

The Emergence of Space in Latin Literature



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Abstract

It's about saying what space is. How can space be defined? What are its nature and its properties? The Sumerians were the first in representing reality with plans and maps, less than five thousand years ago. The Romans are not the inventors of spatiality, but the Latin literature provides numerous remarkable examples concerning the gradual emergence of spatiality, through the development of its uses.

Birth of an Idea

The Latin writing appeared during the seventh century BC; it was derived from the Etruscan. The Romans have gradually enriched their language by introducing new concepts; some of them are defined below. These concepts allowed the Romans to locate themselves in relation to what they observed, and to evaluate the location of each system compared to others. We find *crassus* for thickness and *crassitudo* for thickness in Cato (234-149). We can define the thickness of wall: The thickness of a wall is what separates the two surfaces of the wall. Cicero (106-43) has used *distant* for remote, *longe* for far, *longe* for far. Horace (65-8 AD) has used *disto* for far, so as to characterize an object out there. Far does not exist in the nature; we define the concept according to the use done by the Romans: Far is a concept corresponding to an object out there.

Birth of Length and Distance

Cicero has used *longus* for long and *longitudo* for length. Length has no physical existence; we define the word by: The length is a concept corresponding to what separates the two ends of an Object. *Distantivus* for distance is found in Tertullian (155-225); it does not exist in the nature, and it's defined by: The distance is a concept corresponding to what separates here and out there. For the same concept, Tacitus (55-120) has used *longinquitas* for length. Cicero has used *distantia* for distance and *Longinus* for long distance. Cesar (101-44) has used *trans* for beyond, *ultra* for beyond and further, and *Longinus* for long distance. Long distance does not exist in the nature; the concept is defined by: Long distance is a concept corresponding to what is between here and far beyond.

Birth of The Idea of Space

Gafiot Templum Espace que lavue Embrasse the look on Space

In Cesar and in Cicero *spatium* designated a public square, a large clearance; then an observable space; *spatium* was a reality. We cannot blame the Romans, because our modern science still keeps the same opinion. Space is defined according to the use done by the Romans: Space is a concept corresponding to a square or a large clearance. If for Titus (40-81) and for Cicero, *momentum* meant movement, for Cesar and for Seneca (55-40 AD), it also meant space in which there is a movement. Cesar and Cicero could obviously not imagine that the word space they used for designating a physical reality rather than the concept would have such a destiny. We find the word *conceptio* in Vitruvius Pollio, stating that in the first century BC the Romans knew what a concept was. The conceptualization of space was unknowingly done by the Romans, from observed realities. The definition is derived from what the Romans did with this notion: Space is a concept corresponding to what is in front or around.

Before defining the length, the distance, and the metre. It must be remembered that length, width, height, surface, volume, distance, and all spatial units, do not exist in the nature; they are mathematical concepts. Lucretius (96-55) used metaphorical units such as: *at*, *arrow*, *shetland* with in the Reich of a javel in thoron. [1]. Petronius (?-65 AD) used the flight of a kite. [2]. According to the Greeks Thucydides (465-395) [3] and Herodotus (484-425) [4]. the units such as the Greek *stadion* (177,2m), the Persian *parasang* (5940m), the Roman *leuca* (2220m), the day

walking, and the month navigating used by Greeks, by Persians and by Phoenicians, were all invented. The meter, the square meter, the mile, the nautical mile, are inventions of thought; as well as the speed units: m/s, knot and mile/hour. All these units have mathematical properties, but they have no physical properties; therefore they do not physically exist. Consequently they are not measurable as such.

Definition of The Length

We do not measure the length of a table, but we measure what separates its ends. The result is called length of the table which is a concept without physical existence. The differentiations are crucial as to figure out the nature of physical space. The length can be defined, like longitude of Cicero: The length is a concept corresponding to what separates the two ends of an Object.

Definition of The Distance

The distance is conceptualized by using two points: on a general way, two points are sufficient for defining the distance. The distance is a concept corresponding to what separates two points. The physical non-existence of the space units leads to setting legitimate suspicion of the physical existence of space.

