PHENOMENOGRAPHY — DESCRIBING CONCEPTIONS OF THE WORLD AROUND US

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ABSTRACT

Arguments are put forward in this paper in favour of research which has as its aim the finding and systematizing of forms of thought in terms of which people interpret significant aspects of reality. The kind of research argued for is complementary to other kinds of research; it aims at description, analysis and understanding of experiences. The relatively distinct field of inquiry indicated by such an orientation is labelled *phenomenography*.

A fundamental distinction is made between two perspectives. From the *first-order* perspective we aim at describing various aspects of the world and from the *second-order* perspective (for which a case is made in this paper) we aim at describing people's experience of various aspects of the world.

Research in a variety of disciplines, sub-disciplines and "schools of thought" has provided us with experiential descriptions, that is, content-oriented and interpretative descriptions of the qualitatively different ways in which people perceive and understand their reality. It has, however, seldom been recognized that these various research efforts share a common perspective in their view of phenomena and a unifying scientific identity has in consequence not been attained. The focussing on the apprehended (experienced, conceptualized,) content as a point of departure for carrying out research and as a basis for integrating the findings is seen as the most distinctive feature of the domain indicated.

Conceptions and ways of understanding are not seen as individual qualities. Conceptions of reality are considered rather as *categories of description* to be used in facilitating the grasp of concrete cases of human functioning. Since the same categories of description appear in different situations, the set of categories is thus stable and generalizable between the situations even if individuals move from one category to another on different occasions. The totality of such categories of description denotes a kind of collective intellect, an evolutionary tool in continual development.

Introduction

In Educational Psychology questions are frequently asked about, for example, why some children succeed better than others in school. Any

answer to this question is a statement about reality. An alternative is a question of the kind asked by Säljö (1981): *What do people think about why some children succeed better than others in school?* Any answer to this second kind of question is a statement about people's conception of reality. These two ways of formulating questions represent two different perspectives. In the first and by far the most commonly adopted perspective we orient ourselves towards the world and make statements about it. In the second perspective we orient ourselves towards people's ideas about the world (or their experience of it) and we make statements about people's ideas about the world (or about their experience of it). Let us call the former a first-order and the latter a second-order perspective. The purpose of the present paper is to put forward arguments in favour of the second-order perspective. However, as both perspectives are complementary, we advocate the use of both.

The discerning of these two alternative perspectives has nothing to do with the metaphysical distinction between the real and the apparent, or with arguments for or against as to whether there is a reality as such that is accessible to us. Neither the "realness" of a reality independent of our perception of it, nor the "realness" of our experience of this reality is thus examined and still less questioned here. Our distinction is — we believe — pragmatic and very simple. Following our above example, consider the two statements "The differences in success in school mainly reflect inherited differences in intelligence" and "There are people who think that the differences in school mainly reflect inherited differences in intelligence." Obviously, either of the two statements may be true independently of the other's truth or falsehood. Moreover, we have to do different things in order to verify (or falsify) the two statements.

There are two related reasons for arguing in favour of the formulation of questions of the alternative, second-order kind. Firstly — and most obviously — we consider that to find out the different ways in which people experience, interpret, understand, apprehend, perceive or conceptualize various aspects of reality is sufficiently interesting in itself, not least because of the pedagogical potentiality and necessity of the field of knowledge to be formed. Secondly, the descriptions we arrive at from the second-order perspective are autonomous in the sense that they cannot be derived from descriptions arrived at from the first-order perspective. This means that if we are interested in (to return to our example) how people think about school success, then we have to investigate this very problem because the answer cannot be derived either from what we know (or will find out in the future) about the general properties of the human mind, or from what we know about the school system, or even from the combination of what we know about both.

The very distinction between reality and perception of reality is, in

actual fact, however, by no means self-evident. When studying how people from different social strata described the same event, Schatzman and Strauss (1966) came to the conclusion that the most important difference between lower and middle class respondents was that while the former took for granted that their perception represented reality (they offered their images directly to the listener), the latter acted on the assumption that imagery may be diverse (and gave descriptions from any of several standpoints).

One of Piaget's best known claims is that children below the age of six or seven years cannot take another person's point of view into account (Hughes and Donaldson, 1979). From a phylogenetic perspective the overcoming of this spatial egocentricity appears as a social construction:

> As to the concept of spatial perspective, it should be noted that this was a 15th-century invention first elaborated by the Florentine, *Leone Battista Alberti* in 1435, and very much tied to the man-centered secular cosmology which became dominant in the bourgeois era. Central to the logic of representing two dimensions in a three-dimensional space is the distinction between reality and appearance, and this has become a fundamental principle in the thinking of Western society, while in some traditional African languages, the verbal distinction does not even exist . . . (Buck-Morss, 1975, p. 40).

The book chapter from which the quotation is taken in fact comprises a critique of the separation of form from content in Piaget's theory (an issue which will be discussed later in this paper). Buck-Morss draws on Lukács (1971) thesis that there is

> . . . a structural identity between mind and society and that the logical structure of abstract formalism, far from being universal is itself a product of history, i.e. the form of cognition is itself a social content" (Buck-Morss, op cit., p. 37).

In accordance with this she argues that Piaget's theory is a mapping of how children in a certain society (the capitalist, industrialized Western society) gradually acquire or construct some of its main features, notably its abstract formalism (i.e. ". . . the ability to separate form from content, and the structuring of experience in accordance with that distinction" (ibid., p. 38)). Here we can see that in her critique of the socio-economic bias in Piaget's theory, Buck-Morss is questioning the distinction between appearance and reality. The point she wishes to make is that since the theory is about the acquisition of abstract formalism and since abstract formalism characterizes the structure of some societies but not necessarily of others, cross-cultural studies cannot be said to be comparisons of different conceptions of the same reality. The same arguments holds, she contends, for comparisons between people from different social strata within the same culture. When we find systematic differences, for example, in moral judgement or in the conception of the law,

we should be cautious about accepting such differences as different inter-
pretations of the same reality. More probably —according to her line of
reasoning — they are different interpretations of different realities.

