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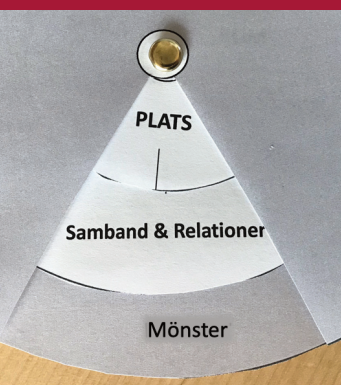


Organising concepts in geography education: a model

Lotta Dessen Jankell, Johan Sandahl and David Örbring

ABSTRACT: This article presents a model for organising geographical concepts that aims to support teachers' choices of what to teach and how to organise a cohesive and appropriate teaching plan for school geography. The model is a result of a collaborative research process between researchers and Swedish teachers. The purpose was to explore how the core concepts of geography, which are implicit in the Swedish syllabus (Örbring, 2017), can be used in teaching as powerful tools for learning (Brooks, 2018) and to develop epistemic teaching practices for school geography to counterbalance the traditional focus on content (Eriksson and Lindberg, 2016; Knorr-Cetina, 1999). During professional development seminars, teachers' experiences were linked to procedural concepts in geography (i.e. concepts that mediate specific geographical ways of thinking and doing (Lambert, 2011)), used at an organisational level in line with models introduced by Taylor (2008). This article describes a model that integrates geographical concepts and suggests how they could be used as tools in relation to each other as well as to specific content. Here, we present the considerations behind the structure and functions of the model, and teachers' reflections on producing and using it in class as a way to develop students' geographical knowing.

Introduction

Curriculum making and the Nordic-continental tradition of *didaktik* share many similarities (Hudson, 2016). In both traditions, the teacher is seen as an active professional who does not just 'deliver' central content, but instead makes conscious and considered choices about how to 'interpret and shape teaching and learning practices from the curriculum' (Bladh, 2020, p. 4). This includes teachers' 'didactical choices', i.e. their choices about what to teach and how to design teaching practices. As researchers and teacher educators in geography education in Sweden, we were concerned about the challenges in relation to these didactical choices in geography. In Sweden, geography is taught as a compulsory subject in comprehensive school between the ages of 6 and 16, and is a specialised topic in upper secondary school (ages 16–19) – primarily studied in theoretical tracks such as social science or natural science programmes. At all stages, it is an integrated, synthesising subject consisting of content from both physical and human geography, with the aim being to 'develop [students'] knowledge of geographical conditions and developing a geographical frame of reference, and spatial awareness' (SNAE, 2018, p. 198).
As previously stated, this integrated subject in school contains a large amount of diverse content, and there is a risk that teaching will be organised by ticking off a long list of content (*cf*. Taylor, 2008). This fragmentation makes it difficult for students to experience the meaning of geography as a way to interpret the world and develop qualitative geographical knowledge.

In Sweden, the syllabus contains directives about what content to teach and what abilities students should develop. However, research shows that teachers interpret this in a variety of ways (Örbring, 2021), and that selective traditions are often a part of the teaching (Molin and Grubbström, 2013; Molin, 2006). This might not be a problem if there is a common view of what Brooks (2007) has called a 'synoptic capacity' in the subject. In essence, a way to 'think across the subject in terms of its big ideas and how they link, and their meanings and purposes' (Lambert and Morgan,

2010, p. 43; *cf*. Rice, 1991). In the Swedish syllabus, however, many of the core ideas of geography are implicit (Örbring, 2017) and there is a need for didactic support to make visible a coherent geographical synoptic capacity and to develop epistemic teaching practices to counterbalance the traditional focus on content (Eriksson and Lindberg, 2016; Knorr-Cetina, 1999).

During 2019–2020, we carried out a practice development research project (van den Akker, 1999) in Sweden through a series of professional development seminars. These were aimed at designing a model based on geographical organising concepts that could be used as guiding principles for teachers' didactical choices. In this article, we share our thoughts behind the model, and teachers' reflections and experiences, both during the process and after the model was tested in teaching. Although the research has been conducted in a Swedish context, we argue that the model could be used in other contexts as well as making a subject-specific contribution to 'applied geography' (*cf*. Lambert, 2016).

Theoretical points of departure

The syllabus in Sweden highlights both factual knowledge and abilities, but integrates these knowledge types into what we will argue could be seen as 'knowing'.

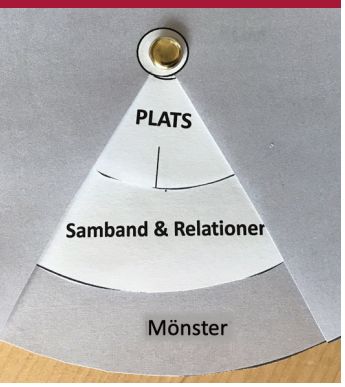
In disciplines or practices, there are certain ways of doing things to produce and develop knowledge (Schatzki *et al*., 2001). These approaches to doing (both theoretical and practical) can be understood as 'knowing', which means a 'capability' when the knower (or learner) is dealing with something to be learned, i.e. creating a 'relationship' to a certain content knowledge (Carlgren, 2015). Consequently, geography teachers need to find ways to set geographical knowing in motion (Radford, 2013), to make it possible for students to experience the relationship between content knowledge and geographical ways of organising it. Since school geography is integrative and broad, teachers need to be explicit about what it means to organise content in a geographical way in order to enable geographical knowing to emerge. In this process, subject-specific organisational concepts are important, i.e. concepts that can link everyday experience with higher theoretical levels, for example geographical ideas (Brooks, 2018). These concepts are seen as tools for developing geographical learning because they bridge the gap between ideas, experiences and processes (Brooks, 2018). Procedural concepts can be used as organising concepts, since they mediate subject-specific theoretical and practical ways of knowing; thereby 'doing things'. Thus, they form a bridge between theory and practice (Carlgren, 2017).

Geographical organising concepts – considerations and demarcations

Taylor (2008) introduced organising concepts (e.g. change, diversity, interaction, perception, representation) to articulate the 'link between content knowledge and overarching disciplinary ways' to organise teaching (Taylor, 2008, p. 51). In history education, similar kinds of organising concepts have been seen as subject-specific tools that capture the syntactic structures of the discipline, and as such they can be used to design teaching (Seixas and Morton, 2013). In history education, these procedural concepts have been labelled 'second-order concepts' (Lee, 2005) or 'thinking concepts' (Seixas and Peck, 2004). We agree with Roberts (2013a), that geographical concepts such as 'space' and 'place' do not easily coincide as solely procedural, 'because of their complex and multiple meanings' (Roberts, 2013b, p. 82). Depending on how geographical concepts are used together and in relation to content, they could have similar functions and thus become powerful tools for learning (Brooks, 2018). This means that, although the concepts themselves might not be exclusively subject specific, depending on how they are used, the concepts can bridge the gap between abstract concepts and a specific topic being studied and thus enable geographical learning (Brooks, 2018). For example, using space together with patterns is a way to interpret the COVID-19 pandemic in a 'geographical way'.

Methods and aims

With this point of departure, we engaged 18 teachers to take part in a professional seminar series consisting of three sessions of three hours each. The aim was to explore how to use geographical procedural concepts as organising concepts to energise and sharpen geography teaching. As a starting point, we used research on 'big concepts' or 'big ideas' (Leat, 1998; Jackson, 2006). Before the seminars, the teachers read articles by Taylor (2008) and compilations of concepts gathered by Roberts (2013b) in order to develop an idea of what kinds of geographical concepts could be used as organising concepts to structure teaching and enable geographical



thinking. In the first seminar, we used the reading to select organising concepts relevant to the Swedish syllabus. Then researchers and teachers discussed the hierarchy between the concepts and their different functions, and a modelling activity was initiated.

The purpose of the modelling activity was to collaboratively construct a model that could support teaching by visualising the functions of the organising concepts in relation to each other, based on teachers' experience and the syllabus. Our selection of organising concepts was driven by two questions: (i) What concepts have the potential to mediate geographical knowing (theoretical and practical) relevant to school practice? and (ii) How can these concepts be structured to support teachers' didactical choices and students' geographical learning? The model was then tested by the teachers in their geography classrooms. The collaborative process is presented below, resulting in the final model with the concepts selected and operationalised in relation to each other and to their function as organising concepts in teaching.

Organising concept 1: the lens of geography

The first step in the modelling activity was to define organising concepts that capture and mediate the very core of geographical knowing. This core could be used as 'a lens through which the student can learn to see, interpret and explore the world in a geographical way', as one of the teachers in the group expressed it. The idea of a 'geographical lens' that arose during the modelling activity led the group to draw an imaginary student in the middle (see Figure 1) and discuss what concepts could enable students to experience how geographers study and explore the world.

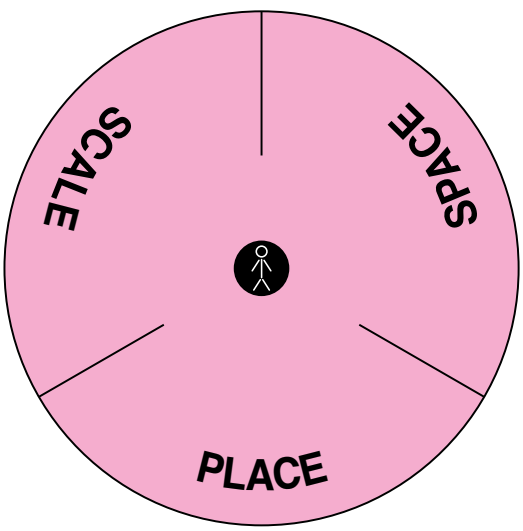


Figure 1: *The first type of organising concept arranged as an inner lens through which students can learn how to see and interpret the world.*

The concepts that everyone agreed had to be in the core lens were space and place. Through spatial perspectives and place awareness, students can learn how the geographer selects, organises and structures content, data and events. This is something that students need to learn in order to get to know the world around them (Lambert, 2011). However, what does it mean to use place and space as organising concepts for teaching? What questions do these concepts invite students to ask and in what way do they invite students to *act* geographically?

Place and space are closely connected and can be understood as both substantial and procedural. Place can be considered the 'raw material' of geography (Rawling, 2018) and as such it inherits substantial knowledge in terms of names and characterisations of places. Place gives rise to questions such as: what could be the function of a place (Cresswell, 2015)? To answer this question, students need to organise knowledge about a certain place (absolute and relative location, facts about natural and human circumstances) and interlink this knowledge. This procedural way of linking, structuring, interpreting and analysing can be considered as organising.

Furthermore, place can be considered procedural, as in the aspect of a 'sense of place' (Massey, 1991, 2014), i.e. to become aware of how to organise knowledge about a place in relation to people's emotions, power and ideologies. An example would be to organise knowledge in order to become aware of who has the power in a place. This aspect of geographical knowing can support students' understanding of the democratic meaning of places for themselves and others in the world.

Space can be used from a substantial perspective as spatial data to be measured in order to map the world. In addition, space as an organising concept can be understood as a way to organise spatial relations, i.e. a way to become familiar with where places and phenomena are situated on Earth in relation to each other. This gives rise to questions such as: what does it mean that a place is situated at a certain location? This way of dividing place and space is similar to an approach used in a GA Think Piece (2013), but there might be differences in terms of what we think these concepts mediate in relation to learning.

In the Swedish syllabus, the ability to develop a 'spatial framework' is explicit. Developing this ability involves combining space and place. For the teachers involved in our seminars, place was

considered concrete and related to actions such as identifying location and describing the characteristics of a place. Meanwhile, space was considered more of a dimension or perspective used to interpret a phenomenon or to reason about the meaning of the fact that places are situated where they are. In order to use a spatial framework to understand, for example, how people have changed their patterns of movement during the COVID-19 pandemic we need to organise spatial data to understand which locations are involved, combined with a spatial perspective in order to interpret the patterns of people's behaviours.

While Taylor (2008) selected space and place to be at the centre of her model, she also used time, because studying something through space and time is central in geography. In our discussions with the participating teachers, they thought of time mostly in relation to change, because nothing can change without a time perspective. As this concept is mostly used to mediate changes in human or natural processes and landscapes, we, therefore, decided to not include time in the concept of change.

A third concept, which everyone agreed on as a geographical lens, is scale (Cox *et al*., 2020). Furthermore, as the way in which geographers use scale is unique, it is important to make this explicit in geography teaching. Sometimes geographers use scale as a 'mechanism to organize geographical content' (Cox *et al*., 2020, p. 114). In essence, it is a predetermined lens through which the world is observed (Lambert and Morgan, 2010). However, scale can also be understood as socially constructed 'as the conceptualization of how the local and global might influence our understanding of social, economic, political, and physical processes, as well as their impact on our world' (Cox *et al*., 2020, p. 114).

We use scale as an organising concept in order to structure and interlink facts and events at local, regional and global scales. To arrange knowledge, for example, connected to complex sustainability issues (e.g. climate change, migration, food supply) in relation to scale makes it possible for students to become aware of how their own actions are connected to people and environments in other places.

So far, the inner circle of our model consists of concepts that can be considered both substantial and procedural, mediating the core of geographical knowing and initiating geographical questions. The inner circle is, therefore, similar to models used to describe what it means to think geographically in relation to teaching (GA, 2013). The next step in our model-making activity was to define *what* is to be analysed and interpreted through the geographical lens.

Organising concept 2: the objects of geography

The second circle represents organising concepts that capture what geographers study; the objects that are relevant in the school context. When architects arrive at a place they look at the design and shape of houses; biologists study living things and their relations within ecosystems; sociologists study people and their relations; historians interpret evidence from the past, and so on. What do geographers observe and study in a place and at different scales? As school geography is an integrated subject consisting of both physical and human geography, it is somewhat challenging to define the objects of knowledge with similar ease. In our dialogue with teachers, we asked: what is the *object of study for geographers* in a place or a landscape, or in issues (e.g. climate change, migration, global trade)? What objects are relevant for students to learn in school (in line with the syllabus)? What do geographers analyse and explain? What geographical concepts could guide these choices?

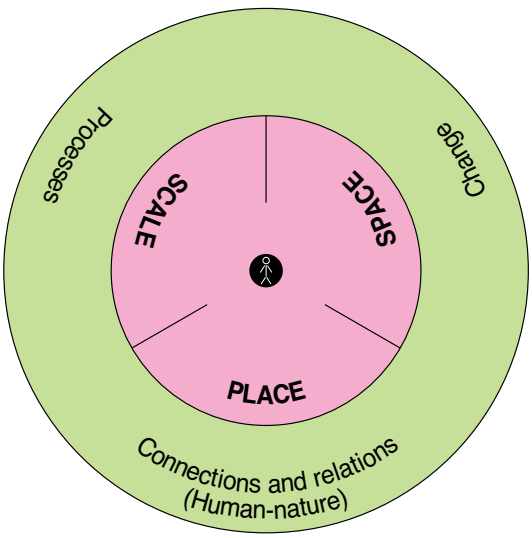
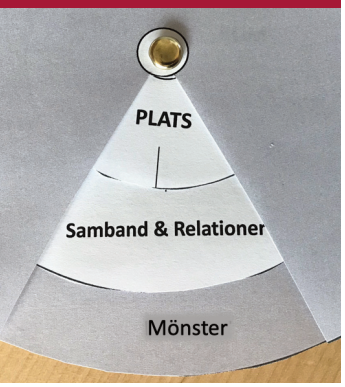


Figure 2: *The second type of organising concepts, representing the objects geographers study, is also an issue that could be relevant for students to learn.*

In order to engage with these issues, we used inspiration from the GeoCapabilities project and the capability perspective formulated by Lambert *et al*. (2015; Bladh and Örbring, 2016), in which different types of geographical knowledge are understood as powerful – i.e. specialised and disciplinary – compared with everyday knowledge (Young, 2008; Lambert and Morgan, 2010). Thus, a knowledge-led curriculum is highlighted in the GeoCapabilities project, where specialised



knowledge meets and adds to students' experiences. The GeoCapabilities approach contributes important insights into what geography can bring to young people in terms of: deep descriptive and explanatory 'world knowledge', relational thinking and a propensity to apply the analysis of alternative social, economic and environmental futures to particular place contexts (Lambert, 2016, p. 404). To complement this, Maude's (2016, 2018) typologies offer a way to define the kind of powerful geographical knowledge that students can learn and what they can use such knowledge for.

In relation to the Swedish syllabus, both researchers and teachers agreed that one of the central aspects of what students should learn through geography is to enquire about the relations between humans and nature. This involves becoming aware of the dependency and challenges implicit in human–nature relations and to experience different ways of analysing the connections between them. This is central to geography as a discipline as a way to organise knowledge in terms of different kinds of connections and relations, vis-à-vis space, place and scale (*cf*. Maude's typologies, Maude, 2016, 2018). For example, organising knowledge in terms of causal connections (*cause and effect*), such as situations where human activity is affecting natural processes, leading to feedback that in turn affects people's living conditions. Sometimes, depending on the context, knowledge needs to be organised in terms of *cause and consequences*. When people are involved, there are different consequences depending on *where* you live and *what group* you belong to. For example, climate change has different consequences for different groups of people. In geography, students also need to explore and describe the *relations* between humans and nature, and between people in different places in terms of similarities and differences; for example, in living conditions (*cf.* Taylor's diversity, 2008). Organising knowledge as connections and relations is a procedural aspect of geographical knowing and a part of what 'relational thinking' in geography is about (Lambert, 2011; Lambert and Balderstone, 2010). Teaching needs to make it possible for students to become aware of the connections and relations in different geographical issues, thus we made *connections and relations* explicit as organising concepts in the model.

To understand these connections and relations, the concept of 'change' is a key factor and a crucial driver (as highlighted by Taylor, 2008). By focusing on change in landscapes, issues concerning nature and human relations, and processes, knowledge can be developed about what has happened in the past, and through that students can understand future changes (Taylor, 2008). Using change as an explicit procedural concept could give students the opportunity to develop awareness of, and reflect on, how things in the world cannot be described as constant (how the world is), but need to be understood in relation to constantly changing processes. In geography students can experience the differences in how geographers organise knowledge in relation to long geological time perspectives, as well as much more rapid changes in, for example, climate, ecosystems or human activities.

Another object of interest for both geographers and teachers in relation to the syllabus are the human and environmental processes (e.g. orogenes, erosion, gentrification, urbanisation). Research shows that students can have alternative conceptions when understanding processes, for example regarding the formation of eskers and erratics (Arrhenius *et al*., 2021). What processes have created certain landscapes or cultural changes? What natural factors, actions or steps were involved? To answer these questions, students need to become aware of how to explore and interpret traces in the environment or in society. The second circle, placed outside the inner lens, can be turned around and combined with the concepts in the inner circle, depending on the purpose and focus of the issue at hand. This construction aims to make it easier to set different aspects of knowledge in motion and relate different concepts to each other, depending on the issue. While doing so, new questions can be asked and new problems addressed and explored. Examples of this are given below.

