

Chapter 2

Worldview

If and when I say that out-of-school background knowledge is relevant for school learning, then I have to come clear on what this background knowledge looks like. To that end I return to anthropology. Indeed, not only school education is a culture specific way of transferring knowledge between generations, but the very domain of vernacular or so-called out-of-school knowledge has to be looked into. In the literature this domain is often captured under the label of ‘worldview’.

The literature on worldviews leaves one with a feeling of uneasiness. On the one hand some philosophers and scholars in religious studies claim that the progressively scattered field of knowledge of the 20th century points to the importance of worldview as a unifying force for the organization and deployment of scientific research. It would act like a logical or theoretical frame in the project of Enlightenment. On the other hand, explicit use of the term worldview in anthropology is decreasing over the years, to the extent that some announce the end of it (Beine 2010).

1 Anthropological Studies

Worldview has been associated over a long period with the culturally idealistic approaches in anthropology. Starting with Boas, anthropologists have been working in the perspective of the ‘psychic unity of humanity’, meaning that all human beings would share the same basic categories of thought, but also of sentiment and volition. For example, time, space, causality and such would be universally shared, although particular shapes and contents of them could be distinguished in diverse cultural traditions. In a general sense, this perspective is based on a philosophical program of mentalism: researchers took for granted that ‘in the human mind’ or ‘in immaterial culture’ situated in the mind, such categories can be found. Kearney (1984) states, in a rare overview of research on this issue, that this emphasis on the

This section is based to a large extent on my entry ‘Worldview’ in the Ency of Social Sciences (Pinxten 2015).

'mental' across cultural borders is probably due to the close links between linguistics and anthropology in the American case: language structures were presupposed to exist in the mind, and hence by extension all other structures and processes which organize the experiences of an outside world would be situated there too. The encompassing phenomenon, which would synthesize concepts, views and expectations about the way the world is, is the worldview of a particular group: a worldview is the shared 'software' of a cultural group, which processes input from the senses, stores its information and serves as the basis for action for the community (after Kearney 1984: Chap. 2).

Most certainly, Lévi-Strauss reinforced the mentalism in anthropological studies by starting almost exclusively from a linguistic perspective with his structuralist anthropology (Lévi-Strauss 1958). In his theory, the deep structures, which matter most for the study of any domain of culture in any part of the world, are to be found in the human mind. Their universal form is uncontested in structuralism until the '80s of the past century. In the view of Lévi-Strauss sense data, concepts, principles and systems of thought and action are structured logically, much like the data in a computer. Neither in his study of thinking and knowing in non-western cultures, nor in his systematic comparative analyses of myths Lévi-Strauss questions the mentalist presupposition, neither does he doubt the motor function (or the generative force) of the deep structures in the human mind. Thus, in the famous '*La pensée sauvage*' (1962) the primacy of classification logic in the human 'hardware' is an unquestioned point of departure, which allows the author to sketch human thinking worldwide as the universal mapping and structuring of inputs from external reality into highly comparable worldviews. The differences he finds are interpreted by means of structural nuances, which are reduced to the workings of the very same universal ironclad logic in the mind. In his numerous studies of mythology a similar intellectual move can be perceived: in these very elaborate analyses Lévi-Strauss (1980) tries to show how the same inborn and hence universal logic is at work in the structuring of human imagination throughout the world. In that sense, the structuralist school of Lévi-Strauss illustrates very strongly what Kearney criticizes as a mentalist view on culture. Although Lévi-Strauss hardly ever uses the term 'worldview' to indicate the ensuing encompassing structures he finds (or builds) across cultures, his use of deep structures in the mind of humanity seems to amount to the same effect.

In the period of the '60s till the '80s of the past century a similar, but more differentiated sub-discipline emerged in American anthropology, known as ethno-science. It grew out of folk taxonomies—a range of sub-disciplines from ethnobotany to ethnozoology—and was later generalised to cognitive anthropology. In an overview article by two prolific scholars in this branch of anthropology (and linguistics) Werner and Schoepfle (1987) explain that this approach aims at mapping in a systematic way what amounts to be the knowledge of different cultural traditions. In practice, ethnographers trigger terms and meanings from a set of informants while presupposing that all human beings actually work in their mind with a preconceived (or inborn) classification logic. Doing field work then amounts to 'filling in' by means of the informants the formal structures of classification about

