

AN ELEMENTARY SCHOOL IN NETWORKS: CONTRIBUTION TO GEOGRAPHY OF EDUCATION

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Abstract. When we speak about the role of infrastructure in networks, traffic corridors or internet might come to our minds. Nevertheless, a school is also a crucial element within local and regional infrastructure, through which many networks are created and reproduced. Moreover, the principle of a school in a network of relationships could be perceived from several different points of view, such as: 1) a school as a part of the educational system, interactions between institutions; 2) a school network in an area unit, its character and connections to other characteristics of the region; 3) the relationships between a school and its local/regional community, including children, parents or representatives of the municipality.

Although geography has a lot to say regarding these issues, we find few articles dealing with geography of education, both in Czechia and throughout the world. Therefore, the aim of our contribution is to discuss the position of school within the types of networks mentioned, as an institution, which teaches individuals to act while simultaneously acting in its environment as well. Emphasis is placed on elementary schools and examples of research topics are presented.

Key words: geography of education, elementary school, spatial relationships, networks, Czechia

INTRODUCTION

Our article deals with elementary school as an institution, which combines education and upbringing and which should facilitate the transfer of such knowledge and experience as society considers to be of the greatest value, the utmost importance and essential for life. Our interest will extend beyond the mere nature and organization of the educational processes, being carried out in the given institution, because pedagogues focus on these aspects. As geographers, we shall focus on school as a unit, an element in a complicated network of regional and local relationships with

a series of other subjects. We shall attempt to show that the school network represents one of the fundamental infrastructures within a given territory, through which it can partially influence development of the region. School is a remarkable institution in that it trains and teaches others to act, while, at the same time, it must act for itself in some way, within the environment, in which it is located (Arum 2000). Therefore, we are able to focus both on the position of a school in its network of institutional relationships, as well as on processes of networking in space, which take place as a result of the impact of a school on individuals and on the local community.

The objective of our article can be perceived at two distinct levels. First, we attempt to generally define the position of an elementary school in a network of spatial relations, so as to demonstrate the complexity of such relationships and to draw attention to the many aspects that should be considered in conducting research on education, including applied research as well as professional practice in school systems or territorial management. At the conclusion of this text, we should at least attempt to answer the question: how can geographical thought contribute to the study of issues regarding schooling and education and whether it is possible to find substantiate the existence of geography of education as a discipline.

RESEARCH CONCERNING THE GEOGRAPHICAL ASPECTS OF EDUCATION AND SCHOOLING

Although a fundamental geographical work, *The Dictionary of Human Geography*, which briefly introduces research in the field, defines geography of education, we find very few articles in geography that actually focus on such issues. According to *The Dictionary of Human Geography*, geography of education consists of “the study of spatial variations in the provision, uptake and outputs of educational facilities and resources” (Johnston 2003, p. 203). Nevertheless, in compiling his dictionary entry, the author himself cites a very small number of articles from the realm of geography of education, doing little to benefit its institutionalization as a scientific discipline. He cites Bradford (1991), who investigates the spatial effects of a nationwide evaluation of the prestige of British schools, but who never directly refers to geography of education. Bondi and Matthews (eds., 1988), the second publication listed by Johnston, presents the outcomes of a working seminar of a social geography study group from the Institute of British Geographers. In addition to geographers, its contributors include pedagogues, sociologists and political scientists. While such a publication demonstrates the need for interdisciplinary cooperation in studying education, it also documents the complete lack of geographical research in the given field and the adoption of key research topics, from a geographical viewpoint, by other scientific disciplines.