Organising concept 3: the outcomes of geography

The guidance for the inner lens was to capture core knowledge, through which students can learn to analyse and interpret the world in a geographical way. The guidance for the second circle was to capture what (objects) geographers (and students) study. For the third circle, we asked: What is the geographical knowledge outcome? How can students learn to present what they have been studying in a geographical way (i.e. in a way that resembles how geographers organise knowledge outcomes)? The first answer to this was that geographers produce maps, but they also depict knowledge outcomes in terms of spatial patterns and interrelated systems.

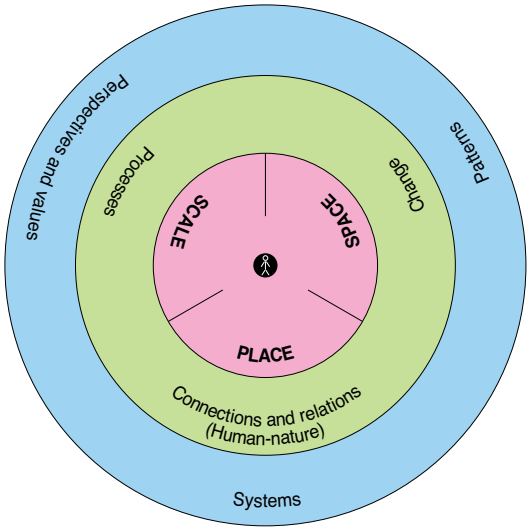


Figure 3: *The third type of organising concepts represents how geographers present knowledge outcomes.*

Explaining the world in such terms is something that Buttimer (1993) defined as 'root metaphors of geography'. Spatial patterns and systems are concepts that encapsulate how geographers organise knowledge in order to visualise the spatial relations between causes and effects (or consequences), as well as the spread, occurrence and disparity of phenomena and events. Furthermore, these concepts are used to explain characteristics and changes in landscapes. In the Swedish syllabus, being able to interpret spatial patterns has become more explicit. Teaching, therefore, needs to make it possible for students to become aware of how to use *patterns* in a procedural way, e.g. to visualise how migration patterns changed in Europe in 2015, to analyse changes in patterns of food resources or land use in a region.

The researchers and teachers then agreed on the importance of being able to use *systems* to organise knowledge, i.e. to explain how various human and natural factors are intertwined and interconnected in terms of systems. Many sustainability challenges taught in school geography are highly complex and there is not one single cause or consequence, but rather 'a system of several highly interrelated causes and consequences' (Cox *et al*., 2020, p. 113). As such, a systems approach has been considered important in order for students to learn about the complexity (i.e. unpredictable, changing, acute and with no correct solutions) of issues that will have great impact on humanity in the near future, and they need to practise such an approach in order to see details as well as the whole (Wiek *et al*., 2011; UNESCO, 2017). Also, it is crucial for students to learn about the underlying structures of these systems as a way to think of possible solutions to challenges (Senge, 1990). Issues such as climate change, food shortages or consumption are examples where this kind of thinking needs to be developed among students. Research has highlighted students' difficulties in understanding complex geographical systems (Cox *et al*., 2019; Favier and van der Schee, 2014; Karkdijk *et al*., 2013), and one reason might be the lack of explicit attention towards a systemic approach. Studies have also demonstrated the importance of including the spatial embeddedness of systems, since 'the real impact of causes and consequences in a system can only be fully understood if it is known on which spatial scale these causes and consequences are situated and interwoven' (Cox, 2020, p. 113). Being able to arrange knowledge in terms of patterns and systems can support students' learning in relation to structuring geographical content concerning complex and 'wicked' problems, with no right or wrong answers.

In the Swedish syllabus, sustainability issues are at the centre of the geography syllabus. Students should not only learn to explain them, but also to discuss different perspectives and values in relation to solutions because they highlight different conflicts of interest (e.g. economic versus ecological sustainability). Taylor (2008) used *perception* and *representation* as organising concepts to help students become aware of different ways to interpret and value an issue. In our seminars, the teachers wanted to make this aspect – of using values and different perspectives – explicit for students. It is important that students learn to describe the world in a nuanced way and not as true or false; otherwise, there is a risk of becoming caught up in a selective tradition that is not compatible with a complex reality (Molin, 2006). The construction of the third circle in our model aimed to make it easier for teachers to combine and embed a spatial approach to patterns, systems, perspectives and values in relation to human–nature connections, which are all important aspects of thinking geographically (Jackson, 2006).

