15.80	2.83	0.84	0.000***	0.30 <sup>a</sup>

\**p* < 0.05

\*\*\**p* < 0.001

<sup>a</sup>Small size effect 0.20 < *d* < 0.50

**Table 4** Positive response to formative background, actual experience and interest on AAI questions

	Students (%)	Workers (%)	Total (%)
Interested in participating	83.3	74.2	80.4
Read book/paper	25.2	32.4	27.3
Formative course	14.4	10.7	13.1
Actual experience	4.3	6.9	5.1

## 5 Discussion and Conclusions

Present manuscript provides fresh information on expectations held by Spanish university students and professionals of elder nursing homes towards AAI.

First of all, results corroborated the high expectations that participants had on the capability of AAI to improve different aspects of QoL, in the line described by Berget and Grepperud (2011), Berget et al. (2008, 2013) and Black et al. (2011), among

others. It was also found that professionals of elder nursing homes held more positive expectations than students did regarding autonomy and adaptation and social interaction. These differences, although of small size, were significant, and it should be necessary to carry out further analysis in the future to clarify if personal variables or formative background could have a modulating effect. Anyway, given that present paper includes (for the first time, to the best of our knowledge) information of two independent samples gathered in the same geographical context, it is possible for us to triangulate results among actors and to extract a clear conclusion: A majority of participants (both students and workers) think that AAI are capable to improve QoL.

Second, present study provides information on two complementary levels of analysis: expectation towards AAI possibilities, and actual knowledge on the matter. On one hand, results provided by MCV (an instrument with a solid framework and good psychometric properties; Perea-Mediavilla et al. 2014) would be compatible with a positive environment where develop AAI, and they seem to be coherent to the fact that over an 80 % of total sample said they would be interested in taking part on AAI; but, on the other hand, only a minority of participants reported to have any formative background (around 13 %) or actual experience (around 5 %), in the line of experiences reported by Berget et al. (2008), Black et al. (2011) and Risley-Curtiss (2010). These figures make us face an unanswered question: what variables could explain these expectations? Of course, it should be noted among limitations that the instruments used to assess this background might not be optimal (a few questions with only two answer options: yes or not) and should be improved in future research efforts, but possible limitations can only be related to excessive sensibility (false positives; i.e. that someone without actual experience in AAI answered yes due to alternative experience such as pet-keeping, or that someone assumed newspapers articles to be scientific literature). Thereby, it is a possibility that the actual percentage of participants with knowledge and/or experience on AAI was even lower than shown.

All together, triangulated results lead us to extract two main conclusions: that both students and professionals do hold strong positive expectation on AAI possibilities; and that scientifically grounded information has not much to do with that expectation. Provided that participants reported an ample variety regarding age (18–64 year) and formative level (from middle to postgraduate), but that both samples endorsed similar figures in all measures, it would be advisable to check if expectative could be grounded on cultural matters (like the roles animals play in our society, which would fall in the field of the so-called *anthrozoology*), controlling the possible effect of urban/country participants, or gathering information from another regions (or countries) to foster further comparisons.

It could be argued that, in spite of the lack of knowledge, participants' expectations did match with some areas of interest in which AAI have demonstrated to be effective. However, research team considers this to be far from adequate. The decision of including animals in intervention contexts should be grounded on evidence and must achieve a balance among potential benefits for humans and potential risks, ethical issues and extra costs when compare to other available interventions, and never rely on technician's personal likes or dislikes. In the light

of this objective, disseminating an accurate view of the benefits and limitations of AAI among professionals arises as a priority.

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# Literature as an Interpretative Method for Socio-Political Scenarios

Luigi Mastrangelo

**Abstract** The Nobel Prize winner Mario Vargas Llosa explains the complex relationship between literature, politics and society, pointing out how literary works might prove an effective interpretative key of the socio-political scenarios, provided to submit them to a detailed and culturally appropriate analysis under a methodological perspective, as a form of a narrative based social simulation, of better quality, the more it proves the author's writing skills, by which it is possible to date back to a wider and more plausible scenario analysis. Despite the paradox of "an activity that comes from loneliness, by an outcast", literature arises from the social and political universe because its object, coming from an unraveling series of plots taken from real result of imagination or the combination of these two elements in different degrees, consists in situations and in social dynamics arising from the relationship between the characters. The works, in order to be properly interpreted, are to be contextualized, starting from the ideological issue that must be approached by two points of view, objective and subjective.

**Keywords** Literature · Politics · Society · Ideology · Methods

## 1 What Is Literature?

Born in Mexico City in 1889, Alfonso Reyes<sup>1</sup> held diplomatic and literary tasks, in addition to those, strictly speaking, academic, who saw him as a founder of the chair of history of the language and Spanish literature at his city campus. A little more than forty years after his death in 1959, a well-known speaker takes a series of

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<sup>1</sup>Among the works by Reyes, collected in 13 volumes (1955–1968), stand out in this respect *La testimonianza di Juan Peña* (1930), *Verità e Menzogna* (1950). As Ambassador he travels in France, Spain, Argentina and Brasil.

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conferences at that institute addressed to the memory of the brilliant Professor, recalling his teaching by which “literature addresses to the audience at large, not just to specialists”.<sup>2</sup>

The lecturer, Mario Vargas Llosa, was already well known in the international panorama for his writings translated into several languages but also for its clear political interests, among other things, which had seen him before to support and then criticize the Cuban revolution of Fidel Castro, a subject that made him losing a friendship he cared a lot about, the one with Gabriel Garcia Marquez,<sup>3</sup> and that was the issue of his doctoral thesis disserted successfully in 1971. The Professor, still unaware of the Nobel Prize in Literature he would have been awarded a decade later had already showed directly his involvement in the management of public affairs a decade earlier, in 1990, even as a presidential candidate in Peru, resulting the most voted in the first ballot before being overtaken at the end, because of the election alliances.

