Exploring the Role of Materiality in Modern Architecture

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Abstract

This article unveils a study based on the content analysis of 6,400 digital books on philosophical materialism published in the 20th century. The universe of speech was classified according to the overall number of citations received between January 2004 and January 2016, from different databases and using digital tools. The aim of the study was to create a model that enabled a conceptual description of the idea of materiality present in modern architecture, based on the method of content analysis. After doing so, it was possible to establish five categories of content characterized by a strong union of context and totality, with enough descriptive capacity to guide the pursuit for association in the discourses of modern architecture. Thereafter, 126 codes were identified in some of the selected historiographies of architecture. They were used to measure degrees of similarity among categories and codes to ultimately identify a system of concepts that could help to define the idea of materialism in architecture. The coding trend was focused on the category known as "idealism", and it was confirmed that modern architecture was not conceived based on a formal object but governed by cultural conventions.

Keywords: modern architecture, materialism, content analysis, concept formation, digital methods.

1. Introduction

Digital search tools, such as SEO and Search Engine Watch, helped to identify that the recurrence relation was centered on "idealism" much more than "materialism" as per the topics of interest that users searched for in Google from January 2004 to January 2016, (Fig. 1.).
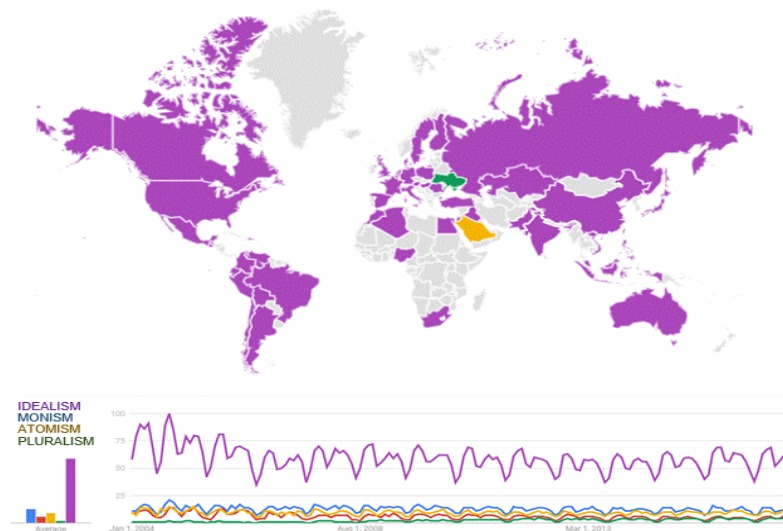

Figure 1. Materialist world. Most popular query. Creation date: January 16, 2017

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Materialism is a current of philosophy that holds that nothing exists beyond the material, while idealism identifies a set of philosophical theories that endorse the belief that reality is only comprised of ideas; it is synonymous with immaterialism[1]. This exploration concurred with the interest in observing the degree of abstraction or idealism that the field of architecture has had in relation to its object of knowledge as it is a discipline of creation that fluctuates between the abstract and the concrete. Given such interest, it then became not only important to reflect on the nature of the subject in the historiographies validated on the topic, but also what intentions they have had and identify the trend of their making under such terms.

Two paths of analysis were proposed. The first, from a qualitative perspective is to review that which has historically conceptualized a sphere of knowledge, and to revisit the conceptual construction of an idea based on the method of content analysis. And the second, a quantitative approach: to explore new ways of controlling and managing extensive information to enable its democratization, assuring that it is valid, complete, and up-to-date (Toffler1980). It was found that the use of content analysis allows the study of a fragmented phenomenon based on the comparison of categories from different periods of time (Weber 1990; Krippendorf1997). Also, that the need to reinvent forms which activate culture, entails extracting all the potential from extensive literature on a topic based on new means of analysis; only currently possible thanks to the use of digital methods (Suarez2008; Rogers2013).There are several critical studies on architecture, but not many that center on the debate about its nature or on making sense of what Plato defined in his Laws as creative potential: the truest and most essential sense of "something" (*Timaeus*, Book 10, 892c).

This does not concern restricting the architectural practice to a single and definitive reality. In this context, we follow Aristotle who suggested that there is more than one way to identify the nature of things, constructing pluralistic definitions better-suited to their form of existence[2]. To this end, to find its very source; he considered matter as the manifest nature of things (*On The Soul*, Physics II, 3; Metaphysics V, 2). To explore the nature of architecture, it is necessary to understand the idea of materiality because it appears to constitute the essence of formal generation, and it is important to refer to modernity since it is the ground from which the architecture of today emerges (Estrada 2016).This article contributes to the studies in the field of architecture by describing the use of content analysis and the necessary digital tools to manage extensive literature on the topic. The specific objectives were: a) to formulate a general description on the concept of materiality, and b) to identify the most relevant categories in the conception of the architectural object in modern times and propose a model to help describe the idea of materiality that drives the creative processes.

A premise. This study is based on the theory that modern architecture has total autonomy from the notion of materiality present in the analyzed scientific and philosophical discourses, which have served as a general reference to the study of the nature of the material dimension that constitutes reality. This has also been evidenced in recently-published works which argue that one of the knowledge gaps in architecture is the understanding of the process underlying material configuration, which is constitutive of the idea of the architectural object and the production of objects in general (Simondon 2013: 10). To support this theory, one of the models of the obtained semantic data shows that the percentage coverage of the code assigned to the tracking of the material dimension in historiographies about modern architecture is less than 0.1; that is, it does not reach the expected reliability. According to the coefficient of agreement proposed by content analysis, a value below 0.7 possesses low statistical significance (Krippendorf 1990; Weber 1990). This represents evidence of the absence of theorization in modern architecture with respect to the material constitution of its object.

2. Theoretical support

All approaches to architecture have required a certain degree of invention, given the symbolic character that appears to be innate as well as the cited uncertainty of the constitution of its object, but it is precisely the convergence of invention that clouds the process of architectural configuration. Simondon calls this an incompatibility between matter and action, defining it as the problem of invention (2013: 157). It has also been a discontinuity that playing the role of a barrier, therefore, official historiographies were classified at the time as: a) "operative histories" that present the past as a negative sphere, and b) "pejorative histories" where architecture is something indeterminate and imprecise (Tournikiotis 2001: 222). Here, it is not the time dimension that is inadvertent but the material one, ratifying Simondon's observation.

2.1. The notion of materiality

The currents of materialist tradition study the relationships between human thought and the environment in which the human being acts. Therefore, materialism is a means of knowledge regarding the nature of things (*physis*, Φυσις). A recently-concluded study claims that the idea of materiality has its origins in a dispute that stretches back to antiquity, centered on the question of what separates man from animal (Simondon2009). This question originated in materialist philosophy, but has also been considered in cultural history, in anthropology, (Bateson 1993), and in the disciplines of phycology (Clark 1999; Simondon 2012). The fundamental difference that arises out of the incompatibility between man and animal regards the former as the true soul and the latter as matter. In this sense, matter does not represent any real value for understanding the world.

In the 17th century, Baruch Spinoza defined matter as an attribute of knowledge, stating that: "although two attributes can be conceived to be really distinct, we cannot infer they constitute two different substances" (Spinoza 2011: 66); thereby restoring the connection of matter with the animated world (we think of architecture as the dispute between form and matter). It also recognizes that this separation runs counter to reason, and states that dividing "the whole substance into equal parts would deprive it of the nature of the substance, meaning that it would cease to exist; and that is absurd" (2011: 71). Thus, matter constitutes the nature of the world and hence its way of being.

We will start by using the following imaginary only to illustrate a general perspective of materialism: First, in terms of uniqueness and in which no division whatsoever is considered, the cosmos is a unique and universal whole. This imaginary draws together the Milesian, Eleatic, and Atomist schools from classical antiquity, including the pluralism of Parmenides while representing a train of thought that ranges from the Spinoza´s "neutral monism" to contemporary evolutionary and scientific materialism[3].

The second, also diverse but useful as a symbolic possibility, we will call duality[4], which in turn brings together three trends: the separation between the material and the immaterial, the attempts to reunify matter, and reductions of matter to the spirit[5]. The latter tend more towards an immaterial and subjective world order and have shown themselves to be more relevant for its conception today. In short, the cited study stated that the concepts based on which materiality is described are: Monism, Atomism, Dualism, Pluralism, and those that deny it, identified as subjective materialism.

Currently in the sciences, for example, the extreme opposition between mind and matter was discarded some time ago (Clark 1999). For its part, materialist philosophy refers to theories that concern "the generative" aspect of materiality without referring to a specific object (Simondon 2012; Bunge 2015). Anthropology proposes the need for an "ecology of the mind" to reconsider the concept of evolution based on the idea of "organized matter" to such an extent that there would be no room for disparities, thus confronting "orthodox materialism" (Bateson 1993:16). Organized matter is an opportunity to approach the nature of things in architecture, psychology and science of the mind, so much that today we reflect on "how thought itself is materially possible" (Clark 1999:31). Nonetheless, for architecture it remains a problem yet to be fully identified, and this is where materialism takes place. For this reason, a historiography of concepts could help to reveal this hidden meaning regarding their architectural aspect that "implicit knowledge of the material as well as the power of explicit representation are key to understanding a real physical environment" (Clark 1999: 41-42).

2.2. The historiographies of modern architecture

Reyner Banham provides the only description found regarding the essence of architecture[6]: "an interpretation of the current essence of architecture (...) from the Hellenic synthetic formalism to swaying baroque facades (...) describes the logical and necessary itinerary of the architectural endeavor that always appears through the same territory of a well-determined spiritual attitude" (1985:300). This result obtained in all the historiographies analyzed by "open coding" (Spiggle 1994:450) agrees with the recurrence relation in the search that presents the world immersed in the already mentioned "idealism".

Document analysis and theoretical computing techniques have helped to determine the personal subjectivity of the researcher (Suarez 2008), allowing the history of modern architecture to be revisited as well as the validation of the connections to the arguments of other architects in their theoretical dissertations that emerge in "conceptual proximity". It has also been useful in developing the cumulative and overlapping character that affects the way of understanding a phenomenon by means of social transformation and the ways we perceive reality (Toffler 1984).

Therefore, the role played by historiography is to be the "single, most cohesive structure that consists simultaneously of: 1, a belief about history and consequent view about the history of architecture as a whole; 2, a social vision stemming from a conviction that social and architectural change are inextricably linked; 3, a thesis about the essence of architecture projected onto a grid of exemplary components through which they are formulated. On the one hand, there is the fabric of historical interpretation and on the other, the rule for architectural production in the future" (Tournikiotis 2001: 23).

Operative Speeches			Pejorative Speeches		
1933	Emil Kaufmann	De Ledoux a Le Corbusier: Origen y desarrollo de la arquitectura autónoma	1929	Henry-Russell Hitchcock	Modern Architecture: Romanticism and Reintegration
1936	Nikolaus Pevsner	Pioneros del diseño moderno. De William Morris a Walter Gropius	1932		El estilo internacional: Arquitectura desde 1922
1941	Sigfried Giedion	Espacio, tiempo y arquitectura	1960	Reyner Banham	Teoría y diseño en la primera era de la maquina
1948	Bruno Zevi	Saber ver la arquitectura	1965	Peter Collins	Los ideales de la arquitectura moderna: Su evolución
1950		La historia de la arquitectura moderna	1968	Manfredo Tafuri	Teoría e historia de la arquitectura
1977	Leonardo Benevolo	Historia de la arquitectura moderna			

Table 1. Historiographies of modern architecture

For the analysis, we have opted for those books that come closer to be a historiography of architecture (Tab.1). Based on their discursive character and/or their ontological orientation, we prioritized those that strive to define the principles of the modern movement, from foundational genealogies of a clear related trend to atomism or uniqueness (operative speeches); and (b), those that seek to establish a set of rules for architecture in which a general dualist or discontinuity trend can be identified (pejorative speeches).

In the analysis, we found that the form and matter old opposition persists in the way that we produce architectural objects and conceive the space where these will take place.On this basis, a reconstruction of the creation of concepts, of their use and their changes, can help to identify the space of experience and the order of expectations that highlight the material configuration and the process of invention in architecture. In short, it has increased the understanding of creative processes and provided information on practical future actions.

3. The Process of Analysis

Content analysis is a research method that can be used for either qualitative or quantitative research or both, this being the case, given that it is an attempt to formulate a general description of the notion of materiality in an inductive manner and based on the definition of categories that have been obtained from literature (Dey 1993).

But it is also quantitative, given the interest in validating the information obtained in a new context (Catanzaro 1988) and the probing of the categories identified by way of digital tools, with the aim of exploring the volumes of theoretical data and information in the field of architecture by making good use of the emerging processes of digitalization.

Content analysis is situated in the sphere of descriptive research and seeks to discover the basic components of a given phenomenon by extracting them from certain contents, following a process that is characterized by rigorous measurement. It has also been defined as "a research technique for an objective, systematic and quantitative description of the manifest content of communications, for which the main goal is to interpret them" (Berelson 1967: 17). In Bardin's view, content analysis is a set of methodological instruments applied to the "extremely diversified discourses, contents, and continents" (1986: 7), for which the common factor is the deduction from the calculation of frequencies to the extraction of structures that are translated into models.

3.1. Preparation phase

The preparation phase was defined with the aim to build a model of abstraction from which the universe could be described, from a study related to the same notion of materiality we previously referred to as: Inductive Content Analysis (Robson 1993, Brunard 1996). And from there, to set forth a structured analysis of categories while conducting a deductive analysis. The identified universe of speech came from a collection of 6,400 digital books found in various databases, on 20th-century´s philosophical materialism and modern architecture.

Based on the content of the discourses, the manifest content associated with the word "materialism" was considered as "datum" (Weber 1990), driving what was there to be observed and registered in units of analysis, considering their respective limits (Krippendorf 1990: 81). The word "materialism" was used as an open code and measured using qualitative data analysis software. Its limits were: the **unit of information registration** in extended paragraphs of up to seven (7) lines in length, the **unit of context** defined by authors, the **unit of place** as per the author´s place of origin, the **unit of time** or date of first publishing, and the **unit of enumeration** to identify the possible existence of subtopics related to the subject of materialism (Tab.3).

3.2. Inductive content analysis phase

Inductive analysis is applicable when the existing knowledge regarding a phenomenon is fragmentary (Elo and Kyngäs 2007). The first part of the analysis shifts from the specific to the general, observing peculiarities that are associated with a general whole or "totality" (Robson 1993, Brunard 1996), enabling the construction of a model of abstraction for the notion of materiality for which the main category is the open code of "materialism." The process of opening codes began by reviewing the digitalized and classified information into units of registration known as general code manifest information, then into guaranteeing the assessment of all discourses while codifying who speaks, where they speak from, when it occurs, what they say, and who the registered information refers to or cites (Dey 1993).

After opening the codes, they are listed and grouped into categories with the purpose of reducing their number, based on similarity or inequality in relation to the general framework of meaning identified, in the form of a semantic core to develop generic categories (Burnard 1991). When categories are formulated, they are named using content words of characteristics with the intention of formulating a structure for the concept. The word primary content refers to the general category and constitutes a topic (Weber 1990). Hence, the topic of "materialism" is made up of generic categories which are named by the following meaning units: (1) Monism, (2) Atomism, (3) Dualism, (4) Pluralism, and (5) Idealism. According to the text corpus digitalized, the topic-unit relationship constitutes the representative universe of the "unit of context and totality," that is, paying attention to the consistency among authors (Berelson 1952) and the possibility of obtaining the meaning of everything (Tesch 1990, Burnard 1991). Adhering to the method, the main generic categories were measured and valued numerically by intensity or weakness of the recurrence of the citation in the bibliographical universe.

The first four categories answered to the topic of "materialism." Their objective valuation was determined based on the historic significance attributed to each one according to the level of universality of the concept, that is, by addressing the unifying character of the reality and the level of objective-essential unification of the concept (Spinoza 2006). The data must be classified in accordance with their group, which also entails identifying units that allow veracity to be established in the sense of non-belonging to the main category (Dey 1993). For this reason, the categories numbered from one to four represent values of intensity, while the fifth measures the absence of materiality, addressing the strategies of action and interaction through which the analysis is developed.

Meaning Units	MAT Monism (M)	MAT Atomism (A)	MAT Dualism (D)	MAT Pluralism (P)	NONMAT Idealism (ID)
# Registration Units					
What forms of materiality exist in the reviewed literature?	9.490	9.240	6.623	6.299	9.401

Table 2. Abstraction model of materiality

The data must be grouped, and the connections arranged in a hierarchal manner (Dey 1993; Robson 1993); thus, the units of significance in turn are expressed as units of enumeration. When categories are formulated by way of inductive analysis, decisions are made based on the interpretation of registered contents, and this makes up the abstraction model or materiality structure (Tab.2). The second step is to validate the categories and identify the terms or significant units from which the idea of materiality present in the historiographies of architecture can be referred to.

3.3. Deductive content analysis phase

After identifying a model of abstraction for the notion of materiality, a matrix of analysis for categorization of the meaning units is structured. It is also possible to associate criteria with each categorization unit. Each criterion functions as a variable to measure the frequency of terms possibly associated with the main category of "materialism". This is viable based on a deductive content analysis that seeks to test the categories and data obtained from a qualitative process (Catanzaro 1988; Marshall and Rossman 1995). The generic categories used to describe the different meanings of materiality in the selected discourses are employed as a framework of categorization for the idea of materiality present in historiographical discourses on modern architecture. In line with this, the deductive analysis is divided into two parts: first, the construction of the materiality categorization; and the second, the pairing of the information obtained from the categorization process in the historiographic discourses to encode the information related to the contents recorded, addressing the subcategory-code correspondence. The organization of the matrix derived from the following research questions.For categorization: What category of materiality has been identified in modern architecture? For codification: What assessment have these categories had? The aim of this was to propose the codes of association from which the idea of materiality present in modern architecture could be deduced. The following table shows the categorization information about materiality codes in modern architecture (see Tab.3).

What category of materiality has been identified in modern architecture?	Operative Speeches in Modern Architecture		
	Classification Unit	Registration Unit	Enumeration Unit
	Descriptor	Code	Frequency
Atomism	MAT	Building	0,31
Idealism	NONMAT	City	0,24
Idealism	NONMAT	Space	0,18
Idealism	NONMAT	Architect	0,16
Idealism	NONMAT	Time	0,16
Atomism	MAT	Project	0,14
Atomism	MAT	Construction	0,13
Idealism	NONMAT	Problem	0,11
Atomism	MAT	Living Space	0,1
Idealism	NONMAT	Center	0,1
Idealism	NONMAT	Shape	0,09
Dualism	MAT	Forms	0,08
Idealism	NONMAT	Architectonic	0,08
Idealism	NONMAT	Modern	0,07
Pluralism	MAT	Iron	0,07
Idealism	NONMAT	Plant	0,07
Dualism	MAT	Relation	0,07
Idealism	NONMAT	Principles	0,07
Pluralism	MAT	Elements	0,06
Pluralism	MAT	Conjunct	0,06
Idealism	NONMAT	Style	0,06
Monism	MAT	Experience	0,06
Monism	MAT	Development	0,05
Idealism	NONMAT	History	0,05
Dualism	MAT	Interior	0,05
Idealism	NONMAT	Culture	0,05
Idealism	NONMAT	Reality	0,05
Idealism	NONMAT	School	0,05
Pluralism	MAT	Scale	0,05
Monism	MAT	System	0,04
Idealism	NONMAT	Tradition	0,04
Pluralism	MAT	Structure	0,04
Pluralism	MAT	Concrete	0,04
Idealism	NONMAT	Production	0,04
Pluralism	MAT	Streets	0,04
Idealism	NONMAT	Period	0,04
Idealism	NONMAT	Meaning	0,04
Idealism	NONMAT	Artists	0,04
Idealism	NONMAT	Character	0,04
Atomism	MAT	Unity	0,04
Dualism	MAT	Material	0,04
Idealism	NONMAT	Urbanism	0,04
Pluralism	MAT	Glass	0,04
Atomism	MAT	Palace	0,04
Idealism	NONMAT	Man	0,04
Monism	MAT	State	0,04
Pluralism	MAT	Parts	0,04
Monism	MAT	Evolution	0,04
Monism	MAT	Design	0,03
Dualism	MAT	Exterior	0,03
Idealism	NONMAT	Expression	0,03
Atomism	MAT	Church	0,03
Idealism	NONMAT	Nouveau	0,03
Pluralism	MAT	Change	0,03
Dualism	MAT	Public	0,03
Atomism	MAT	Nature	0,03
Idealism	NONMAT	Rooms	0,03
Idealism	NONMAT	Environment	0,03
Idealism	NONMAT	Spirit	0,03

What category of materiality has been identified in modern architecture?	Pejorative Speeches in Modern Architecture		
	Classification Unit	Registration Unit	Enumeration Unit
	Descriptor	Code	Frequency
Atomism	MAT	Building	0,64
Idealism	NONMAT	Architectonic	0,45
Idealism	NONMAT	Work	0,44
Dualism	MAT	Form	0,38
Idealism	NONMAT	History	0,38
Idealism	NONMAT	Style	0,29
Idealism	NONMAT	Craft	0,28
Atomism	MAT	Project	0,27
Idealism	NONMAT	Principles	0,21
Dualism	MAT	Material	0,2
Pluralism	MAT	Elements	0,2
Idealism	NONMAT	Time	0,19
Idealism	NONMAT	Meaning	0,19
Pluralism	MAT	Structure	0,19
Idealism	NONMAT	Theory	0,19
Idealism	NONMAT	Expression	0,18
Idealism	NONMAT	Aesthetic	0,17
Idealism	NONMAT	Historicism	0,16
Idealism	NONMAT	Value	0,16
Monism	MAT	System	0,14
Dualism	MAT	Interior	0,14
Idealism	NONMAT	Space	0,14
Atomism	MAT	House	0,14
Atomism	MAT	Funtion	0,13
Idealism	NONMAT	Eclecticism	0,13
Monism	MAT	Design	0,12
Idealism	NONMAT	Effect	0,12
Atomism	MAT	Nature	0,12
Idealism	NONMAT	Problem	0,12
Idealism	NONMAT	Reality	0,12
Idealism	NONMAT	Romanticism	0,12
Monism	MAT	Analysis	0,12
Dualism	MAT	Object	0,12
Idealism	NONMAT	Site	0,11
Idealism	NONMAT	Language	0,11
Monism	MAT	Method	0,11
Idealism	NONMAT	Idea	0,11
Idealism	NONMAT	Detail	0,11
Idealism	NONMAT	Monuments	0,11
Atomism	MAT	Type	0,1
Idealism	NONMAT	City	0,1
Idealism	NONMAT	Concept	0,1
Idealism	NONMAT	Character	0,1
Dualism	MAT	Mind	0,09
Idealism	NONMAT	Symbolic	0,09
Dualism	MAT	Exterior	0,09
Idealism	NONMAT	Surfaces	0,09
Idealism	NONMAT	Ornament	0,09
Idealism	NONMAT	Phenomenon	0,09
Idealism	NONMAT	Plant	0,08
Idealism	NONMAT	Facade	0,08
Monism	MAT	Change	0,08
Atomism	MAT	Projection	0,08
Monism	MAT	Evolution	0,07
Idealism	NONMAT	Man	0,07
Idealism	NONMAT	Image	0,07
Atomism	MAT	Living Placa	0,07
Pluralism	MAT	Conjunct	0,07
Idealism	NONMAT	Shape	0,07
Idealism	NONMAT	Liking	0,07
Idealism	NONMAT	Medieval	0,07
Atomism	MAT	Code	0,07
Pluralism	MAT	Scale	0,06
Idealism	NONMAT	Baroque	0,06
Idealism	NONMAT	Quality	0,06
Monism	MAT	Operative	0,05
Monism	MAT	Operation	0.05

Table 3. Materiality codes categorization

4. Results

The results presented below interpret the data obtained in relation to the material conception of the architectural object.

Meaning Unit	Context Unit		Place Unit		Time Unit		Enumeration Unit	
	Search Word	Book	Origin Country	Origin City	First Publication	Historical Period	Absolute Freq. Materialism Code	Citations Spanish & other languages
Monism	Thales of Miletus	Nautical Astrology	TURKEY	Miletus	-640	ANCIENT	NA	62600
Monism	Anaximander	On Nature	TURKEY	Miletus	-610	ANCIENT	NA	22590
Atomism	Ajita Kesakambali	NA	INDIA	Charvaka	-600	ANCIENT	NA	992
Monism	Xenophanes	Poems	TURKEY	Izmir	-570	ANCIENT	NA	14471
Atomism	Payasi	NA	INDIA	Charvaka	-563	ANCIENT	NA	100
Monism	Anaximenes	Book according Theophrastus	TURKEY	Miletus	-546	ANCIENT	NA	10560
Atomism	Parmenides	On Nature	GREECE	Velia	-510	ANCIENT	NA	354000
Monism	Heraclitus	On Nature	GREECE	Ephesus	-504	ANCIENT	NA	292500
Dualism	Majarshi Kapila	NA	INDIA	Sidhbari	-500	ANCIENT	NA	1287
Atomism	Leucippus	The Arrangement of Cosmos	GREECE	Abdera	-500	ANCIENT	NA	113800
Atomism	Anaxagoras	On Nature	TURKEY	Urla	-500	ANCIENT	NA	251600
Pluralism	Empedocles	On Nature	ITALY	Agrigento	-495	ANCIENT	NA	146900
Monism	Zeno	Book of the Paradoxes of Movement	GREECE	Velia	-490	ANCIENT	NA	32320
Pluralism	Hippocrates	Hippocratic Corpus	GREECE	Kos	-460	ANCIENT	NA	17150
Monism	Diogenes of Apollonia	On Nature	BULGARIA	Sozopol	-460	ANCIENT	NA	36620
Atomism	Democritus	Tritogenia	GREECE	Abdera	-460	ANCIENT	NA	414000
Atomism	Epicurus	Thirty-seven treatises on Natural Philosophy	GREECE	Samos	-341	ANCIENT	NA	383000
Atomism	Kanada Kashyapa	Vaisheshika Sutra	INDIA	Nagpur	-200	ANCIENT	NA	1103
Dualism	Yang Xiong	Exemplary Sayings	CHINA	Chengdu	-53	ANCIENT	NA	3971
Dualism	Wang Chong	Critical Essays	CHINA	Shaoxing	-27	ANCIENT	NA	3873
Dualism	Lucretius	On the Nature of Things	ITALY	Rome	99	CLASSICAL	NA	582000
Idealism	Maitreya-natha	Yogacarabhumi sastra	AFGHANISTAN	Bagram	270	CLASSICAL	NA	166
Idealism	Plato	Timaeus	GREECE	Athens	370	CLASSICAL	0,12	1172000
Dualism	Aristotle	On the Soul	GREECE	Stagira	384	CLASSICAL	0,16	1111000
Dualism	Vasubandhu	Abhidharmakosakarika (Treasury Abhidharma)	PAKISTAN	Peshawar	499	CLASSICAL	NA	446
Idealism	Asanga	Ratnagotravibhaga	PAKISTAN	Peshawar	499	CLASSICAL	NA	592
Atomism	Jayarasi Bhatta	Tattvopaplavasimha (Upsetting of all principles")	INDIA	Charvaka	770	MIDDLE	NA	870
Dualism	Ibn Tufail	Hayy ibn Yaqdhan (Philosophus Autodidactus)	ESPAÑA	Guadix	1150	MIDDLE	NA	17142
Monism	M. Eckart	Essential Sermons, Commentaries, Treatises and	GERMANY	Ta-Dietharz	1302	MIDDLE	0,16	5417
Monism	Ibn Khaldun	Prolegomena (Muqaddimah)	TUNISIA	Tunis	1332	MIDDLE	0,22	19990
Pluralism	Bernardino Telesio	On the Nature of Things according to their Own	ITALY	Cosenza	1565	S XVI	0,32	776
Monism	Giordano Bruno	Concerning Cause, Principle, and Unity	ITALY	Nola	1584	S XVI	0,16	5050
Dualism	Francis Bacon	Novum Organum Scientiarum	UNITED KINGDOM	York House	1620	S XVII	0,12	5933
Dualism	T. Hobbes	Human Nature: or The fundamental Elements of	ENGLAND	Wiltshire	1640	S XVII	0,1	263320
Dualism	Descartes	Meditations on First Philosophy	FRANCE	Descartes	1641	S XVII	0,46	161600
Pluralism	P. Gassendi	Syntagma philosophicum	FRANCE	Champtercie	1658	S XVII	0,16	9267
Monism	Spinoza	The Ethics	NETHERLANDS	Amsterdam	1661	S XVII	0,27	217460
Dualism	Leibniz	New System of Nature	GERMANY	Leipzig	1666	S XVII	0,53	28130
Dualism	Malebranche	The Search After Truth	FRANCE	Paris	1674	S XVII	0,19	11830
Dualism	Locke	An Essay Concerning Human Understanding	ENGLAND	Wrington	1690	S XVII	0,14	380210
Idealism	George Berkeley	A Treatise Concerning the Principles of Human K	IRELAND	Kilkenny	1710	SXVIII	0,16	14840
Dualism	Christian Wolff	General Cosmology	POLAND	Wroclaw	1731	SXVIII	0,22	2821
Idealism	Hume	A Treatise of Human Nature	UNITED KINGDOM	Edinburgh	1739	SXVIII	0,16	349490
Idealism	Maupertuis	Essay on Cosmology	FRANCE	Saint-Malo	1742	SXVIII	0,24	1509
Dualism	La Mettrie	The Human Mechanism	FRANCE	Saint-Malo	1747	SXVIII	0,19	4580
Dualism	Diderot	On the interpretation of Nature	FRANCE	Langres	1751	SXVIII	0,12	27220
Dualism	Condillac	Treatise on Sensations	FRANCE	Grenoble	1754	SXVIII	0,11	7120
Idealism	Helvétius	On Mind	FRANCE	Paris	1758	SXVIII	0,24	40740
Monism	J. Meslier	Testament: Memoir of the Thoughts and Sentimen	FRANCE	Mazerny	1762	SXVIII	0,39	674
Monism	d'Holbach	The System of Nature	GERMANY	Landau	1770	SXVIII	0,14	21370
Monism	J. Priestley	Disquisitions relating to Matter and Spirit	UNITED KINGDOM	Birstall	1777	SXVIII	0,14	7018
Idealism	Kant	Critique of Pure Reason	RUSSIA	Kaliningrad	1781	SXVIII	0,14	293070
Monism	John Stewart	The Apocalypse of Nature	ENGLAND	London	1790	SXVIII	0,15	6330
Idealism	Fichte	Foundations of the Science of Knowledge	GERMANY	Rammenau	1794	SXVIII	0,12	7100
Dualism	Cabanis	On the relations between the physical and moral a	FRANCE	Cosnac	1796	SXVIII	0,14	7830
Idealism	Hegel	Phenomenology of Spirit	GERMANY	Stuttgart	1807	S XIX	0,42	217900
Dualism	Feuerbach	The Infinity, Unity and Universality of Reason	GERMANY	Landshut	1828	S XIX	0,16	1758
Dualism	B. Bolzano	Theory of Science	CZECH REPUBLIC	Prague	1837	S XIX	0,11	8394
Dualism	Marx	The Difference Between the Democritean and Epi	GERMANY	Trier	1841	S XIX	0,16	3870
Dualism	J. S. Mill	A system of Logic	ENGLAND	Pentonville	1843	S XIX	0,4	25730
Monism	Heinrich Czolbe	Neue Darstellung des Sensualismus	POLAND	Kaczki	1855	S XIX	0,31	505
Monism	Jacob Moleschott	Untersuchungen zur Naturlehre des Menschen und	NETHERLANDS	Hertogenbos	1856	S XIX	0,27	565
Monism	Ludwig Büchner	Nature and Spirit	GERMANY	Darmstadt	1857	S XIX	0,2	2371
Monism	H. Spencer	System of Synthetic Philosophy	ENGLAND	Derby	1858	S XIX	0,17	5345
Monism	Charles Darwin	On the Origin of Species	ENGLAND	The Mount	1859	S XIX	0,12	289600
Pluralism	Karl Vogt	Lectures on Man	GERMANY	Giessen	1864	S XIX	0,18	4873
Dualism	C. Bernard	An Introduction to the Study of Experimental Medi	FRANCE	Saint-Julien	1865	S XIX	0,16	11320
Dualism	F. Lange	History of Materialism and Critique of its Present S	GERMANY	Solingen	1866	S XIX	0,26	6093
Dualism	Charles S. Peirce	Studies in Logic	UNITED STATES	Cambridge	1883	S XIX	0,13	20050
Dualism	Engels	Dialectics of Nature	GERMANY	Wuppertal	1883	S XIX	0,16	44900
Monism	Ernst Mach	The Analysis of Sensations	GERMANY	Brno	1886	S XIX	0,1	7970
Idealism	Nietzsche	The Will to Power: In Science, Nature, Society and	GERMANY	Röcken	1888	S XIX	0,34	220400
Monism	R. Avenarius	The Human Concept of the World	FRANCE	Paris	1891	S XIX	0,27	1439
Dualism	Gottlob Frege	Concept and Object	GERMANY	Wismar	1892	S XIX	0,16	5509
Pluralism	Bergson	Matter and Memory	FRANCE	Paris	1896	S XIX	0,58	35900
Dualism	Ernst Haeckel	Art forms of Nature	GERMANY	Potsdam	1904	EARLY MODERN	0,14	3211
Monism	William James	Pragmatism: A New Name for Some Old Ways of T	UNITED STATES	New York	1907	EARLY MODERN	0,18	9810
Dualism	Lenin	Materialism and Empiriocriticism	RUSSIA	Ulyanovsk	1908	EARLY MODERN	0,33	24960
Idealism	W. Dilthey	The Understanding of Other Persons and Their Ma	GERMANY	Wiesbaden-	1910	EARLY MODERN	0,14	10754
Idealism	de Saussure	Course in General Linguistics	SWITZERLAND	Geneva	1913	EARLY MODERN	0,16	36500
Idealism	Husserl	On the Phenomenology of the Consciousness of I	CZECH REPUBLIC	Prostejov	1917	MODERN	0,16	14470
Atomism	Wittgenstein	Tractatus Logico-Philosophicus	AUSTRIA	Vienna	1921	MODERN	0,15	177600
Monism	Roy Wood Sellars	Evolutionary Naturalism	CANADA	Seaforth	1922	MODERN	0,2	2423
Dualism	Dewey	Experience and Nature	UNITED STATES	Burlington	1925	MODERN	0,51	238640
Dualism	J. Randall	The Making of the Modern Mind	UNITED STATES	GranRapids	1926	MODERN	0,19	8840
Monism	Ivan Petrovich Pavlov	Conditioned Reflexes	RUSSIA	Ryazan	1927	MODERN	0,1	6478
Monism	Russell	The Analysis of Matter	UNITED KINGDOM	Trelleck	1927	MODERN	0,63	19840
Dualism	G. Politzer	Elementary Principles of Philosophy	ROMANIA	Oradea	1928	MODERN	0,16	2928
Atomism	R. Carnap	The Logical Structure of the World	GERMANY/USA	Remscheid	1928	MODERN	0,13	5925
Monism	A. Eddington	The Nature of the Physical World	UNITED KINGDOM	Kendal	1928	MODERN	0,45	26670
Dualism	H. Feigl	Theory and Experience in Physics	CZECH REPUBLIC	Liberec	1929	MODERN	0,19	1953
Dualism	Whitehead	Process and Reality: An Essay in Cosmology	UNITED KINGDOM	Ramsgate	1929	MODERN	0,12	143390
Monism	Skinner	The Behavior of Organisms: An Experimental An	UNITED STATES	Susquehann	1938	MODERN	0,1	19730
Dualism	Sherrington	Man on His Nature	UNITED KINGDOM	Islington	1940	MODERN	0,23	2327
Monism	Teilhard de Chardin	The Phenomenon of Man	FRANCE	Orcines	1941	MODERN	0,31	24551
Pluralism	George Santayana	The Realms of Being (The Realm of Matter)	SPAIN	Madrid	1942	MODERN	0,61	10810
Idealism	Sartre	Being and Nothingness	FRANCE	Paris	1943	MODERN	0,23	363500
Monism	Donald Hebb	The Organization of Behaviour	CANADA	Chester	1949	MODERN	0,18	2244
Dualism	Marc Bloch	The Historian's Craft	FRANCE	Lyon	1949	MODERN	0,17	9770
Idealism	Heidegger	Identity and Difference	GERMANY	Meßkirch	1955	MODERN	0,18	37870
Monism	U. T. Place	Is Consciousness a Brain Process?	ENGLAND	Yorkshire	1956	MODERN	0,21	2869
Idealism	S. Kripke	Semantical Considerations on Modal Logic	UNITED STATES	Bay Shore	1959	MODERN	0,24	2218
Dualism	W. V. Quine	Word and Object	UNITED STATES	Akron	1960	MODERN	0,12	6705
Dualism	E. Hobsbawm	The Age of Revolution: Europe 1789-1848	EGYPT	Alexandria	1962	MODERN	0,14	30800
Dualism	I. Wallerstein	The modern world-system	UNITED STATES	New York	1962	MODERN	0,35	34730
Monism	J. J. C. Smart	Problems of Space and Time	AUSTRALIA	Melbourne	1964	MODERN	0,29	2452
Dualism	Eric Wolf	Anthropology	AUSTRIA/USA	Vienna	1964	MODERN	0,1	29040
Dualism	Merleau-Ponty	The Visible and Invisible	FRANCE	Rochefort	1964	MODERN	0,14	61730
Monism	T. Kotarbinski	Gnoseology. The scientific approach to the theory o	POLAND	Warsaw	1966	MODERN	0,35	170
Monism	D. Armstrong	A Materialist Theory of the Mind	AUSTRALIA	Melbourne	1968	MODERN	0,12	4358
Monism	D. H. Davidson	Mental Events, in Experience and Theory	UNITED STATES	Springfield	1970	POST MODERN	0,16	8750
Dualism	Gustavo Bueno	Ensayos Materialistas	SPAIN	La Rioja	1972	POST MODERN	0,67	626
Pluralism	K. Popper	Objective Knowledge: An Evolutionary Approach	AUSTRIA	Vienna	1972	POST MODERN	0,14	6440
Dualism	Lucien Febvre	A New Kind of History	FRANCE	Nancy	1973	POST MODERN	0,18	6120
Dualism	J. C. Eccles	The Understanding of the Brain	AUSTRALIA	Melbourne	1973	POST MODERN	0,49	29341
Monism	W. G. Penfield	The Mystery of the Mind : A Critical Study of Consc	UNITED STATES	Spokane	1975	POST MODERN	0,37	1736
Pluralism	Jaakko Hintikka	The intentions of intentionality and other new mode	FINLAND	Vantaa	1975	POST MODERN	0,16	4181
Dualism	P. Feyerabend	Against Method: Outline of an Anarchist Theory of	AUSTRIA	Vienna	1975	POST MODERN	0,14	18630
Dualism	M. Harris	Cultural Materialism: the Struggle for a Science of C	UNITED STATES	Brooklyn	1979	POST MODERN	0,14	9390
Dualism	F. Braudel	Civilization and Capitalism	FRANCE	Luméville-en	1979	POST MODERN	0,13	26830
Monism	Mario Bunge	The Mind-Body Problem	ARGENTINA	Bs Aires	1980	POST MODERN	0,61	4260
Dualism	Searle	Intentionality: An Essay in the Philosophy of Mind	UNITED STATES	Denver	1983	POST MODERN	0,19	10150
Dualism	J. Fodor	The Modularity of Mind: An Essay on Faculty Psy	UNITED STATES	New York	1983	POST MODERN	0,32	12524
Dualism	Paul Churchland	Matter and Consciousness	CANADA/USA	Vancouver	1984	POST MODERN	0,27	5263
Monism	M. Minsky	The Society of Mind	UNITED STATES	New York	1986	POST MODERN	0,28	2319
Idealism	Pylyshyn	Meaning and Cognitive Structure: Issues in the Co	CANADA	Ontario	1986	POST MODERN	0,37	2548
Dualism	Patricia Churchland	Neurophilosophy: Toward a Unified Science of the	CANADA	Oliver	1986	POST MODERN	0,37	2839
Pluralism	David Lewis	On the Plurality of Worlds	UNITED STATES	Oberlin	1986	POST MODERN	0,18	6280
Dualism	D. Dennett	The Intentional Stance	UNITED STATES	Boston	1987	POST MODERN	0,13	5286
Dualism	Jean-P Changeaux	Conversations on Mind, Matter and Mathematics	FRANCE	Domont	1989	POST MODERN	0,22	2109
Idealism	Roger Penrose	The Emperor's New Mind: Concerning Computers,	UNITED KINGDOM	Colchester	1989	POST MODERN	0,16	8950
Idealism	H. Dreyfus	Being-in-the-World: A Commentary on Heidegger's	UNITED STATES	Terre Haute	1991	POST MODERN	0,16	5320
Monism	Manuel DeLanda	A Thousand Years of Nonlinear History	MEXICO	Mexico City	1997	POST MODERN	0,23	2227
Monism	S. Dehaene	The number sense	FRANCE	Roubaix	1997	POST MODERN	0,14	3558
Monism	Jaegwon Kim	Mind in a Physical World	SOUTH KOREA	Daegu	1998	POST MODERN	0,26	2530
Dualism	B. G.Trigger	Sociocultural Evolution: Calculation and Conting	CANADA	Preston	1998	POST MODERN	0,12	4379
Dualism	H. Putnam	The Threefold Cord: Mind, Body, and World	UNITED STATES	Chicago	1999	POST MODERN	0,25	1185
Monism	A. Damasio	The Feeling of What Happens: Body and Emotion	PORTUGAL	Lisbon	1999	POST MODERN	0,35	11068

Table 4. Authors representative of materialism

To perform the three stages of analysis, 6,400 digital books were systematized corresponding to the topic of materialization, published in the 20th century. In addition, eleven (11) more books corresponding to the topic of history of modern architecture were digitalized and systematized. Different databases and information management software were used: qualitative software to codify and structure the textual documents in the first place and secondly, quantitative software for data analysis. Their main uses were: (a) to identify works on materialism, (b) to identify works and authors by thematic content and citation, (c) to validate the concepts with which materiality has been described, and (d) to identify material codes of modern architecture connected with the concepts that describe materialism.

4.1. Materiality model identification

The database query[7] yielded 6.400 books on study subject. The information was systematized into 153 groups, each containing 41 or 42 books; to find the most frequently-recurring terms related to the word "materialism". These were codified validating the conceptual model that had been identified based on content analysis on an analogue rather than digital basis. The results are shown in Fig.1. The information resulted from the association of the reviewed literature with the proposed limits or units of meaning, depicting principally the world cartography of the literature of materiality regarding the topic of "philosophy of materialism". These books run from the classical period (SVII ac.) through to the so-called post-modernity. See Tab.4.

The already mentioned content analysis yielded 41,053 information registry units and the terms related to materialism were the nouns with the greatest relative weight found. The same results were found in the registers as nominal elements that resulted in four kinds that agreed with the subject of materiality and one kind in reiterated opposition. In the reviewed literature, most citations correspond to Monism, Idealism, and Atomism (23% each) as concepts with a greater connection with materiality. However, Dualism (16%) and Pluralism (15%) attained a high level of representativeness that validates them as categories.

In turn, to validate these concepts and generate a vision of universality, Google's SEO database was consulted with the purpose of evaluating how often users looked up materialism issues. It could be observed that between January 2004 and September 2016, the consultation interest of the users validated the concepts related to materialism. The highest level of interest in the network in a month is equivalent to 100% (top or most popular query). It was observed that the lowest percentage of popularity corresponded to the term Pluralism with approximately 20%, and that the highest popularity corresponds to Idealism which has sometimes reached 100% popularity (Fig. 1.).

4.2. Identification of authors representative of materialism.

The "categorization matrix" required the definition of a study sample of the entire discursive universe proposed. According to that, it was decided to filter the most representative authors of materialism. The most cited work in the databases consulted was digitalized and validated based on queries of frequency and recurrence of words by way of digital tools, verifying that the coverage percentage of the "materialism" code was the most frequent. Those books in which the code was higher than 0.10 were classified. According to the findings, 138 books were the most cited, and consequently, 138 authors were the most representative of the idea of materialism in the discourses studied[8]. See Tab.4. This accounted for two things: it facilitated precision in the construction of meaning in each generic category found in the previous stage and restricted the universe of queries for the identification of material and immaterial codes to be used as a reference in the historiographies.

4.3. Categorization of the idea of materiality present in modern architecture.

It is important to mention that it would have been appropriate to perform the analysis with the largest-possible number of discourses on modern architecture; this constitutes a future research aim for us. However, the coding was possible with the eleven historiographies defined as the most representative of the history and theory of architecture in the modern period (Tab.1). The historiographies were analyzed by means of data management software, and it was possible to verify the separation into the two groups earlier proposed by Tournikiotis. This was possible by identifying similarities of words that emerged in the text queries, validating the coverage of the word defined, based on absolute frequencies and extraction of structures or conglomerates. The frequencies and conglomerates of words were understood through quantification techniques, under the concept known as the "common-sense basis" (Common Meeting Ground, Berelson 1967), see Fig.2.

Figure 2. Common sense analysis. Operatives speeches in blue, Pejoratives in red. Creation date: February 10, 2017

The procedure assumed that the entire verbal response of a subject, whether controlled by it or not, concerns an interview or formal discourse, providing information regarding the motivations of the speaker in regard to the topics identified in the body of the discourse, and this can be described by way of digital techniques (Bardin 1986). This common-sense basis obtained from the textual analysis started by observing the distribution of frequencies and enabled the grouping of data into corresponding categories, with the frequency of appearance used as the basis for drawing conclusions (Tab.5). Both speeches are governed by idealism (NONMAT)alike. The highest recurrence code was "building" but considering the following difference of meaning: for the operative, "building" is an act of building and for the pejorative, "building" is building process.

Meaning	Key Word	Meaning Units	Pejorative Codes	Frec.	Operative Codes	Frec.
Belief that reality is made up only of ideas. Tendency to represent things in an ideal form or pursuit of the ideal, a striving after the perfect state	Subjective Objective Reality	Idealism	Architectonic Work History Style	5.8	City Space Time Problem	2.0
Everything is composed entirely of various imperishable, indivisible elements	Indivisible Combination	Atomism	Building Project House Function	1.6	Building Project Construction Living Space	0.8
Recognizes that mental phenomena are non-physical, or that the mind and body are not identical	Duality Hylomorphic form	Dualism	Form Material Interior Object	1.0	Forms Relation Interior Exterior	0.3
Recognizes more than one ultimate principle	Diversity Relativity	Pluralism	Elements Structure Conjunt Scale	0.5	Conjunct Elements Scale Parts	0.4
Recognizes that there is only one principle, a basic substance That which has no attributes and has no true predicates	Unity Continuity	Monism	System Analysis Design Method	0.7	Experience Development Evolution State	0.2

Table 5. Significance framework

The discursive sample of 138 books enabled the definition of the generic categories corresponding to each concept related to materialism, based on sub-categories, increasing their significance and configuring the framework of abstraction on the idea of materiality. The ultimate interest of the categorization was to construct routes of agreement of meaning, similarity, and reciprocity between the framework of materiality constructed and the concepts identified in the historiographies selected, which were defined as: codes of materiality of modern architecture (Tab.5).

The systematization of historiographies yielded 59 operative and 67 pejorative codes; the same were associated with the categories and subcategories identified, adding a classification that enabled the identification of material and non-material trends to limit their significance and to draw conclusions under these terms (Fig.3). The hierarchical order of the categories of materiality in both groups gave priority to the codes relative to idealism, followed by atomism. Similarly, for both groups, the codes related to dualism, pluralism and monism shared the same relative significance for the definition of the idea of materiality present in modern architecture.
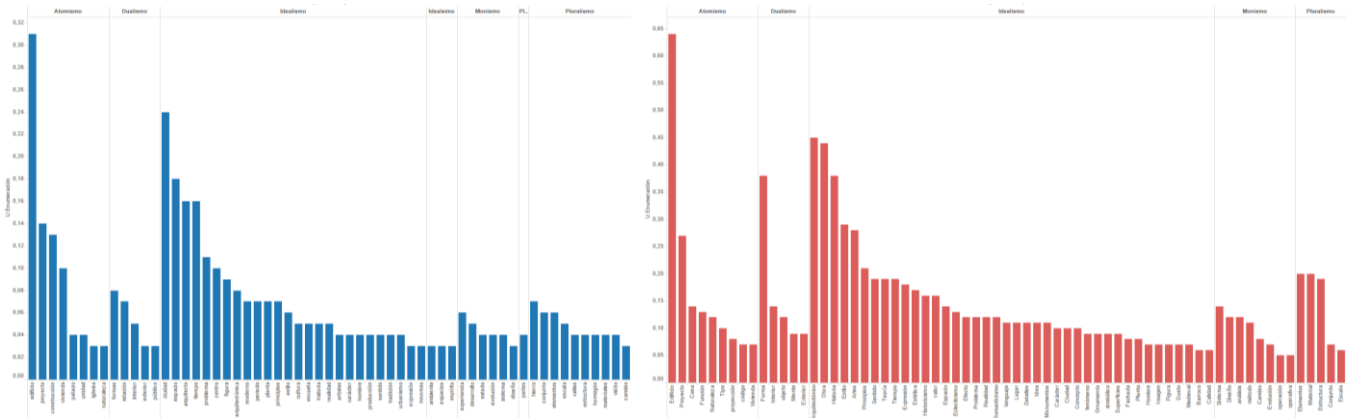
Figure 3. Systematization of historiographies. Creation date: February 10, 2017

For the operative group, the idea of creation follows the next thematic sequence: NONMAT~ City = Space = