

Symbolic resources and sense-making in learning and instruction

Tania Zittoun¹

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Abstract This paper presents the concept of symbolic resources for apprehending sense-making in learning and instruction. It first reminds the centrality of sense-making in learning and instruction from a sociocultural perspective, and proposes a pragmatist approach to examine what sorts of knowledge people use when they face situations that matter. The paper then presents two series of studies of symbolic resources. The first studies, led in informal situations, allow to define the concept of symbolic resources and a model of its uses. The second series is focused on school situations, and examines how school knowledge can be used as symbolic resources, and also, how symbolic resources can support learning in educational settings. This leads into a discussion on the role of institutional and social dynamics in the relations between learning in and out of school, at the heart of sense-making, as well as on the central role of imagination in learning and development. The paper ends by underlying the centrality of sense-making in learning and development, and the need to complement nomothetic studies with a more idiographic understanding of the complex dynamics involved.

Keywords Sense-making · Symbolic resources · Informal learning · Sociocultural psychology · Imagination

Children, young adults, and adults often are passionate about certain films, novels, music, or art works. They read or watch them, they learn through them, and they want to know more about them. They often share and discuss them with others, and they turn to these in difficult times. What is it that makes them so special? And why is it that these books, songs, or films are so rarely the ones met with at school or during one's educational trajectory? Perhaps the answers lies in sense-making: well, certain films or books “make sense” to people, and some

✉ Tania Zittoun
Tania.zittoun@unine.ch

¹ Faculty of Humanities, Institute of psychology and education, FLSH - University of Neuchâtel, Louis Agassiz 1, 2000 Neuchâtel, Switzerland

less. But would it not be worthy to understand at what conditions people make sense of these, and especially, at school? What if sense-making were at the heart of learning? This paper proposes the concept of symbolic resource to approach dynamics of sense-making, and as such contributes to the understanding of the underpinnings of learning and instruction. It first raises the question of sense-making, offers a theoretical frame to address it, and specifies an epistemological and methodological stance. The concept of symbolic resources, as studied in informal settings, is presented in the second section. How school knowledge can be used as symbolic resource and how symbolic resources can support learning at school is then discussed in the light of recent studies. The last section connects this with the two broader questions of relating in- and out-of-school knowledge, and of imagination, before concluding.

The role of sense-making in learning and instruction

One of the recurrent questions in psychology of education is: why would someone learn? Although some people—children or adults—are happy to learn mainly for the fun of it, or to please their teachers, or because this is what one is supposed to do, some others need primarily to know *why*—and they want to find that specific learning interesting or useful. In other words, learning, or the knowledge at stake, needs to make sense, in one way or another. That knowledge makes sense is the basic condition for engagement in learning, the possibility for in-depth learning, and therefore, the possibility to use that knowledge in other situations. Often neglected in studies on learning and instruction, the dynamics of sense- and meaning-making have preoccupied researchers interested in the subjective perspective of learners.

Theoretical framing: personal sense in learning and instruction

In the line of Piaget and Vygotsky's work, approaches sensitive to the social and dynamic dimensions of learning and development, together with the cultural turn in psychology of education (Bruner 1990; Bruner and Haste 1987), have progressively redefined learning as a process, rather than as an outcome resulting from specific educational interventions. The learner, previously often conceptualized as an isolated mind whose capacities have to be adequately stimulated, has thus been redefined as a person or an individual, actively engaged in interactions with others, in specifically situated activities or situations, with their social and material organization and their culturally defined goals (Doise et al. 1975; Hinde et al. 1985; Hjärne and Säljö 2014; Kontopodis and Perret-Clermont 2015; Kumpulainen et al. 2009; Mercer 2007; Mugny and Doise 1978; Perret-Clermont and Carugati 2001; Rogoff 2003; Säljö 1997). Looking at the psychological processes involved in learning and development, authors have notably drawn on Vygotsky's work, who emphasized the role of cultural mediation in thinking activities (Vygotsky 1986). This has inspired many studies on science reasoning, language acquisition, and general learning, showing the importance of socially shared explorations and argumentation in learning and development (Kontopodis and Perret-Clermont 2015; p. 201; Kumpulainen and Lipponen 2010; Mercer 2007; Muller Mirza and Perret-Clermont 2009; Perret-Clermont et al. 2015).

One of the questions raised by this trend since Vygotsky and Leontiev's seminal work concerns the meaning of knowledge and more specifically, the distinction between the culturally shared aspect of signification, and its more personal aspects. Without retracing here the full debates on this question, but drawing on Leontiev (1996) and its reading by

Rochex (among others) (Rochex 1998) I will simply take for granted a fundamental distinction between personal sense and shared meaning from the perspective of a semiotic, cultural psychology (Lawrence and Valsiner 2003).

Meaning—of a word, or a cultural element—is what is culturally shared, in a given community, and usually stabilized by various artifacts (such as dictionaries, works of reference, etc.); it is negotiated in interactions, and it allows people to understand each other. In contrast, sense is the more private phase of meaning-making; it is the point where a unique person meets meaning and relates to it. Sense can thus be understood “as denoting personal meaningfulness, integrating the aspect of the unconscious inner feeling that guides one’s action, and the conscious grasping of meaningful connections among one’s actions, perceived objects, or events, with something significant” (Leontiev 1996, p. 131). Sense is thus emotional, and demands the creation of “connections” between a given object and one’s overall, present, and past experience.