Of course the topic of his meetings at the Reyes Institute was the analysis of the relationship between literature, politics and society, i.e. how literary works can be an effective interpretive key of the socio-political scenario, provided of course to submit them to a detailed and culturally appropriate analysis under a methodological perspective, as a form of a narrative based social simulation, of better quality, the more it proves the author’s writing skills, by which it is possible to date back to a wider and more plausible scenario analysis.

Despite the paradox of “an activity that comes from loneliness, by an outcast”,<sup>4</sup> as it is directly experienced by many who, to write and study, seek silence and the suitable concentration, literature arises from the social and political universe because its object, coming from an unraveling series of plots taken from real result of imagination or the combination of these two elements in different degrees, consists in situations and in social dynamics arising from the relationship between the characters who solve the plot.

Our brief reflections of course focus on the reliability of this type of analysis, which tends to lead to more than a concern, especially in the case of plots less anchored to real events and which are more the result of a creative birth of the author’s mind who, it should be remembered, is always a social actor, historically contextualized, even when he performs, through his writing, a task apparently out of any context.

In order to define more precisely the relationship among the literates who started this reasoning, it should be stressed that such personalities are inserted in the twentieth-century Central and South America context, where “writing meant acting”. In other words, through stories, novels, poems, the human being exercised his status as a citizen, as a member of a community who has the social and civic duty to

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<sup>2</sup>Vargas Llosa (2005, p. 10).

<sup>3</sup>Besides to *Cent’anni di solitudine* (1967), it is useful to remember *La mala ora* (1962) and *L’autunno del patriarca* (1975). He was awarded the Nobel prize in 1982.

<sup>4</sup>M. Vargas Llosa, *Letteratura* cit., p. 12.



take part in a debate and to solve his own contemporary social problems.<sup>5</sup> Not by chance, in this respect, Vargas Llosa mentions a European author, Jean-Paul Sartre,<sup>6</sup> who influenced his youth greatly, beginning from a fundamental assumption expressed in the first issue, published in October 1945, in the journal “Les Temps modernes”, directed by the intellectual from Paris. “Words are actions and by writing one participates the event of life. Writing is neither a gratuitous exercise, nor an intellectual gym. It is rather an action that produces historical effects, reverberating in every aspect of life, and therefore is a profound activity, social at its core”.<sup>7</sup>

The journal is extremely relevant here, since twelve years later will guest as his epistemological Manifesto the *Questions de méthode* (Santre 1963) where the thinker will proclaim loudly his full membership, “without reservation” to Marxian historicism integrated with the “existential anthropology”.

But already in the first issue Sartre had just traced well markedly his line: “Our journal will be devoted precisely to defend the autonomy and rights of the human being. We consider it first of all a tool of research: the ideas that I have exposed will serve as a central theme in the study of real problems”.<sup>8</sup> The French writer had been asking a specific question, which would have become the title of a successful essay: What is literature?

“For Sartre—writes Ezio Sciarra—the task of the intellectual is to side with those who want to transform the world, through a work of demystification and denunciation of the myths of oppression, giving up their privacy in the face of universal values, to dive into the relativity of their own time, choosing a place to fight alongside the working class. But then literature has claimed itself as a form of independent action”.<sup>9</sup>

Sartre’s argument proceeds from the separation between prose and poetry, united only by the act of writing, but radically different in function: “Prose is essentially utilitarian; I would define the prose writer as a man who makes use of words. Mr. Jourdain<sup>10</sup> wrote prose to ask his slippers, and Hitler to declare war on Poland”.<sup>11</sup> The writer is thus not merely someone who describes things, but a social actor fully aware of his own actions, because he “chose to unveil the world and, in particular, the man to other men, in order these put naked in front of the object are able to take all their responsibilities. [...]. The function of the writer is to ensure that no one can

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<sup>5</sup>Ibidem, p. 15.

<sup>6</sup>The two writers have also in common the attempt to get into active politics: in 1947 Sartre founded with Rosenthal and Rousset the party called Rassemblement Démocratique Révolutionnaire, similarly destined to a negative election result.

<sup>7</sup>M. Vargas Llosa, *Letteratura* quoted, pp. 16–17.

<sup>8</sup>Sartre (1995, p. 137).

<sup>9</sup>Sciarra (2009, p. 129).

<sup>10</sup>It is the ambitious Bourgeois gentleman of the play by Moliere performed the first time in 1670.

<sup>11</sup>Sartre, J.P. *Che cos’è la letteratura?* Quoted, p. 20.

ignore the world or can define himself innocent. That is why he is committed once and for all in the universe of the language, so he can no longer pretend not to know how to speak".<sup>12</sup>

## 2 Literature and Politics

Sartre represents an extreme point in the relationship between literature and politics, being absolutely convinced of the ability of novels and poems to change even the institutional settings. More moderate however, is the position of Vargas Llosa: "I believe that the relationship should be placed in between these two poles: halfway from those who believe that literature can be a weapon, an instrument of political and social action, and those who believe, on the contrary, that literature and politics are essentially different things and trying to bring them closer and merge them in some way will lead literature to collapse, without producing the slightest political effect".