Using the model in the classroom

During the seminars, researchers and teachers discussed the need to avoid a conceptual stalemate, i.e. to retain flexibility when relating the organising concepts to each other. To address this, a paper prototype of the model was suggested in order to facilitate planning in class (see Figure 4). The design allowed the user to move the concepts around, combining them in different ways depending on the specific geographical issue at hand. In order to make this flexible way of

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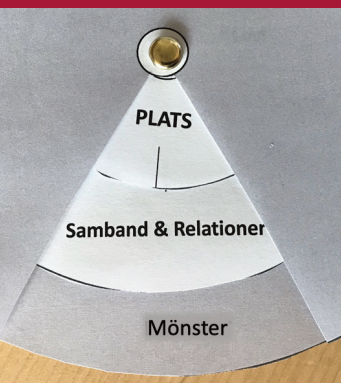

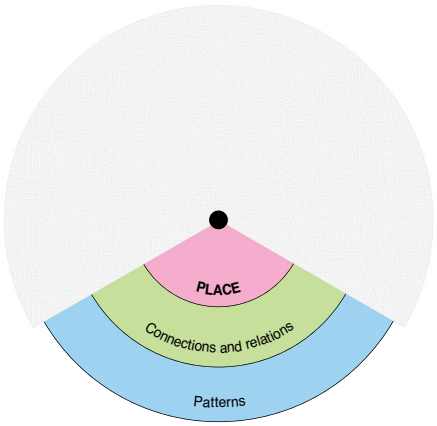

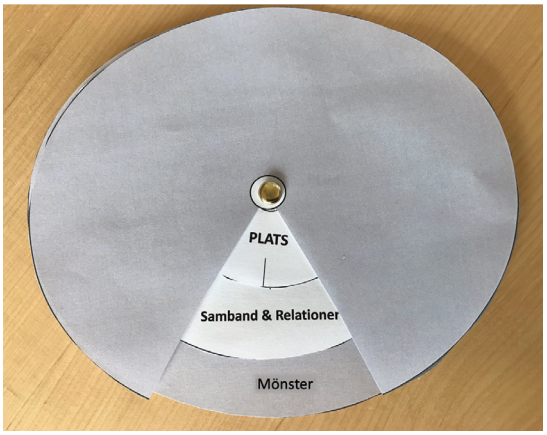

Figure 4: *(a) a model that has been adjusted for use in practice, where different concepts can be chosen and related to each other; (b) a paper version used in teaching with students (concepts are shown in Swedish).*

combining concepts more explicit, the design was elaborated by adding a cover, which allowed the combination being used to appear more clearly. The idea of making the model *movable* became a way to set the organising concepts in motion, literally as well as physically, and to explore, visualise and unpack relations.

Teachers tested the model both in planning and with students. The ambition was not to collect empirical data from these trial runs, but rather to discuss the model and adjust it in accordance with teachers' experiences when using it to plan lessons. One such experience occurred when one of the teachers was planning a lesson series about cities with her 16-year-old students. They started with what geographical lens to use and continued with the object to study through that lens and how to visualise the knowledge outcome. She selected *place* in combination with *change* and *patterns* and assigned the students two cities (Bangkok and Stockholm) to analyse through these concepts, constructing specific questions to scaffold the students' analysis (see Figure 5). The questions functioned as a start point, and she asked students to devise with additional questions and define problems they wanted to explore using other concepts from the model. To facilitate this, the teacher made paper copies of the model and took them into classroom (see Figure 4). The structure of the model seemed to invite students to explore the cities from several geographical aspects, particularly since they could physically move the model and combine the different concepts within

