



The linchpins of geographic reasoning for a successful teaching/learning: Comparison between school curricula in Italy and Brazil

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Received: January 2023 – Accepted: March 2023

Abstract

A considerable portion of the most recent researcher in the field of geography learning has been dedicated to the investigation of the *modus operandi* employed in the interpretation of the spatiality of facts and phenomena. Therefore, mental operations essential to the exercise of an effective geographic reasoning are, nowadays, the object of systematic investigations. It is in response to this contemporary reality that it is registered in several countries that initiatives aimed to the recent reformulation of their curricular norms guiding the teaching of geography and, consequently, their educational systems. With the purpose of identify and understand the geography prescribed in the official documents that rule the education in Brazil and in Italy, this study shows the results of a comparative reading among these national documents. In our comparative analysis, to which we associated to the Grounded Theory, we took as reference and foundation the substantive concepts that we considered essential to the geographic analysis (space – scale – time) and to the development of an effective geographic reasoning. The results of this analysis reveal a set of significant and diversified conditions and, also, to a certain extent, divergent as the geography that is intended to be taught in both countries.

Keywords: National Curricula, Geography Learning, Geographical Reasoning

1. Introduction

It's not only today that the renovation sought in teaching geography aims a didactic-pedagogic action that overcomes the forms and methods of teaching-learning which to lead the students to a mere replication of contents, and, to the consequent lack of their interest in this subject.

Such fact leads us to ask: What happens in the process of teaching and learning geography at school? Does the old known didactic, which applies the traditional and related to memorization of facts and phenomenon methods, contributes to the young student's disinterest in this subject? On the other hand, we also debate: How much of motivation of young

students of geography is linked to the new possible and available technology and to the innovation of the lessons by the teachers? How to promote a geography teaching which stimulates the interest of the young students and connects him to the understanding of reality?

Certainly, all these questions lead us to think about the success or the failure of school geography among the students, meaning that searching for the answers for all the questions turns out to be of extreme importance. Answering all these questions is not, obviously, the purpose of this study, nevertheless, these questions were the reason that stimulated us to develop this research. Even before discussing about these already established questions, we thought it is essential underline what we expect or understand of geography.

Therefore, we believe it is significant to treat the linchpins that sustain the geography science, once we believe they are possible catalyzers of active and dynamic scholar geography. We start from the principle that, to take a step forward, that is, in order to answer the questions posed, it is relevant to review the meaning of the substantive concepts of this science – its pillars.

In this study, we presented part of the results of research carried out within the framework of geography involving an analytic-comparative lecture of curriculum norms that governs the stages of the *Ensino Fundamental* in Brazil, and of the *Primo Ciclo di Istruzione*, in Italy. By means of a theoretical discussion, interpretation, and comparative analysis presented, we seek to make associations and reflections concerning to the geography established on the Brazilian and Italian curricular orientations. The discussions elaborated in this study attempt to propose problems related to the importance of the scientific pillars of science geography for of the development of a scholar geography that reveals more significant to the teacher and, consequently, more interesting to the student. Such task also allowed us to comprehend, in a more systematic manner, the curricular norms instruments, in question, by comparison (Botelho, 2022).

We choose the comparative method of Weber, as suggested by Sartori (1990), Zotti (1996), Schneider and Schmitt (1998) and

Fachin (2006), to analyse the documents that has the same intention, are similar, but, distinct at the same time. The curricular norms analysed in this study are of the same nature and property, the object of orientation and education in their countries – Brazil and Italy – being effective, contemporary and current normative. These set of attributes make theses normative analogues and subject to investigation according to the analytic-comparative method (Ornaghi, 2014, p. 140).

The comparison of a national document with an equivalent international, has the aim to reveal another context and show us how the external context, with its peculiarities, similarities cultural differences organised itself face to the same aim, which is, in this case, the rules and indications for geography teaching. Generically, present, analyse and compare different educational normative contexts is still an attribution for us to understand tendencies in education. And, in the specific case of this study, comprehend what is expected of the geography teaching in a national scale with developments within international level. We are aware that when comparing similar documents in different cultural contexts, what we understand of geography and its substantive concepts can reveal discrepancies, at some point. However, the geographic science has been developed in academy in an environment that allows exchanges among peers related to its scope, methods, main concepts, and categories of analysis.

We reaffirm that we will use, as data base, official documents from Brazil – *Base Nacional Comum Curricular* (BNCC) – and from Italy – *Indicazioni Nazionali per la scuola dell'infanzia e de primo ciclo*. The former was ratified in 2017, while the latter, in 2012 and revised in 2018. The reading and analysis of these documents was done from section of the documents destined to the *Ensino Fundamental* in Brazil and to the *Primo Ciclo di Istruzione*, in Italy, both relatively correspondent. Such clipping was made according to the student's age (between 6-7 years and 14-15 years) and the presence of geography in all this respective scholar years, in both countries.

Between the end of 20th century and the beginning of the 21st century it began, in the field of geography teaching, a movement that involved – and still does – researchers concerned for innovations that reinforce the meaning and the importance of geography learning in school. This intellectual movement includes researchers worried about a certain *modus operandi* of geography, aiming the development and comprehension of cognitive processes linked to the spatial order of the things and phenomena and to the way of thinking problems under the geography vision. In this movement, there are tendencies and indications of which ways we can follow in order to overcome the cited problems and presentation of alternative proposes of didactic-pedagogical actions, with the aim of dynamize the geography teaching, such as the proposals for the development of geographical reasoning presented by Daudel (1979), Merenné-Schoumaker (1986, 2002, 2012), Castellar (2019), Castellar and Juliasz (2017), Castellar and De Paula (2020), Castellar, Pereira and Guimarães (2021), Roque Ascensão and Valadão (2017a, 2017b, 2016, 2014, 2011), Roque Ascensão, Valadão and Silva (2018) and Roque Ascensão et al. (2022). Likewise, we identified in the ideas of Cachinho and Reis (1991), Cachinho, (2000), Gomes (2009, 2016), Souza (2016), Santos (1979, 1988, 2004), that dialogue or even anchor, the most recent proposals on geographical reasoning.

It is worth mentioning that in the international literature, the number of publications dedicated, in a systematic way, to geographic reasoning is still small. This term has become important in the Brazilian school scenario, since it is prescribed as a goal in the curriculum of this country in 2017. For this reason, there is currently a considerable number of researchers and publications in Brazil that deal with this theme, while in the international literature they are publications aimed at understanding spatial thinking were more significant.

However, it is important to note that the term reasoning geographically and the way to do it is not new, and neither is geographical reasoning synonymous with spatial thinking. With regard to the latter, a report was published in 2006 by

the National Research Council of the United States of America, as well as in 2017 a book entitled “The Power of Geographical Thinking” (2017), to name a few examples. According to Castellar and De Paula (2020, p. 297), the notions of spatial thinking “are not theoretically and methodologically sufficient to support advances in Brazilian geographic education” (p.297). These authors argue that one of the issues is the fact that Brazilian geographic education differs “substantially from the Anglo-Saxon epistemic matrix, greatly influenced by Hartshorne (1939)” (p. 298). According to these researchers, the interpretations of space in Brazil are more focused on the perspective of production than the perspective of organization, and in the same way, space is interpreted more from a relational and relative point of view than merely absolute (Castellar and De Paula, 2020).

We believe that the development of Geographical Reasoning depends on the establishment of logical relationships on geographic issues in the understanding of geographic situations, and, moreover, for such reasoning to occur, a dialectic must be established between the nature of the phenomenon and space, and vice versa; and, in this sense, conceptually moving away from establishing the positioning of objects, calculating distances or perceiving volumes, among other issues that are important to the development of spatial thinking. The spatial thinking is then contained in geographical reasoning. In other words, in all geographic reasoning there is spatial thinking, but not in all spatial thinking there is geographic reasoning (Botelho, 2022).

We go back in time to quote Vidal de La Blache and Yves Lacoste on the use of the term geographic reasoning. La Blache, in a conference held at the University of Paris in 1914, made considerations about the most important methodological foundations for geography that would allow the development of complex reasoning, which would lead us to the understanding of locations, and named it geographic reasoning (Ribeiro, 2019). To some extent, the term geographic reasoning gained prominence in the field of geopolitics from publications that Yves Lacoste made about the

bombings that occurred in the Vietnam War. In these publications, the French geographer calls geographic reasoning a linked logic of articulated thoughts that allowed selecting the places to be bombed by American troops with the intention of flooding the Vietnamese plain and transforming the situation in which thousands of people lived, that is, a way to think strategically about locations (Lacoste, 2008; Verdi, 2017).

It seems that the results of these research, which began at the end of the 20th century, start to reverberate into the context of curricular norms in some countries indicating, to some extent, changes in teaching methodology of this subject. Contemporaneously, the concepts that valorize the capabilities of young students to spatially and geographically thought were incorporated to the norms that rule education and the scholar curriculum in some countries, such as, Brazil, Portugal, Chile, United Kingdom, Australia, United States of America (Ministério da Educação, 2018), Sweden (Örbring, 2017) and Finland (Tani et al., 2018). Despite the already achieved advances, within today, it is current in schools a limited, excessively communicative, informative and illustrative geography.

In this study we used, as reference, the conceptions which have been developed in Brazil by the Teaching and Research Group in Geography (GEPEGEO), nucleated in the Universidade Federal de Minas Gerais – UFMG. Since 2010, Valéria de Oliveira Roque Ascensão and Roberto Célio Valadão, have aims to develop research related to the teacher's knowledge and the geographic interpretation of the spatial phenomena, notably, with geography teachers of basic level. These researchers have been demonstrating that “the geography teachers do not operate with the geographic knowledge, but act informing their students about spatial components – the climate, the relief, the urbanization, the economy” (Roque Ascensão et al., 2022). It is through the use of the theoretical conception of the Pedagogical Content of Knowledge – PCK, proposed by Shulman (1986), that these researchers believe the information is not the basic principle of teaching and “breaking with this idea of ‘teaching things

over the space’ is crucial to the PCK in Geography”, being them in discordance with the idea of teaching what is traditionally called geographic content (Roque Ascensão et al., 2022). For the researchers, the base of the teacher's knowledge is the interface between the knowledge of the content (syntactic and analytic) and the general pedagogical knowledge, with emphasis on the curriculum knowledge and on the teaching knowledge. The term substantive concept, as it was used by them, refers to a permanent conceptual net that aims to found and sustain the construction of a given scientific knowledge.

But what is effectively a geographic analysis? Searching for an answer for this question, the GEPEGEO researchers appealed to the classic authors¹ of geographic thought, seeking to identify the substantial knowledge of geographic science and their epidemiological elements. Hence, Roque Ascensão et al. (2018, p. 36) refer it as “the existence of a hard core of this science”, composed of substantive and syntactic concepts of the subject identifiable from classic to contemporary geographic analysis. They also assume that the lack and precariousness of knowledge of this content can affect teaching (Roque Ascensão et al., 2022).