In the Anglo-American world, for instance, social sciences such as pedagogy (also education sciences) and sociology are very active in this research field (Bell and Sigs-

worth 1987; Bryant and Grady 1990; Dyson 2008; Karlberg-Granlund 2009; Kvalsund 2004; Lyson 2002; Miller 1995; Sell et al. 1996 etc.). The scientific discipline sociology of education has emerged relatively successfully within this framework. In terms of its research agenda, sociology of education attempts to encompass topics dealing with geography, such as relationships between a school and its hinterland, school and location, school and community, unequal access to education, etc. (see Halsey et al. eds. 1997). However, if the spatial aspects of education are studied exclusively by specialties connected with pedagogy and sociology, many relationships will be forced to remain overlooked. As a rule, authors from education sciences focus their research on excessive territorial detail (cases studies of a single school institution, etc.) and are more inclined to discuss the projection of external conditions into the interpersonal relations between teachers and pupils, between teachers and parents, and among the pupils themselves. Sociology of education, in contrast with geography, primarily explores the societal outcomes of education, the causes of which it claims and presents as being determined by certain external factors and, in particular, it nearly completely ignores spatial connections. Kvalsund (2004, p. 49), for instance, notes that spatiality is entirely absent in Norwegian research on education: "... the regional dimension of schooling and research is hardly mentioned (...), the relationship between school and the local community have only historical relevance. So a noticeable part of the educational research still locks itself up in the classroom and school." Most recently, a publication issued by Australian pedagogues confirms the unfortunate absence of geography's voice concerning the spatial issues of education (Gulson and Symes, eds. 2007). The book's introduction includes a motto, which sounds very favourable to geographers (p. 1): "Geography...now looks set to become the sexiest academic subject of all (Eagleton 1997)." However, the item of central interest in the publication is not actually geography, but more an attempt to integrate the concept of space into research conducted in pedagogy and sociology. Moreover, the book does not present any systematic research dealing with space or with the organization of space; it merely represents an attempt to speak about space and to make reference to the term itself.

On the other hand, there are a number of geographers, who write about spatial aspects of education and schooling; however, such research is carried out as part of broader studies concerning regional development (Dostál and Markusse 1989), urban or rural geography (Pacione 1984) or economic geography. They do not speak of a unified discipline referred to as geography of education. Besides Johnston (2000), we only encounter this term in two additional publications: Marsden (1977), who makes no effort to define geography of education, and merely states that (p. 21) "'geography of education' is still in its infancy". Hones and Ryba (1972) go as far as to use the term in question in the title of their article, in which they ask why geography of education has not yet been established as a scientific discipline, when specialized fields, such as geography of elections, geography of medicine, etc., already exist. Of course, they also limit their scope to an enumeration of examples of fragmented

research topics, and fail to define geography of education as a discipline. We did not find any fundamental responses to their work and so we shall attempt, with our article, to resurrect discussion concerning the relevance of geography of education as a geographical discipline.

With the exception of our most recent work (Kučerová and Kučera 2009 a, b), exploring the relationship between the development of the school network and the polarization of space—at least in our country, Czechia—questions concerning the geographical aspects of education continue to be neglected. The first, and for a long time, the only person to bring the concept of geography of education into Czech science, has been Wahla (1988). However, under the influence of his time period and prevalent topics in Czech geography at the time, he perceives and defines the object of study—as he names the discipline as the “geography of the education of the population”—narrow and static in contrast with Johnston’s (2000) definition. It calls for the mere description of a certain attained state, in terms of the spatial pattern of a variety of manifestations connected with education, but fails to consider deeper causes and entirely ignores the consequences of this spatial organization. Spatial relationships, however, continue to receive practically no attention, even in Czech pedagogy. Only in recent years, with an initiative from the Department of Educational Sciences in Brno, has a research group been haltingly formed to focus on the relationship between schools and their hinterland (Trnková 2009; see also the special, single-topic issue of the journal *Studia Paedagogica* 2008, dedicated to the theme of “School and place”). Nonetheless, in terms of theory and practice in education, regional development, population policy, and other areas, such research manifests itself as being indispensable.

SCHOOL IN NETWORKS AND NETWORKING THROUGH THE SCHOOL

In connection with geography of education, we focus this article solely on elementary schools, due to the fact that this type of school is the most widespread and the most frequently occurring and because research on elementary schools offers the broadest spectrum of relevance. The largest possible number of individuals has direct experience with elementary school; practically the entire population of the country, at some point during their lifetime, encounters an elementary school, because this level of education is obligatory in European countries. If we consider the position of such a school within its intricate network of (socio-) spatial relationships, we can, for greater clarity, express it with the following schema (Figure 1).