As it is known, the fundamental contribution of complex literary works, especially of the novels, is in the analysis of scenarios, in the reconstruction of the wider historical reality in which events regarding the characters are placed, whose representation appears as a micro-subjective story, able to prove the atmosphere of a context, starting from the system of values expressed by the characters' individual point of view and their interrelations. "When one reads Tolstoy<sup>13</sup>—says Vargas Llosa—one plunges into the universe that is *War and Peace* and participates with the characters of the novel the Napoleonic wars, the advancing of the armies in the Russian steppes, the popular resistance, and understands how these epic episodes have affected the lives of individuals, of everyone, the great, the mighty, but also of the anonymous, the servants, the peasants".<sup>14</sup>

In particular, the late eighteenth and nineteenth century Italian literature, to offer examples closest to us, is directly related to the complex and intricate story of the Risorgimento.<sup>15</sup> Just think—deliberately omitting here Giacomo Leopardi, to whom a more extensive work (Mastrangelo 2010) is reserved, whose conclusions however fit together with the sense of this paper—to authors like Giuseppe Baretta,<sup>16</sup> Ippolito

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<sup>12</sup>Ibidem, pp. 23–24.

<sup>13</sup>In 1853, Leo Tolstoy asks to be transferred to Sevastopol to tell the Crimean War. In Anna Karenina's adultery (1873–1877) there is all the conformism of Russian society.

<sup>14</sup>Vargas Llosa, *Letteratura* quoted, p. 25.

<sup>15</sup>See, among the others, Di Benedetto (1991).

<sup>16</sup>Baretta defends against Voltaire' attacks the Italian literature and the Shakespearean theater. From 1763 to 1765 he directed "La Frusta Letteraria".

Pindemonte,<sup>17</sup> Vittorio Alfieri,<sup>18</sup> Pietro Verri,<sup>19</sup> and especially Alessandro Manzoni. It is not an accident that one quotes the last two names one after the other, being known the circumstance besides the extra-marital relationship of Alessandro's mother, Giulia Beccaria—daughter of the author of a text highly political as *On Crimes and Punishments*<sup>20</sup>—with the youngest brother of Verri: Giovanni. Whether connected or not with Manzoni's matter of the biological father, it does not change much the overall picture about the formation of a young intellectual who feeds inevitably to social issues and civil rights, which are reflected in a direct or indirect involvement in his literary production, whose opening was in 1801 with the poem in four songs; *The triumph of freedom*, celebrating the defeat of despotism with hints echoing the Jacobite radicalism.

After the death of his mother's last partner, Carlo Imbonati, to whom he addresses the poem of the same name and with whom he had lived in Paris, Manzoni, by attending the cultural circles of the French capital, succeeds in deepening his knowledge of the famous Republican "ideologues" of Sophie's lounge de Condorcet (Cabanis, Destut de Tracy, Fauriel): precisely the structured concept of ideology is a focal point in this analysis that, is essentially meant to explore the method of analysis and social policy through the mediation of literature, even if in the necessary overruns in the biographical and artistic lives of the writers, just as on Manzoni.

On the latter, leaving out the next *Sacred Hymns*, here the very famous political odes, in *March* 1821 and the *May* 5, in addition to the well-known tragedies as *The Count of Carmagnola* and *Adelchi* deserve mention for consistency of interpretation. But another literary genre soon surpasses the others in the list of priorities for Manzoni, like many of his contemporaries fascinated by the historical novel he had found in Walter Scott<sup>21</sup> his former ensign, bearer of a literary form where the imagination does not prevail on the true historian, but on the contrary proves able to integrate harmoniously invention and history.

The result is the continuous rewriting to "rinse clothes in the Arno river" that transforms the original Fermo and Lucia in the final version: the *Betrothed*. The change of the title is highly significant and is itself a form of sociological analysis: an interest no longer for the two young people in question, the two peasants in love and hampered in building their own family, contrasted by an odd man too much powerful than they are, as the ideal-types related of a hierarchical and oppressive

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<sup>17</sup>Translator of the *Odyssey*, Pindemonte is the addressee of the Foscolo's *Sepolcri* dedicated note. This theme was also developed in a poem of the same title, but with a more private than patriotic enthusiasm belonging to Foscolo.

<sup>18</sup>In the three tragedies of freedom (*La congiura de' Pazzi* 1779, *Virginia* 1783, *Timoleone* 1784), Alfieri condemns the aristocracy's submissiveness to tyranny.

<sup>19</sup>Animator of "Il Caffè", Pietro Verri also wrote *the Dialogo sul disordine delle monete nello stato di Milano* (1763) and *le Osservazioni sulle torture*.

<sup>20</sup>Cesare Beccaria was also committed with *Elements of public economy* (1804).

<sup>21</sup>With *Ivanhoe* (1820) Scott shows the reader Richard the lionhearted's England. He writes in nine volumes the *Life of Napoleon* (1827).

social framework, where the components of the hegemonic categories may exercise their privilege arbitrarily by placing the armed wing (the *henchmen*), who can affect not only the life of the state, whose laws are reduced to screaming so much stronger as they are unheard, but also that of the church, intimated in the person of coward Abbondio not to impart a sacrament, specifically of marriage, neither tomorrow, nor forever. “That’s how the world goes...—you can read in the eighth chapter, when Renzo tries to celebrate the wedding compulsorily, making the reluctant priest appear as the victim (‘yet, in fact it was him who made an injustice’)—I mean things went on this way in the seventeenth century”.

