

Geography Education in the Liquid Society

Geographische Bildung in der flüchtigen Gesellschaft

Enseñanza de la geografía en la sociedad líquida

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Zusammenfassung Der vorliegende Beitrag widmet sich dem Begriff der liquiden Moderne von Zygmunt Bauman und kontextualisiert diesen in der Geographie als akademische Disziplin und der Didaktik der Geographie als Disziplin mit schulischer Anwendung. Vor dem Hintergrund ihrer Relevanz für die Geographie wirkten die Konzepte Zeit und Raum als strukturierende Ankerpunkte der Analyse. In Anlehnung an Popper kontrastiert die vorliegende Arbeit theoretische Konzepte mit der räumlichen Realität. Anschließend erfolgt eine Auseinandersetzung mit möglichen Richtlinien und Konstanten für Geographielehrkräfte, um Konstanz für ihren Unterricht in den sich stets wandelnden und unsicheren Zeiten zu bieten.

Schlüsselwörter liquide Moderne, geographischer Raum, Geographiedidaktik

Abstract This paper aims to explore Zygmunt Bauman's concept of liquid society considering its relevance for scholarship in Geography and its consequences for the teaching and learning of Geography as a school subject. Thereby, time and space served as the structuring criteria given their importance for Geography as an academic discipline. The paper follows a Popperian approach contrasting theoretical reflections with spatial reality. Based on these findings, the paper reflects on possible references for teachers to develop their Geography curriculum in changing and uncertain times.

Keywords liquid society, geographical space, Geography Education

Resumen La investigación desarrollada busca categorizar el concepto de sociedad líquida de Bauman, creador del dicho concepto, y conocer su implicación en la geografía, particularmente en la enseñanza de la misma. Las categorías propuestas para el análisis han sido las de espacio y tiempo por ser conceptos estructurantes de la ciencia de referencia. La interpretación de los escritos de Bauman se ha realizado mediante un cuestionamiento siguiendo la propuesta de Popper, contrastando la reflexión teórica con la realidad espacial. A partir de esta revisión se han establecido los contenidos básicos que permitan a los docentes disponer de referentes para los diseños curriculares en contextos de cambio e incertidumbre.

Palabras clave sociedad líquida, espacio geográfico, enseñanza de la geografía

1. Introduction

As Geography educators, we may wonder what the concept of the liquid society that proliferates in the media today, means. This paper explores the concept of the liquid society for two reasons. On the one hand, as citizens and teachers, we are aware of the change that surrounds us and constantly challenges our reference frameworks and principles leading to a condition of uncertainty. On the other hand, citizens and teachers frequently take over in an intuitive way the concepts that surround them, generating false knowledge. They are, in general, the *idols* of which Francis BACON (2002) wrote in his classic *Novum Organum*, and, in particular, the *idol specus* that is related to each person's prejudices originating from education and habits. Particularly when it comes to (academic) fashion, it is always useful to reflect on concepts and their meanings. Therefore, it seems a timely question to explore the liquid society.

Our analysis of the concept of liquid society focusses on the works of Zygmunt Bau-

man, since he coined this concept and because, among other recognitions of his research, in 2010, he was awarded the Prince of Asturias Prize for Communication and Humanities. Other authors, such as Anthony GIDDENS (2010) and Ulrich BECK (2005), are contributing or have contributed to the study of our liquid society, but until today, no relation to education or teaching has been found in their work. Nevertheless, their sociological work can be useful in understanding current geographical phenomena, particularly those derived from globalization and the uncertainties arising from environmental problems.

Our method follows Popper's principles, that is, contrasting theory with the particularities offered by reality. From this relationship, we justify basic contents, especially those of procedural nature that have been present in Geography since its origins, but which have been relegated in the official curricula of Spain and many countries by the influence of Regional Geography.

2. Defining Criteria

Liquid society's definition requires the identification of criteria for which it is necessary to undertake a selective reading of Zygmunt Bauman's selected publications.

Analysis, separation of elements, and comparison will allow us in the following to categorize the concept of the liquid society. Once defined, we will proceed to discover how the concept of liquid society relates to Geography and its teaching.

BAUMAN's (2007) book *The Challenges of Education in Liquid Modernity* constitutes the starting point with the thesis that continuous change and social crisis characterizes the liquid society.

2.1 Time in the Liquid Geography

Temporality made its way into Geography with Hettner (1859-1841), Vidal de la Blache (1845-1918), and Morris Davis (1850-1934).

In his analysis of reality, Bauman includes and combines time and geographical space. Thereby, he addresses the temporal dimension through different categories, including those of change and crisis. However, these labels are not unique to our society, even if they serve Bauman as structuring elements of his concept of liquid society.

Humanity has been living in a process of permanent change, which is not unique to our times. As Bauman stresses and insists, contemporary change is not only exponential and logarithmic but humanity is also very much aware of it.

Humanity has taken change into account for centuries. For example, during Renaissance, people experienced a recovery of the classical past, after a stage of darkness—an experience repeated with the arrival of the Enlightenment, the Bourgeois revolution, and the industrialization.

The problem with contemporary society, which is liquid in Bauman's view, is that it has gone from a society of constants that dates back to the beginning of agriculture, to a society that changes at such a speed that it prevents people from having *landmarks* of reference and disorients them.

When measuring the importance of change, a set of aspects require careful consideration. For example, the introduction of letterpress printing in the fifteenth century was a major change, but its dissemination was slow and initially only a few people benefited from the change. In contemporary society, changes are made on the personal timeline of individuals' lives and are generally disseminated across broad sections of the population. Even if the change only sometimes reaches everyone, its consequences do affect everyone. For example, the introduction of an improved knitting machine in a certain country allows the beat down production costs. This way, the country becomes more competitive than countries lacking the innovation.

Therefore, the first criterion that helps to define the concept of the liquid society could be described as change and crisis experienced over short periods of time that affect a large number of people either directly or indirectly. The idea of change, of crisis, is inherent to the concept of time, and, in the liquid society, time is perceived in a different way.

While historians traditionally reduced time to its chronological dimension, BRAUDEL (1991) distinguished between long periods of time (e.g., of an ideological nature), medium periods of time, such as economic cycles, and short periods of time (daily life). In Bauman's interpretation of the contemporary society, the latter dimension takes on extraordinary notoriety.

As time is often viewed as continuous flow, its *pointillist* conceptualization represents an unusual alternative. Translated into education, in a *solid society*, the school offered individuals the knowledge that was considered essential to solve the problems that arose throughout life. However, in a *liquid society*, this knowledge is insufficient and Bauman states that people must be educated throughout their existence in a timely manner to solve the liquid society's new and different challenges.

For this reason, it is not unusual to ask ourselves what we should teach. This is a recur-

ring issue in Geography Education research (TONDA 2010; MARRÓN 2011; RODRÍGUEZ 2015). Teachers wonder, beyond curriculum design, what geographical content can be useful and functional for students' social development in the future. One of the frequent answers is technology. However, the use of a particular program or data collection is not enough. The conceptual and scientific mastery applied to any tool representing either traditional or new technologies, is more essential. Bauman's vision of the liquid society originates from his sociological glance at society as best represented in *Hermeneutics and Social Science* (BAUMAN 2002). However, reading this book may raise more questions than deliver answers as teachers discover that the scientific method itself is dynamic.

A brief glance at the history of Geography illustrates how dynamic and complex geographical methods are. In fact, one can only speak of methods instead of one single method. For example, Physical Geography uses other methods for the study of climate or relief as Human Geography does when exploring the distribution of population or its economic activities. For this reason, teachers needs to make sure that students acquire, assess, and apply the most appropriate method to solve a problem by consulting the most appropriate sources. For example, the Internet expanded the possibilities to read traditional maps. Novel digital tools that automatically measure distances and areas replaced traditional approaches resting on scale-based cross-multiplication when working with maps. Nevertheless, there is still the necessity to quantify, measure, and obtain information to interpret geographical space. Obviously, new technologies made it possible to accelerate this processes, which corresponds to Bauman's rapid problem-solving.

The second criterion that helps to define the concept of the liquid society, temporal understanding, carries the imprint of the immediacy condition. While human beings live in time, their attention is directed towards the here and now instead of long periods of time. In teaching, immediacy can be problematic for several reasons. One of these problems becomes evident from Walter Mischel's experiments conducted during the 1970s at Stanford University. Mischel proposed to a group of four-year-old children to choose between

receiving a candy right away or waiting for a while (until the researcher came back) to receive two sweets. One third of the children took the candy immediately, another third waited a few minutes but then gave in to temptation and took the candy, while the remaining third waited for fifteen minutes to receive the two sweets. Fourteen years later, Mischel compared his results with the same children's SAT results. Children who had waited for fifteen minutes had, on average, scores higher by 210 points than those taking the candy immediately (MARINA 2011). Another assessment also showed these students' ability to better solve personal and social problems. The initial conclusion, therefore, is that not everyone covers their needs with the same immediacy. Also, those who spend time on reflection or problem-solving are more successfully adapted to society. In essence, the findings raise two questions for teachers: Should time be devoted to the teaching processes in which reflection can be essential? Can teachers change this human condition at all, and if yes, how?

A possible classroom activity could start with the teacher confronting the students with the following geographical inquiry: *A family has all year to take a trip to Cuba. Check the prices for the trip on the Internet and observe that there is an opportunity to travel immediately in August for a lower price or to travel in December for a higher price. Which option do you think they should choose? Explain your answer!*

The most impulsive students would certainly choose the first option, others would explain that their parents are on holiday in August or their families have limited financial resources and, finally, a few would look up online Cuba's geographical characteristics to make a decision. The teacher then should require the first two groups of students to virtually visit Cuba and be confronted with the fact that August falls into the hurricane season. Subsequently, students should find out whether hurricanes occur all year round and which are the most favorable times to visit Cuba. Such tasks lead to cognitive conflicts.

Concerning the group of students referring to the parents' holidays and economic resources, the teacher needs to refer them back to the task clearly stating that the family can travel around the year and has the required financial resources. Such actions are necessary given that many people are unable or encounter difficul-

ties when faced with problems they perceive as impossible to solve or not affecting them. Therefore, it is crucial for teachers to have sufficient information on their students' socio-cultural background. If the school is located in a deprived area where families are unlikely to go on holidays, the proposed task may feel out of reach and, therefore, irrelevant to the students.

The third group of students, those who looked up Cuba's geographical characteristics online, may be asked to dive into the subject by looking for the causes of hurricanes, infrastructure development, etc. In exceptional cases, students pick December because in Spain the temperatures are lower while in Cuba the temperatures are higher and allow, for example, swimming in the sea.

The above-described geographical task highlights the importance of mastering different time concepts to solve a problem. It also showcases that the tendency to solve a problem immediately may not always be the right choice. Of course, trained professionals can give answers quickly as they fall back on problem-solving patterns based on specialist knowledge. According to Bauman, this difference between novices and experts justifies, among other reasons, the social hierarchies. Geography teachers could have solved the same task almost immediately as they master both the information and procedural knowledge to address the problem. It is this interpretation of society that constitutes the profound reasoning of Bauman's work.

Concerning the issue whether individuals can be educated in the area of immediacy and motivation (PINK 2010), research showed a range of possibilities. However, embracing such endeavors seems, in contemporary societies, undesired as waiting is often regarded as an exclusion from power. The powerful obtain things right away while the rest takes a long time to access power or never gets to have it. Failure to meet immediate demands due to this exclusion can become a cause of anxiety or irritation.

The teacher should aim for students to discover temporal categories. As already indicated, the temporal dimension has been an integral part of how we address geographical space. For example, a city's center is very different at 12 p.m. and 4 a.m. Geographical explanation need to take the temporal dimension into account.

The next question is how to incorporate this temporal dimension into Geography Education. Traditionally, Geography educators resorted to the theories of PIAGET (1978) and HANNOUN (1977) to develop a temporal conceptualization from children's personal and, subsequently, social experiences. However, teachers should also resort to the vision of temporality in Bauman's liquid society that stands under the sign of immediate consumption and, thus, time conceptualization. For example, whenever a student wants to purchase a certain product, how long does it take to actually buy it online? How much does it cost? How long does it take to find the product, if you are looking for it in your region, and what would it cost if you had to travel outside your region to purchase it? How much more would you be willing to pay to receive the product faster? One suitable context information is the historical comparison with the Industrial Revolution. Students could compare their purchase demands and options with the required time prior to and in the aftermath of the Industrial Revolution by looking into the travel time between Edinburgh and London and how travel time changed with the improvement of roads and railways—infrastructural development having immediate and substantial impact on both the amount of products transported and transportation fees.

Problems of everyday life related to consumption highlight how the immediacy of consumption affects the configuration of geographical space. Digital platforms change consumption and, through that, also the configuration of markets, urban spaces, and social relations. The market on the main square first entered into competition with the shopping centers. Subsequently, virtual spaces also entered the scene.

Bauman indirectly addresses another temporal issue, namely subjectivity, present in BERGSON's (2004) theory about time and the Geography of perception. The necessity concept that Bauman uses to define temporality can be lived and perceived by people differently. An everyday life example: A child that owns many toys does not appreciate a new ball with the same enthusiasm and intensity as another child who has none. Taking a geographical reference, a child who lives by the seaside is less excited to go to the beach as a child who lives in an inland area. Nor do eight hours on the beach pass in the same way for the two chil-

dren. Space is temporally perceived differently in each case just as it passes differently for those who spend the day selling water on the beach and those who calmly sunbathe.

In sum, the temporal categories of before, then, and now are incorporated into the geographical study, and the interpretation of geographical space is impossible without considering the temporal dimension imprinted by immediacy.

2.2 Liquid Space in a New Geography

Geographical space is another criterion adherent to the liquid society. It is obvious that time and space are structuring concepts of the Social Sciences. However, it is necessary to look into Bauman's understanding of space. The history of Geography highlights that the concept of space underwent an evolution and, therefore, the study of this concept might speak of a vision of space rather than an evolution of space.

In order to conceptualize geographical space, we proceed to list a series of categories and attributes that BAUMAN (2001) uses in *Globalization. Human Consequences*.

The starting point is a historical view of space based on the category of distance associated with measurement. At the beginning, projections of the human body constituted the core of measuring distance. Gradually, the application of external parameters to the body (meter) helped to overcome the imperfection of personal reference (BAUMAN 2001). However, bodies exhibit a great variance. The projection of the body can serve a person, but it is not necessarily a reference for the rest of the people. The need to measure the human body in a way that is detached from the features of each individual is one of humanity's grand challenges. The solution focused on establishing impersonal patterns that serve as a reference for everyone. Following a different objective, the modern state also encountered the need to measure distance for taxation. The measurement of space is considered to be objective since the negotiated standard no longer depends on personal criteria. However, this standard cannot yet be considered entirely objective since it is the result of a social convention that associated the distance category with space measured based on impersonal parameters.

Bauman ties the distance category to proximity and uses distance to characterize the liq-

uid society. Geographers clearly differentiate between distance and proximity. Distance is the projection of a pattern of social consensus, while proximity is the relationship between different referents (thing-person, thing-thing, person-person) both physically and in a lived, perceived, and internalized way. Therefore, Geography teachers following Bauman in their teaching must take into account the need to measure space either through bodily projection in the early years or through quantification whenever age allows it. In addition, teachers are also required to distinguish between the category of distance as a projection of patterns from the category of proximity as the relationship between exterior elements and the human being's internalized space.

Mastering spatial categories is far from being trivial. As Bauman points out, the modern state had a special interest in measuring space for taxation purpose, so it was necessary for citizens to be trained in this regard. However, in the liquid society, it is unclear whether governing forces want to teach these concepts as the population's ignorance enables a better manipulation of society. For example, during the first Gulf War, the media informed the population that Saddam Hussein had missiles with a range of 1,500 km. With this information the media managed to scare the Spanish population who remembered the scarcity shaping the period after the Civil War. The unexpected consequence was that the population hoarded reserves, which led to supply shortage on the market. The example demonstrates Geography's important role in teaching students to measure space and to discover how the media approximates or distorts the facts according to their interests. BAUMAN (2001, p. 43) explicitly indicates the power exercised by the modern state using the spatial category:

"It is no coincidence that the readability and transparency of space has become one of the main objectives in the battle of the modern state to impose the sovereignty of its power. In order to achieve control [...] the state had to control the transparency of the framework in which the various actors are forced to act [...] A decisive aspect of power [...] was [...] the war that was fought [...] [to] control the cartographic service."

Bauman reads distance as a classification criterion. It is obvious that human beings, in addition to measuring distances, also need to

classify and rank spatial knowledge and set a clear example: pets are the ones that live inside the house, the breeding animals live in nearby areas, stables, corrals, and the wild animals far away from the houses. Therefore, the conclusion is that distance allows humans to structure spatial information. However, BAUMAN (2001) also highlights that classification itself is a human construct and that the criteria used depend on the human beings. This is an important issue, as the school system often requires classifications, such as those of landscapes, climates, and cities to be first memorized even though reality is complex and students may encounter difficulties applying these classifications. As STERNBERG and SPEAR-SWERLING (1999) indicate, in schools, humans learn taxonomically, in an abstract and artificial way. However, in practice, reality is complex and makes it difficult to apply these classifications. Therefore, the conceptual development initiated in early childhood education—despite its abstract final nature—involves addressing in school the concepts students use in their daily lives and gradually advancing to those used in the media to finally work with the most specific ones originating from academic knowledge. This process is not linear and may occasionally be altered by certain circumstances and contexts (SEBASTIÁ 2014).

BAUMAN (2001) argues that the introduction of new technologies, such as the World Wide Web, with a rapid transport of information erodes the concepts of displacement and distance as information is instantly available across the globe. For Bauman, geographical reality is not shaped by atmospheric agents or traditional human activity but by the application of new technologies. If technology previously allowed to increase the production of farmland, to stable animals, build factories or roads, it now enables through cyberspace the modification and even disappearance of geographical space. Specifically, BAUMAN (2013, p. 148) concludes that a new spatial dimension is configured that overlaps and transcends the traditional geographical space. We no longer talk about geographical space, but cyberspace as an independent category:

"The transfer to cyberspace and the subordination to the logic of online or live transmission, with all its pragmatic potential [...] made the distinction between far and near, here and there, become virtually zero and void."

This feature involves a de-localization, an exclusion of notions, such as proximity, close, far, here, or there—all of which were incorporated into a new concept called glocalization. If the concept of localization has its semantic root referred to locally, on the contrary, glocalization departs from this idea, since it implies that the local is not essential to understand the geographical space.

BAUMAN's (2013, p. 147) liquid society comes to question the transcendence that the distance category has traditionally had in the geographical argument:

"What we can and must learn from this experience is that distance is no longer an obstacle, and its extent no longer determines the distribution of opportunities. Nor do the neighborhood or the physical proximity, that is why [...] causes may be local, but the scope of their inspirations is global. The causes may be global, but the impact they cause is shaped and achieved locally".

Bauman maintains and reaffirms his argument on the liquid society based on the role that information plays in contemporary society with an imposed ICT—yet another revision of the role given to land, labor, and capital in explaining radical Geography.

The impact of information on Geography at the present time is fundamental, as the information processing must be a basic content in the teaching and learning of Geography. JUARISTI (1984) offers an example of geographical research that highlights the importance of information in the construction of geographical knowledge by applying theories of Physics, in particular, the second principle of thermodynamics (Carnot's law or the law of entropy), to Geography based on information usage. The underlying paradigm is associated with the creation of models and systems, i.e., theoretical Geography.

Geography also redefined the concept of information. In geoinformation, new technologies relate to geographical information that require a different way of manipulating or processing information, possibly giving rise to a new paradigm called Neogeography. For BUZO (2015), geoinformation is understood as geographic content information. CAPEL (2012) defines Neogeography as a new way of understanding geographical problems through the use of Geographical Information Technologies and Systems (GIS).

In BAUMAN's (2001, p. 20) view, two aspects are important when questioning the traditional categories of distance measurement and proximity. On the one hand, Bauman's theory involves giving up spatial causality. On the other hand, the delimitation category—one of Geography's basic challenges—leading to dividing space by drawing borders, whether physical or human, and indicating what is inside and what is left outside:

"To what extent the geophysical factors, the natural and artificial boundaries of territorial units, the separate identities of the population and *Kulturkreise*, and the distinction between inside and outside delimitation—all Geography's traditional objects of study—were, essentially, nothing but the conceptual derivatives, or sediments/artifacts, of speed limits [...] more generally, the time and cost restrictions imposed on the freedom of movement".

Bauman's border concept is essentially sociological. The traditional view that he expresses is that the separating borders were not identical for all social classes. In the past, borders primarily affected disadvantaged classes, while classes with monetary power were less affected. Currently, the incorporation of new technologies that allow the transmission of information almost immediately has erased borders so that distinguishing between inside and outside makes little sense.

Therefore, for Bauman, a digital or cyberspace structures the liquid society, where the transmission of information/geoinformation makes the distance disappear and requires a new form of the study of geographical spatial reality, namely Neogeography.

Together with the distance category, BAUMAN (2001) also introduced the speed category, which is, in the traditional definition of this concept, the relationship between space and time. The latter point therefore reinforces the idea that, in the liquid society, the development of communication attributed a marginal position to the geographical physical space.

Finally, BAUMAN (2007, pp. 44–45) also adds quantity as an information-related review that links back to the matter of measurement. For Bauman, the challenges inherent to the liquid society derive not only from the speed of information, distances, or even time but also from the enormous quantity of transferred data.

"The mass of accumulated knowledge has become the contemporary epitome of disorder

and chaos. In this mass, all orthodox sorting mechanisms, relevant issues, the assignment of importance, the need to determine usefulness, and the authorities determining value, have been progressively collapsing and dissolving”.

In light of Bauman’s theses, the following reflective stances may be adopted. First, a key challenge of Bauman’s theory is the difficulty to comprehend geographical reality based on a single variable. Reducing an analysis to a single attribute impoverished the comprehension of geographical reality and also leads to skewed visions of reality. The importance of information in the contemporary liquid society is unquestionable. Therefore, all efforts taken in the teaching and learning of Geography to seek out, select, structure, and communicate information, are highly valued. Nevertheless, this might not be enough to explain the contemporary world.

Bauman defines geographical space through new technologies and gives the impression that the physical environment, for example, is irrelevant. However, will the people who have to cross the Sahara or the Mediterranean in inhumane conditions have the same opinion? Do Spain or Turkey act in these displacements as bridges or barriers? What are the similarities and differences between a person who emigrates to Europe from Morocco or Senegal? Is distance and time no longer important for thousands of emigrants?

Second, products of human societies, such as subways, railroads, airports, and ports remain uninfluenced by the geographical scale. Are these means and infrastructure not affecting people’s mobility? Why does it necessarily take less time to get to work for a person who has Internet at home or access to the Internet from their mobile phone? Does the use of new technology facilitate the availability of a home? Does having access to an online marketplace enable us to purchase everything we need or want? Homeless persons or the population of favelas might have quite different views as city dwellers with a stable income.

Third, spatial distribution constitutes one of Geography’s most important research fields. Knowing where resources are located and making sense of their distribution has been important not only for human beings in general but also for Geography. Some researchers even defined Geography as the science of distribution. However, is this distribution altered

by geoinformation? Does oil change its location with new technologies? Is it faster and cheaper to bring it to Europe from Saudi Arabia because information circulates faster?

Fourth, human resource costs influence products’ final price. Factories change their location in search of cheaper workforce in the cyberspace. Therefore, as much information we might have on demand and raw material costs for planning, companies will continue to cut production costs and will not hesitate to change location to achieve it.

Fifth, in Geography, endogenous potential along with spatiality are essential to explain a given territory’s location and development. How do you explain the development of Singapore, New York, or San Francisco? Aren’t the Suez Channel and the Panama Channel equally important from a strategic perspective?

Sixth, for BAUMAN (2013, p. 103), land price depends on the purchasing power: “Today, segregation and polarization in cities are the result of the free market forces without political control”. Certainly, markets operate, among others, based on the interplay between supply and demand. However, are economically affluent classes moving into flood zones, areas with poor visibility, or near an airport or channel? Consequently, despite the fluidity of information, geographical space cannot be ignored. Ignoring it means losing the ability to explain our society, whether liquid or not as people do not live in cyberspace. It is economic reality that prevails. While humanity lives under the illusion that access to new technologies changes our lives, basic problems remain unsolved. In other words, it can be said that Geography’s essential issues, such as spatial distribution, require the taking into consideration of endogenous potentials, location factors, orientation etc. MOLTÓ and HERNANDEZ (2002) emphasized the role of endogenous potential in their study on local development in a globalized framework. According to the authors, endogenous potential should not be reduced to physical factors but it has to also consider human factors, including the capabilities of its inhabitants. Moreover, CANZANELLI (2004, p. 35) states that “[...] globally, there is always more competitiveness between territories: the areas that offer some important prerequisites [...] have more chances than others in the global competition”. Contradicting himself, BAUMAN (2013, p. 149) admits that, despite the

information flows he uses to characterize the liquid society, taking into account the local remains important: "Initiatives are still local but their consequences are now global, and remain stubbornly beyond the reach of the powers—which predict, plan and command their places of origin".

Seventh, Bauman raised the issue that the amount of digital information available in the liquid society generates anxiety and uncertainty in people. Indeed, the new technologies that characterize the liquid society grant access to an extraordinary amount of information. In the possession of such amounts of information, human beings are better informed and can make better decisions. However, Psychology addresses rather differently the incidence of this avalanche of information on humans. Psychology has had an influence on Geography since as early as the 1960s.

Looking at the history of Geography, positivist approaches became contested because the amount of data that human beings could handle was limited and there were many problems in generating regularities. With the development and dissemination of computing, from the middle of the twentieth century, confidence in data and information was regained, which led to the consolidation of quantitative Geography. However, psychological influences on Geography led to the rise of various trends (e.g., phenomenological, behavior, perception) that, at their turn, questioned the validity of the information itself. Considering cognitive schemes, feelings, and experiences, human beings are more than machines coldly processing information and manipulating data. Human capacity sets limits to the development of new technologies. Regarding the amount of information, BRUNING, SCHRAW and NORBY (2012, p. 110) indicates that "[t]wo students with the 'same' amount of knowledge can write quite differently on a topic, not because one of them knows more than the other, but due to the knowledge available to support the reconstruction process." For example, students with previous knowledge on a certain topic, such as rural development, follow quite differently the teacher's explanations as those lacking previous knowledge. As a result, two students who are exposed to the same information will process it differently depending on their available cognitive structures and previous knowledge. Short-term memory also im-

pacts the amount of available information with new technologies. MILLER's (1956) experiment showed that humans had trouble retaining more than seven units of information, plus minus two. Also, Cognitive Psychology repeatedly and insistently stressed that knowledge depends on the quality and not on the quantity of information. For example, textbooks may contain unclear explanations on a topic that leads for students to learn the content without knowing that the information presented in the textbooks is insufficient. As BRUNING et al. (2012, p. 38) state,

"[...] when this happens, students may be forced to find information for themselves, or they may not even realize that essential information is missing. Unfortunately, many students in this situation simply resign, being unable to bridge the void caused by insufficient data".

Thus, Bauman explains the problems arising from the amount of information, while Bruning and colleagues highlight the importance of information quality.

Eighth, along with quantity and quality of transmitted information, its nature and type also require attention. In educational terms, this aspect leads to issues connected to the content to be taught. One can distinguish between factual or declarative, procedural, and conditional information. For example, the concept of density (declarative) is useful if the aim is to explore the characteristics of the population. At first, teachers can define the concept of density to apply it, in a next step, to a specific case (e.g., city or region). Finally, students have to learn to identify the situation where density needs to be applied. For example, the topic of population distribution, unlike its structure and dynamics, requires knowledge on density.

In conclusion, the amount of information does not necessarily imply better geographic knowledge. Psychological studies address the challenges human beings face when required to process the information they are confronted with. New technologies and the avalanche of information can, paradoxically, lead to counter-effects, such as misinformation, frustration, fear, anxiety, and even phobia of new technologies.

2.3 Knowledge in the Liquid Society

COLLINGOOD (1995) and BAUMAN (2002, p. 225) agreed that "each science is made up of the practices of those who practice it. To say this is

to grant a considerable autonomy to science". Hence, Geography as an academic discipline may be considered as the set of knowledge generated by the academic community of geographers. In Bauman's view, knowledge is not only an individual but a social product intimately tied to society's other attributes. Using Tim Jackson's theory, BAUMAN (2013, p. 106) offers the following vision of society's future:

"Tim Jackson warns that by the end of this century, our children and grandchildren will have to face a hostile climate and impoverished resources, habitat destruction, species extinction, food shortages, mass migrations and, almost inevitably, war".