In one sense this is a truism: differences in thinking obviously reflect dif-
ferences both in experiences and in realities. Our own point is essentially
that we cannot separate the structure and the content of experience from
one another. Viewed in this way, judgements concerning cross-cultural or
cross-strata comparisons of levels of intellectual development turn out to be
unjust. There are no equal opportunities to proceed through the levels of the
Piaget "scale of development". Rather the kinds of intellectual development
possible vary between different cultures or different social strata. In growing
up, people learn to conceptualize their own reality.

The aim of the research programme argued for in this paper is not, how-
ever, to classify people, nor is it to compare groups, to explain, to predict,
nor to make fair or unfair judgements of people. It is to find and systematize
forms of thought in terms of which people interpret aspects of reality —
aspects which are socially significant and which are at least supposed to be
shared by the members of a particular kind of society; namely, our own
industrialized Western society.

The kind of research we wish to argue for is complementary to other
kinds of research. It is research which aims at description, analysis, and un-
derstanding of experiences; that is, research which is directed towards
experiential description. Such an approach points to a relatively distinct field
of inquiry which we would like to label *phenomenography*. This specializa-
tion does not only resemble the highly rich, elaborate and diverse tradition
of phenomenology on the word level. In this context, however, we will only
briefly point out some of the differences without dealing with the very
obvious similarities. As a point of departure we choose Giorgi's (1975)
attempt to transform phenomenological thinking into empirical research (for
an overview see Alexandersson, 1981).

Firstly, from a strictly phenomenological point of view, the distinction
between the first- and second-order perspective is simply not feasible.
According to this line of thought we only have access to the world through
experience. This implies that we cannot separate that which is experienced
from the experience per se. By investigating people's experience of political
power, for instance, the phenomenologist would aim at learning about polit-
ical power, the psychologist would aim at learning about how people experi-
ence things, taking "phenomenography" as a point of departure we would
aim at learning about people's experience of political power.

Secondly, central to phenomenology is the notion of "essence". Al-
though its interpretation varies, as to the study of people's experience of a
certain aspect of reality, "essence" here will refer to the common, intersub-
jective meaning of that aspect. In the kind of research which constitutes the

basis for arguing for the discerning of the domain of "phenomenography" we have repeatedly found that phenomena, aspects of reality, are experienced (or conceptualized) in a relatively limited number of qualitatively different ways (cf. for instance, Marton and Säljö, 1976, Säljö, 1981 (b); for an overview see Gibbs, Morgan and Taylor, 1980). Inbetween the common and the idiosyncratic there seems, thus, to exist a level; a level of *modes* of experience, *forms* of thought, worthwhile studying.

Thirdly, phenomenology is basically methodological, "phenomenography" is substance-oriented. "The *phenomenology* of political power" would, for instance, refer to something that we arrive at concerning political power by means of a phenomenological investigation. "The *phenomenography* of political power," on the other hand, would refer to anything that can be said about how people perceive, experience and conceptualize political power.

Fourthly, a phenomenological investigation is directed towards the prereflective level of consciousness. The aim is to describe either what the world would look like without having learned how to see it or how the taken-forgranted world of our everyday existence is "lived". In "phenomenography," we suggest, we would deal with both the conceptual and the experiential, as well with what is thought of as that which is lived. We would also deal with what is culturally learned and with what are individually developed ways of relating ourselves to the world around us.

As to the disposition of the present paper, having made an attempt to outline the distinction between the first- and second-order perspective (which is the first main topic) and having introduced the notion of *phenomenography,* in relation to which this distinction is essential, research on learning (a field within which the empirical background of the present paper is to be found) will be discussed in terms of the difference between the two perspectives. As regards the study of learning, arguments for applying a second-order perspective are closely related to arguments employed to emphasize the central role of the content of learning. This will lead to the second main topic, namely to the claim to consciously realize the commonness of the second-order perspective in a great variety of scattered research efforts and to the argument for reorganizing such findings in terms of content. A discussion of certain aspects of Piagetian psychology – a field of inquiry from which a substantial part of findings of the kind focussed on here originates, and in relation to which the role of content has been much debated during recent years – will lead to the third main topic, the idea of regarding categories of description as the major outcome of research that takes a second-order perspective as a point of departure.

The Process and Content of Learning

The application of general principles of learning to educational contexts has traditionally been considered one of the main tasks of Educational Psychology. It is based on the idea that general principles of learning refer to the process and the conditions of learning, i.e. to the general properties of mental activities or of behavioural changes as well as to the factors operating upon them. The content of learning has almost always been thought of as being defined by the various disciplines of academic study such as Mathematics, Physics, Biology, etc.