The elementary school, as the focus of our interest, is located in a rectangle in the centre of Figure 1. This represents a general type of this educational institution, which is, at the same time, however, characterized by conditions unique to each particular school under observation. The ultimate nature of this unique institution is determined, on the one hand, by the nature of internal organizational and person-

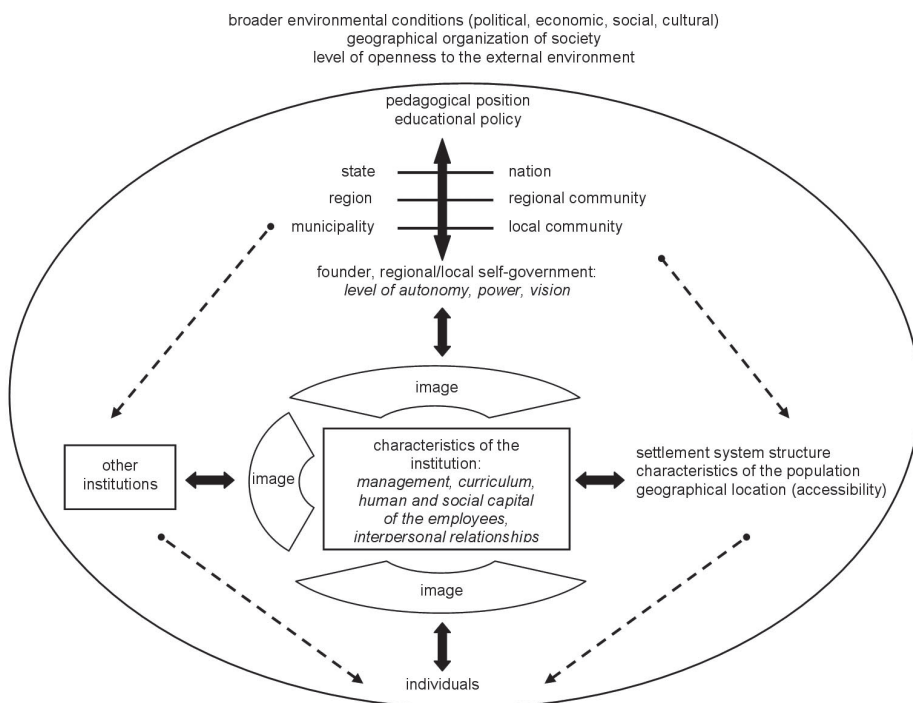


Figure 1. Abstract model of an elementary school's position in the system of socio-spatial relationships
 Author: S. Kučerová

nel relationships, meaning primarily the manner and quality of the school's management, the content and implementation of its curriculum as well as the internal and external relationships of the school's employees. On the other hand, its reputation is shaped by social, cultural, economic, demographic and other characteristics, that we can, for the most part, "objectively" describe or measure (the number of pupils, their nationalities, teachers' average age, the school's budget, etc.). The unique combination of internal (meaning the institution's own) relationships and the characteristics mentioned influence the external relationships of the school as independent part of the system impacting other parts of the system—institutions, individuals, groups of individuals, etc. These characteristics of a school contribute to the formation of its image (Pol et al. 2006 label this as "culture"). We define the word "image", here, with a reference to the work of Finnish geographer Paasi (e.g. Paasi 1986): "An image" (derived from "imagination") can be replaced by the term "perception", that is how the school is perceived either by people inside (pupils and employees) or by outsiders, and how its characteristics, as mentioned above, are appreciated by insiders and outsiders. Image can be contrived, created through the targeted promotion of a school, but naturally it also has its unplanned, or unintentionally created, side, meaning the way in which an institution presents itself through its daily operations

and through events it organizes, what pupils tell parents about the school, etc. In agreement with Paasi (1986), we also emphasize in the schema the fact that only an individual has the ability to perceive an environment or a picture of reality, meaning that the image of the school we are observing operates upon individuals and their behaviour. And because other institutions, including public administration, are also comprised of individuals (in Figure 1 these are expressed as arrows and dashed lines), who, again, perceive reality in a certain way, we have circumscribed our specific elementary school with an “image” lens in all the directions, in which it can be transformed, in return, by the actions of individuals as a reaction to its current state and their perceptions concerning its ideal state. The two-directional arrows in Figure 1 imply these actions.