According to these ideas, our readings highlight that most of the researchers consider that the scholar geography should focus on the geographic concepts, in order to guarantee learning founded on scientific bases and in the development of geographic reasoning. As stated by Cachinho (2000), it is when answering these questions concerning to geography, that it is necessary to use of a set of basic concepts that confer scientificity to the ongoing analysis. These concepts constitute the fundamental pillars of the interpretation of facts and spatial

¹ Alexander Von Humboldt (Humboldt, 1877), Friedrich Ratzel (Ratzel, 1983), Paul Vidal de La Blache (Vidal de La Blache, 1913), Elisée Reclus (Reclus, 1876), Halford John Mackinder (Mackinder, 1891), Jean Brunhes (Brunhes, 1897), Peter Kropotkin (Kropotkin, 2021), Maximilien Sorre (Sorre, 1948), Carl Ortwin Sauer (Sauer, 1966), Richard Hartshorne (Hartshorne, 1939), David Harvey (Harvey, 2012) and Milton Santos (Santos, 1986).

phenomena, but the relevance and meaning of each of these concepts are far from being consensual among researchers, considering their distinct epistemological affiliation (Cachinho, 2000).

From the view of classic authors of geography and under the perspective of the Pedagogical Content Knowledge (PCK), Roque Ascensão and Valadão (2014, 2017b) identified as substantive knowledge the space, the time and the scale; and as the syntactic knowledge of the subject, the cognitive actions, such as, localize, describe, and analyse. These authors elucidate that, even if there are different variations on it comes to be space, time and schedule, these concepts are essential and reveal permanence in many already consecrated studies in geography science. It is also valid for the articulated and dialectic use of the cognitive actions already cited, always presented in the study and comprehension of the specialities (Roque Ascensão and Valadão, 2011).

Regarding to the inherent dynamism of the spatial phenomena, it is due to variable action and complex web of processes marked by changes, relations, and interrelations. The processes operate in all spatial components inherent to the geographic situation under investigation (Roque Ascensão, 2017b). We believe that the core of the geographic reasoning lies on a systematic argumentation in which elements decompose making understandable the relation between them and the space, seeking for logical connections with other elements that articulate with the reality in question.

From the point of view of Roque Ascensão and Valadão (2014, 2016, 2017a, 2017b, Roque Ascensão et al. (2022) and of the other authors cited in this study, we present below the considerations about the substantive concepts essential to geographic analysis: space, time and scale (Kedron and Holler, 2022).

2. Space, time and scale: the fundamental pillars of geographic science

2.1 The space

We start from the premise that geography studies geographic space, but which space are we referring to? In agreement with Harvey (1989), Lefebvre (1974) and Santos (1988), we understand that the space that interests us is the socially produced space. However, throughout its history, geography developed concepts of space according to its analysis needs that did not always correspond to the social space, to the point that Harvey (1989, p. 13-14) questioned: “how different human practices create and make use of distinct conceptualizations of space? Given this, we ask ourselves: what are the privileged conceptualizations of space in national curriculum regulations in Brazil and Italy? Are there, to some extent, references to the types of spaces in the texts of these documents? We argue here that it is important for the teacher to understand that space is simultaneously absolute, relative and relational. As Mitchell (2021) asserts, space is not absolute, relative or relational in itself, but can become one or all simultaneously, depending on the circumstances. We are not defending here the elision of absolute and relative space, but we are in agreement with Santos (1988) when he points out that the relational space is what comes closest to geography, in such a way that in our teaching practices we must aim at the geographical interpretation in a relational way.

It is precisely in this same sense that the concept of geographical space considered in Roque Ascensão and Valadão’s proposal is the relational, as it is this concept that approaches what the authors mean to be the objective of geographic investigations. Absolute and relative space have reduced importance. However, the absolute for establishing the mere location of geographic coordinates of an object on the earth’s surface, to conceive space in its concrete, exact and immobile dimension (Hartshorne, 1939). The relative space for considering space as an empty by plane highlighting the relationships between objects, their spatial distribution and quantification, to establish order and organization by means of the explanation of

systems. We reiterate that although the absolute and relative spaces suppress the subjects and their actions (Valenzuela and Pyszczk, 2012; Santos, 1988, 2004), they can be present in the geographic analysis, but it is essential that this analysis has the relational space as a fundamental pillar.

It is the relational space that incorporates the lived place (living space) and that contains the vision of the integrated whole always in transition, being considered a social product (Valenzuela and Pyszczk, 2012; Harvey, 2009; Lefebvre, 1974). For this reason, the relational space is “an inseparable set of systems of objects and systems of actions” (Santos, 2006, p. 44), socially (re)produced, dynamic and in constant transformation.

For Roque Ascensão and Valadão (2017b, p. 180) it is up to the teaching of Geography to understand the spatiality of phenomena in which “the relationship between space and phenomenon is considered, in the sense of understanding that a phenomenon affects the space where it occurs, just as it is affected by the characteristics of the place of its occurrence”. This understanding requires going beyond answering “where?”, “how?” and “why?”.

2.2 The Scale

The term scale, as polysemous, offers us an almost infinite number of possibilities. Considering the meaning of the measure of proportionality of the graphic representation of elements and objects in the territory, the cartographic scale is the mathematical result of the reducing of real world in graphic representation, which allows evaluate distances and obtain measurements from the use of maps. However, the complexity of geographic space and the multiple dimensions and magnitudes of socio-spatial phenomena require a higher level of abstraction (Castro, 2017; Delaney and Leitner, 1997). Furthermore, generalizations made on one scale may not be valid on another scale (Kedron and Holler, 2022). All these factors corroborate that the use of the cartographic scale is insufficient to solve the problems of geographic analysis beyond the purely mathematical perspective.

In according to Roque Ascensão and Valadão, we consider that the geographic scale is the revealing of the intensity and the scope of a phenomenon and its flowing relationships (Roque Ascensão et al, 2018). Souza (2016, p. 180) reinforces this idea: “[...] in social-spatial research, it is obvious that we need, at all times, to use the cartographic scale, which is one of the essential informative elements of any map (or letter, or plan)”. However, he asserts that we should not fail to differentiate cartographic scale and geographic scale, since the latter “has to do not with the fraction of the division of a surface represented in a cartographic document, but rather with the very extension or magnitude of the space that is being taken. into account” (Souza, 2016, p. 180-181). It then becomes fundamental, in geographic analyses, to emancipate the scalar reasoning beyond the narrow limits of cartography.

Reasoning geographically requires confronting different scalar levels of successive and classificatory totalities, as this reasoning is multiscalar par excellence. A multiscalar reasoning is based not only on the multiplicity of metric and real quantities, but also considers perception and conception (Castro, 2017), insomuch that a single scalar level is insufficient to explain the totality of the geographic phenomenon investigated (Mérenne-Schoumaker, 2012).

2.3 The Time

Time and space are central dimensions to geographic studies. In the same way, we ask: what should be the time of geography? In the Roque Ascensão and Valadão’s proposal, we understand that time, to which these authors refer, concerns a specific and circumscribed temporal dimension, not corresponding to geological time nor to the entire scope of human-historical time.

We believe that no event can be truly geographic if it is being considered on a temporal scale under the perspective of deep time (since it involves geological processes) or in the totality of human-historical time. Invariably, even if some consider this time as part of human-historical time, in our

understanding, the time cut of the spatiality of the phenomenon must have, as a principle, the duration of the event in a time of the present, of the now, of spatial practices (Botelho, 2022). We remember that every spatial practice is an action or a structured set of actions from the perspective of social relations (Souza, 2016).

We understand that time in geographic studies concerns the duration of phenomena that affect space and, in this case, has a direct relationship with the dynamics of processes of all orders that occur in geographic space. Such dynamics can be understood as multiple spatialities that combine themselves and, when combined, reveal the duration and continuity of the phenomenon. Complementing this conception, Souza (2016) reiterates these ideas when dealing with spatial practices, so that temporal analysis, seen from this perspective, can reveal different temporalities – more or less ephemeral and more or less permanent –, starting by considering the ephemerality of the event (like an earthquake), or just a few hours (like a hurricane), a few days (like the effects of an earthquake), a few weeks (like the harvest of agricultural products), or even consider the continuation of the phenomenon for a period of time. relatively long period of time (such as a war; such as a drought).

It is not therefore how long the air mass will reach a certain region that we have to worry about; this should concern to the climatology or meteorology. From the perspective we defend here, time is linked to the duration and consequences of atmospheric phenomena on man and society. It is time seen in the particularity of a temporal scale proper to the analysis of a geographic situation, in which one must consider the duration and consequences of phenomena on space in the present; that is, it is a time scale committed to the analysis of the spatiality of the phenomenon. Consequently, we can conclude that not all historical time is the time required in the analysis of spatiality.

We believe that human-historical time, or even geological time, can be accessed in geographic studies as an aid to understanding a given situation, however, according to the concept of geographic space adopted here, we must focus on the time of space production and

its dynamics. It is in this particular analytical cut of time that it becomes possible to recognize the simultaneities, ruptures, sequences and continuities of phenomena in favor of understanding a geographic situation (Santos, 1979, 2008, 2012).

3. The analysis of curriculum regulations

We believe that by understanding the perspective of the substantive concepts – space, time and scale – contained in the Brazilian and Italian curricular norms, it is possible to infer which is the geography prescribed in these documents. Thus, it is important to highlight that both curricular norms are not organized from the perspective of the concepts that we consider essential to geographic studies. Therefore, in view of the interpretation of these concepts in the normative texts in search of understanding which is the geography that is engendered in the curricular normatives, we associate the comparative methodology to the methodological procedures of the Grounded Theory, in order to allow a more detailed and flexible analysis of written, verbal and visual material (Fernandes and Maia, 2001; Rocca, 2010).

Grounded Theory aims to understand phenomena or describe them from the subject's point of view, in order to support theoretical sensitivity (sense and meaning to data). Therefore, the role of the researcher is to compare incident with incident, bringing out the data, establishing conceptual categories that are relevant to the observation of central issues of the object under study in the search for patterns, which, in the end, serve to explain the event and, in the case of this article, also to understand synthetically the researched in a whole (Fernandes and Maia, 2001; Nico et al., 2007; Rocca, 2010; Cepellos and Tonelli, 2020).

The procedures for analysing the curriculum documents included the selection, interpretation and categorization of textual information. In the case of the BNCC, the text referring to Geography starts on page 359 and ends on page 395. In the Italian curriculum norms, it starts on page 56 and extends to page 59. It should be highlighted that we analysed the entire text of the curriculum norms and the list of learning

objects. In the case of the BNCC, the learning objects are divided into 123 skills. We present, separately and proportionally, the results of the analysis of the texts and the results of the analysis of the 24 learning objects related to *Indicazioni Nazionali* and the 123 skills related to the BNCC.

When selecting the words and excerpts in the curriculum documents, the question that guided us in the first phase was: “What does this represent?”. Thereafter, while reading, besides taking into consideration the lexical link of the date, we also bore in mind terms, expressions, procedures and indications contained in regulations that, directly or indirectly, mention or refer us to categories of substantive concepts of geography.

Next, we grouped the selected material into categories of concepts, if the concept combines characteristics of unique objects. This is because we understand that in case a concept brings together a series of more specific concepts, they are called a category (Cornoldi et al., 2018). Therefore, categorization was the process used to classify information into meaningful categories. At this stage of our analysis, the guiding question was: which kind of category does such an expression belong to? Our objective in identifying the categories present in the regulations arises from the need to understand what kind of space, time and scale are privileged, proposed or favored in these documents.

3.1 The concept of space in curricula norms

In the analysis of the curricular norms, references to living space, absolute space, relative space and relational space were identified (Table 1). We understand that these categories of space are, to some extent, hierarchical, so that the relational space constitutes the main objective of geographic analyses and, in it, the other categories of space are contained (Mitchell, 2021).

As for selected excerpts from the BNCC text, none of them explicitly bring us the concept of space categories. However, the text as a whole contemplates, to some extent, the dialectical

relations and the integrated whole referred to the relational space:

Therefore, students need to broaden their knowledge about the use of space in different geographic situations ruled by historically established norms and laws, including the transformation of space into used territory - a space of concrete action and unequal power relations [...] (Ministério da Educação, 2018, p. 381).

Living space – L s
It refers to the space circumscribed to people's daily lives; where there is coexistence with other individuals in society, directly linked to the concept of place.
Absolute space – A s
It refers to the space of conventional Euclidean references and simple location; it is the Cartesian space, organized from a system of coordinates.
Relative space – RT s
It refers to the relationship between geographic objects in space, seeking to validate the explanation of a spatial organization that most of the time excludes social practices.
Relational space – RC s
It refers to the vision of space as an integrated whole, in constant transition, where the phenomenon affects the space and the space affects the phenomenon; “a truly and densely social space, and the dynamics to be highlighted are the dynamics of social relations (even without losing sight of natural dynamics and their relative conditioning)” (Souza, 2016, p.31).

Table 1. Space categories recognized in the BNCC/Geography (*Ensino Fundamental*) and in the *Indicazioni Nazionali/Geography (Primo e Secondo Ciclo)*. Authors' elaboration.

In the Italian regulations, as in the text of the BNCC, there is no explicit reference to the concepts of space. Although in Italian legislation the concept of space adopted is unclear, we categorized excerpts as relational space such as: “Geography studies the relationships of human societies with each other and with the planet that hosts them”; “Geographical knowledge also concerns the processes of progressive transformation of the environment by man or by natural causes of different types” (Ministero dell’Istruzione, dell’Università e della Ricerca, 2012, p. 56).

The excerpts selected as indicators of relative space are, in both regulations, excerpts that refer us to the idea of analysing a certain element

considering scalar levels or of an object in relation to the other, without considering interrelationships or spatial practices, such as example: “In this way, students must be guaranteed an understanding of the natural and cultural characteristics of the different societies and places around them [...]” (Ministero dell’Istruzione, dell’Università e della Ricerca, 2018, p. 368).

Regarding absolute space, we find the following examples: “By dealing with the concept of space, the development of topological, projective and Euclidean spatial relations is encouraged, in addition to geographical reasoning [...]” (Ministério da Educação, 2018, p. 362) or “Students must equip themselves with spatial coordinates to orient themselves in the territory [...]” (Ministero dell’Istruzione, dell’Università e della Ricerca, 2012, p. 56). At this point, we ask: To what extent is absolute space fundamental in Geography classes?

In both regulations, it is possible to perceive that the place of experience (living space) becomes reference for thinking about scalar levels that go from the local to the global.

When analysing the BNCC skills, we observed that the relational space, whose frequency (68.3%) is significantly higher than other identified categories, is strongly indicated in the document, even implicitly, because no mention in the document of the relational term.

In Italian regulations, all learning objectives fall into one of the analysed space categories. The learning objects register low frequency of occurrence of living space (8.3%). However, the lower frequency of the relational space (25%) in relation to the absolute (29.2%) and relative spaces (37.5%) calls our attention.

3.2 The concept of time in curricula norms

In the analysis of the concept of time, we took as reference terms that refer us to the sense of time in general, such as: “changes”, “period”, “transformation”, “processes”, “past”, “future”, “memory”, “cycle”, among other terms. Likewise, we consider expressions that refer us to the idea of temporality, such as: “the times of

nature”; “subjects’ memory” and “in a given time”. Therefore, throughout the categorization it was possible to infer the following senses of time: chronological, atmospheric and climate, historical, geological and time of the spatiality of the phenomenon (Table 2).

It should be noted that in relation to other times found in curricula norms, such as social time or nature times, we chose not to use these expressions, which does not mean that these times are not present in regulations; we preferred to use the categories presented because of the way in which the concept of time is dealt with in the classroom.

Chronological time - C t

It refers to the time in which every day human activities unfold in sequence; it is time measured by exact and constant fractions, it can be organized in order to consider the counting of hours, days, months, therefore, it is time that can be marked on clocks and registered on calendars.

Atmospheric and Climate weather – AC t

It includes two distinct temporal dimensions: (i) the state of the atmosphere for relatively short periods of observation (hours, days or weeks at most), essential in weather forecasts; (ii) the regularity of successive weather conditions reproduced over years of systematic collection, essential in the recognition of climate types.

Geological time – G t

Refers to the chronological scale composed of billions of years that fits the geohistory of planet Earth; consequently, an analysis of events that took place over deep time is not consistent with the production of geographic space, given how recent, from a geological point of view, the origin and action of society with nature is.