The assumption is that, having gained sufficient knowledge about the learning process in general, we can apply what we know to the various disciplines in order to find out what it takes to learn Mathematics, Physics, Biology etc. According to this line of reasoning, given that we know what it takes to learn or to comprehend in general and that we are familiar with the correct meaning of, for instance, the derivative or of Darwin's theory of evolution, there is only a small step to be taken in order to find out what it takes to learn about or to comprehend the concept of the derivative or Darwin's theory of evolution. In terms of the above distinction it has been thought that learning a specific content could be described by means of a combination of statements, arrived at from a first-order perspective, about on the one hand, learning, and on the other, about content. This idea of learning is, however, based on the notion of the transfer of ready-made concepts or principles into the empty spaces in the students' heads. If we think instead of the content of learning in terms of what is in the students' minds rather than of what is in the textbook, it clearly seems preferable that the content of learning should be described from a second-order (or experiential) perspective. This view is based on the argument that the question of the content of learning does not necessarily concern the *correct* meaning of the derivative or of the Darwinian theory of evolution but rather the meaning the *students* put into the derivative or into the Darwinian theory of evolution. (Also Bohm (1980) has recently argued against restricting our attention to *correct knowledge* only. Whatever an individual feels that he knows contributes to his actions, beliefs, attitudes, modes of experiencing, etc. Similarly, from the point of view of a science of instruction, Lefrere (1981) has drawn attention to the importance of understanding how students think about what they are taught and of making use of the knowledge they each have.)

In one of our experiments on the understanding of content (Marton and Dahlgren, 1976), a number of subjects read two chapters of Paul Samuelsson's famous textbook *Economics*. Among the basic principles discussed in the text is the law of diminishing returns, which states that when one production factor, such as land, is constant and another, such as labour (i.e. number of workers), is increasing linearly, then the total production will

increase less and less (i.e. in a negatively accelerated fashion). Another principle which students read about in the experiment was the Malthus theory of population, which is in fact a straightforward application of the law of diminishing returns in a global perspective and which states that when the population is increasing and the total amount of cultivable area on the earth is constant there will be a wider and wider gap between the increment in population and the increment in production.

We found a crucial difference in the understanding of both laws. This difference is between the correct understanding of the gradual decrease of increments in the production and the misunderstanding of this in terms of a linear increment up to a certain level and no increment thereafter. We interpreted this reduction of complexity from "change of change" to "change, no change" in terms of the difference between a dynamic and a static conception of productive resources. In the first case resources are perceived as a potentiality which becomes more and more realized, steadily approaching an asymptotic level; while in the second case resources are seen as a more or less finite and concrete amount of something, like a cake of which the amount to be eaten is given by its size and not by the way it is utilized.

In the teaching process, students have various conceptions which we try to change, modify or successively replace. The conceptions held by the students − as a rule − differ from those which the author of the textbook or the teacher is trying to make the students acquire (or construct). This discrepancy is certainly there during the learning process and it is not infrequently there too when the class has to proceed to the next topic. What these conceptions are, however, does not follow either from any general properties of the learning process, or from the subject matter as defined by the teacher or by the textbook. Consequently, if we accept the thesis that it is of interest to know about the possible alternative conceptions students may have of the phenomena or the aspects present in, related to or underlying the subject matter of their study, it is these questions specifically which we must investigate. If then we wish to find out what it takes to learn or to comprehend the concept of the derivative or the Darwinian theory of evolution, for purely logical reasons it is not sufficient to have knowledge about learning and comprehension in general, in addition to our knowledge of the derivative and of the Darwinian theory of evolution. Our task is rather to study specifically the learning and comprehending of the concept of the derivative and of Darwin's theory.

In order to derive the various forms of understanding of a certain concept or principle from general properties of cognitive functioning on the one hand, and from the description of the actual content domain on the other, we would need both knowledge of the machinery of the mind and a uniquely suitable description of the domain. But how could we possibly arrive at the latter? Even if there were general agreement at a certain point in time on the

scientific way of describing the domain (which is frequently not the case) we would still have to contend with the problem that descriptions and definitions inevitably change in the course of scientific progress.

Strauss and Kroy (1977) have for example criticized the Inhelder-Piaget theory of formal operations for its intimate linkage with Newtonian physics. Putting it in very general terms their question is the following. If possession of the *structure d'ensemble* underlying the stage of formal operations leads to reasoning in terms of Newtonian physics, has no-one living before the invention of Newtonian physics mastered the level of formal operations, and will all those who possess these formal operational structures and thought remain true to Newtonian physics for all time?

As to our argument that learning should be described in terms of its content, it must be said that clearly no experiment on learning can be undertaken without some content. But content has, in practically all studies of learning, an instrumental function, i.e. it is used in order to find out some general properties of the process of learning and not from an interest in how the particular content is understood and learned. (In a searching review of the field Easley (1977) discussed seven different perspectives from which learning and teaching can be studied. Although, from the methodological point of view, the approach we advocate clearly resembles one of these perspectives (the one which is characterized by what Easley calls dynamic structural models), we believe that our view of apprehended content as being figure, and process as being ground in a figure—ground relation makes the research strategy argued for here an alternative to all of Easley's seven ways of doing research on learning and teaching.

Process and content are two different aspects constituting a logical unity; there can be no process without a content and there can be no content except in terms of a mental activity. (Since we use 'content' in the sense of apprehended content, the act of apprehension is a necessary tacit assumption.) We must, however, be aware of the fact that what we can see from one point of view may not have any representation from another point of view. If we are interested in the general properties of the learning process, we must use a special language to describe similarities across a variety of learning tasks. But different conceptions of a certain phenomenon or of a scientific principle cannot be described in this language, as its terms refer to the process of learning in general; in fact, they are not even visible from this perspective.

CONCEPTIONS OF THE WORLD AROUND US

In the classroom we can probably always find a variation in the way students understand the concepts and principles presented by the teacher or by the author of a textbook. As we argued earlier, at the time the class is moving to a new topic, the concept or principle is understood by some stu-

dents in a way which is similar to the teacher's or the author's conception and by other students in other ways which differ from it (and from each other). The "authorized" conception can then be considered as one of several possible forms of understanding the concept or principle in question.

This "authorized" conception, which is hopefully in accordance with the standpoint of modern science, is not only a special case in relation to the varying conceptions prevalent in the classroom but it is also a special case among the varying conceptions science itself has held during its history.