Other institutions (in Figure 1, drawn in a rectangle, the same as the institution we are observing), with which an elementary school is in direct or indirect contact and which also influence the position of the school in the system of spatial relationships, can include additional educational institutions at various hierarchical levels: other elementary schools, pre-school care facilities, secondary schools, universities, leisure-time educational facilities. Of course, there are also other types of institutions, with which the school communicates: educational authorities, healthcare institutions, employment organizations, etc. Last but not least among these are public administration bodies, which we have given their own space in Figure 1 and whose membership in the category “other institutions”, we expressed with an arrow and a dashed line.

The spatial distribution and characteristics of the population, i.s. the structure of the settlement system and the demographic, socio-economic and cultural structure of the population also have a very strong influence on the image of various educational institutions and the resulting form of the school network in a given region. We also illustrated these relationships in the schema with a two-directional arrow, because we assume that their activities are two-directional in nature. For example, the demographic composition of the local population (the presence of school-aged children) is a basic condition for the existence or non-existence of an elementary school in the locality, but at the same time, characteristics of the school, its image or its prestige could determine whether these potential pupils will attend the school or whether they choose (their parents choose for them) a different educational institution. In the opposite direction, then, the attitudes and values adopted in school, more often than not, lead pupils in the future as they make decisions concerning their place of residence, meaning in essence that schools play a role, in return, in population distribution and in the formation of the settlement system (Kvalsund 2004). This group of environmental factors could even include the geographic situation of a given school, either in terms of the geomorphological characteristics of the area or in light of the population’s spatial concentration or the layout of transport networks. Of course, the micro-regional location of the school building within a settlement or municipality can also influence attendance levels in a given elementary school, when

viewed in light of the everyday movements of the population, wherein, for example, pupils' parents' commute to work takes them in a completely opposite direction and such parents, utilizing their own car for transport, prefer to place their child in a school, located along the path of their work commute.

The relationships described, between an elementary school and other institutions as well as with selected environmental characteristics, can be considered to be rather horizontal in their nature, in spite of the existence of a number of vertical dependencies: for instance, an elementary school's relationship with hierarchically higher levels of schools, or comparisons concerning the position of the settlement, in which a school is located, within its settlement hierarchy, etc. However, we do consider school relationships concerning issues of educational policy and public administration, which are based on the school's position as an educational service provider, to be unequivocally vertical. This train of thought can be followed from theory and concepts (prevailing opinion among pedagogical experts on the organization and form of education, declared education policy) to implementation and educational practices (the actions of the founders of specific educational facilities, curriculum implementation in a school) (Řezníčková 2003). The various hierarchical levels of public administration (from state to municipality) as well as societal groups (from the entire nation to local communities) place a wide variety of claims and demands, which are binding to differing degrees, on a school. Some of these come in the form of legislative regulations (e.g. a minimum number of pupils in a class that is required for the school to operate), policies (the manner for financing education), recommendations (emphasis on specialization and professional training for teaching professions) or in the form of supply—demand relationships (preference for certain types of schools and for certain specialties, such as multi-year gymnasia, schools with increased language instruction, sport schools, etc.). Each individual school then has certain possibilities and abilities, regarding how to more or less effectively react to these stimuli and all of these reactions collectively impact, in return, the entire educational system along with public opinion concerning education and the education level of the population; in essence, opinion regarding who, why, where, what and how to educate. Decisions concerning the very existence and type (e.g. size) of a given educational institution are left entirely up to its founder, which again acts within enabling and limiting conditions (e.g. its authority and autonomy).

We recognized all of the dependencies, described to this point, as direct. They, more or less, directly determine the existence or non-existence of the school under observation as well as its position. Consequently, we have placed the factors mentioned in ellipses in the schema. Moreover, internal dependencies, as opposed to external dependencies, are inscribed inside the frame, representing the school institution. We consider those items, which are written outside of an ellipse, to be indirect factors. They include the broader context, within which education takes place and which can, at times, significantly project itself into the form or organization of said education: the general development of human society including its spatial or-

ganization, its political and economic situation and the permeability of the system to external influences (interregional, interstate influences).