Space

In a collection of texts, articles and conferences, of the 1920s/1930s, and published in 1953, Einstein (1879-1955) has a mathematical approach with the Galilean tridimensional space; then he writes that the notion of interval (with or without systems) is at the origin of the concept of space; but he does not define the intervals without systems. Then Einstein includes time as the fourth dimension of physical space [5]. Dimension is a term of spatiality which has other acceptations; e.g. time is called the fourth dimension of space-time. This specialization of time in everyday language often leads to confusions and fantasies. Mathematics has theorized the mathematical space by generalizing the concept with n-dimensional spaces and infinite dimensional spaces; but this is not physical space. The goal is to focus on physical space, as far as differentiation between space concept and an elusive reality can be achieved. About 2300 BC, Sumerian scholars thought they were standing at the center of a flat world, which was surrounded by the terrestrial ocean, and which was located between the celestial vault and the lower hell; all was encompassed by the primordial sea [6].

This attempt could be considered as the invention of geography. Herodotus has quipped on Homer: Talking about the Ocean, it is replacing any explanation by an unclear fable. Homer will have invented this name so as to use it in his fables [4]. We are in debt to the Sumerians with the map of Nippur which is inscribed on a clay tablet dated mid second millennium BC [6]. The British Museum holds the oldest known map of the world, engraved on a clay tablet; Southern Mesopotamia, seventh century BC [5]. The unknown was inspiring fear: for Romans the more people were far, the more they were lower. The Greeks

named barbarians those who did not speak their language. Herodotus reported that for Persians, the more people were far, the less they were estimable [4]. The Sumerian conception of the world, the map of Nippur and the Mesopotamian map, are real spatial models of the Nature. These maps aimed to satisfy human desire of comprehension, and to deal with immensity of the World and its numerous obstacles; it is an awareness of what would finally be called in the future: space. By fostering space mastery, the plans and the maps would gradually become instruments of geopolitics. The space topic is more difficult than that of time; however the studies, the definitions and the commentaries do not differentiate between

- a. The physical space, which corresponds to our ordinary space.
- b. And the empty space, which corresponds to space as such.

The Physical Space

Mixing a variety of a plant susceptible to a disease, with a resistant variety, increases the space between susceptible subjects: the epiphytotic progression is slowed down or stopped [7]. It explains the fragility of monoculture, the success of diversified seedlings and the vitality of primary forests, and it justifies biodiversity. The progression of epizootic diseases in intensive briefings is another illustration. Does space play an active role in slowing down these progressions? Heidegger (1889-1976) asserted that space was a being and a phenomenon: the various spatialities are phenomenal. [8]. The philosopher believed that manipulation of the language would allow him to define space; but like for time, he could not demonstrate anything. The definition of physical space will allow for answering the question.

The physical space is conceptualized when an observer becomes aware of what separates him from an object, or what separates two objects. Therefore, two arbitrary systems permit one to formulate a basic definition: The physical space is a concept corresponding to what separates two systems. What separates means what is in between. In Cicero, *distractio* means separation. This definition « a minima » teaches us little, but what it tells is true; and it is the first consistent definition of the physical space. It would obviously be validated if some theoretical extensions could be extracted later on; we think about the possible properties of physical space. Let's wonder what happens if the two systems are removed. How can space be defined without systems: empty space, space as such?

The Empty Space

Physical Space and Empty Space are Concepts

- a. The physical space is conceptualized and defined through what it contains; it corresponds to our ordinary space; it is a physical concept:

b. . The empty space cannot be physical conceptualized. It means that the space as such has no physical existence : it's a mathematical concept.

Why is there something instead of nothing ? The German philosopher Leibniz (1646-1716) asked: this dichotomous questioning assumed that nothing could exist. Well, without physical existence of the empty space, nothing is not an option, but a mathematical construction of thinking: physical, something is an obligation. Leibniz did not take the precaution of defining space, empty space and the word nothing. He supposed a dichotomy, such as his questioning was a sophism. The international definitions of space have an acceptable defect of forms. For example, the Conférence Générale des Poids et Mesures of 1983 defined the speed of light in relation to the meter, and in the wake, the meter in relation to the speed of light [9]. It's a sophism.

Conclusion

The way the Romans have gradually conceptualized the spatiality is an interesting example of diachronic linguistics.

(diachronic menas change with time, not because of time). It allows one to confirm that space has no materiality. In addition, the Latin literature illustrates the effective contribution of interdisciplinarity in the theoretical research on space.

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