Bauman's liquid society seems to be troubled, at the very least, and raises multiple questions. Can this deplorable society be avoided? In a positive interpretation, we can ask ourselves what knowledge would be needed to avoid this situation? And from a pessimistic position, what knowledge would our descendants need to live and survive in the society that awaits them?

BAUMAN (2013, p. 107) turns to Adam Smith's classic theories to find explanations of which forces move our society:

"[...] we owe our daily provisions of fresh bread to the greed of the baker, and not to his altruism, to his charitable sense, to his benevolence or to his noble morality. Thanks to the human desire, too human, to take advantage of situations, the goods reach the shelves of the market and we can be sure to find them there".

These thoughts on society's evolution bear two significant arguments for education. On the one hand, desire constitutes the starting point of human action and, in particular, of learning. Therefore, for teachers, regardless of the subject they teach, knowledge acquisition requires the consideration and, in a positive phase, the stimulation of students' desires. Given the pessimistic visions of their future in the liquid society, students may be discouraged to study. Students can almost be considered to be in a situation of learned helplessness; people lose the ability to know how to act after repeatedly failing to find alternatives and remain impassive as they feel unable to find a solution. On the other hand, an important aspect is how to find a new driving force that leads to a society other than that depicted by Tim Jackson and, ultimately, how to encourage a desire to learn. Bauman's liquid society

views knowledge, unlike previous societies, as a product.

2.3.1 Traditional Perspectives on Knowledge

Societies traditionally viewed knowledge as something lasting bearing intrinsic value and, more importantly, granting a better social position to whoever possessed it. BAUMAN (2007, p. 26) addresses this matter as follows: "Knowledge had value since it was expected to last, just as education had value to the extent that it offered knowledge of lasting value".

The quotation implicitly recognizes that scientific progress was moving slowly and that the knowledge it produced and that individuals acquired in the field, in workshops, or in educational establishments served them for the rest of their lives. Schools were both sources and social instruments that allowed knowledge acquisition. As possessing knowledge meant giving a better future to children, families made great efforts for their descendants to acquire it. In short, in traditional societies, according to Bauman, the value of knowledge depended on the durability of knowledge. As the Bourgeois revolution led to the emergence and institutionalization of the current educational system, knowledge became an economic good that influenced the social position of its owner.

2.3.2 Knowledge in the Liquid Society

In contrast to the stable, solid knowledge, the liquid society presents knowledge that is dynamic and rapidly changing. This also implies that its validity quickly dilutes, that is, that the value of knowledge is relative, that it depends on the moment and that it has no prospect of the future. In fact, stable knowledge even becomes a serious inconvenience for its holder and might negatively impact the holder's social position. As BAUMAN (2007) shows, knowledge is not something located outside of a person but is part the individual's self-construction and cognitive structures. Therefore, Bauman's understanding of knowledge is caught between knowledge emerging from the activity of a collective of individual specialists' internal activities. Of equal importance is each human individual's predisposition or attitude to learn. Learning is not limited to the early years of each individual's life. It is rather a continuous activity, otherwise the individual is doomed to fail. The above statement, once

again, challenges the educational system's (orthodox education) role.

Yet another characteristic that BAUMAN (2007, p. 30) attributes to knowledge in the liquid society is that of knowledge being a product:

"Today, knowledge is a commodity, at least it has melted into the mold of the goods and is encouraged to continue to be formed in accordance with the model of the goods [...] the fate of the goods is to lose market value quickly and be replaced by other 'new and improved' versions".

Knowledge is a product because it is exchanged, bought and sold, in markets. In addition, this exchange takes place quickly because there is a great deal of supply and an even greater demand. Therefore, another characteristic of the liquid society is the demand for a great deal of knowledge. This need for the movement of goods entails policies aimed at reducing or removing barriers that impede fluidity or free movement.

The underlying criticism of this development in the nature of knowledge is that demand does not really fit basic needs, which are not motivated, in contrast to traditional markets, to meet real, basic needs, but are generated in an induced, artificial way. For example, new merchandise is void of innovation and only undergoes a change in design to outdate the existing product on the market.

Translated into the context of education, if knowledge is a product, the educational system is the market that offers products (knowledge) that allow the consumer to purchase a good (BAUMAN 2007). However, the educational system should not be regarded as a market for several reasons, one of which being societies promoting inclusion and the incorporation of all young people.

2.3.3 Knowledge Acquisition or the Scientific Method

One of the traditional questions of academic research is focused on the ways human beings acquire knowledge. In the eighteenth century, modern science emerged because human beings established a path, a method, for knowledge acquisition. Bauman, however, also incorporates another perspective into his vision on knowledge acquisition. In his book on hermeneutics, BAUMAN (2002) addresses how the explication or interpretation of social reality is produced.

Looking back on the history of knowledge concerning how individuals acquire knowledge, it increases the uncertainty about how science gains knowledge as theories offer multiple and even divergent answers. Bauman's thesis is that knowledge in the liquid society is short-lived. A range of paradigms, outlined below, underpin his thesis.

Different authors highlighted the existence of epistemological ruptures in the development of scientific knowledge. In KUHN's (1994) reading, confidence set into a set of knowledge elements at a certain time in history constitutes a paradigm. Over time, paradigms enter a phase of crisis (revolution) leading to a new paradigm replacing the preceding one. The new paradigm, generally completely incompatible with its predecessor, responds to specific challenges and involves the use of certain concepts and methods. The survival of a paradigm depends on power structures. BAUMAN (2013) explicitly shares Kuhn's perspective. Similarly, BAUMAN (2002) also embraces POPPER's (1983) perspectives on the evolution of science based on a model of conjectures and rebuttals that place it in a continuous state of revolution. Hence, BAUMAN (2002, p. 232) considers that "[...] the methods of empirical-analytical analysis cannot guarantee the truth of scientific propositions; they can only guarantee that false postulates will have to be exposed and rejected".