However, it is necessary to point out that the issue of spatial conditionality in education is so complicated and complex that this attempt at expressing it schematically and covering all relationships at all levels demands further study and specification of the dependencies observed. Therefore, we do not object to the idea of our proposed schema (Figure 1) being appropriately amended or reorganized in the future. Its present form, however, is appropriate for fulfilling the objectives of this article.

PROPOSALS OF RESEARCH OBJECT IN GEOGRAPHY OF EDUCATION

As we have indicated above, geography can contribute to the topic of education with its own study of reality. Hampl (1998) states that the object of geography, which can be labelled as the, so-called, complex science, should be studying the overall organization of complexes (meaning relatively comprehensive entities) and the external interactions of elements (i.e. the basic units or particles of a system). In so doing, it should turn its focus away from the internal dependencies of these elements. The so-called elementary sciences focus on the internal dependencies of elements in depth and, in contrast, should avoid in-depth studies of the external environment (dependencies), in which the elements are located. If we regard individual school facilities, as they are represented by the rectangle in the centre of Figure 1, as elements; we can, with help from our schema, identify the object of interest for geography of education. At the same time, with a few examples, we attempt to demonstrate how geography can contribute to work in the field of education research.

If we look carefully at Figure 1, a number of levels, at which elementary education issues should be viewed, become evident. (1) First and foremost these include the activities that take place within the educational institution itself—interpersonal relations, questions of institutional management and work with the vision, form and implementation of the education process, etc. This dimension of the research is clearly no geographical, because it focuses on mutual relationships within an element. Research concerning the indicated questions, therefore, lies within the domain of pedagogy (which is confirmed, among other things, by the thematic composition of presentations made at the annual conference of the European Educational Research Association in Vienna in 2009—see <http://www.eera-ecer.eu/ecer/ecer-2009-vienna/>).

As a result, geography shall preferentially focus its research on the left and right horizontal segments of Figure 1. In the first case this involves (2) the mutual dependencies between an elementary school and other institutions. This problem shall be primarily viewed as a system, i.e. through a collection of elements, which in their combined outcome form something of a functioning system. The work of American sociologist Arum (2000), who attempts to deal with the absence of a discussion of broader dependencies of education, or rather of society-wide, legisla-

tive and political influences on the operations of a school, comes closest to such an approach. According to Arum, research on the relationships of schools with their so-called demographic communities, meaning the demographic and socio-economic characteristics of the population within their direct service area, in the sense that researchers from the Chicago school (see below) conducted such studies, has lost its significance in today's modernizing and globalizing world. With a reference to neo-institutionalism (compare Blažek, Uhlíř 2002), he calls for research of a different type of "communities", namely an association of institutions, which are in contact with schools and with influence their operation. He names such associations "school communities", after redefining the original meaning of this word pair. Although his claim is overly simple and radical, due to the fact that local communities continue, not only in relation to schools, to maintain their significance (see Kvalsund 2004; Kühnlová 2000; Smith 1999), a systemic approach to research on relationships in education can be appropriately illustrated with this example.