The same considerations are made by Vargas Llosa for the great novelists of the various literatures: Cervantes,<sup>22</sup> Joyce,<sup>23</sup> Proust,<sup>24</sup> Faulkner,<sup>25</sup> Flaubert,<sup>26</sup> and Balzac<sup>27</sup>: “Summarize in a story, a relative number of chapters and pages, and the never-ending vertigo that is the human experience. And there appears the human being, with the context within which this individual is born, grows, develops and dies, which is society, as well as those activities that appear, and from experience, we feel unavoidable from the human being and through which mankind is accomplished”.<sup>28</sup>

The Nobel introduces in his analysis, highly qualitative because it is only possible through the ownership and usage of the finest cultural instruments, also an element of a quantitative nature: “The amount, the number, is an essential ingredient in the novel, and I believe it is the only literary genre in which it occurs. A short novel, of a few pages, is not a novel; it can be extraordinary, but a novel that in addition to extraordinary is also great will always look more extraordinary than the short one. Why? Because in the novel, the amount, the number, stand for quality. Is so because the novel is history, it is time that passes, a time where everything which is part of the novel moves forward, changes being able to give us the impression of life that is created, the reality in movement that is given to us by all the great novels”.<sup>29</sup>

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<sup>22</sup>Miguel de Cervantes has to flee to Italy for his involvement in a doubtful act of violence, for which he is sentenced to the cut of the right hand: he puts himself in the wake of the Cardinal Giulio Acquaviva, second son of the Duke of Atri and nephew of the Jesuit General Claudio, author of the *Ratio studiorum*.

<sup>23</sup>James Joyce with the *Dubliners* written in 1914 offers a portrait of the public life of the city. For the author of *Ulysses* (1927) likelihood is a rigorous operation and it represents a need both ethical and aesthetic.

<sup>24</sup>Marcel Proust is the author of a work, *In Search of Lost Time* (1913–1927), considered a stream of consciousness novel but instead more properly sociological, since it describes through the complex transition from the I to We the French society of the early twentieth century.

<sup>25</sup>William Faulkner, Nobel in 1949, deals with the issue of the decline of the South in the scenario of the Secession, also recalling a distant family affair through Colonel *Sartoris* (1929).

<sup>26</sup>Gustave Flaubert lives in Paris the 1848 Revolution. From *Madame Bovary* (1856–1857) develops the “bovaryism”, which sees the migration to the metropolis as an antidote to the monotony of the province.

<sup>27</sup>Honoré de Balzac adds the “de” to his surname to elevate his bourgeois origins. He publishes in 1829 *Les Chouans* about the Vendée rebellion.

<sup>28</sup>Vargas Llosa, *Letteratura* quoted, p. 34.

<sup>29</sup>Ibidem, pp. 38–39.

### 3 Relationship with Ideology

As part of the early Italian twentieth century, is significant the intervention of Antonio Gramsci who explains the hidden meanings of Giovanni Gentile's<sup>30</sup> appeal who suggests a "return to De Sanctis",<sup>31</sup> i.e. a literature and its interpretation carried on to build the identity, in a strictly political perspective before and socio-cultural one later, to realize the motto by D'Azeglio *to make Italians*, making literature itself "functional, according to a predetermined social direction",<sup>32</sup> playing a significant parallel with the architecture, by which Fascism concretely realized his presence in the territory, physically establishing his identification with the Nation.

The ability of literature to serve as a tool for qualitative research, as a form of simulation of the social world, can be experienced with the precious instrument of the *Dictionary of the works of the Italian literature*,<sup>33</sup> through which you can check how much, and in what different meanings, are frequent the most diverse social and political analyses, both the broad ones and those more geographically and chronologically circumscribed, but not for this reason less effective. From an initial brief examination it was possible to find, with a default tolerance range, at least 260 titles that fully respond to these features in a way that, starting from the sixth symbolically political songs of Dante's canticles, intensify more and more toward the crossroads of 'the nineteenth unification and the twentieth-century republican reunification'.

The works, of course, in order to be properly interpreted, are to be contextualized starting from the ideological problem we mentioned, and which has to be dealt from a twofold point of view, objective and subjective. For the former, we must therefore investigate the author's own ideological perspective, wearing his glasses recalling Flaiano, and the operation is not always as immediate as in the first case cited by Sartre, who delivered a keynote speech to express publicly his 'adherence to a particular system of values'.<sup>34</sup> In many cases the ideology must be rebuilt or, with an even more complicated task, demystified, when the author consciously choose to hide it, or, in a Machiavellianism disguise turning it into its opposite. Gao Xingjiang, Nobel Prize for Literature in the very year when his future successor Vargas Llosa held lectures at the University of Mexico City, faced Claudio Magris on the relationship between ideology and literature: "Ideology that governs literature, aspires to dominate, to dominate it and confine it in a predetermined space,

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<sup>30</sup>The Philosopher from Castelvetroano dealt with, among the others, Manzoni and Leopardi (1920) and Vincenzo Cuoco (1927).

<sup>31</sup>Francesco De Sanctis was appointed Minister of the Public Education from March 1861 to 1862 e still in 1878 and from 1979 to 1981. His History of the Italian literature is to be appreciated as a civil, cultural and spiritual path of the Italian People.

<sup>32</sup>Gramsci (1974, pp. 5–29).

<sup>33</sup>*Dizionario delle Opere della letteratura italiana*, directed by A. Asor Rosa, Einaudi, 2 tt., Torino (2000) 2006.