By adopting this position, Bauman also places scientific methods under the veil of uncertainty. While LAKATOS (1989) falls in line with Popper by accepting the continuous questioning in science, he does question the existence of a permanent revolution in science. In his reading, the model-he calls it research program-consists of a nucleus, located outside of controversy, and a crust where knowledge is being accumulated, controversy happens, and decisions are made on whether to integrate new ideas into the nucleus.

The ideas Kuhn, Popper, or Lakatos developed on scientific thinking, need to find their way into initial teacher education as too often intransigent positions on knowledge prevail. Such positions leave the fact unconsidered that science itself is the result of historical context and personal interests.

Revising the evolution of science leads BAUMAN (2002) to questioning the certainty of our knowledge and, ultimately, reinforcing his

idea of the insecurity that affects today's world.

The fluidity of knowledge manifests in Geography—a field familiar with paradigms. However, paradigms in Geography are not understood in a Kuhnian way that excludes the coexistence of two or more paradigms. In Kuhn's view, geographical paradigms should replace each other. However, Geography gradually incorporates different ways of gaining knowledge in a more Lakatosian manner. CAPEL (2012) argues that Geography has incorporated different trends over time and practically each of them has contributed to geographic knowledge and research. This evolution involves introducing new objectives for research, new methods to obtaining knowledge, using new concepts, or applying new tools.

In short, obtaining geographical knowledge embraces a multitude of ways that, rather than creating uncertainty, enrich the discipline's hermeneutic possibilities. The uncertainty is held by the professional, the geographer, who has the duty to have an overview that allows the effective and efficient application of alternatives.

BAUMAN (2007) repeatedly explains why a dynamic society affected by deep structural changes with uncertain references can be considered to be liquid. However, the very theory of the liquid society (BAUMAN 2007) contains its own contradictions, reason why it cannot serve as a reference either. If everything flows, if there is no structure, a theory of reference, or durable knowledge of reference, the very theory of liquid society lacks consistency since it itself, by definition, cannot be characterized as a solid theoretical framework.

The acquisition of knowledge requires, in addition to following research structures which we call methods, conceptual domain. The problem of conceptual mastery is also present in Bauman's work. Words allow us to shape reality. Lack of concepts can prevent the acquisition of new knowledge. BAUMAN'S (2002) idea is not only to delve into this issue but its aim is to advance the idea of liquid society's fluidity and uncertainty. Therefore, it states that words change their meaning and have nuances depending on who uses them and the context in which they are used.

Conceptual fluidity is also inherent to Geography, as exemplified by structuring concepts, such as space (SEBASTIÁ & TONDA 2015)

and other non-essential ones, such as BRUNET'S (2002) blue banana or BOIRA and PRYTHERCH'S (2015) Mediterranean corridor. These concepts served to explain current European territorial structures. A more traditional example is the new meaning that has been incorporated into the concept of network. Initially an object used in fishing, the network was subsequently applied to transport, trade, and, lately, to digital communication structures.

In short, Bauman's characterization of the liquid society is defined by the attributes of short-lived knowledge obtained through methods that essentially focus on continuous refutation and do not allow the construction of solid knowledge and that also use terms with fluctuating meanings.

2.3.4 On Bauman's Knowledge Concept

This section questions the value Bauman attributes to knowledge based on its duration. Knowledge remains valuable as long as it solves problems and not as long as it is available. For example, the validity of geographic coordinates will disappear once a different projection will replace meridians and parallels. The meridian and parallel reference has a mortgaged value over time, it is limited, but as long as it is useful to solve problems effectively and efficiently, it remains valid. Nevertheless, human beings are willing to learn by their nature regardless of how functional or lasting the knowledge might seem.

The liquid society expands problems instead of eliminating them. For this reason, the acquired knowledge can continue to be useful as long as it conserves its capability to provide solutions. The challenge lies in finding the right answers to new realities and current problems. This is also the key to teaching in the liquid society, namely holding on to already acquired knowledge as long as it serves the individual's needs and concurrently acquiring new knowledge to meet new challenges. In other words, already acquired knowledge serves to solve existing problems or facilitates the way to finding paths or concepts necessary to solve new challenges. For example, traditionally, studies of cities first identified urban morphology. With Kevin Lynch, another way of interpreting the city emerged. Today, virtual reality introduces yet another tool that allows to expand the exploration of the city. Reflecting on this develop-

ment, the question rises whether morphological analysis lost its relevance to explain urban genesis and development.

When exploring knowledge, Bauman also addresses the value of experience. The decision to hire a person in the liquid society depends, according to BAUMAN (2007, p. 35), primarily on the last years of professional activity instead of considering the entirety of previous experience: "One is as good as his successes, but in reality, only as good as the latest successful project". However, experience is a much broader concept. Both Pedagogy and Psychology traditionally stressed the value of experience in the construction of knowledge (i.e., Dewey, Kolb). Historical references on this matter are extensive, ranging from Comenius, Pestalozzi, Froebel, and Rousseau to ILE in Spain. They emphasize the need to teach each human being by drawing on the environment, working with sensory experiences, and using intuitive methods. Overall, experience facilitates learning, reason why teaching is bound to rely on experience.

In Geography, for example, a certain population's experience can be considered an endogenous potential that facilitates the exploration of a geographical space or economic activity. Such frameworks led to possibilistic and deterministic alternative explanations.

3. Teaching Geography in the Liquid Society

The teaching and learning of Geography happens mostly within formal education. As a political structure of the state aimed to educate the population, formal education's establishment, funding, and development lies in the hands of the state. Therefore, teaching Geography involves considering the framework set up by the educational system for each teacher's activities.