If we focus on the right-hand segment of Figure 1, studies concerning the relationship of a school and its surrounding environment or hinterland present themselves. This relationship can be expressed in a variety of ways, primarily in terms of the scale level selected for research. At the broadest level, this concerns (3) the study of networks within a defined region (e.g. a school network in a territorial unit), the nature of a network and its changes in time or the elements of a network in relation to other characteristics of the region. In our previous work we have dealt with this issue, in greater detail, by studying the development of the elementary school network during the second half of the 20th century in Czechia (Kučerová 2008; Kučerová and Kučera 2009 a, b). Using lexicons of municipalities, we successfully compiled a database containing the number of elementary schools in each of Czechia's municipalities at four different points in time: 1961, 1976, 1990 and 2004. Subsequently, in a GIS environment, we conducted a broader analysis of these data and compared the development of the school network in the context of the polarisation of space, we identified problematic (marginalized) areas (in the sense that such areas are defined, for instance, by Havlíček et al. 2008). Figure 2 displays one of our cartographic outcomes. It is clearly evident from this cartogram that, over the last 50 years, a rapid decrease in elementary schools has taken place in Czechia, the same as in other European countries (concerning these decreases, see e.g. Bell, Sigsworth 1987; Karlberg-Granlund 2009; Kvalsund 2004), in some areas to less than half of their initial state at the beginning of the 1960s. Small rural schools, which did not have all 9 grade levels of obligatory school attendance for Czechia, have been closed to a greater degree. Rural peripheral areas are especially encumbered with the closure of schools, regardless of whether these belong to the so-called inner peripheries of the country (Havlíček et al. 2008; Musil and Müller 2008) or to a section of the Czech borderlands, noted for the post-war transfer of German inhabitants and subject to peripherization as a result of the establishment of the so-called iron curtain. According to the values of the change index, the intensity of school closure between 1961 and

2004 manifests itself as more favourable in continuously settled, southeast Moravia or in the hinterland of the largest cities (Prague, Ostrava). In Czechia, therefore, a very significant concentration of elementary schools both in core (or non-peripheral) areas as well as in larger—in terms of population—and hierarchically higher settlement units, is underway. As a result, considerable inequalities exist in the distribution of these fundamental service facilities and the polarisation of space is increasing. In light of the changing geographical organization of society, the increasing heterogeneity as well as organic nature (two-directional connectivity) of the whole (Hampl 1998) claims that the operation of small schools in rural areas is financially burdensome and non-efficient, that the low number of teachers with limited specialties cannot ensure instruction at the required professional level for all subjects, etc., are certainly substantiated (Bell and Sigsworth 1987). Nevertheless, it is necessary to recognize the fact that, in a rural area, an elementary school fulfils a number of other functions for the local community, including cultural and societal functions, and that it represents a certain symbol of autonomy and the municipality's "future", i.e. its "battle" against marginalization.

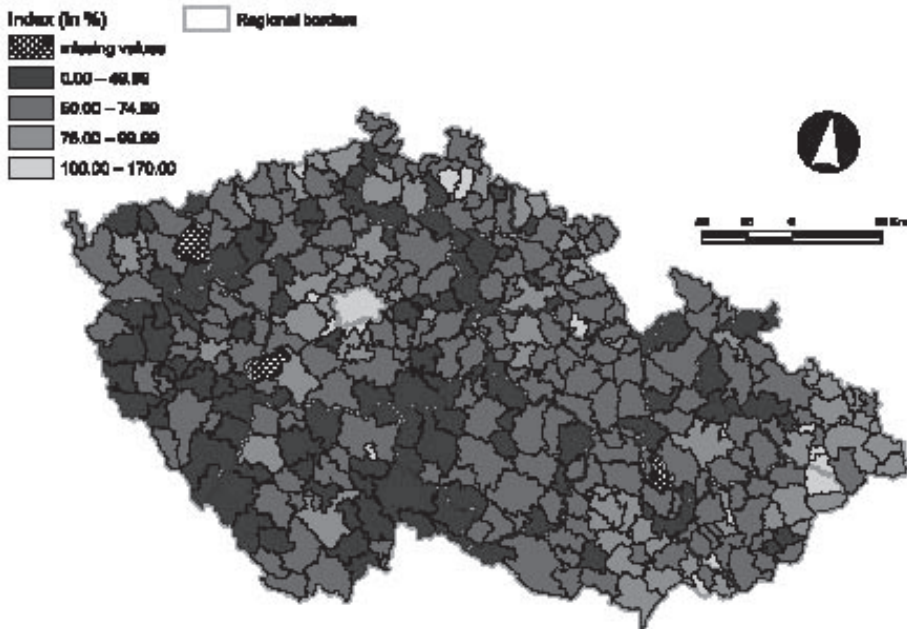


Figure 2. Index of change of the weighted number of elementary schools between 1961 and 2004, for municipalities with a certified municipal authority office, Czechia
Source: Kučerová (2008, p. 44).