different domains of reality which are in themselves unquestioned, because all human minds are believed to work in a rather exclusive way within the frame of universal classification logic. Of course, different informants will be competent in different reality domains. Hence, particular taxonomies will be filled in more by some, and less by others. The ethnographer is, in Werner's view, the one who can construct the ideal knowledge system, which is the sum of all competent data and classification thinking around in one particular cultural group. Werner calls this the 'synthetic informant model' or SIM: it holds the knowledge of the 'omniscient informant'. No one member of a community has the total classification system of knowledge, all terms and all concepts, which are formulated in the model. Only the virtual 'omniscient informant', built up as a product of research with many particular informants, adding on bits and pieces along the way, will constitute the overview of knowledge available in the community. The anthropologist thus constructs a sort of superstructure of worldview items which is supposed to represent all partial worldview items in real and particular members of the community. The SIM is warranted, according to the researchers, because it synthesizes in an encompassing model what is present in a scattered way throughout individual cultural subjects. This reasoning is intriguing, since it carries to its limit the *a priori* I indicated in Lévi-Strauss's approach. Based on the presupposition of the universality of taxonomic thinking as the preferential or even unique way of mapping reality, the 'omniscient informant' of SIM thus becomes something like the necessary and "natural" master discourse for a community. Although not one person in any particular community will actually incorporate the model, the anthropologist pretends that the construct as SIM would be warranted and truthful, because it would be the most encompassing instantiation of the deep logic at work. It is clear that this approach carries the philosophical idealism of former scholars to an extreme: actual flaws and patchwork patterns in empirical work does not hinder the scholar, because the deep structure logic which the researcher projects into human worldviews guarantees the validity of the virtual model. It is very probable that all cultures build classifications (Conklin 1971). But it is improbable that the preference for the same logical operators is universal, or that the contents are uniform across cultures.

Over the years critical assessments have been developed, yielding more varied and nuanced descriptions and models. On the one hand, different logics have been recognized in non-western cultures: e.g., inference next to classification logic. Thorough experimental work has been done (e.g., Cole 1996). On the other hand, knowledge and learning have been looked at much more as contextualized processes. This made for perspectives on worldviews as differentiated and dynamic ways of production and use of knowledge, rather than fixed or inborn software structures (Lave 1990). Hence, not the worldview as such is the focus of attention, but rather the processes of acquisition, production, use and change of data, models and folk theories. Along the way, the term 'worldview' silently disappeared from the anthropological literature in the past years. A quick survey of textbooks teaches us that almost none of them mention the concept in their index. A rare exception is Bonvillain (2006), who uses the term exclusively in the context of struggles by

minorities to claim their rights in a context of marginalization: '(Worldview is the) Culture-based, often ethnocentric, way that people see the world and other peoples.' (Bonvillain 2006: 35).

However, a second approach should be mentioned. It is the materialistic view on culture (in the line of M. Harris and a small group of Marxists) elaborated by Kearney. In his book on 'World View' Kearney (1984) explicitly turns against the philosophically idealist approach focused on in the previous sections of the present chapter. Although he dwells on historical roots most of the time (Boas and others) and is limited in his scope to work before 1980, he makes a deep critique of the mentalism in most of the old work, which is largely valid for the broader cognitive anthropological studies of a later date as well.

Kearney refers succinctly to the work of the Russian psychologist Vygotsky. The so-called socio-historical approach of this early Marxist psychologist was an example of situating thinking, and hence worldview, in socio-historical contexts. With a school of researchers (Luria, Leontiev and many others: see Wertsch 1985) he developed an approach on the cognitive world, which emphasized social functions as well as the practical workings of concepts, models and worldview. Kearney picks this up and develops a materialistic theory on worldview which recognizes static aspects (like classification systems), but at the same time looks at subjects in their manifold interrelatedness: they are related to their self, and to others. On top of that they are, through learning processes, related to concepts and pragmatic procedures which are transferred by groups or communities: notions of dealing with time, space, causality and so on. Kearney emphasizes that the ecological environment has impact on worldviews as well: f. ex. cosmological processes induce views about time, while the daily experience of the geographical environment will serve as foundation for a 'carpentered space' (in the western worldview: Campbell 1989) or else a 'habitat life-space' in some oral traditions (Pinxten et al. 1983; Ingold 2004).