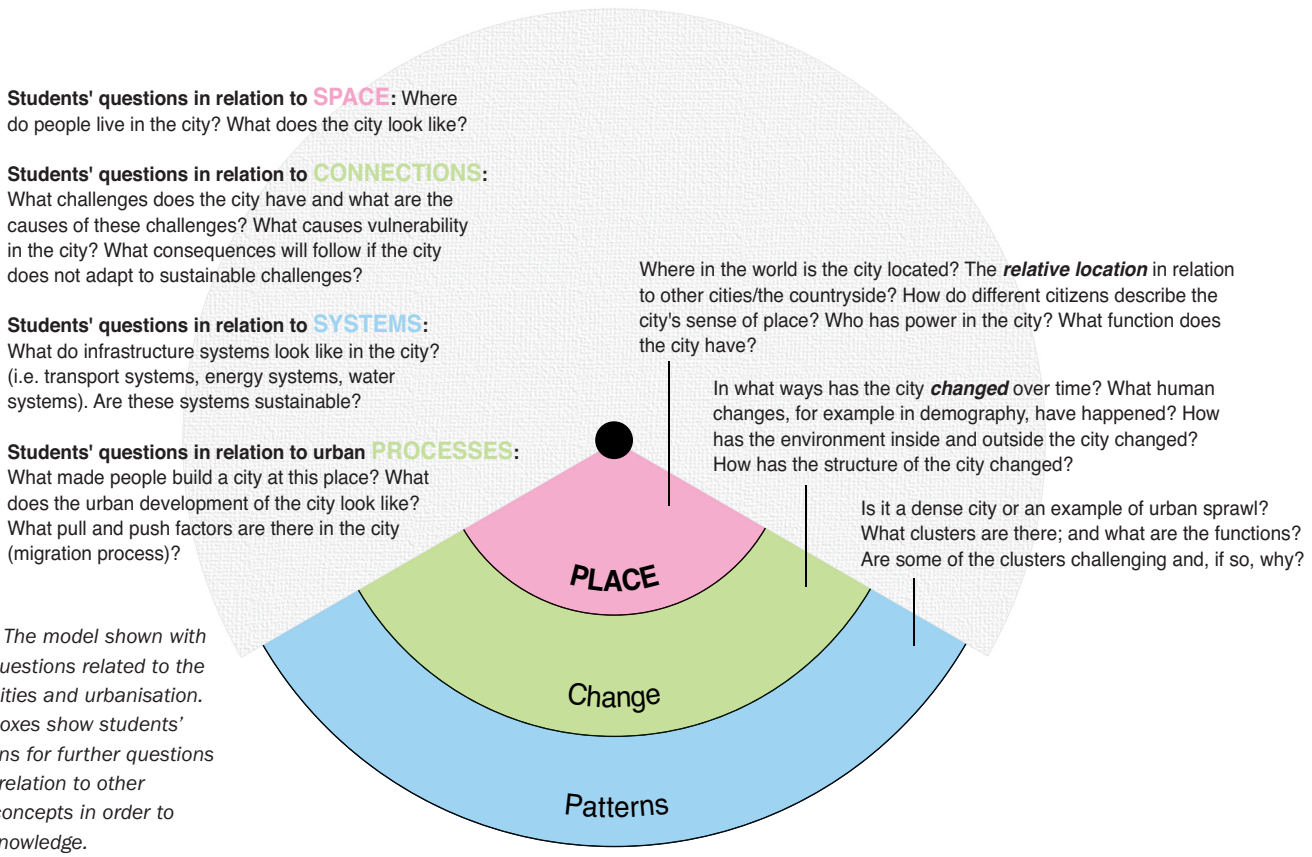

Figure 5: *The model shown with specific questions related to the issue of cities and urbanisation. Dashed boxes show students' suggestions for further questions to use in relation to other thinking concepts in order to deepen knowledge.*

it. The students were curious about how to use the concepts to analyse the cities they had been assigned.

In a professional development seminar, the teacher concluded that the model had been very useful and that her students had spoken 'geographically' while they used the concepts to explore and compare the assigned cities. Thus, the model seemed to invite students to ask and communicate about the cities *through* aspects of geography that normally did not appear in their communications. For example, how the students presented changes in terms of urban processes. In this way, according to the teacher, geographical knowing became visible during the lessons.

Generally, the teachers' experiences were that the model was useful to scaffold discussions about geographical issues and problems with students. Furthermore, since students and teachers used the same language (in terms of organising concepts), it became easier to give feedback on how to qualify students' knowing, e.g. how to use these concepts as a way to interpret and analyse an issue. In turn, this feedback was not limited to the specific task or topic, but was something that the students could take with them to the next module.

An important conclusion in the group was that students needed help with limiting the scope of their questions – if students used all of the concepts at once, it became time consuming and somewhat confusing for them (*cf*. Taylor, 2008). Therefore, concealing some concepts and making others explicit seemed a good idea (Figure 4). Another important and shared conclusion among the participating teachers was that the model was usable for teachers to plan their lessons by asking didactical questions (What? How?) in relation to the concepts and the knowledge they mediate. In turn, these questions visualised what students needed to experience in order to develop that particular form of knowing (see Figure 6).