Historical time – H t

It refers to the temporal dimension that begins with the emergence of humanity and continues until today; along it, a chain of transformations takes place, “their causes and consequences, the periods thus established and their duration, the places of their incidence” (Santos, 2006, p.88).

Time of spatiality of the phenomenon – SP t

It is the time of the event commanded by society, as preconized by Santos (2006), of that event that is always current and, not, of the past or future event; it is the time of the present, but not necessarily the instantaneous, in which the spatiality of the phenomenon loaded with current elements is constructed.

Table 2. Categories of the concept of time recognized in the BNCC/Geography (*Ensino Fundamental*) and in the *Indicazioni Nazionali/Geography (Primo e Secondo Ciclo)*. Authors’ elaboration.

When analysing the time categories in the documents, we realized that the frequency of chronological and atmospheric times and climate

is reduced. However, when the physical-natural processes are mentioned, it is oriented, to some extent, towards the resumption of deep time by proposing a relationship with geological, geomorphological processes or the evolution of life on Earth, as shown in the excerpt from follow from BNCC:

Likewise, the times of nature cannot be ignored, as they mark the memory of the Earth and the natural transformations that explain the current conditions of the natural physical environment (Ministério da Educação, 2018, p. 361).

The same concern applies to the following excerpt from the Italian norms:

The history of nature and that of man, however, unfold in different times: the long times of nature are intertwined, often in conflict, with those much shorter than man's [...] (Ministero dell'Istruzione, dell'Università e della Ricerca, 2012, p. 56).

In these examples, the demarcation of the deep time scale is clear in order to understand the current conditions of the physical environment, such as the relief, the climate and the arrangement of the continents, among other themes, from a perspective that is not of geographical order. But to what extent are the times of nature necessary and fundamental to explain the current conditions of the natural physical environment? To what extent are the times of nature linked with contemporary spatialities and practices? If these times are linked merely to physical processes, is this not engendered there and revealing itself to be part of the dichotomy between physical geography and human geography?

About the time of spatiality of the phenomenon, such an idea is not directly indicated in the texts. However, in the excerpts extracted from the regulations, it is possible to perceive geographical situations in which the use of time at the service of interpreting the spatiality of the phenomenon is favored. Despite this possibility of reading, in a generalized way, we perceive that the texts of both normatives guide in the sense of historical time.

Regarding the analysis of the BNCC skills, we recorded a low frequency of recurrence of chronological, geological and atmospheric times and climate, reaching a total of almost 10% of the skills together. Unlike the indications in the text of this regulation, historical time has a low frequency in skills (17.9%). While the spatiality of the phenomena has a higher frequency (64.2%). In 8.1% of the skills there is no applicability of the time concept.

In the BNCC skills, historical temporality is clearly marked with the use of terms such as historical transformations, different eras and the colonial system, just to name a few examples, as in the following skill:

“Describe the routes of dispersion of the human population across the planet and the main migratory flows in different periods of history, discussing the historical factors and physical-natural conditions associated with the distribution of the human population across continents” (Ministério da Educação, 2018, p. 389).

Although we interpret the vast majority of skills in the temporality of the spatiality of the phenomenon, the BNCC does not make this distinction nor it bring this discussion by privileging historical time in its text.

In the investigation of the concept of time in the learning objectives of the Italian regulations, we did not find applicability in 45,8% of the total objects. There is no record of chronological, atmospheric, climate and geological time. Historical time registered a frequency of 12,5%. The possibilities of interpreting the time of the spatiality of the phenomenon corresponds to 41,7% of the recurrences.

The significant absence of the temporal dimension in almost half of the learning objectives is strictly related to learning that requires knowledge such as: orientation, laterality, displacement in space, absolute location, the use of maps and cartographic scales, pure and simple. This result leads us to infer that the Italian regulation emphasizes cartographic knowledge. It is noteworthy that these specific objectives are distributed proportionally in all school stages.

With regard to the historical time in the Italian document, it is placed in the learning objectives that evoke the past, as in socio-historical frameworks of the past, evolution over time and historical, political and economic evolution, that is, a use of time merely history, divided into periods, in a succession of events.

We remember that the effective use of learning objects in the Italian regulations, according to the temporality of the spatiality of the phenomena, is dependent on their reading and treatment by the teacher. Like the BNCC, the Italian regulations do not bring any discussion and delimitation in this regard.

3.3 The scale concept in curricula norms

Like the concepts of space and time, the concept of scale is polysemic and serves many areas of knowledge. It is important point, we chose not to use other scalar categories or subdivisions of the geographic scale that may be present in the regulations, such as: the scale of the phenomenon, the scale of analysis and the scale of action; the relative scale and the relational scale; nor take into account the use of pre-established and fixed space-scalar terms (Souza, 2016; Castro, 2017).

We understand that these issues are complex and lead us to a series of other issues that are important to understanding the geographic scale, so we believe that future research is needed to address this issue.

Therefore, when analysing the regulations, we chose to categorize the scales into cartographic and geographic (Table 3).

In the analysis of both regulations, throughout the texts, there is no guideline that refers directly to the categorization of the scale. However, everything indicates that there is an orientation towards the geographical scale.

At the BNCC, it is possible to perceive such an indication in the following statement, which emphasizes the importance of transit between scales in the geographic sense: “[...] articulation of different spaces and scales of analysis, enabling students to understand the existing relationships between facts in the local and

global levels” (Ministério da Educação, 2018, p. 362).