A conception of a certain aspect of reality accepted as the scientifically correct view is not something given, something which is to stand for all time. (As a rule, it is not even agreed upon by everyone during the same period of time.) Historically, there have been other dominant conceptions no longer taken as correct and it is not unreasonable to think that there will be others in the future. The scientifically accepted conceptions of today thus appear as a section in time as well as a special case of the variation in people's commonsense conceptions of the same aspect of reality which exists at the same point in time.

Furthermore, we often find that these two kinds of qualitative variation correspond fairly well to one another. Commonsense conceptions held by today's laymen and judged wrong by science frequently turn out to be identical to conceptions accepted previously in history as scientifically valid ways of thinking.

In their investigation of proportional reasoning in adolescents Johansson and Lybeck (1978) revealed two major forms of thought with several subcategories within each. Let us take a simple example. The problem is as follows: a car moves at a constant speed and in 3 seconds it travels 6 meters. What distance does it travel in 9 seconds? Both correct and incorrect solutions can be arrived at in either of two possible ways. On the one hand, the student may focus on the relationship *within* the variables; "9 is 3 times 3, thus I have to multiply 6 by 3, which makes 18." On the other hand he may concentrate on the relationship *between* the variables: "6 is two times 3, thus I have to multiply 9 by 2 which makes 18." From the point of view of mathematical calculus it is, of course, quite irrelevant which of the two approaches is used. In physics, however, it does make a difference: relating two different qualities to each other in terms of a quantified relationship is central to the use of the concept of function in physics. The second approach described above is thus far more fruitful if the student is to progress in his studies.

Historically, the first form seems to have preceded the second. When using a two-armed lever as a balance to measure weight by means of length, Archimedes (according to Lybeck) either computed the ratio between the heavier and the lighter weight or between the larger and the shorter arm of the balance, but did not compare length and weight directly by taking the

ratio between either the longer arm and the heavier weight or between the shorter and the lighter weight (Lybeck, 1978, p. 33).

Differences in the conception of various aspects of reality can, of course, be found not only *between* individuals or between different periods in the history of science. Our conceptualization of learning in terms of possible changes in the way the students view subject matter clearly concerns differences *within* individuals.

Changes in the individual's way of interpreting certain aspects of reality are often a crucial component of scientific discoveries. This is lucidly illustrated by Gruber's (1974) thorough analysis of the developments in Darwin's thinking which led up to his formulation of the theory of evolution. In Gruber's account, Darwin ". . . . began with a notion of a stable, harmonious natural order, in which all organic beings were adapted to each other and to their physical environment in a fashion ordained by the creator" (p. 20). This is a static conception; homogeneous, unchanging species are adapted to their unchanging physical environments. The notion of natural selection was not in point of fact unfamiliar to Darwin, but he thought of it in the sense of a conservative force; a guard against change, a mechanism for *selecting out* those examples less well adapted to the unchanging environment. However,

> . . . as he came to accept modern geological views of a constantly changing order in the physical world, a contradiction within his point of view developed as follows: each species was adapted to its milieu: the milieu was undergoing constant change, and yet the species were changeless (loc. cit.).

From this contradiction he arrived at the conclusion that ". . . in a changing world, species must change in order to remain adapted" (ibid., p. 103). This change in his thinking went hand in hand with his observations on the Galapagos Islands of the enormous variation within species. And then upon reading Malthus' essay on population (and having given special consideration to Malthus' notion of superfecundity), Darwin realized

> . . . that natural selection, although it might work against adaptive variants, could also work in favour of occasional variants which were better adapted than their ancestors to the prevailing conditions under which they must survive (ibid., p. 105).

We see then how Darwin's static conception of unchanging species protected from maladaptive variation by natural selection (*selecting out* maladaptive members) becomes transformed into a dynamic conception of changing species, developing due to variation by natural selection (*selecting* in better adapted members).

Rather like a figure–ground reversal, the view of variation as deviance from the *ideal* of today is thus changed to the view of variation as a yet unrealized possibility of the *ideal* of tomorrow. When applied to mankind, the

former view is similar to what is called "social Darwinism". Both conceptions currently exist side by side, representing a fundamental difference in people's thinking.

In social Darwinism, "the pitiless struggle of man against man" is seen as the mechanism by which society will be brought to perfection. The term "social Darwinism" itself implies its origins in Darwin's theory of evolution, but as Dunham (1948) points out, the same idea was explicitly formulated by Herbert Spencer in his *Social Statics* published exactly nine years before *The Origin of the Species:*

> The poverty of the incapable, the distress that came upon the imprudent, the starvation of the idle, and those shoulderings aside of the weak by the strong, which leaves so many in shadows and miseries are the decrees of a large, far seeing benevolence (Spencer, 1888, p. 354).

This far-seeing benevolence ensures that the strong survive and the weak do not. But whereas for Darwin the idea of variation (within species) was transformed by means of natural selection into *change* (between species), Spencer saw the conception of variation (within species) as being reduced by means of natural selection for *preservation* (of the species). Here then, are two opposing conceptions of the natural order. And both, as we have already noted, are forms of thought, categories by means of which people interpret an aspect of the world around them.

Darwin's thinking was used to illustrate the notion that different conceptions are not necessarily related to differences between individuals but may equally well be related to differences within individuals. Moreover, the concept of *family Weltanschauung* used by Gruber, implies that a certain conception is not even necessarily related to a single individual at a given point in time. The term refers to conceptions which characterize not simply individuals but more particularly the higher order unit of a family tradition. (In the Darwin case the special conception is *mutaphilism* — the seeing of variation as the essence of nature.) In the same way we can formulate meaningful questions about the conception of reality dominant in a particular epoch, a particular culture, or in a particular society.