Education usually aims to foster or support people’s development as members of a specific cultural system and community, and thus targets the elaboration and mastery of shared meanings. However, psychologically, because each of us approaches a given object of knowledge from a unique perspective, shaped by one’s past trajectory, meaning-making is always also grounded in sense-making. Sense and meaning are the two aspects of a person’s relation to the same semiotic object. For instance, the shared meaning of a given anecdote in a certain context—say, Wilhelm Tell shooting an arrow in an apple on the head of his son, which in Switzerland suggests Wilhelm Tell’s bravery, resistance to the enemy, and skills—may have for a given child a different personal sense—for instance, the fear or being betrayed by one’s own father, or the pleasing thrills of being told this scary story by one’s parents. In educational settings, it is mostly required for learners to bracket the personal sense of a given object of knowledge and its accompanying emotions, and to demonstrate that they master the required shared meaning. Interrogated about Tell in a history class, children are not expected to speak about their fears to be shot at by their parents. Of course, objects of knowledge which are strongly culturally constructed and elaborated into a system—such as mathematics—facilitate distancing from personal sense. However, even there, personal sense-making is triggered—whether as thrills that support the exploration of the unknown, or the anxieties provoked by dividing—which might prevent learning (Boimare 2005; Pain 1992). More generally, sense-making play a central role in learners’ engagement, and its absence, or the fact that it may differ too much from the expected meaning, may explain many instances of disinvestment or difficulties at school (Charlot et al. 1997; Hviid 2012, 2015; Zittoun 2004b).

Hence, learning and education demand complex relational and thinking dynamics, in link to objects of knowledge, other people, and specific situations. These are usually oriented toward the mastery of shared meanings, yet are always also accompanied by the person’s sense-making of the situation and of the objects of knowledge. It therefore seems important to approach and understand these dynamics.

Approaching sense-making—a pragmatic stance and methodological eclecticism

As a researcher, how must one approach personal sense-making, and how to study it in educational contexts? This raises an epistemological question and a methodological one. From a pragmatist perspective, knowledge can be considered as such for certain persons, if they use it as such (Dewey 1916; James 1904). Such perspective has two important consequences for studying sense-making.

First, it invites to examine what sort of “knowledge” people actually use, inspires them, can trigger their curiosity, invite them to develop new interests, skills, and domains of expertise. Hence, studies on home knowledge (Moll, Amanti, Neff, and Gonzalez 1992), youth culture (Habermas 1996; Heath 2004; Hundeide 2005; Perret-Clermont et al. 2004b), school dropouts (Zittoun 2004a, 2006a), or street skills (Carraher et al. 1988; Rogoff 1993), have recurrently shown that young people as well as adults learn through many ways, in specific relational settings, and about specific objects—which do not always resemble to these offered by schools. One of the very conducive cultural artifacts likely to support knowledge and personal change are the ones related to cultural elements—arts, novels, films, and songs (Cole 1998; Daiute 2010; Heath 2004; Walker 2014). Cultural elements, such as a song, a film, or an art work, can thus be defined as bounded semiotic constructs, primarily meant to carry meaning, and demanding an imaginary experience (Zittoun et al. 2003). Although their role have been widely acknowledged in the cultural life and at the beginning of cultural psychology (Bruner 1990; Vygotsky 1971), how cultural elements, and people’s relationship to these, can play a role in learning and development, has still been little studied.

Second, a pragmatist approach invites to examine situations that constitute an “irritation” (Dewey 1896) to people and demand them to draw on various skills to be solved—this is where people are likely to use knowledge that makes sense. This is the logic presiding many classical experimental and clinical studies in learning and development. Drawing on Piaget’s work, the social psychology of cognitive development had thus developed a very simple and efficient research paradigm: expose children to a situation likely to be strange for them—a new task, a new question—and carefully observes how they solve it (Perret-Clermont and Carugati 2001; Perret-Clermont et al. 1991, 2004a). Such strategy allowed identifying the reasoning strategy engaged by children; but it also, incidentally, often reveals on what knowledge children drew.

Based on this double observation, we developed a research program to identify situations in which people were likely to use cultural elements as sorts of knowledge, with which they sort problems, develop skills, and often change themselves (Zittoun 2007b; Zittoun et al. 2003). For this, we proposed to study, rather than school-like tasks, real-life ones—experiences shaking the taken-for-granted of people’s daily experiences: how to leave one’s parents’ home, how to handle war, or how to decide how to name’s one child? Closely examining the process of transition ensuing, we observed what people use different elements as knowledge—social relations, personal experience, and cultural elements—when they have to solve a problem that existentially matters. In what follows, we focus on people’s uses of cultural elements, which we call symbolic resources. But how to observe people’s uses of cultural elements?

Methodologically, the approach draws on a diversity of techniques although it is overall qualitative. First, it is primarily using techniques allowing to capture a first-person perspective, such as interviews and self-writings (Zittoun 2004a, 2006b, 2009a; Zittoun et al. 2008; Zittoun and Gillespie 2012); these indeed allow to identify people’s at times explicit uses of symbolic resources (e.g., “this book changed my life because ...”) as well as implicit ones (e.g., “I feel sad, because of situation X; I happen to love that story/to listen to this song (which appears to represent or comparable situation X)”). Second, we used ethnographic approaches to document institutional settings, and observations of teaching-learning and quasi-experimental situations (Zittoun et al. 2003), which enable to capture the interpersonal dynamics taking place when cultural elements are mentioned (e.g., teacher ignoring or supporting a student’s attempt to relate a school text with a personal experience). Finally, we designed a questionnaire with a semi-open procedure allowing, among others, to capture people’s preferred cultural

elements and their possible uses as resources (Grossen et al. 2010; Stankovic et al. 2009) (e.g., “think about a book that you like to read”—“do you happen to think about this book in situation X?”). Although the analysis of uses of resources is less precise, the questionnaire allows crossing results with other psychological constructs, such as measures of well-being (Ryff 1989). The following is thus based on such diversity of techniques.