What Kearney did not know, apparently, is that the Vygotsky school became very influential in the West, basically by the rediscovery, translation and subsequent introduction in the Anglo-Saxon world of his writings and of a lot of the publications of his collaborators by scholars such as J. Wertsch and M. Cole. Not only did a series of books get translated and discussed, but at least two English language journals were launched (*Mind, Culture and Activity* and *Culture and Psychology*). Moreover, a whole network of groups and institutional programs was developed in the past three decades, stretching from Russia over Europe to the USA and Japan. So, although Kearney's proposal to work out a materialistic perspective on worldview, with links to the early Marxist psychology of Vygotsky, was not picked up in anthropology, a strong group of psychologists now work out a materialistic view, combining cognition, culture and an action perspective in thorough and cross-culturally oriented research. However, the notion of worldview, still so central in Kearney's book, is not used anymore in this line of 'cultural psychology' (which is the actual title of Cole 1996). Rather, the focus is on types of activity, types of contexts, mathematical skills, time (e.g., Vaalsiner 2006) and so on.

2 Worldview and Sphere

A special case of recent date is the work of Tim Ingold. This influential and prolific anthropologist combines an evolutionary approach with a deep interest in an environmental focus on culture and learning. The old work of ecologists such as von Uexkühl, von Bertalanffy and others studied social and cultural patterns and forms in the ecological context of the subjects. The term ‘worldview’ is seldom used, but such concepts as ‘Umwelt’ or ecosystem seem to be conceptually similar or overlapping with what was understood by worldview in the social sciences and philosophy. That these authors came from biological sciences may account for the fact that not many scholars have them brought into contact with the worldview perspective of the humanities. *The Perception of the Environment* by Ingold (2004) is, in my view, the one great exception of recent date in that respect.

Ingold did thorough ethnographic research with the Saami people in Finland. In this major book of his he expands his scope to encompass all hunter-gatherer cultures. A central issue he introduces has to do with cosmology, or the broader notion of ‘worldview’ (without using the term in any central way). Ingold explains how hunter-gatherer peoples live within nature, whereas at least western peasant cultures share a worldview of humans living vis-à-vis nature. The latter have an objectifying view: humans look upon all other creatures as if from an outsider position. Ingold examines how the globalisation discourse of today’s social sciences can only be developed and even understood in this latter worldview: the whole world is constructed as the context which exists outside of human beings, and hence the natural environment is seen as a globe by humans, who distance themselves from it by conceiving it as a whole existing independent and outside of the observer. In the worldview of hunter-gatherers the environment is seen as a sphere, that is to say an environment, which is like a habitat, with all creatures (including humans) living within the whole. The consequences of these different stands on nature or environment are tremendous: in the hunter-gatherer culture humans see themselves on an equal level with animals and other natural phenomena, as is shown in the ‘discourse’ between animals and humans in such cultures (e.g., illustrated in the rock paintings and drawings Ingold discusses). In the western view on reality as a globe, humans see the environment as the objective other, which is somehow estranged from human beings and can hence be manipulated by them. My reading of this new line of research is that, by linking the cultural and social anthropological models (again) with the broader ecological perspective, Ingold in fact opens up a new line of thinking on worldview.

3 Applications

Ingold did link his approach to culture with natural sciences, especially with biology. On the other hand, in the work cited as well as elsewhere (Ingold 2010) he shows a keen interest in the production and use of artefacts, including what is

generally referred to as art. In that sense he allows for applied anthropology to be linked with worldview. In a very specialized field, outside of anthropology, this interdisciplinary link between the worldview focus and applied anthropology is booming in recent research (of the first and second decade of this century). In what is now known as ethnomathematics—linked in name and by means of some researchers in that field with the cognitive anthropological approach, but mainly emanating from mathematics education circles—the relevance of worldview is keenly discussed. The founding father of this sub-discipline, the Brazilian mathematician D'Ambrosio, (e.g., 1985) has made multiple references to the living conditions, the cultural practices and beliefs, the social aspects of schooling and of learning in general, and how all of these have impact on the success or failure of mathematics education.