An example of this can be found in Janik and Toulmin's (1973) analysis of the cultural context of Wittgenstein's thinking (and of his world-view in particular). The authors argue that the *Tractatus* should be understood partly in terms of Wittgenstein's philosophy, according to which a line should be drawn between what we can speak of and what we must be silent about (as the positivists think), and partly in terms of Wittgenstein's world-view that what really matters is that of which we cannot speak (which runs directly counter to positivist thinking). What we cannot speak of (such as ethics for example) we can still *show*, we can *point out*, we can *live*. According to

Janik and Toulmin this world-view mirrors an aspect of the Austro-Hungarian Empire at the beginning of this century. It was a society in which the links between the world of words (politics as it was officially presented) and the world of deeds (the practical solution of authentic social and political problems) were essentially dissolved, resulting in a profound corruption of thought and standards.

Throughout this article we have argued for what we call the second-order perspective of statements-about-perceived-reality, which is considered to have a complementary relationship to the first-order perspective of statements-about-reality. We have pointed out sources of variation such as differences in learning, differences in the history of science, differences arising from the accomplishment of a scientific discovery and differences between societal epochs. The second-order perspective is by no means a new discovery. On the contrary, we can find many descriptions in the literature of the ways in which people's understanding of the world around them varies between, for instance, different cultures, different developmental levels or between different clinical states. (And most obviously these differences are not restricted to the apprehension of the subject matter of various disciplines. They may refer to the different ways in which people experience or conceptualize any aspect of the world around them.)

It is however, the very *commonness* of the perspective which has not been given attention, or which at least has not been pointed out explicitly. The main focus of interest has therefore been the source of variation and not the variation as such. The qualitative differences obtained have been looked upon instrumentally, they have been of interest insofar as they have served to illustrate the effects of differences in culture, development or mental health. The results (in terms of conceptions of various phenomena) have also seldom been related to findings originating from studies of other sources of variation concerning the conceptions of the same phenomena described from the same perspective. In other words, while there has been considerable interest in studying differences between different cultures (e.g. in regard to conceptions of time, space or social justice), between developmental levels (e.g. in regard to conceptions of time, space or social justice) or between clinical states (in regard to conceptions of time and so on), there has been little interest in questions like "What are the different conceptions which people have of, for example, time, space or of social justice?" thus bringing together information from studies directed towards investigating separate sources of variation (such as, for instance, differences between cultures, developmental levels or clinical states). The source of variation has practically always been superordinate to that which varies (i.e. conceptions of a certain aspect of reality). What we are arguing for here is a shift of perspective by means of which we might turn the classificatory system on its axis and begin to use conceptions of various aspects of reality as the superordinate categories

instead of those sources of variation which give rise to variation in the conceptions (such as individual differences, development, learning etc). This focussing on conceptions of specific aspects of reality, i.e. on apprehended (perceived, conceptualized or "lived") contents of thought or experience, as a point of departure for carrying out research, and as a base for integrating the findings, is in fact the most distinctive feature of the domain labelled "phenomenography", which we intend to delineate in this article.

Such an orientation resembles the one held by Heinz Werner. The aim of the study of development is in his view "the establishment and description" of forms of, for instance, thought and perception which can be ordered in terms of a progression, irrespective of the source of variation. In his book, *Comparative Psychology of Mental Development* (1948), that which varies is, in fact, superordinate to the source of variation. Under headings such as "Notions of time" and "Notions of space", he brings together evidence from anthropological, child-developmental and clinical studies, and by doing so he gives the system of categorization the axial turn we are arguing for.

The system of disciplines and subdisciplines and the different "schools of thought" within them constitute the most frequent higher order principle of organization of knowledge. We can find many examples of experiential description — that is, description which is experiential, qualitative, content-orientated and interpretative and in which the individual's world and not the individual himself is "thematized" and described — both within different disciplines such as psychology, anthropology, sociology, and educational research and in the different "schools of thought" which exist within and between disciplines.

Goldstein and Scheerer's (1944) thorough qualitative analysis of the way the world appears in schizophrenic thinking is, for instance, one of the foundation stones on which Werner's *Comparative Psychology of Mental Development* is built. Another starting-point is Levy-Bruhl's (1923) pioneering investigations of the categories in terms of which reality is interpreted in non-literate societies. Schutz and Luckman's (1974) argument that the structures of the socially constructed reality should be revealed and described is only one among many examples of such an approach in Sociology. In Psychology the founder of the gestalt school, Max Wertheimer, provided us with a very thorough qualitative analysis of different people's structuring and understanding of the content of various problems (see, for instance, Wertheimer, 1945) — and in so doing indicated a new direction for the study of thinking, the significance and importance of which has unfortunately been very little understood by later psychologists.

To return to our argument, what has not been realized, however, is that various descriptions originating from different disciplines and from different "schools of thought" share a *common* perspective in their view of phenomena.

Nor has it been realized in the case of many recent scattered efforts to characterize reality as it is experienced by different people in different situations. Compare such topics as housewives' experience of the transition to working life, the meaning of work for the unemployed, children's thinking about God, children's conceptions of violence, the concept of force in first-year physics students at university level, the conceptions of science held by Arts students at university, teachers' perceptions of individual differences in the classroom, students' conceptions of the origins of authority, and so on. Many of the studies summarized by Magoon (1977) under the heading "constructivist approaches" are undoubtedly of this kind.