<sup>34</sup>Xingjiang and Magris (2012, p. 7).

does not hesitate to produce it or judge it according to its needs, is a trend that during the twentieth century was far too well established. This phenomenon has affected not only the creation or literary criticism but also the history of literature: all brought upon itself the brand of ideology. [...] To define an ideological doctrine and its theory, first of all you must have a philosophical construct from which to draw out a number of views of the world with their respective values". The soil for any work suddenly becomes steep and inaccessible: "Ideology is an ambiguous word. The first who coined it was Destut de Tracy, a member of those French 'ideologues', active between the late eighteenth and early nineteenth century, scorned by Napoleonas abstract intellectuals, even if their studies on human being and society, inspired by Helvetius and Condillac's sensism, having a materialist foundation, were addressing to the social sciences, to statistical and probabilistic analysis".<sup>35</sup>

#### 4 Discussion and Conclusion

The theme is still highly topical, as demonstrated once again in a recent presentation by Dario Antiseri who focuses on the transition of the political party in Western democracies after the fall of the Berlin Wall: "In the transition from the 'ideological party, source of truth, to the 'post-ideological' one, source of proposals, the presumed explanatory scope and highly prescriptive set of traditional opposition between left and right is dissolved".<sup>36</sup>

The issue also regards, as already told,—the working experience in the "not exact" sciences suggests a reinforcement *especially*—the technical action of the interpreter, who must avoid slipping into persistent temptation to superimpose his own ideology or simple his personal vision of life over the author examined, turning, for example, the historical Leopardi, and therefore the social and political one, in a Leopardi perceived in his opinion, as he would like or would consider he had been. It is not a case that I quote the man from Recanati, defined by Cesare Luporini "progressive" (Luporini, 1947) in spite of everything.

Even school teaching, entrenched on a too wide interpretation of the principle of teaching freedom, is full of examples of this, with the result of generations of graduates without an overall view and unknowingly started on the mental track paved by ideologically oriented teachers.

This aspect has been dealt with great care by Rodolfo De Mattei, a student of Gaetano Mosca and a supporter of an expositive based research method: "The scholar is still a reader who uses a technical weaponry to query the written page. The tools are the classic ones of every craftsman: some pre-existing, partly invented at the time, some simple, other refined, and all aimed at understanding even of what

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<sup>35</sup>Ibidem, p. 36.

<sup>36</sup>Antiseri (2014, p. 29).

appears or may remain incomprehensible. All this with passion, dedication, hard work”.<sup>37</sup>

The query between the interpreting and interpreted is basically the Socratic maieutical method, for the process of understanding between different human beings and the interpenetration between the man who asks questions and that who answers, between the interpretant's and the interpreted history of the traditions: a hermeneutical circle between the interpretant and interpreted interpenetrating by inquiring, as the basic approach to the humanities and social sciences, which is accomplished through the language meanings.<sup>38</sup> “The world—says Gadamer in *Truth and Method*—is built by acts of speech as well as man, who has from the very beginning formed and organized by the language his meaningful world. The word is verbum: it is what it is”.<sup>39</sup>

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<sup>37</sup>Russi (2005, p. 63).

<sup>38</sup>Sciarra (2007, p. 132).

<sup>39</sup>Gadamer (1972, pp. 508–509).

# New Media Education: The Contribution of Social Sciences to Training Teachers

Giselda Antonelli, Roberta Di Risio and Giovanna Di Felice

**Abstract** The spread of digital communication technologies has led to substantial changes in individual behavior, in many newspapers and collective practices. The social sciences detect the change by analyzing the strengths and weaknesses. This paper aims at presenting the educational offer of a Master, addressed to the training of teachers experienced in teaching communication by proposing a blended methodological approach that combines the teaching laboratory with the a critical and expert use of new technologies.

**Keywords** Media education · School · Digital competence · Information technology · Training

## 1 New Media Education Towards a Quality School

Contemporary society has imposed important changes in every fields under the influence of new technologies thus provoking and revolutionizing both the individual and the collective behaviors of social actors. “Cyber space as a virtual universe is infinitely present in quotidian life through internet connection, social networks, personal access to digital contents and wireless modality from every kind of physical context and by the proper devices” (Antonelli 2012: 36).

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Technology has represented the engine of transformation and at the same its use has changed the universe of social relations and consumption of the people who use and manage, on demand, the varied network world, where the users are at the same time the subjects and objects of the issue. In fact as subjects they manage individually their life through friend, work, love, informative and educational relations and as objects they define their role of community, citizen and consumer in a continuous exchange between on line and offline contexts which are not separated but well integrated in daily life (Boccia Artieri 2012). Therefore it is observed an outline of various modalities of involvement which give life to what is defined by Jenkins (2007) “convergence culture” that creates new ways of using media in particular in the case of the new generations which use new technologies as instruments of social relation.

We are analyzing the consequences of this change in the school and education reality where two generations get together, the students and the teachers. The first, the so called *digital natives*, who represent the first generation that is grown up within the technological reality, the second, the *digital immigrants*, who like «all the immigrants (...) have had to adapt to a new social and technological, but preserving their accent and their past» (Prensky 2001: 2).