Theorizing symbolic resources out of school

The concept of “symbolic resource” was coined to designate the fact that a cultural element is used by a person, that is, drawn upon as element of knowledge to support thinking, feeling, or action, in situations that demand some elaboration: “Symbolic resources, sometimes called cultural resources, are cultural elements (i.e., created by people and loaded with meaning) that become resources in the process of being used by people to act upon the world, another person or themselves” (Zittoun and Gillespie 2013, p. 1). Symbolic resources are thus cultural elements used for something beyond their immediate purpose, in a secondary use, as mediator (Zittoun et al. 2003): not only to listen to a song for the esthetic experience it provides, but because it allows to feel closer to a friend abroad. It is through these complex semiotic and often emotional dynamics that these cultural elements can be said to make sense to the person in a specific situation.

Developing symbolic resources

A first series of studies on symbolic resources was carried out of school, in informal contexts, and with a focus on informal knowledge. Two first studies, based on interviews with young people and young parents (Zittoun 2004a, 2006b), enabled to identify the diversity of uses of symbolic resources by people confronted with new, difficult, or challenging life situations: young people attached to a song listened to as young lovers, to the point that their daughter’s name refers to the song; young men referring to Biblical stories, or alternatively, to street artists’ paintings, to feel more confident in unknown urban environments; grieving young people listening to pop or rock songs that “word how they feel” and that show them ways to pursue their lives; or young women reflecting about films that touched them to define values that may guide their future life trajectory (Zittoun 2006b, 2007a, 2008b). These two studies allowed to develop a model of the development and uses of symbolic resources.

From a learning and development perspective, it appears that very often, the cultural element that people invest as symbolic resource at a certain point in time is one out of a long series of cultural elements to which they relate. Indeed, these seem to be part of symbolic trajectory—a history of interacting with books, stories, and songs, usually shared with various significant others: first, a caregiver (mother or father), then members of the family, friends, teachers, and progressively, distant others (people remembered or imagined, like a writer or an artist) (Gillespie 2010; Zittoun 2010). These others primarily expose the person to the cultural element, share its meaning with them, and eventually, acknowledge, more or less explicitly, the personal sense these cultural elements may have for the person. Hence, parents can support their child’s temporary enthusiasm for a specific goodnight story (Miller et al. 1993), and later, for a specific game; or a group of friends can respect one’s passion for a singer (Zittoun 2007a), later replaced by one’s partner. In other words, these others acknowledge the “transitional” nature of the cultural element: the fact that it certainly

coming from the socially shared reality (everyone can watch that movie or listen to that song) yet that it becomes invested with personal experiences and emotions (Winnicott 2001; Zittoun 2013a). Often, people also develop skills and expertise about these cultural elements, and their modality of sense- and meaning-making also develop along these symbolic trajectories (Zittoun 2008a).

The semiotic prism

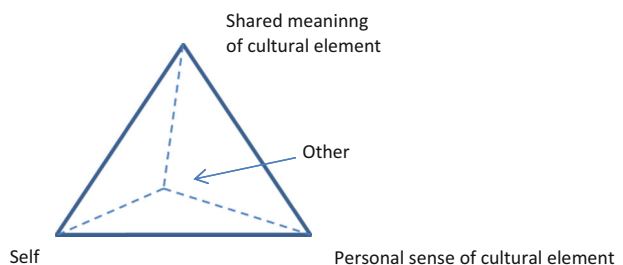
This developmental route led us to propose a model for theorizing symbolic resources. Indeed symbolic resources demand a double mediation: on the one side, a symbolic resource designates a cultural element, charged with both shared meaning and personal sense; on the other side, it is related to self but also acknowledged by others. This has been represented by the prism model (see Fig. 1) built on an integration of the semiotic triangle à la Vygotsky and the psychosocial triangle put forward by Moscovici (Moscovici 1984; Vygotsky 1986; Zittoun et al. 2007).

This model allows to depict the following dynamics. People interact with cultural elements during what can be called a cultural experience—the experience of watching a movie, reading a novel, listening to a song, or watching a painting or an art installation. A cultural element is made out of semiotic material (words, signs, sounds, colors) and any “interaction” with it demands to follow and interpret, on the basis on one’s prior experience, these series of signs (Peirce 1974; Valsiner 2014a). These acquire hence a transformative function: a classical song or a romantic story usually sets a problem, lets an emotional tension grow, until it resolves it in a happy finale (Bruner 2003). One way or another, people who live a cultural experience also go through the mild—at times more radical—experience of being guided, if not transformed, by it (Schuetz 1944; Zittoun 2013a, 2016a; Zittoun and Gillespie 2014). In other words, a symbolic resource is a cultural element that has become significant for self—it makes sense, because of relevant relations to others, and, or because it allowed an important cultural experience for self—often, an emotionally charged experience, accompanied or followed by distancing dynamics that may lead to see self from another perspective (Gillespie 2006). Symbolic resources are shortcut to these bundles of meanings and experiences; using a symbolic resource is engaging in personal semiotic mediation of one’s experience of self, others and the world.