There is a sense of uncertainty about these – frequently isolated – research efforts. As the "tradition" which we wish to define retrospectively in terms of a certain perspective has not been identified by those whom we consider as its representatives, they either have another scientific identity or no scientific identity at all. Our point is that descriptions which have been arrived at from the second-order perspective can and should be brought together, irrespective of the source of variation they represent, the discipline to which they belong or the "school of thought" from which they stem. Such an aggregate of descriptions making up "the perceived world" is logically bound to be "*unvollendbar*", i.e. "incompletable" (the famous chess-player Emanuel Lasker's term for something which is not only inaccessible to our senses but whose limits are inconceivable to our minds – see Andersson, (1978)). Still, we are able to point not only to conceptions – making up its constituents – but also to relations between certain conceptions of one aspect of the world and certain conceptions of another aspect. What we have in mind is certainly not merely a listing of one conception after another. Some aspects are certainly more basic than others and different (and more or less fundamental) layers of the perceived world can be revealed.

Like several other writers, Werner (op. cit.) distinguishes, for instance, between a personal and a universal conception of time; between a "concrete time of action embedded in a continuum of activity", that is, time as something closely related to what you do or to what happens to you, on the one hand, and the abstract continuous time-ordering scheme with, as it were, an existence independent of the concrete reality, on the other. The difference between the undifferentiated mode of perception ("participation" in Levy-Bruhl's terminology) and the separation of object from subject is obviously more basic than the difference between the personal and the universal conception of time. The former is implied by the latter and the latter is "explained" by the former. The difference between the two ideas of time is, of course, not explained in the sense of a scientific explanation, rather it is explained in the same sense as other phenomena are explained by this difference:

The concept of time may help to explain beliefs, attitudes, practices, and general way of life of African people not only in the traditional set up but also in the modern situation (whether of political, economical, educational, or Church life) (Mbiti, 1969, p. 16).

The Ontological Status of Piagetian Structures

The differentiation between subject and object is fundamental also in the most extensive and well-known contribution to the mapping of the different ways people conceptualize the world around them, in the work of Piaget and his collaborators. No-one has provided anything like as many detailed and such ingenious descriptions of children's qualitatively different conceptions of various aspects of their reality as has Piaget. There is no doubt that a large portion of his empirical work (especially his early empirical work) has been carried out from what we call the second-order, phenomenal perspective. Piaget has simply described what various aspects of the world look like from the child's point of view (or rather from the point of view of children at different age levels). The primary aim of these descriptions has been to shed light on the development of knowledge in terms of its different forms, reflecting various aspects of reality. There has been a gradual tendency in Piaget's research, however, towards on the one hand, focussing on the general similarities between the various aspects, and on the other hand, towards considering these formal similarities as psychologically real entities. This trend can be interpreted as a shift in which the child rather than the child's world, has gradually become thematic (i.e. has become the focus of attention) for Piaget. In our terminology it implies a shift from the second-order to the first-order perspective.

The more abstract conception of time mentioned above, for instance, has two main structural characteristics according to Piaget. One is the grasping of the temporal order of succession and the other is the grasping of the notion of a number of equidistant intervals between successive points in time. These two structural attributes correspond, for example, to what are for Piaget the two main aspects of the concept of number, ordinality and cardinality, as well as to what in mathematics are known as the lattice and the group structure respectively. In this way Piaget has been able to describe formal similarities between the forms of a wide range of concepts mastered within a certain age period. The lattice and the group structure, are, furthermore, aspects of a superordinate structure called "grouping"; structural similarities between not only the conceptions of time and number, but also of quantity, speed and movement, are described.

We have to bear in mind that if we accept the characterization of separate concepts, it is possible to question the *formal* similarities on logical or pragmatic but not on empirical grounds. As Strauss and Kroy (op. cit.) observe, at this point a decisive step taken by Piaget comes into view. He could have restricted himself to referring to the formal similarities simply as

formal similarities, without stating that there is a common psychological entity underlying the various, formally similar concepts. As we know, however, Piaget did not do so. Instead, he endowed the formal structure with a factual existence by considering it as descriptive of a psychological structure of thought. As Smedslund (1977) says, this reflects an *a priori* ontological position of *conceptual realism.* What is mastered, according to Piaget, is not the various concepts, but a formal structure which ". . . when applied to different domains, yields the different concepts" (Strauss and Kroy, op. cit., p. 104). (We may incidentally note the structural similarity with the above discussed and criticized idea of general knowledge about learning which when applied to different content areas (academic subjects) results in knowledge about the learning of these content areas.)

The assumption about the acquired (or rather, constructed) general structure implies empirically testable corollaries. If there is a common structure underlying the ability to handle different concepts and different contents, we should expect a certain homogeneity of behaviour across tasks which have this structure in common. Individuals who possess the structure should handle the tasks in accordance with it, in contrast to those who do not possess the actual structure. The thought structure of grouping in our example above is, for instance, believed to account for the behavioural manifestations of the developmental level, which Piaget has labelled concrete-operational. Now, it is obvious even in Piaget's own writings that it does not work in this way. Our possibilities of generalizing children's ability to succeed in tasks which are structurally identical but which differ in content are severely restricted. Children frequently "succeed" in some of the tasks and "fail" in others. Piaget explains this in terms of resistance from certain objects or situations to which the general structure of thought is applied. Little or no resistance at all is then thought to be correlated with success and much resistance with "failure". This is known as *horizontal décalage,* which means variation within individuals across structurally similar tasks.

Content and Structure

The obvious circularity of the concept of *horizontal décalage* has been pointed out by many critics and it has been argued that the large variation between different content areas makes the notion of "stages" and of content-free mental structures, assumed to underly the stages, highly questionable.

Drawing on his many years' experience of research work in the Piagetian tradition as well as on the results obtained by other, Smedslund (op. cit.) asserts:

> The empirical evidence did not provide much direct support for the existence of operatory structures. All kinds of discrepancies crop up with children of all ages and with adults, and with all kinds of concepts and structures. A child behaves in one way in one situation and in another way in another situation which may appear strictly equivalent to the first situation as far as task structure is concerned (p. 2).