At school the passage from “Gutenberg Era” to “Zuckenber Era” is relevant and this leads to the necessity of a change in the education system to answer to the diffusion of new media and consequently to the necessity of a New Media Education, that is education of new media and training to use in a reflective way the new technologies both from the teachers and the students thus involving an organizational and cultural consequence. The changes on a cultural level due to the use of technologies are more and more defined media-culture. «A media culture is a kind of culture which is characterized by an horizontal socialization (...) by redefining the time dimensions (annulment of past, lack of future, emphasizing the present), by the integration and by overexposing the media communication in the individual and social life, the prevail of the tactile and emotional dimension, the attention-seeking behavior-the appropriation of knowledge and of short forms of reading since the rule is *zapping*, a hiccup consumption» (Ardizzone and Rivoltella 2007: 52). All these elements redefine, through media which have become invasive, all the cultural horizon of the *digital natives*.

Media culture on an organizational level becomes part of the school context where the *digital immigrants* that are the teachers need to change their teaching to meet the needs of the *digital natives*. This represents an important problem related to the initial training of the teachers who have had not the chance to modify their personal training in favor of the use of new technologies and whose training is based basically on voluntarism and personal initiative.

The digital world divides between students and teachers and this situation is still alive even though there are some examples of overcoming this gap. The problem is that most of the classes has not internet and that the technology equipment at school are of a low quality; moreover most of the “Gutenberg teachers” are not able to manage these technology devices. “Misalignment” is the term used by Giuseppe Roma, ex general manager of Censis, to define the condition of the school system in

Italy towards the emerging culture among the digital natives, a “misalignment” which is strongly perceived from both the students and the teachers. The first complain about the low appeal in learning at school and the teaching practices which are not so satisfying while the second as digital immigrants have difficulty to abandon the idea that the traditional teaching method should be integrated by new technologies both for their low ability to manage them and for their insufficient training about the issue. More over other problems are found in the lack of contacts between media education activities and the national programs, in the solitude of the teachers abandoned in teaching their own subjects and unable to manage the interdisciplinary, in the lack of economic resources and low reliability from both colleagues and headmasters.

The way to mend this disease is possible only through a new and qualified training of teachers which aims at not only acquiring the right digital proficiencies and has a new teaching approach which is pursuant to the new needs of the students, but also through the attention to the traditional values which create a basis for the innovations so that they start that process of realignment of school by its protagonists. We need to give back priority to school through the renovation of the importance of training and the repositioning of teacher in a “school of modernity” (Morcellini 2004) to manage in a right way the network of the communication relations between teachers and students.

In 2014 it has been launched in Italy the project “*La buona scuola*” by Miur (the Ministry of Education) in which is given importance to the training of teacher «to offer the students a proper training for the society and the job market they have to face with, teachers should be the first to receive a constant training which should become the instrument to attest the proficiency of teachers introduced by the new contract. It is given the teacher the opportunity to reflect in a systematic way upon the teaching practices, to make researches, to value their efficiency and when it is possible to modify them, to value their training needs, to work in collaboration with their colleagues, the parents, the territory (...) In the end a particular concern goes to the digital training of teachers.

The University of Chieti has introduced in agreement with MIUR a second level Master about this important issue for the two year period 2013–15 which is named: “*Koinè. Trainer profession for communication teaching*” that aims at offer teachers a training course on

- Planning teaching through the use of multimedia languages and instruments;
- Processes of analysis of media and multimedia texts;
- Planning and communication of the culture products through multimedia instruments;
- Planning and managing a multimedia curriculum in the school system;
- Management of the monitoring activity and evaluation of a training process.

## 2 Why Speaking About New Media Education at School?

The relationship between the media and the school is inherently complex and it cannot be resolved only with intervention dropped from above, because the school is into the complexity of the social system. The media are becoming more and more a strong socio-cultural significance, involving teenagers in processes of socialization “in-mediated”.

It is therefore necessary that the school keeps up with the times to avoid creating a gap too wide between the activities that the students perform in the classroom and those who live in daily life. The widespread use of information technology in human activity is an important field of research. However, “technology does not determine society” (Castells 1996: 5) since many factors are involved in technology-society relationship which could be economic, political as well as social factors. In any case, the company does not determine the technology, but it is, however, able to initiate a process of technological modernization, which could intervene in the general social welfare.

We tried to identify through the analysis of two national quantitative researches which were carried out respectively by ISTAT and Censis in 2013, the relationship that people have with new technologies in order to design “New Media Education” interventions in the school. The analysis of data collected by ISTAT<sup>1</sup> showed the growth of the technological equipment of Italian families: 62.8 % of them, in fact, owns a PC, 60.7 % have access to the Internet while 43.9 % have a mobile phone-enabled Internet connection; especially families with minor children are the most technologically advanced because the 87.8 % own a personal computer and 85.7 % have access to the Internet from home. Interestingly, at the other extreme lie the families of only elderly: only 14.8 % of them owns a personal computer and only 12.7 % have a connection to surf the Internet, a sign that the digital divides affects who has more than 65 years.

Other elements that characterize the access to goods and technology services are social differences; in fact 93.2 % of households headed by executive, entrepreneur or freelancer owns the personal computer, 91.4 % of these have the ‘access to the Internet from home, 78.1 % have enabled mobile Internet connection and 17.8 % has the e-book reader, while 54.6 % of households headed worker states to have enabled mobile phone to connect to the Internet and 24.2 % of those with no breadwinner has occupied the personal computer.

It is interesting to note about the activities that people do with internet, which is an important means of communication and participation, in fact, 81.7 % uses it to send email, 58.7 % to refer to a wiki, 53.2 % to participate in a social network and 49 % to send messages on chat rooms, blogs, newsgroups, online discussion forums, 34.5 % for calls via the Internet and/or make video calls and 20.9 % uses it to express opinions on social issues or political.