A model to analyze use of symbolic resources

We have proposed to analyze uses of symbolic resources along three dimensions (Zittoun 2006b, 2007b). First, symbolic resources can have different intended direction—they can be used about self (to remember one’s past, to comfort oneself), about others (to share a movie

Fig. 1 Semiotic prism



with a good friend to reveal something about self); or about the social and material world (to use a song to better understand the political situation). Second, these mediations can be more or less distant from the immediate, embodied experience, that is, more or less generalized: feeling that a melody is reflecting one's mood is quite close to emotions; knowing that the lyrics reflect one's story is more distant yet relates to specific events; developing general values or a "personal life philosophy" from a story is even more general. Third, the temporal embeddedness of the use can vary; again, symbolic resources may primarily be used to maintain a sense of continuity, to remember or explore the past; they can also primarily be oriented toward the future; for instance, when one reads travel stories or watches movies located in exotic places so as to decide upon a holiday destination; and they can be located frankly in an alternative reality, when one watches fantasy films, or get engrossed in crime stories that could happen if one were another person.¹ As a whole, then, uses of symbolic resources have outcomes: they can participate in a person's identity transformation; they can also function as knowledge, or invite the person to look for specific skills and pieces of knowledge; and third, and overall, they participate in the person's sense-making and elaboration of experience (see also: Gillespie 2006; Hale 2008; Kadianaki 2014).

This first series of studies allows us to make a triple statement: first, people do learn and develop through the uses of symbolic resources, that is, through the mediation of cultural elements of all kinds, whether these have a very institutionally accepted meaning, or not—impressionism as well as graffiti, classical novels as well as contemporary fiction, cinema as well as TV series. Because these make sense to the person, they become semiotic mediations to address significant existential questions, everyday problems, and life-changing decisions: how to combine one's studying hours with more personal and private interests, whether or not to give money to beggars, where to study next year, or how to improve the educational level of one's region of origin (Zittoun 2006b, 2007a, 2013b). Second, these uses of symbolic resources are often generative: they invite people to move from one resource to the next, to go deeper in some understanding, or can sustain long-standing interests. Third, this important mediation for learning and development occurs outside formal education, as if school and other formal educational settings did not transmit cultural element that make enough sense for young people to be used in their daily lives and to support engagements. But is it really so?

Symbolic resources at school

Do students make sense of knowledge, so that they use cultural elements met at school as symbolic resources out of school? And do they use any other symbolic resources to make sense of knowledge at school? In this section, I present the symbolic resources at school (SYRES) study aiming at responding the first question, and further studies contributing to the second question.

SYRES

Given the fact that symbolic resources supposes that people have established a personal sense of a cultural element, examining students' relationship to cultural elements met with at school,

¹ We have initially tried to account for the more cognitive vs. emotional nature of the use of the resource, notably through questionnaire, but the distinction does not resist closer investigation.

and identifying their uses as symbolic resources out of school, would allow to see whether, and in which institutional and social conditions, dynamics of sense-making can take place at school. This is the goal of the SYRES project carried on in Swiss schools by Michèle Grossen and myself (Grossen et al. 2012; Zittoun and Grossen 2012).²

We documented the institutional conditions of teaching-learning, by approaching three upper-secondary schools in a same region with different social status (e.g., pre-university vs. vocational), and different disciplines, more or less traditional (e.g., literature, which has a long didactic tradition; philosophy, which is new in these schools: and “general culture”, created ad hoc in one of the schools), through documents, school material, and their representatives. We also documented social and relational conditions of teaching-learning, by observing different classes in each school. We identified the modalities through which teachers presented cultural elements to students, to which interactions it leads, and how students could appropriate these. We also made a close analysis of all the verbal sequences in which an element external to the object of knowledge was mentioned in the classroom (an incident referring to the social or political life, the personal life of a teacher or a student, or another cultural element). We then interviewed students and teachers on their relationship to knowledge (Rochex 1998), as well as to cultural elements in and out of the school. We finally devised a questionnaire that allowed us to capture more widely—but less precisely—young people’s uses of cultural elements from in, or out of school, as symbolic resources (Grossen et al. 2010; Zittoun et al. 2010).

The questionnaire was filled by 205 students from three different schools: two in pre-academic tracks and one in a vocational track. It was devised to identify people’s various cultural experiences, their relationship to knowledge at school, as well as certain general data about the students (for a detailed presentation, see Grossen et al. 2010). From the analysis, which we will not detail here, we could identify three profiles of young people according to their daily cultural experiences. If all would regularly listen to music or watch films, there were however contrasts between (a) about 40 % of the young people who attributed low values to all cultural activities they had to rate, ranging from sports to reading, taking care of older people to going to concerts; (b) about 25 % of the respondents who were interested in what could be called the “school culture,” that is, reading novels, going to the theater, writing a diary; and (c) about 35 % of our respondents who valorized what could be called “youth subculture,” in the sense that they preferred to engage in activities such as playing videogames or reading mangas, that are usually attributed to adolescents. Interestingly, these young people were also quite aware of the symbolic distance between their personal preferences and these of the school: young people privileging school culture knew their leisure activities were valorized by schools, while young people into youth culture knew school would not encourage their interests. We also evaluated how much these young people related to these cultural elements as symbolic resources; here we observed that students that appeared as “high users” of cultural elements (to sooth, reflect, comfort, etc.) were using indifferently resources from in or from outside of school.

All this called for a more qualitative analysis of personal uses in order to see how cultural elements were treated in the classroom and were reflected upon by teachers. Examining students’ uses of symbolic resources through their interviews ($N=18$), we found results that were very comparable with those in previous studies. Here, as well,

² SYRES or “Symbolic resources at school,” a research program funded by the Swiss National Research Foundation (No. 100013-116040/1), under the direction of Tania Zittoun and Michèle Grossen, with the collaboration of Christophe Matthey, Olivia Lempen, Sheila Padiglia, and the support of Aleksandar Baucal.

symbolic resources found out of school were used to support identity dynamic, learning, and sense-making. Some uses of symbolic resources could be punctual—listening to a song that comforts after the death of a close person—or very generative or “committed,” for instance when one young person is interested in an Asian movie that reflects one’s family problems, which triggers an interest for the Asian context of the movie, which leads him to learn its language, to read about the history of the region, etc. In addition, we also examined whether the young people used symbolic resources by drawing cultural elements met with at school. Indeed students did use, at times, such cultural elements. In most cases, these uses were more anecdotic, and focused on one aspect of learning or identity—for instance, “I read this novel at school and I recognized myself in the character”—and less conducive of substantial sense-making and transitions as what we observed in relation to symbolic resources met with in everyday life. In a few rare cases, however, young people developed a committed relation to some cultural elements met with at school, using them as symbolic resource in and out of school. This occurred usually when the cultural element echoed with some aspects of the young person’s experience out of the school; and this was also mostly possible when there had been a real work on the meaning of the cultural element in the classroom (e.g., an analysis of the language, the construction of the text, or the reasoning in the classroom). For instance, a young man found some personal sense in a text by Zola, describing a strike—he had also known one in the company where he was trained as apprentice; yet this recognition was possible only after the teacher had worked with the class on the quite difficult literary style of the text. At this double condition, young people seemed to elaborate a personal sense of cultural elements met with at school and use them as resources (Zittoun et al. 2010).

We observed these dynamics more specifically in classes in which the teachers managed to establish what we may call a “double a-symmetrical” relationship to cultural elements. In this modality, the teachers proposed a quite clear framing of the lesson and the lecture series (announcing its structure, having a discourse about its organization, its goals, his or her intentions, etc.). These teachers quite clearly focus their teaching, on the one hand, on the students’ acquisition of specific skills: the mastery of a technical vocabulary to analyze texts, of argumentative skills, of modes of reasoning, etc. These can be called “secondarised knowledge” (Rochex 2001, 2009; Rochex and Bautier 2005)—which are related to concepts and “higher mental functions” in a Vygotskian tradition (Toomela 2015; Vygotsky 1986)—that is, semiotic means belonging to a culturally constructed semiotic system, and enabling the students to regulate their thinking, reasoning, and discourse. These dynamics focus on the elaboration of socially shared meaning of the cultural elements. On the other hand, the teachers also fully acknowledged the fact that each student is unique, has his or her history, and that he or she could develop a personal relationship to texts and cultural elements, thus making sense of it in a unique manner. In order to do this, these teachers established a “good enough” relationship with the students, and offered them spaces of freedom for their work—choices of texts, moments of personal work, reading or discussion, open discussions, etc. In addition, these teachers were, on some occasions, display their own interest in these texts, the fact that these made sense to them, or that these were symbolic resources for them.

In this sense, the frame of these classes is quite formal, it allows a good relational climate, yet the focus is on school knowledge. In addition, it establishes a double semiotic modality (see Fig. 2). First, it establishes an asymmetrical relation between teacher and students regarding the cultural element: the teacher has more knowledge and skills to unpack its construction and to approach its shared meaning, and his work is to enable students to

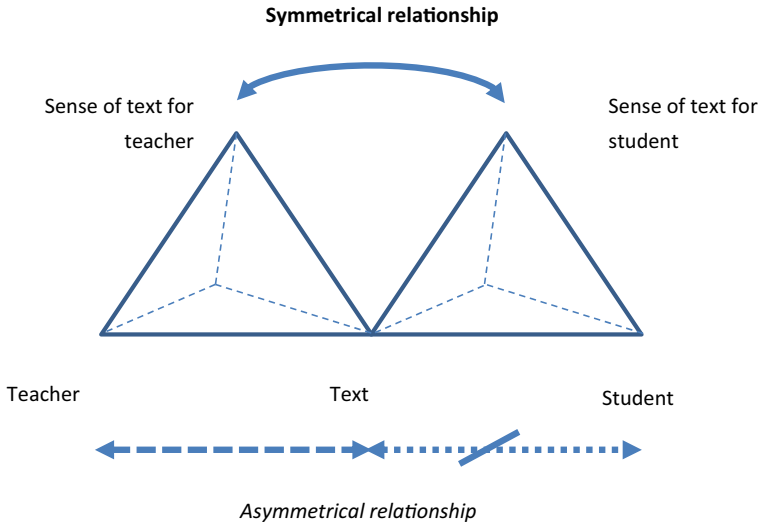


Fig. 2 Double a-symmetrical relation to cultural element in double semiotic prism

construct comparable skills. Second, it suggests a symmetrical relationship to the cultural element in what regards personal sense: both the teacher and the students, as unique persons, are likely to develop their own and unalienable personal sense to that cultural element (Zittoun 2014, 2015a). In these conditions, we observed, even students who met difficulties along their school tracks could develop personal relationship and confer sense to difficult texts and start using them as symbolic resources out of school (Zittoun and Grossen 2012).

All teachers that we interviewed ($N=15$) eventually hoped for the students to develop a personal cultural baggage, and to become involved and critical citizens. However, our analysis, and the triangulation of interviews with teachers, students, as well as with two types of analyses of classroom interactions, highlighted the contrast between classrooms where there was a double a-symmetric relation, and others. We indeed observed two other types of dynamics. First, we observed classes in which teachers were focusing much more of their interventions on non-formal modalities of learning, trying to get closer to young people's lives, often disclosing more of their own lives—a too radical symmetrical relationship, at times without framing, that was not particularly conducive of learning and developing personal relationship to knowledge. Second, in other classes, we observed teachers emphasizing the formal aspect of learning and its shared meaning, so as to prevent any personal exploration and appropriation, betting rather on a form of imitation of their skills and knowledge by the students. In these circumstances, students' attempt to evoke a personal sense triggered by a text was usually ignored or dismissed. Of course, in both cases, the teachers' intentions were laudable: in the first case, teachers mostly intended to get closer to their students' interest; in the second, they wanted to be sure to transmit a certain cultural heritage while respecting students' privacy. Yet our analysis suggests that, in the context of this study, these two modes of interactions could be less conducive of students' appropriation, sense- and meaning-making and uses of knowledge than in the case of double a-symmetry (Zittoun 2014, 2015a). Of course, these results demand further investigation, as they depend on complex configurations, in which the discipline, the object of knowledge, and other dimensions also intervene.

Interestingly these observations join these of Radišić, who identified three types of interactions in literature classrooms in secondary schools in Serbia (Radišić 2011): a “traditional” way in which teachers use a formal language, have a monological type of discourse and, when they ask question, expect an answer that is evaluated—which corresponds to our classical asymmetrical configuration; a “laissez-faire” style where the teacher uses a more informal language, asks open questions, yet eventually comes back to an evaluative mode, and that would resemble the symmetrical modalities we observed; and a more “modern style,” where the teacher uses formal language in relation to knowledge, but where open questions are raised in more informal language, allowing students to reply and explore, without immediate evaluation—which would correspond to the double a-symmetrical modality just described, authentically dialogical, hence allowing sense to be made.

Hence, the focus on symbolic resources, and the semiotic dynamics that these demand, enable us to identify dialogical modalities of interactions in the classroom in which the teacher creates adequate “thinking spaces,” that is, social and relational arrangements within specific social frames that are more conducive to sense-making by the students (Perret-Clermont 2015). These modalities are characterized by the frame created, the type of mediation used, the relational qualities of the space, and the possibility to engage personally in thinking and learning.

Further studies on uses of symbolic resources in learning and development

Not only can school knowledge be used as symbolic resource beyond the classroom, also, symbolic resources can be used to make sense of school knowledge or dealing with school life, as further studied have shown.

First, the symbolic resources questionnaires were further developed and used in different national contexts to address students’ experiences. It was tested and evaluated with university students in Serbia; beyond translation difficulties (e.g., the notion of “cultural experience” does not have an equivalent in Serbian), it confirmed the theoretical construct of the symbolic resource model and showed that students in general use symbolic resources (Stankovic et al. 2009). A second questionnaire-based study pursued in Australia focused on uses of symbolic resources by students entering university. It showed the role of uses of symbolic resources in dealing with stress, and the emotional demands of the transition to university (Märtsin et al. 2016).

The notion of symbolic resource was also used in qualitative studies that articulate different aspects of the students’ life trajectory with the school demands. On the one hand, studies have examined symbolic resources used by students from migrating families. Hence, Mehmeti (2013) showed how some cultural experiences shared at home supported the relation to school and sense-making of young women from the Balkans in Switzerland. Hale and de Abreu showed the role of symbolic resources in the transition of young students from Portuguese background in England (Hale and de Abreu 2010). Walker has recently shown how an arts program, providing students from Latino communities in the USA with symbolic resources, could foster learning and commitment into school learning (Walker 2014). On the other hand, another line of studies examined the role of symbolic resources in vocational training, showing for example the role of past personal experience to establish meaningful relationships between school and work (Jonasson 2014). On both lines, such in-depth qualitative work, attentive to the learners’ perspective, emphasize how much cultural elements coming from out of school play an important role in students’ engagement in learning at school, as they support sense-making and identity processes.

A third aspect regards the actual operations of learning. Cerchia (2009, 2011) has shown, in an experimental setting, that children facing a complex metaphorical task (in a Piagetian tradition) could actually use a variety of symbolic resources to make sense of the task and reply to the researcher's questions. In a comparable situation, Perret-Clermont et al. (2015) have observed that children use various symbolic resources as part of their argumentation to decide of a response to a task in physics, using everyday knowledge and their cultural experience to support their reasoning.

Although still growing, these studies thus suggest that there is a specific interest in studying learners' uses of symbolic resources, whether these come from in or out of schools, as these seem to support and feeding the actual tasks of thinking and reasoning, as well as to participate in the identity work required by learning, and sense-making of the teaching-learning situation, as part of one's life. These studies will prove to be useful and important, as they may give other entries in what might prevent or support learning for students.

Openings

Studies on uses of symbolic resources in and out of school shed a new light on the question of sense-making in learning and education. They also highlighted two other emergent and fundamental questions: the circulation of learning in and out of school, and the role of imagination in learning. In this section, I address them in turn, showing their potential, before concluding.

Knowledge and sense-making in and out of school: relational and institutional conditions

Not only did the research program presented so far enable moving in and out of formal settings but also this articulation is at the heart of learning itself. Indeed, one core issue in studies in teaching and learning is whether the knowledge acquired, or the skills constructed by students, can be used beyond the situation given, either in further tasks, or in everyday life situation. This is of course a double question, as it concerns as much the transfer of learning, that is, the possibility of using formal knowledge in another situation, than the possibility to rely on past personal experiences in a learning situation. This problem of connecting in and out of a learning situation, or school, has been addressed in different ways over the past years (e.g., Perkins and Salomon 1994).

One of them was to apprehend it as question of "boundary crossing," that is, crossing the social, material, and symbolic boundaries between activity settings (Akkerman and Bakker 2011; Engeström et al. 1995; Jonasson 2014; Konkola et al. 2007). This allows for instance to examine "boundary objects" (Star and Griesemer 1989), material or symbolic objects which circulate between these different activity settings (Akkerman and Bakker 2011; Kumpulainen et al. 2014), such as for instance a learner's interest in nature out of school that becomes an interest in school biology, and back.

In our own work, we have proposed to examine the ways different spheres of experiences in a person's life. Drawing on Lewin and other authors, we have defined sphere of experience as "a configuration of experiences, activities, representations and feelings, recurrently occurring in a given type of social (material and symbolic) setting" (Zittoun and Gillespie 2016b, p. 8). From such perspective, in their daily life, people move across diverse spheres of experience, which can be recurrent over weeks, months or years—such as one's family life, a typical math

class, or watching a movie with one's partner—but that can also go under deep transformation, disappear, or emerge in new circumstances. In our SYRES project (see earlier), we have observed that in certain cases, it was very important for learners to create relations between spheres of experience. This is, for instance, the case when the student has a long history of school failure, yet has positive experience of learning in a leisure sphere of experience—for instance, in music playing. Here, if the sense conferred to this musical sphere of experience can be brought into the classroom, then the sense conferred to knowledge might also be transformed. In less dramatic situations, it can be the passion for Asian culture or arts out of school that can nourish one's engagement in school knowledge (Zittoun and Grossen 2012). Because cultural elements can be such reservoir of meanings and emotions, it is often around or through symbolic resources that such sense-making dynamics take place. In such cases, then, symbolic resources can support continuities between spheres of experience in and out of the school—they thus become boundary objects. On the other hand, our work also suggests that some students prefer to—or tend to—keep some sharp boundaries between their spheres of experiences—keeping distinct, for instance, their love for music from their school curriculum. Why and in which circumstances it is better for students to create distance between personal aspects of their lives and school learning demands further investigation—clinical psychology literature for instance suggests that in some circumstances, school knowledge allows to create a distance with too negative or difficult life circumstances (Boimare 2008; Paín 1989; Zittoun and Perret-Clermont 2009).

On a different level of analysis, given the key role that links between spheres of experience can have for a person, it is important to understand what institutional dynamics support or prevent them. First, as part of our project, we have examined the microgenesis of establishing links between in and out of school in the setting of a classroom—a process at the heart of sense-making—distinguishing how the teacher, or at times students, initiated such linking; we also tried to see the outcomes of these linking dynamics within the discursive activities (Grossen et al. 2012). Indeed, one reasonable hypothesis is that such discursive linking, collectively shared in the classroom, can further be internalized by students—if of course these are valorized and acknowledged by teachers.

Second, linking knowledge in and out of school also depends on an often overlooked aspect in sociocultural research, which is located at the institutional level (Zittoun 2016b). Institutional values, that is, values organizing the life of a specific school or establishment, in a certain socioeconomic and cultural context—can organize an institution in deep ways, guiding teachers' and professionals' actions. Hence, we have observed that in certain cases, institutional values can encourage a link between the school and the external world, creating practical encounters with it, supporting people's reflection on their activities out of the setting, or fostering skills that prepare and anticipate the outside of the setting—for instance, when the representatives of a vocational schools actively create bridges with local industries to prepare adequately their outgoing students (Zittoun 2004b, 2006a). In contrast, we have also observed that in certain case the institutional values of certain settings prevent from thinking the external context, values then instantiated in practices focused on within the setting (Hviid and Zittoun 2008), or more simply, cases in which the links between in and out are not sufficiently part of the institutional reflection such as in certain teacher training programs, which has consequences for how learners can imagine themselves beyond the institution (Wentzel and Zittoun 2011). Hence, a second reasonable hypothesis is that if knowledge is to be used beyond the educational settings (whether compulsory school, vocational training, or universities), certain general values related to the open nature of knowledge, or the importance of relating

knowledge to daily life, have to be developed, promoted, and implemented within practices and discourses (Zittoun 2009b). This, in turn, might then support dynamics facilitating uses of knowledge learned in formal settings as symbolic resources in further symbolic resources, in and out of the school—and thus sense-making. Of course, these questions need to be further investigated by adequate methodologies.

On imagination in learning

The study of symbolic resources in and out of the school progressively led to another line of investigation. On closer analysis, one of the main psychological functions of the sorts of cultural elements we have been studying—films, novels, songs, arts—appears to be techniques of guided imagination (Vygotsky 1971). Consequently, it might be that uses of symbolic resources are so powerful precisely because they can be seen as internalized modalities of guiding imaginary exploration (Zittoun 2016a; Zittoun and Gillespie 2015). In effect, if sense-making demands the creation of links between different domains of experience, then imagination is per excellence the process of creating new synthesis across these (Vygotsky 2004).

Based on this reasoning, and drawing on previous work, we have undertaken another line of research, this time focusing on imagination. Rereading classic and recent literature, proposing analysis of everyday situation as well as research situations, we examined the nature of imagination and its role in the development of people and society (Zittoun and Gillespie 2016b). With Alex Gillespie, we have proposed to re-theorize imagination as “the process of creating experiences that escape the immediate setting, which allow exploring the past or future, present possibilities or even impossibilities.” (Zittoun and Gillespie 2016a, p. 2).

Such a move enables us not only to examine the processes of imagination fostered by uses of symbolic resources, but more generally, to start to examining the role of imagination in learning and instruction. In this context, imagination clearly becomes an expansion of experience (Pelaprat and Cole 2011; Vygotsky 1931; Zittoun and Cerchia 2013). It invites to examine how learners go beyond limitations when confronted to a new or difficult task, how they explore, using a diversity of resources, possible perspectives and ways to consider the problem, seek for possible answers and explanation, in a creative and playful way—even though these seem inadequate from a normative stance. A few studies show how imagination can thus play a role in individual learning, as well as collective activity of imagining, which can be situated in the classroom or take place out of it (Akkerman 2016; Daiute 2016; Eckhoff and Urbach 2008; Harris 2000; Hilppö et al 2016; Singer and Singer 2012; Smolucha 1992; Zittoun and Cerchia 2013).

As these studies suggest, there is much to learn from the study of imagination in learning. Drawing on the work on symbolic resources, imagination might be related to identity aspects of learning, to the sense it may take for a person, as well as to the very thinking activities; it may also play a key role in relating past knowledge and experiences with a present task, and orient knowledge and skills toward future uses. Finally, the theoretical perspective that we have proposed so far invites to consider the situatedness of imagination, in certain webs of relationships, in specific settings, often institutionally framed, in given sociocultural environments.

Overall, our hypothesis is that imagination plays a fundamental role in development in the life course (Zittoun 2015b; Zittoun and Gillespie 2016a); and thus, it is more than likely that it plays a key role in learning and instruction, a hypothesis which also needs to be further investigated.

Conclusive words

This paper has presented a body of research examining sense-making in learning. Adopting a pragmatic stance, our studies have proposed to examine sorts of knowledge that people use in situation for which they need it, first in situations out of school. This led to identify the importance of symbolic resources that people use when they face new situations, and to propose a model, highlighting the identity dynamic, sense-making, and thinking processes supported by these semiotic mediations. In formal school settings, it became relevant to examine whether and at which conditions learners could appropriate and use school-based knowledge as symbolic resources mediating their relationships toward themselves, others, and the world. This allowed identifying further emotional, interpersonal, social, and institutional characteristics supporting, or preventing uses of the school-based knowledge beyond the classroom. Finally, the study of uses of symbolic resources leads to researching the role of imagination in learning and development.

On a more general level, studies on symbolic resources emphasize two aspects worth exploring in research on learning and instruction. First, this whole line of studies is based on the core idea that the person needs to make sense to learn—both to engage in learning dynamics and to relate to objects of knowledge. Sense-making is emotional, psychological, and relational; it is what allows knowledge to be used, skills to be transferred across boundaries, and probably, more general ideas and engagements to develop. Sense-making—and not only the establishment of shared meaning—deserves to be investigated more in all fields of research on learning and instruction. It is indeed a complex issue: although it is made by a unique person in a given situation, it is a process which takes place in social interactions, in specific settings. It is thus both culturally and institutionally guided, enabled and constrained, yet also the result of the unique internalization and uses of cultural means by a person.

Second, this whole body of work also suggests the importance of complementing nomothetic approaches to learning and instruction with more qualitative and idiographic approaches, joining here a whole trend of classical and recent studies. Dynamics as learning and educational processes explored here cannot be simply explained by simple factors of age, social class, self-related beliefs, learning strategies, or school performance based on the assumptions that they determine individual actors in general ways regardless of personal and contextual characteristics; how a person makes sense of a given object of knowledge and dynamics of learning depends on complex and evolving configurations (Cabell and Valsiner 2014; Valsiner 2014b, 2015). Only so can we approach people's perspective on a learning situation (Hedegaard et al. 2012), the actual micro- and macro-dynamics by which shared meaning as well as personal sense are established—or not—and so, identify the practices likely to support at best learning and development. Hopefully, such studies might thus help us to define the best conditions for learners to explore knowledge and find by themselves a satisfying answer to an old question—what is the sense of all this?

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Personal details

Tania Zittoun. Faculty of Humanities, Institute of psychology and education, FLSH - University of Neuchâtel, Louis Agassiz 1, CH – 2000 Neuchâtel, Switzerland. Email: Tania.zittoun@unine.ch

Current Themes of Research:

Psychology of the lifecourse; imagination; highly mobile families; migration and the law; ageing

Most relevant publications in the field of Psychology of Education (5):

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