Mass media contests the educational system in different ways using various terms and arguments. Similarly, BAUMAN (2007, p. 31) criticizes the educational system because of its commercialization: "This is how the idea that education can be a 'product' that one wins and preserves, treasures, and protects is discouraged and, certainly, few speak in favor of institutionalized education".

BAUMAN (2002, p. 217) himself recognizes the contradiction in his discourse concerning the importance of experience in knowledge construction: "There is no understanding in the absence of experience to which the object may refer to. But, likewise, the opposite relationship holds that meaning is only accessible coupled with experience." However, as already stated above, experience conditions learning, and, therefore, in addition to modifying and personalizing it, it can also obstruct previous ideas.

A last matter to address is Bauman's perspective on conceptual dynamism in the liquid society. Indeed, words are born, are disseminated, and die. In the liquid society, these processes are possibly more frequent and intense. In addition, another issue to be considered is the objective to confuse, manipulate, and dominate people through conceptual fluidity. An example of how a term can have two different ratings is that of the magistral class in Spanish. The magistral class refers to an outdated didactic method that paints those using it in the colors of backward-looking individuals detached from progress. Used in English as master class, the concept reflects innovation and modernity. Therefore, it remains crucial to continue studying terms and concepts along their use and dissemination, which is far from neutral.

However, Bauman also addresses the motivation to contest the educational system, since its possible disappearance implies an increase in power for certain persons or groups. The progressive dilution of the educational system leads to cultural, social, and moral erosion in the population that creates ideal prerequisites for manipulation. Therefore, one of the first aspects teachers need to become very aware of is that their work will contribute to the training of adult, responsible, and critical persons. In other words, educated individuals are able to access and evaluate the abundant, even excessive information of the liquid society to pass judgement and decide on their actions.

BAUMAN (2013, p. 41-43) explains that the absence of an educational system will enable the powerful to exercise power more easily:

"In wealthy societies, the work of the teacher is often devalued [...] Depravity is the smartest strategy for dispossession. Deflecting attention (through temptation and seduction) [...] is the technique of depravity that produces NEETs."

BAUMAN (2007) also addresses the challenges of widespread relativity. In terms of education, this translates into the teacher lacking references, criteria, and values. As the methods used to obtain knowledge are also liquid, the challenges increase. Both the contents where knowledge is created and the ways to access and teach it are liquid.

However, when reflecting on teaching, Bauman's ideas on the temporality of knowledge based on Popper require further exploration. In our reading, Lakatos' perspective allows the establishment of solid cognitive frameworks. However, is a solid cognitive framework a mistake, an inconvenient, or even a disadvantage?

Referencing Piaget, education often falls back on the idea that cognitive conflict in the learning process is essential as without this learning does not take place. Therefore, there is a certain coincidence between Bauman and Piaget. However, new knowledge is far from chaotic. In fact, new knowledge is structured and as new connections within the cognitive structures or schemes increase, significant knowledge increase occurs.

In a similar fashion, AUSUBEL, NOVAK and HANESIAN (1989) also highlight the importance of structured learning. However, if Bauman rejects solid cognitive frameworks, how can meaningful knowledge or learning take place? Meaningful knowledge requires solid structures, which do not mean or imply immobility. The interpretative challenge of Bauman's theory is that the concept of solidity neither excludes dynamism nor flexibility.

Therefore, the liquid society's dynamism leads to uncertainty and lack of criteria and values,

4. Conclusions

Bauman depicts a liquid society immersed in a sea of uncertainties with impact on the educational system and the teacher. The liquid society alters the role of the teachers, the ways they teach, what content they teach, and, ultimately, the purpose of teaching. Geography teachers may wonder what criteria are there to assist them navigating this new situation. Teachers'

which aggravate the crisis of reference frameworks. The fluid society propels the teacher into a deep professional disorientation. Nevertheless, criticism works towards recovering criteria that can support teachers in their teaching activities. Regarding Geography, the discipline is as dynamic as society is. However, Geography equips individuals with tools to interpret the reality in which they work and, more importantly, beyond indicating how to use existing conceptual and procedural tools, it assists them in creating and applying new ones for a changing world.

The following questions highlight the need for strong references:

- (1) Has playful learning stopped to be a benchmark for teachers?
- (2) Equally, is motivating the student not the starting point for learning anymore?
- (3) Should we drop functional or problem-based learning?
- (4) Is spatial thinking and orientation no longer useful for the human beings?
- (5) Is the concept of density not useful to understand spatial distribution problems?
- (6) Doesn't solving a spatial problem require proper use of cartographic scale?
- (7) Is cartographic interpretation no longer useful?
- (8) Can the selection of a business location leave urban flows unconsidered?

Bauman could possibly regard the above questions as obsolete given that they stress the dynamism of knowledge. However, BAUMAN (2013, p. 30-31) himself describes a reference criterion for education:

"The invariable purpose of education was, is, and will always remain the preparation of the young people for life. A life in concordance with the reality into which they are destined to enter. To be prepared, they need instruction, 'practical, specific, and immediately applicable knowledge'".

uncertainties increase as they witness the rapid change in content they have to teach and are confronted with different, partly concurring methods used to generate the changing knowledge underlying educational content.

This paper sought to address these challenges; however, the conclusions we draw are biased by our own perspectives, professional

and private condition, academic training etc. Despite their age, basic principles proposed by different scholars maintain their validity. Some of these principles are taking into account experience, cognitive representations, motivation, interest, problem-based learning, cognitive conflict generation, and dialogical learning. Particularly assisting students in the development of cognitive processes seems important. While memorizing information remains necessary, it is also insufficient as knowledge entails more than information. In the liquid society, it seems in-

creasingly necessary to promote self-awareness of how knowledge is generated.

Summing up, despite the myriad insecurities the liquid society brought about, teachers not only have a long track record of educational experience, they also have the latest research at their hands that facilitates the establishment of criteria and principles. Lacking criteria and principles makes teachers more prone to be manipulated by the dominant social interests and this has detrimental consequences for the future generations they educate.

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