A group of sociologists and anthropologists carried out research in the same perspective. One of the influential scholars in this regard is the Danish mathematician Skovsmose, who successfully launched the concepts of 'background knowledge' (BK) and 'foreground knowledge' (FK), (Skovsmose 1994). BK refers to the out-of-school knowledge a child brings to school from her culture: concepts and models about reality, linguistic categories, learning styles and strategies to build and use knowledge. FK then encompasses all those concepts and skills the teacher can add on to the BK of each child to introduce it by means of insightful and relevant (to the child) steps to a further level of formal thought. Here again the notion of 'worldview' as such is hardly ever used in the literature. But to my mind the combination of BK and FK seems to add up to the content of what researchers in the humanities and the social sciences understood by worldview (Pinxten and François 2011). The whole engagement with ethnomathematics is to understand what formal thought (and mathematical thinking as an integral part of it) amounts to in different traditions of thinking and learning. From this knowledge the mathematics educator will then try to develop learning procedures and curriculum material, that will allow to counter the serious dropout rates of minority groups and lower social groups.

4 Religion, Ideology and Worldview

In the past decades the concept of worldview is abundantly and almost exclusively used in religious contexts. Not surprisingly it then has also a normative ring.

Already in the Marxist perspective on worldview, which was introduced by Kearney (1984), action and action strategies were an integral part of the concept (his Chap. 2). That focus broke away from the purely objectifying 'idealist' view of structuralists and cognitive anthropologists. In a broader philosophical view we find worldview linked with the old German notion of *Weltanschauung*, with a decidedly normative aspect: it refers to the way the world is known and is (to be) interacted with. Most scholars refer to Wilhelm von Humboldt (1767–1835) as the originator of this notion. Today, philosophers and scholars in religious studies continue in this

line of research. Thus, the well-known scholar in comparative study of religion Ninian Smart gives it a central place in his study on human beliefs (Smart 2000), while other Christian scholars diminish the role of the cognitive or knowledge dimension of worldview in order to underline the prominence of religious and existential dimensions. Thus states: worldview is ‘a commitment, a fundamental orientation of the heart, that can be expressed as a story or a set of presuppositions (assumptions which may be true, partially true, or entirely false) which we hold (consciously or subconsciously, consistently or inconsistently) about the construction of reality, and that proved the foundation on which we live and move and have our being” (Sire 2004: 15–16).

The conservative philosopher of science and of religion, MacGrath (2004) approvingly cites MacIntyre in his disbelief about the project of Enlightenment and calls for a reuse of a worldview notion, that includes knowledge but places it firmly in a broader, not only rational but clearly religious (Christian) foundation.

Whatever the chances for success may be for such a re-emergence of a religious worldview notion, the general criticism on a detached and purely cognitive perspective on worldview and knowledge has been picked up by numerous religious scholars outside of anthropology.

The Belgian philosopher and logician, Leo Apostel, started an interesting research group in the past decades. He was trained by the philosopher of rhetorics Chaim Perelman and by the logician Rudolph Carnap. From the latter’s Vienna Circle work he borrowed the ideal of a “unified science”. Apostel worked extensively with Jean Piaget, adopting the focus on logically coherent development of knowledge from him. Finally, he was close to the research group of Nobel Laureate Ilya Prigogine, who combined ontological interests with thermodynamics. Apostel embraced some of the criticism on Enlightenment thinking, and started out to work on an ethically responsible approach to science (parallel to I. Stengers, M. Serres, B. Latour and others today in the French tradition). This critical position did not reject rationality or a strong scientific approach to knowledge, but looked at science as a form of contextualized thinking and acting. Apostel engaged in extensive collaborative research with scholars from different disciplines, and also took care to involve researchers from various life stance and religious positions. In the course of this work he developed the idea that scientific knowledge is too much scattered and hence vulnerable to particular and even particularistic interests. At the same time the group around Apostel recognized that science is produced by human beings (taking in the criticism by Kuhn (1962) and sociologists of science) and that the latter were in need of a synthetic and self-critical worldview to found their intuitions and heuristics. He founded a research centre at the Free University of Brussels (CLEA, *Centre Leo Apostel*) which is entirely devoted to the study of worldviews in philosophy and science. He thus merged the ‘unified science’ ideal of the Vienna Circle with the pluralistic and interdisciplinary approach he explored in the ’70s and ’80s of the past century. In one of his last publications (Apostel and Vanderveken 1991) the project is outlined as a major research program for the whole of science, recognizing at the same time that science is a human endeavour and thus in need of more than only rationalistic principles. In a sense, the criticism on Enlightenment

thinking by conservative thinkers and religious scholars (such as MacGrath) is taken up as a fair critique. It is answered by the exploratory research in worldviews: a new, scientifically screened and tested worldview is needed, according the group, in order to overcome the failures and inconsistencies of the old Enlightenment project. The centre was successful in attracting research grants, producing PhDs and publishing worldwide. It certainly acquired a high status by organizing a series of path breaking symposia, followed by an intriguing book series with a first class academic publisher, under the inviting title ‘Einstein meets Magritte’. The series title in itself highlights the programmatic perspective of the Worldview group in Brussels: both science and art, both cognition and vision. Over the years a plethora of great names has become attached to the initiatives of this group, all of them engaging themselves with the worldview notion in one way or another (e.g., see Aerts et al. 2005).

Whether the program will be successful in the end is an open question. It is relevant here to mention the initiative since it focuses squarely and uniquely on worldview, linked to scientific research. In their perspective science needs a unifying worldview today. This worldview will certainly be cognitive, but does entail ontological, religious-moral and political stands as well. Because scientific rigour is combined with societal engagement it presents an intriguing positive alternative to the merely ideological worldview concepts of the religions. In that sense the Brussels worldview program is linked with the older anthropological perspective (explicit use is made of anthropological material, but also of the contemporary sociology and ethnography of science with Latour and others in Apostel and Vanderveken 1991). On the otherhand the ecological and evolutionary thinkers (e.g., von Bertalanffy) as well as genetic psychologists (e.g., Piaget) are recognized as foundational for the contemporary project. A question that remains is to what extent the group is aware and critical about the transcendental implications of former philosophies of science (such as Kant and others) and is able to break away from that deep-seated pretention and move to a genuine comparative and possibly pluralistic perspective on worldview. The latter focus is explored at the very least in some of the publications (see Aerts et al. 2005, 2011; Note et al. 2009; Vanderbeken et al. 2011).

5 The Notion of Sphere

As mentioned earlier, the British anthropologist Tim Ingold developed an explicitly ecological perspective on thinking and learning. He speaks (e.g., Ingold 2004) of environment instead of world, nature and such. Older philosophical works have proposed a series of terms, some of which were adopted for a while, and have been dropped later: Russell used the term ‘external world’ (Russell 1918) and others that of ‘nature’. The most successful label may well be that of ‘Umwelt’ (von Uexküll 1926) with its clearly biological or ecological ring. It was often used in its German version in Anglosaxon literature, like the works of general system theory and ecological theory. It might well be closest to Ingold’s notion of environment: a (member

of a) species lives in, adapts to and transforms the natural surroundings to some extent. That is to say, the creature does not live on its own, as an isolated phenomenon, but is best studied in the complex context in which it survives. Ingold (2004) seeks to distinguish between two clearly distinct cultural types of environment. Put differently, human communities think and manipulate the surroundings in at the least two very different ways, according to Ingold. On the one hand there is the way which is taken for granted by western traditions: humans think themselves somewhat detached from the rest of nature and in a way objectify all other creatures and phenomena, as if they belong to a reality that is somewhat distinct from humans. In religious studies and philosophy this way of thinking nature is called the ‘God’s Eye View’: westerners position themselves mentally in an outside viewers position, which can only be found in the religious imagination as that of God, who created nature and humans. In a sense, the mental setup of the western cultural subject is to imagine oneself looking over God’s shoulder upon everything, thus turning it all into objects (Pinxten 2010). In the perception of environment this results in thinking and speaking of reality in terms of globe and global: you can only speak that way when taking this objectifying perspective and distance yourself from the phenomena of nature according to Ingold (2004). On the other hand, Ingold found in his detailed study of hunter-gatherer communities that their imaging and conceptualizing of natural phenomena is fundamentally different. These cultural subjects always see themselves mentally as part of an encompassing network of phenomena, forces, and processes. They think of nature as a habitat, of which all phenomena are integral parts. Ingold calls this intuitive model of nature a sphere. You are not distancing yourself from nature in that mental setup, but you are within it, part of it. The notion of sphere is opposed to that of globe in this particular sense.

In my own fieldwork with Navajo Indians I had experiences, which seem to substantiate Ingold’s idea of sphere: when I made a mud scale model of what earth and sky would look like in my understanding of them from field notes (a shallow basket of the earth topped by a similar upside down structure representing the sky: Pinxten et al. 1983) my informants showed embarrassment. During later interviews with them the scale model had disappeared, and people told me: ‘you can go only so far up in the sky’. In other words, there is no total view of a globe, no outsider’s position, which is thinkable. That would be a counterintuitive way of thinking and speaking. Hence I developed a notion of ‘action habitat’ to describe the intuitive model of nature held by them. It points to what Ingold understands by sphere: human beings are in a network of phenomena and forces, together with all other phenomena and that is what we mean by nature or reality.