Hundeide (1977) has assembled an impressive amount of evidence indicating that whether or not the child solves a certain task or in whatever way the child solves it is not so much a function of the logical structure of the task but of its content and of the context in which it is presented. Above all, the child's performance is heavily influenced by the extent to which the experimenter's questions are interpreted by the child on the same premises as those on which the experimenter based his questions. Hundeide reports a study in which a picture of five cups and two glasses was shown to 36 children of 8½ years of age. The question was asked: "Are there more cups or more things to drink from?" On one condition the picture was shown first and the question was asked afterwards: 17 of the 36 children thought there were more cups, thereby failing on class-inclusion, a major indicator of concrete operational thinking. In the other condition the sequence between picture and question was reversed (and the children were thus, according to Hundeide, given the possibility of interpreting the expected content in terms of the experimenter's own preconception). Only five of the 36 children in this group "failed" (pp. 41–42).

The meaning of the task is not only dependent on the temporal order of question and presentation but also on the way the question is formulated and on certain perceptual details. For example in one study the coordination of spatial perspectives was investigated by using the famous Piagetian task with three scale model mountains and photographs showing the mountains from four different perspectives (As Hughes and Donaldson (op. cit.) have convincingly demonstrated, this task leads to a serious underestimation of children's ability to take another person's point of view into account.) In this particular case three different kinds of pictures were used. It turned out that the ease with which the children exhibited decentered thought covaried with the richness of detail: coloured pictures were easiest, then black and white ones, while silhouettes were the most difficult (ibid., pp. 50–51).

Clearly, not only is the notion of stages questioned; but rather the mastery of the very same concepts or the solving of the very same tasks has also repeatedly been proved to be dependent both on content and on contextual factors. Indeed, long before the emergence of the critique of the lack of generalizability across content on the basis of the commonness of formal structures, Werner had reported findings which indicated that whether the child exhibited an egocentric, personal conception of time or an impersonal, universal one was context-dependent. It was found that whether the question asked concerns the child's family or his visible surrounding (e.g. "What time is

it in your home now?") or whether it is rather about distant towns or scenes (e.g. "What time is it in X (another neighbouring town)?", is of decisive importance (op. cit., p. 187).

More recently Dahlgren (1979) has provided a striking demonstration of the contextual character of conceptions. His study draws on previous findings by himself and Marton (1978), who had discerned two different conceptions of price: price as a relation between supply and demand, and price as an inherent quality of the commodity (corresponding to its "value"). In a subsequent investigation Dahlgren (1978) had shown that even after one semester's study of Economics at university level, a substantial number of students (in fact about two-thirds of those taking part in the investigation) held the second conception, of price-as-an-inherent-quality, in spite of the fact that the first (relational) conception had been presupposed in the Economics course they had just gone through. In a later investigation (Dahlgren, 1979) it was found that when the same question, "Why does a bun cost 1 krona?" was asked of 30 children aged 11 and 30 aged 13, only one child in each group exhibited the supply—demand conception. However, when the question was rephrased into "Why does a diamond ring cost more than a bicycle?", 14 of the first group of children and 17 of the second gave supply—demand answers (i.e. a larger proportion than among the Economics students who had answered the first question on the price of a bun).

There is one theme running through this paper: we cannot gain knowledge about learning *as such,* nor about operatory structures *as such* and not even about a conception of price *as such.* (In other words, learning, operatory structures, conceptions as psychological entities are epistemologically unattainable independently of context and content.) This conclusion, based both on logical and empirical considerations, has been reached by various writers and its most obvious implication is that we can hardly categorize individuals unambigously in terms of their possessing (or not possessing) operatory structures or even conceptions. But what, in that case, does research in this area have to offer?

CATEGORIES OF DESCRIPTION

When we think that there is something wrong with the fact that the same individual is performing differently on tasks which are structurally identical but which differ in terms of content, our judgement is based on the assumption that what we should be able to do is to classify an individual's behaviour in other possible situations. The impossibility of making statements as to which single conception of price a certain individual has is then interpreted simply as our inability to describe an individual's conceptions of price in a sufficiently reliable way. What we perhaps do not think of is that we can in fact describe *conceptions of price* in an absolutely reliable way. This means

that the same categories of description appear in different situations. The set of categories is thus stable and generalizable between situations, even if the individuals "move" from one category to another on different occasions.

Individual stability across contents and situations is neither denied nor assumed by us. In our view, it should be a target of empirical investigation rather than being taken for granted: it should be regarded as something to be described and analyzed. Even if it is the case that we cannot reliably and meaningfully classify children as being at the sensorimotor, concrete-operational, or formal-operational stage, we may very well find it appropriate to describe their *way of thinking* in a certain situation as exhibiting the formal characteristics of the sensorimotor, concrete-operational, or formal-operational *way of thinking*. Egocentric, societal and universal perspectives, for instance, may well have explanatory power in characterizing and understanding for example moral judgements made in certain concrete situations, even if we do not find it meaningful to characterize people's "real I" in those terms.

Abandoning the Piagetian assumption of the psychological existence of stages and operatory structures in individuals is very much in accordance both with the accumulation of empirical findings concerning the lack of generalizability in terms of the structure of the task and with a relational and contextual view of human functioning. And thus by restricting the meaning of the construct Piaget uses to characterize the development of the "knowing subject" (and not, as he argues elsewhere, the development of knowledge), interest would probably be refocussed on the most remarkable contribution of the Piagetian tradition, the ingenious and sensitive discernment of various forms of thought, the layers of the "hidden world" of ways of understanding reality. We would argue that these forms of thought should not be considered as categories for classifying individuals, but as categories for describing ways of perceiving the world around us. In this way, the shift which we have discussed in the Piagetian research tradition would be reversed again; the perceived world, rather than the perceiving child, would become thematized (i.e. become the focus of attention).