Cartographic scale – C s

Refers to the mathematical result of reducing the real world to graphical representation, allowing to evaluate distances and obtain measurements from the use of maps; check the distance between objects on a map, or the dimensions and proportions of what is being cartographically represented.

Geographic scale – G s

It refers to the intensity and scope of a phenomenon and the flow relationship that constitutes it; being defined from the analysis of the phenomenon itself, which should “put in the foreground the nature of social relations, including spatial practices, whose perception may vary greatly” (Souza, 2016, p.198).

Table 3. Scale concept categories recognized in the BNCC/Geography (*Ensino Fundamental*) and in the *Indicazioni Nazionali/Geography (Primo e Secondo Ciclo)*. Authors' elaboration.

The same concern for multiscale analysis appears in the Italian regulations, from the local to the world context, such as: “The comparison of reality itself (lived space) with the global one, and vice versa, is facilitated by the continuous comparison of spatial representations, read and interpreted in different scales [...]” (Ministero dell’Istruzione, dell’Università e della Ricerca, 2012, p. 56).

All excerpts dealing with the scale in the BNCC lead us to the geographic scale (whether relative or relational), as shown in the following excerpt:

I this regard, it starts from the understanding that, in the current reality, the international division of labor and the distribution of wealth have become much more fluid and complex from the point of view of spatial interactions and interdependence networks at different scales. (Ministério da Educação, 2018, p. 382)

In the case of the Italian regulations, 71.4% of the excerpts refer to the geographic scale, as in the following excerpt: “[...] getting used to analysing each element in its spatial context and in a multiscale way, from the place to the global context” (Ministero dell’Istruzione, dell’Università e della Ricerca, 2012, p. 56). For the cartographic scale, the frequency of recurrence is 28.6%. In any

case, guidance on scale is scarce in both documents.

When analysing the BNCC skills, we noticed the low frequency for the cartographic scale (9%). However, this frequency increases considerably in terms of geographic scale, making up 90.2% of skills. Only in 0.8% of the skills there is no applicability of the concept of scale.

The geographic scale in the BNCC consists of those skills that demand the idea of flow, scope, intensity, as well as the interrelationships between objects and phenomena, such as: “Recognize specificities and analyse the interdependence of the countryside and the city, considering economic flows, of information, ideas and people. In this and other examples, there is the possibility of developing a scalar reasoning between relationships and interrelationships.

As an example of a clear reference to the use of the cartographic scale in the BNCC, we took the following skill: “Measuring distances on the surface by the graphic and numerical scales of the maps”. In this case, what matters is the treatment of the scale from a purely metric and mathematical perspective.

In the case of the Italian regulations, the learning objectives record frequency of recurrence of the cartographic scale at 29.2%. However, this frequency increases considerably in terms of geographic scale, present in 66.6% of the objectives. In only 4.1% there is no applicability of the scale concept.

In this document, the references to the cartographic scale are enclosed in those learning objectives that approach absolute space and, consequently, demand location, position and measurements, which reduces possibilities for other relationships. It is mainly present in objects associated with orientation and cartography (*geo-graficità*).

Regarding to the geographic scale, this was considered when the learning objective allows conceiving situations that involve, to some extent, flow, intensity, scope and expansion of phenomena, as in the following objective: “Recognize, in your own life environment, the functions of the various spaces and their connections, the positive and negative

interventions of man and project solutions, exercising an active citizenship”.

3.4 The processes in the curricula norms

As stated by Roque Ascensão and Valadão (2017b), we consider that in the course of the analysis of a geographic situation it is essential to use the substantive concepts - space, scale and time - in mobilization with the cognitive processes to locate, describe and interpret, seeking to understand on the processes that manifest themselves in the production of space.

It is from this perspective that, in the analysis of Brazilian and Italian regulations, we seek to understand from which point of view the processes are placed, if they are seen as an inseparable set of processes that make a phenomenon act on a given space, in order to lead to study committed to the totality. We are aware that the study of a single concept or spatial component does not explain the geographic reality (Hugonié, 1989). This idea led us to explore the concept of process in the regulations under the logic of fragmentation and systematization (Table 4).

The analysis of the processes revealed a discrepancy between the data of the analysed norms. In the BNCC, there is no recurrence of processes in the text that are consistent with fragmentation, the proposition being clear through the systemic analysis. In the case of Indicazioni Nazionali, this is an unfavorable aspect, as systemic processes (45.5%) are less frequent compared to fragmented processes (54.5%).

In the analysis of the BNCC skills, there is no applicability in 9.8% of the skills, which we believe are closely linked to principles of the category of absolute space. Despite this, most skills (82.9%) are related to systemic processes. Only 7.3% of the skills were categorized as referring to fragmented processes.

<p>Fragmented Process – F p</p> <p>Reveals the approach of contents in a fragmented way, where there is no connection between the processes and phenomena of a geographic situation; it is the drawer plan, where you study process by process, concept by concept, component by component. It, therefore, does not explain reality.</p>
<p>Systemic Process – S p</p> <p>It refers to the integrated, problematized and dynamic approach, in which concepts, components, phenomena and processes are related and articulated, placing them in relation to others, allowing a systemic analysis of a given geographic situation. In this approach, what is taken into account are the interrelationships that the agents establish with each other and with the structures that, in fact, give meaning and life to a system. (Cachinho, 2000, p.177).</p>

Table 4. Categories designed to approach the processes in the BNCC/Geography (*Ensino Fundamental*) and in the *Indicazioni Nazionali/Geography (Primo e Secondo Ciclo)*. Authors' elaboration.

In the case of the analysis of the learning objectives of *Indicazioni Nazionali*, the lack of processes in 33.3% of the objects and, likewise, the frequency of 37.5% of fragmented processes calls our attention. Systemic processes were identified in 29.2% of the objects.

3.5 The frequency of substantive concepts

In the following figures, we selected the frequency of the substantive concepts that are closest to what is expected of them in the construction of a geographic analysis, contained in the selected excerpts (Figure 1), skills (BNCC) and learning objectives (*Indicazioni Nazionali*) (Figure 2). In this way, we selected the frequency of the relational space, the time of the spatialities of the phenomenon and the geographic scale, and we also included the systemic processes.

Based on this selection of data, it can be seen that there is a difference between the regulations in relation to the frequency of the relational space. This category of space is little considered in Italian norms. In Brazilian norms, a more effective clarification is needed in relation to this approach. Promoting the relational category of geographic space is essential to move towards geographic analysis.

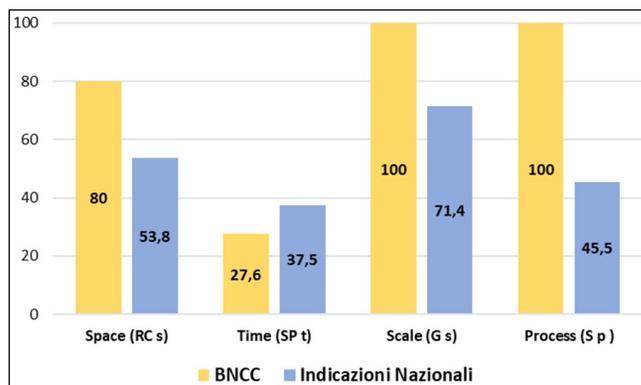


Figure 1. Frequency of structuring concepts that are closest to what is expected from their functionality in the construction of geographic reasoning based on the interpretation of the excerpts. Authors' elaboration.

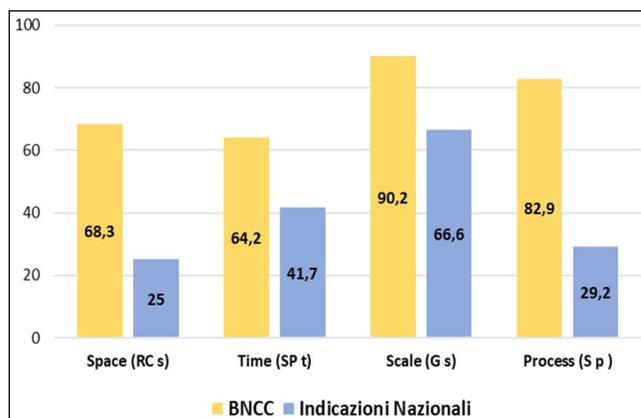


Figure 2. Frequency of structuring concepts that are closest to what is expected of their functionality in the construction of geographical reasoning based on the interpretation of skills and learning objectives. Authors' elaboration.

In the case of the concept of time, despite the spatiality category of phenomena being highlighted in our analysis, it is only a possibility of reading. What we perceive, in a generalized way, is that the documents favor historical time. However, in the case of *Indicazioni Nazionali*, it is noteworthy that none of the time categories are present in 45.8% of the learning objectives. This fact compromises, to a great extent, a geographic analysis.

We can consider that the scale has the best result among the substantive concepts, being privileged in the documents the category of the geographic scale. Even so, it deserves attention

in some aspects, especially in the Italian document, which, perhaps due to the strong cartographic orientation and absolute space, highlights the cartographic scale.

It is worth remembering that the frequency recorded in terms of substantive concepts, for the most part, concerns the possibilities that are presented, in such a way that all of this is depend the teacher's interpretation of what is contained in the text when considering the functionality of these concepts in the construction of a reasoning that is geographical.

4. Conclusions

The curricular norms that rule the education and the teaching of geography in Brazil and Italy, once investigated from the point of the basic pillars that we consider essential to the adjectival analysis of geography, reveal a set of aspects that characterize the teaching of geography prescribed in two socio-economical distinct realities, one Latin-American and, the other European.

With regard to the Brazilian normative, the document largely supports and contemplates the geographical interpretation. This suggests that there was, in Brazil, investment in construction of a normative that dialogue with contemporary questions in the field of geography teaching research concerning to the substantive concepts of this science. With respect to the Italian normative, it recommends a formulation aimed to a geography which is still revealed, in a certain way, traditional and discordant with what has been developed in recent years in the fields of geography teaching research. The investment of the Italian normative related to the prescriptions effectively directed to the interpretation of the spatiality of the investigated phenomena is fragile. Such fact puts away the curricular Italian document from an expected geographical analysis really systemic. It is important to note that, in March 2022, the Italian Ministry of Education established a commission to review the teaching of geography in Italy.

In the view of the above mentioned, we reaffirm the importance and the essentiality of the use of the substantive concepts in

geographical analysis dedicated to the development of the geographical reasoning, and consequently, to a well-succeeded teaching-learning. We believe that the core of pedagogical turning – of one turn – in geography lies on the understanding of the permanence of the conceptual net here mentioned and analysed, the understanding of their meanings and purposes in favour of the geographical and scientific literacy, so as to disapprove a mere descriptive and fragmented geography. The results achieved here reinforce the necessity of critically understand that the school geography holds, within today, a strong signature of questions that are not, necessarily, geographical, both epistemologically and methodologically. These questions can reveal itself firmly rooted in the national curricular normative, as it is demonstrated in this study, but also in school culture, in teacher practice, in didactic collections, in teacher training and mainly in the imaginary if society.

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