As we have just indicated, the next scale level, at which the relationship between a school and its hinterland can be studied, is the local level. This approach in geography of education is rooted in the studies of the above-cited Chicago School

(see Park, Burgess, Mackenzie 1925; compare with Marsden 1977). In compliance with the socio-ecological approach used at the time, these authors contemplated how a school's hinterland (the demographic, socio-economic and cultural characteristics of the population) influences the form of the school itself (its focus, the level and purpose of education). While many of the conclusions of these studies are subject to considerable simplification, with implications of social Darwinism, the Chicago School laid the foundation for further contemplation concerning the relationship between a school and its immediate hinterland. Consequently, its influence can also be found in western countries, in currently popular research on relationships concerning school and place, school and local/regional community relationships (e.g. Kvalsund 2004; Lyson 2002), and community schools (Dyson 2008). The outlined topic can be considered as (4) the third level in geography of education's object of interest, which lies along the boundary of geography (new regional and cultural geography—see Chromý 2004) and educational sciences. While in our geographical research we have tried to grasp the topic in question by conducting in-depth interviews with the residents of settlements affected by the closure of an elementary school, discovering their perceptions regarding the effects of such closures, we do so with an awareness of cooperation with colleagues from disciplines dealing with education (Karlberg-Granlund 2009; Trnková 2009), because such methods of research are not entirely unique to geography. This final, referenced dimension offers the greatest opportunities for cooperation between geographers and scientists, who have, up to the present time, dominated research into topics of education (see interdisciplinary studies Witten et al. 2001), and, as a result, the greatest opportunities for spreading the ideas of geography of education among other scientific fields.

CONCLUSION

The central objective of our article was to direct attention to the existence and possible redefinition of geography of education as a discipline. This term first began to be discussed in western European countries and in the United States of America in the 1960s and 1970s (Marsden 1977), even though work with a similar focus had been conducted in geography as early as the beginning of the 20th century (Hones and Ryba 1972). While *The Dictionary of Human Geography* (Johnston 2000) defines a discipline entitled geography of education, the work of geographers in this field is very rare and research conducted within educational sciences dominates. Such research, however, generally lacks a clear conceptualization of space and a broad generalization of the issue.

In the meantime, a wide variety of aspects concerning education are assuming an increasing amount of importance in theory and in practice. This is due not only to the fact that knowledge and know-how have assumed the status of “strategic

resources for economic as well as regional and local development” (Ball 2009; Morgan 1997). It is also happening within the context of general processes in the development of human society: the spatial concentration of human activities during the modern and post-modern periods (HAMPL 1998), the aging of the population in economically advanced countries (Stolnitz 1994) and many others. This is why we feel that geography should not remain silent on these fundamental issues, but that it should face these challenges regarding societal needs and calling for interdisciplinary cooperation.

In our article, we have, therefore, attempted to characterize an elementary school’s position in a wide variety of networks of relationships with an emphasis on their spatial aspects. In the resultant Figure 1, we took into account the internal relationships and characteristics of a school, which express themselves in the external relationships and in the formation of the school’s image among various individuals (actors within the school, residents in its hinterland, representatives of institutions connected with the operation of the school, as well as the general public). We attempted to capture both the horizontal and vertical relationships of the observed school as well as of additional parts of the educational system (other institutions) along with the mutual relationships of the school and its hinterland, region and surrounding environment. Based on the proposed schema, we then outlined three areas, in which, in our opinion, geography could contribute to research on issues of education and schooling: 1) school as a part of the educational system, interactions between institutions (Arum 2000); 2) the school network in a territorial unit, its character, development and connections with other characteristics of the region (Kučerová 2008; Kučerová and Kučera 2009 a, b); 3) relationships between a school and its local/regional community and their consequences (Bell and Sigsworth 1987; Kvalsund 2004; Lyson 2002; Sell et al. 1996; Trnková 2009; Witten et al. 2001). The collective thought of geographers and researchers in education sciences can greatly enrich the discussion concerning the indicated problems in education, and the development of such dialogue in this field would certainly be a desirable outcome.

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