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<sup>1</sup><http://www.istat.it>.

Moreover, according to data provided by ISTAT, it is also increasing the share of web surfers who inform online: 63 % of Internet users are connecting to web to read up on current affairs, to consult newspapers and magazines online, 17.3 % uses Internet to read or download online books or e-books and more than 21 % of young Internet users, from 15 to 34 years, reads or downloads online books or e-books.

The 11th CENSIS REPORT<sup>2</sup> defines it “the under-30 players of the digital evolution of the species”.

The research shows that a large majority of young people is connecting to Internet every day, often using a smartphone, while those over 65 who access the network are about 20 %. The adult members of Facebook are 75 %, while those over 65 are only 9 %; also many young people declare that acquire their information through Facebook. Another interesting fact that we can detect from the Censis research is that there is a relationship between the use of the network and the ownership income. In fact, adults who download App are in great part young people, because many of these are paid, and there are more adult users who have made purchases online or have made home banking operations.

In reference to users of the new media and the newspapers we can see that young people are more oriented towards the consultation of the former and less on the latter, while in over 65 people opposite values are obtained with a greater propensity for searching the newspapers instead of new average. It has been shown by the two researches that is undergoing a transformation in the practices of use of digital media, in particular, is growing technological equipment of households, although the social differences persist in access to goods and technology services.

Both searches show that Internet is an important tool of communication and participation, in fact it is increased the share of surfers who informs online especially among young people. It is for these reasons that the Censis defines under 30 as “protagonists of the digital evolution of the species”.

For all these reasons, it becomes increasingly important and necessary to talk about New Media Education in the school. The media are changing the way of life of millions of people, facilitating and promoting communication, disseminating information. Children and young people are big consumers of media culture and demonstrate familiarity with the languages and media technologies. The school cannot ignore this and must do so to socialize their students to contemporary society, avoiding the creation of fractures and discontinuities between the real world and the virtual world.

The National Guidelines for Primary<sup>3</sup> school define: «the spread of information technology and communication as a great opportunity that represents the border decisive for the school». It is an epochal revolution, not due to a simple increase of the means used in learning. The school hasn't the monopoly of information and ways of learning, and it cannot possibly ignore or do not consider the complexity that surrounds it.

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<sup>2</sup><http://www.censis.it>.

<sup>3</sup><http://www.indicazioninazionali.it>.

Even Recommendation Of The European Parliament and of the Council of The European Union<sup>4</sup> (18 December 2006/962/EC), emphasizes that «digital competence is concerned with the issue of the confident and critical use of technologies of the information society for work, leisure and communication», inviting not to overlook and forget in no case trainings which follow this path.

The New Media Education, is not intended as a discipline or technique deepening nor as a “burden” to carry, but as a new opportunity available to teachers and students engaged in the construction of a truly shared culture, able to be based also on previous skills and passions of the students as an educational approach cross and not to be “experiential ferryman” between different disciplines and the school and the local area and which meets the objectives and purpose of the school system and the challenges that the complexity of reality puts on the real training systems.

On this line is placed the proposal of the University G. D’Annunzio of the Master’s Degree: “Koiné. Profession trainer for communication teaching”, addressed to teachers of primary school and secondary of first and second degree.

### **3 Master: “Koiné. Trainer Profession for Communication Teaching”**

The II level Master: “Koiné. Trainer profession for communication teaching”, is promoted and financed by MIUR (Ministry of Education) for the two year period 2013–2014 and 2014/2015 by University “G. D’Annunzio”, with the scientific and didactic coordination of Professor Giselda Antonelli (Department of Literatures, Arts and Social Sciences). It involves four Italian universities: University “G. D’Annunzio” of Chieti-Pescara, University of Geneva, University of Salerno and University of Palermo and it is linked to the National Plan Logos.<sup>5</sup> The Master lasts two years (1500 h, 60 training credits units) and it is provided in blended learning modality, that is through the use of lectures on line and in classroom. The lectures in classrooms are given by the University Campus of Chieti, while the on line didactic is given by the training platform managed by the Telematics University “Leonardo da Vinci”, in Torrevecchia Teatina (CH). The aims of this training course are the following: to train the professional figure of the trainer for communication didactic and to enrich his/her professional profile through the use of the most cutting-edge technologies of communication in didactic contexts. This Master aims at developing the knowledge and the proficiencies related to “the key competences” and “the cultural languages axis” which were proposed in the two documents, the former is an international document (the European Parliament

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<sup>4</sup><http://eur-lex.europa.eu/>.

<sup>5</sup>The National Plan Logos is part of the National Training Plans that are organized by MIUR and it is addressed to Headmasters and Teachers from all the orders and Italian regions. It aims at sustaining and promoting the use of ITC in the curriculum and the didactic of each school subject.

Recommendation), the latter a national one (the Council Recommendation), both related to the key competences for the permanent learning (18 December 2006) and the Decree Law, 22 August 2007.

The European Commission has drawn up a list of key competencies to live in the “information society” (Paccagnella 2004: 224) where the “digital competence” has a relevant role among these. It is the ability to use with a critical sensibility the technologies in order to make the citizen able to adapt himself/herself to the flexibility which is required in a network and complex organization, so that he/she is not excluded from the work opportunities, from communication and democratic inclusion processes. This “cognitive society”: «puts into evidence not only the changes in the knowledge processes and instruments, but brings into question also the traditional roles of education such as the teacher and the student. School is first of all a social structure with its complex processes of relation and socialization which change throughout time and modify each other» (Corsi and Ottaviano 2003: 11).