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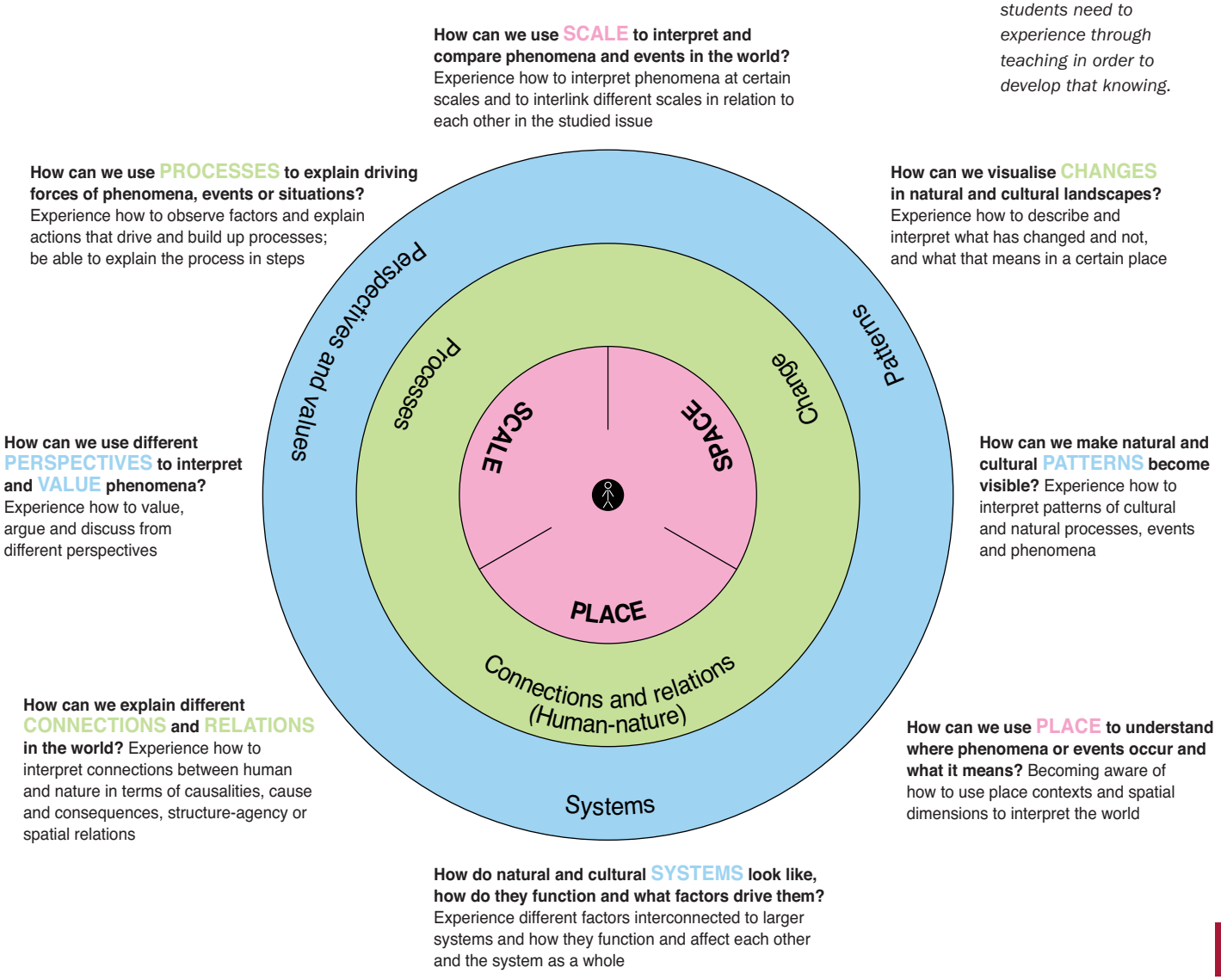
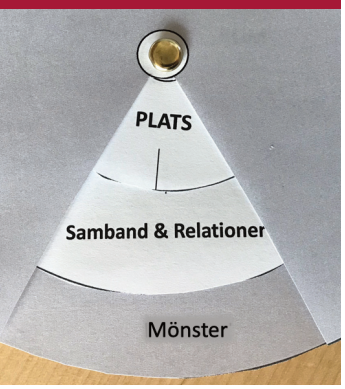


Figure 6: *The model and questions that capture what the organising concepts mediate in terms of knowing and what students need to experience through teaching in order to develop that knowing.*



Another aspect discussed in the seminars was that the model allows teaching to become enquiry based rather than the learning of facts, because it invited students to question, and it became an analytical framework for students as well as teachers to use.

Concluding remarks

In this article, we have presented a model that can be used to support teachers' didactical choices in how to structure, organise and set geographical knowledge in motion. Furthermore, we argue that the model can help teachers and students to gain experience in using organising geographical concepts in order to interpret and analyse geographical issues, and thereby qualify their geographical *knowing*. This applies not just in terms of accumulating content, but also in terms of 'applied geography' (*cf.* Lambert, 2016). The tentative results suggest that the model opens up opportunities for what might be called a 'geography lab': an active learning space that has the potential to counterbalance the traditional focus on content, and instead establish an epistemic practice suitable for geography (Eriksson and Lindberg, 2016; Knorr-Cetina, 1999). The knowledge contribution of the article can be seen as two-fold. First, how geographical procedural concepts can be arranged as organising concepts for teachers in their planning, and, second, how this approach can enable students to experience geographical knowing in a concrete way through teaching. The model has similarities with other models used in geography teaching (e.g. GA, 2013), even though the ways in which the concepts are selected, concretised, structured and operationalised are different. Our model could complement other models and be inspirational in other teaching contexts. A next step is to systematically apply and evaluate the model and explore its potential as a planning tool for teachers. We invite researchers and teachers to engage in this endeavour.

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