It seems worthwhile to look at this problem from the point of view of logic of research. Let us assume that we are investigating conceptions of a certain aspect of reality in a certain group of people. Let us also assume that conceptions of this aspect of reality have not been discerned previously. If our undertaking is successful, then we may perhaps become able to describe a number of different conceptions and also to identify the distribution, over the categories, of the group participating in the study. We arrive in consequence at two different kinds of results, the categories of description themselves, and the distribution of subjects over them. The first result is a qualitative one ("What are the conceptions held?"), and the second is quantitative ("How many people hold these different conceptions?"). To accord with the canons of research methodology one is supposed to define one's variables

before embarking on the empirical part of an investigation. But if the variables are defined in advance, we are logically bound to conclude that the results are necessarily quantitative. (We can of course carry out a qualitative analysis with preconceived categories, but as they concern the extent to which categories can be applied, the *results* would turn out to be quantitative.)

It is frequently not even recognized that categories of description can be considered as results. The extremely narrow conception of "result" in the behavioural sciences can probably "explain" why there has been so little widening of Piagetian description. Even if Piaget has inspired a great amount of research, this research has only infrequently been of a similar kind to his own, namely research which aims at characterization of the child's different ways of understanding various aspects of reality. It hardly seems plausible that Piaget has rendered further investigation of children's conceptions of reality unnecessary by emptying the pool of aspects of reality worthy of study.

We would argue that the outcome of a research undertaking is thus separated into two different aspects; on one hand, we can view the results as categories of description considered as abstract instruments to be used in the analysis of concrete cases in the future. On the other hand, we can focus on the applicability of these categories in concrete cases, considering the possibility of applying the categories in order to make a statement about an historical fact such as, for instance, that individual X exhibited conception Y under circumstance Z. This dual character of the description has its counterpart in a correspondingly dual character of what is described. A conception exists in the real world only in terms of a mental act and it is exhibited by someone who does something in a certain setting. In talking about categories of description, then, we "bracket" the dynamic-activity perspective and we consider the categories almost as if they were "frozen" forms of thought.

The relationship between conception as an act of conceiving and conception as a category of description resembles the relationship between Lewis Caroll's smiling cat and the smile that is left when the cat is separated from the smiling.

The Collective Mind

The categories of description, denoting forms of thought, which we bring together in order to characterize the perceived world (or at least fragments of it), are arrived at by separating forms of thought both from the thinking and from the thinker. This sectioning-off of thought from thinker, in spite of obvious differences in other respects, has a certain similarity to Popper's (1972) notion of *epistemology without a knowing subject*. In Popper's view, we can speak not only of a world of physical objects and physical states ("the first world") and of a world of states of consciousness ("the second world") but also of a "third world" of "objective contents of

thought". He thinks of this "third world" in terms of valid scientific knowledge which changes in an evolutionary way; some forms die, others evolve.

What is separated from "the knowing subject" in Popper's case is the body of propositional knowledge regarded as valid at a certain point in the history of science. What we want to thematize, on the other hand, is the complex of possible ways of viewing various aspects of the world, the aggregate of basic conceptions underlying not only different, but even alternative and contradictory forms of propositional knowledge, irrespective of whether these forms are deemed right or wrong. Popper's "third world" is a world of the first-order perspective, ours of the second.

Nevertheless, we share Popper's evolutionary outlook. By means of scientific progress new ways of conceiving aspects of reality are introduced into thinking in general. This is what Liedman (1977) calls "the ideological function of science". He argues that when Darwin's theory of evolution first took root, for instance, it did not have any implications whatsoever for material production ("it didn't even get a single Swede to grow faster"). Instead, it had an enormous impact on the view of nature and of the place of man in nature.

Another example is the work of Einstein, who added a third conception of time to those two conceptions which were described above in terms of a distinction between local and personal time and universal and impersonal time. Einstein's concept has something of both. Being a variable aspect of different material systems, time is local in his world of thought but it is certainly not personal. New forms of thought are thus introduced from time to time and become, through being transformed to common categories of interpretation, parts of "the perceived world". This is one of the reasons why an "ultimate" description of human thinking can never be achieved. To repeat our earlier point: it is, in the terminology of Emanuel Lasker, *unvollendbar*.

In the 1976 Reith lectures broadcast on BBC radio, the biologist Colin Blakemore argued that:

> Just as individual memory has partly released each animal from the immediate restrictions of the genetic code, so the sharing of learned ideas by social animals has added an entirely new dimension to the progress of evolution (Blakemore, 1977, p. 116).

He describes how certain discoveries made by an ingenious macaque monkey (a method for cleaning unpalatable sand from sweet potatoes and a method for sifting wheat by flotation) were spread by social learning not only to the other members of the troop but even to subsequent generations. The skills became part of the social inheritance:

By sharing of ideas, animals, and most especially humans, pool the ability of their group. The pinnacles of intelligence are exploited by the entire society. In human culture, this has led to the emergence of a kind of communal intellect — the Collective Mind of man — that has pushed forward his biological progress at a prodigious rate (ibid., p. 117).

This collective intellect can thus be seen as a structured pool of ideas, conceptions, and beliefs underlying the possible interpretations (or possible constructions) of reality and it is enhanced steadily, as new possibilities are continually added to those previously available.

This superindividual system of forms of thought, this perceived world, is, we believe, descriptive of human thought in two ways. It can be used as an *instrument for description* of the way people think in concrete situations and, from the collective perspective, it can be seen as a *description* of thinking.

Acknowledgements

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