6 Back to Mathematics Education

What is the relevance of this section on worldview for mathematics education?

In the list of What Ifs my number 3 speaks about these issues in a very general sense. The hypothesis I can produce from that What If reads: knowing the

background knowledge of the particular cultural and linguistic groups in the class room is important because the results of that research can be used in order to develop appropriate culture-sensitive mathematics education. Again the culture-sensitivity pertains both to the curriculum materials and to the learning procedures.

The discussion on worldview makes clear in a particular way what is meant here. When developing curriculum material it is obvious from such studies that western mathematics education works under the implicit assumption of the universality of the notions of world, environment and space, which are those of Academic Mathematics. When considering set theory, for example, it is taken for granted that the learner (as an instance of the community of human beings in general) reasons about reality in terms of things (set, element), part-whole relations between things, and so on. The child coming from e.g. a Navajo Indian or a Cherokee cultural background is immediately confronted with a way of thinking and speaking about the world, which is fundamentally different from the process or event cosmos it is living in and reasoning about. The intuitive clash between these two worldviews is not explicitly addressed in regular mathematics curricula, because a basic difference at that ontological level is not expected by the AM mathematician. Literature on the Chinese tradition (Needham 1965, vol. III) and on other traditions (Ascher 1998) point to these fundamentally different worldviews, linked with the structural diversity at the linguistic level. The dropout of children at an early stage of education can possibly be linked to the fact that it is left to the children to solve this 'clash of ontologies' while being a pupil in the mathematics class. That is a yeoman's job, and blindness for it is not a good pedagogical principle.

At the deepest level of understanding the very notion of sphere (in the sense of the network of phenomena one lives with and in) against that of globe (in the sense of the 'external world' vis-à-vis which a knower positions herself) obviously implies another worldview. But it also impacts on the strategies and procedures for thinking and learning which are available to the learner. Objectifying reality in the globe-view entails a mental setup where the knower sees herself as detached from the rest of reality. The very experience of a habitat world, which implies the in-relationship and the necessary interrelatedness of everything, is absent. Or better still, it is counter-intuitive. Even ecologists in western culture cannot adopt that mental setup: they want to include context in their decisions and concepts, but then continue to speak about the whole, as if they have an outsider's position. Their point would then come down to defending a more responsible view, when including the context in their global vision. In the sphere perspective, the knower sees herself necessarily within nature, interrelated with and impacting on everything else. Thus, western subjects have a long tradition of believing that 'thoughts are free' and hence have no moral sanctions attached to them. It is primarily action and speech, which are liable to have impact and hence fall under moral rules. In the sphere view, however, thinking, speaking, acting (and ritual) are all considered to be sides of the same coin, and all of these human activities intrinsically impact on reality (McNeley 1981). Such a view can only be understood within the scope of the sphere or habitat view on nature, with humans as fully part and parcel of the sphere.

In mathematics education these different intuitive worldviews entail different types of background or out-of-school knowledge. It is my contention that AM carries the objectifying or God's eye View as intrinsic background knowledge. And that knowledge is not shared or acquired by the pupil coming from a sphere-cultural view. Hence, the latter will likely get in trouble when trying to build up mathematical knowledge through steps of insight, since the background knowledge she falls back on does not connect properly with the out-of-school view of AM. This is not the whole story, which explains dropout, but I propose it is one avenue to investigate in order to understand systematic dropout of several cultural groups.

7 Conclusions

Worldview or out-of-school knowledge or background knowledge are used as largely overlapping notions in the present work. What I mean to say is not that they are synonyms, but rather that the domains they are supposed to cover are pretty much the same. Rather, one term is used in a particular discipline (e.g., worldview in religious studies and in religious denominations), and another one in mathematical education studies (background and foreground: Skovsmose's work).

In the present work I will not go into the nuanced differences, but only consider the basic point on the relevance of this type of knowledge for planning and implementing mathematics education in general. This point is important, because to my experience the rationalistic view on education of formal thinking often seems to disregard the impact of the type of knowledge that the child brings to school. Hence, dropout will be partially linked to this lack of attention.



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