Moreover, the Master Koinè tries to develop the right proficiencies and knowledge related to the “cultural languages axes” which are encompassed and described by the Decree Law no 139, 22 August 2007. The document sets forth the elevation of compulsory education in Italy for at least ten years and has attached: “The Cultural Axis”, that is the skills, which each student needs to acquire at the end of his-her school paths. These skills are divided into four axes: language axis, math axis, scientific-technological axis and social–history axis.

“The language axis” shows the necessity to teach the student how to manage the comprehension and production of Italian language, both at a written and oral level, the knowledge of at least a foreign language and the ability to adequately utilize the information and communication technologies.

#### **4 Master Koiné: The Importance of Teachers Training About the Use of Technologies in Classroom**

When we speak about training on media and their related cultural horizons we need to underline that the main points are the skills and the media proficiencies, which teachers have to change and to teach their students. To carry out training courses in which teachers have to change or review their professional culture and the culture of the school they belong to involves oppositions due to the fear of bringing into question methods and experiences which have been already strengthened. So how to train those particular figures who act like a *liaison* between the education, students and media system? How to overcome the teacher’s opposition to these changes?

The necessity of a training method which is concerned with teachers needs and their professional experience and the key points of this kind of training become: «to learn, to make, to reflect» (Morcellini 2004: 102), that is lectures that are focused

not only on the content but also on sharing all the issues which are met during the training process. This kind of approach praises the studio aspect, the exercises, the case analysis in order to make possible to share best practices among teachers. The importance of experience is encompassed in the six key-points of Malcom Knowles, one of the most important academic of learning in adult age in his andragogy model<sup>6</sup> (Knowles 2006: 76–82). The profile defined by this kind of training is that of the teacher who reflects upon his/her method in the context of the method itself. We can refer to Shon's reflective professional" model (Shon 1993) according to which the professional (the teacher in this case): «learns by debating with the method» (Genovese 2006: 51). Training can match theory and practice by promoting research-action paths of the teacher through the implementation of what has been learned and achieved during the training. Moreover it is pointed out the social quality of knowledge, that is: «it is emphasized the dimension of reciprocity, sharing, communication of the proficiencies of each member of the organization; in fact an organization is the result of mutual dialogue and learning processes» (Sabatano 2008: 4).

The training project of Master Koinè is characterized by learning among pairs who share and socialize the experiences, the difficulties and the good methods and the group represents a mean of discussion and reflection for learning. The Master provides not only lectures in classrooms but also on-line lectures to help the teachers/students who already work and live in a distant territory to involve themselves in the course. This didactic methodology is useful for its flexibility but also because it tries to approach the teachers who are not used to new technologies to make them learn the world and the knowledge approach through "native digitals" ITC (Information and Communications Technology). Therefore the professional communities can cooperate and learning becomes not a one-directional phenomenon (from teacher to student) but a self-managed action, which depends on the collaboration among the subjects who take part into the practice community. This kind of "mix or integrated" learning (on line and in the classroom) is able: «to help the activation of the so called practice communities which through the interaction of the pairs and socialization of knowledge, problems, solutions aim at developing a new learning based on self-managed collaborative processes» (Trentin 2004: 19).

This kind of knowledge is related to the concept of practice community by the academic Etienne Wenger. He suggests that a practice community, that is: «a strong entity which exists outside any will or project» (Midoro 2002: 3), could be defined on the basis of three main elements: mutual engagement, joint enterprise and shared repertoire (Wenger 2006: 87). The subjects hold a repertory to carry out practice, that is a combination of mutual objects and procedures. These communities are born in a spontaneous way and have their own rules of development. How to turn the practice community into a virtual learning community? The Master Koinè,

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<sup>6</sup>Knowles suggests that andragogy is that subject which studies the learning in adult age, that is different from pedagogy which studies how to teach children. The academic analyzes six characteristics distinguishing the andragogy approach: the need to know, the I concept of the learner, the rule of experience, the will to learn, orientation to learning and the motivation.

follows the same steps: the practice community becomes an artificial learning community with characteristics which are derived from the main concepts of Wenger's theory. In the learning community the individuals are united by a defined period of time, which is for example a course or, in this case, a Master. The community is established when it is constituted the group of participants of the course and it ends when it is finished. The participants are bond by a mutual commitment agreement and this lead to a strengthening of the relations within the group, where the individuals are divided according to their rules and skills. The joint enterprise is the cooperative elaborating of a project (which is defined in the Master as "Project Work"<sup>7</sup>) or a service or a task from the members of a group, while the shared repertory could be given by the subjects, by the products realized in course itself, but also by the technology supporting it. Guglielmo Trentin<sup>8</sup> suggests that: "the use of modern technologies supporting the informal learning processes could be the result of the intersection between ICT, sharing/managing knowledge and "network" and "in the network" interaction processes which are favored by the communities of professional practice» (Trentin 2012: 14).

Therefore professional knowledge derives more and more from a mix of participation to official and formal training events (a master for example) and from the informal socialization among the participants to this event and the formal learning is integrated by the informal learning. The students are invited to discuss and to debate and in this way the solution to problems comes through the social interaction supported by the use of ICT.

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<sup>7</sup>A Project Work is a learning, analysis, planning and experimentation training course. Teachers are divided into groups according to the curriculum affinities and through this process they can use and experience what they have learned during the Master Koinè, first in the classrooms and then among their pairs (colleagues).

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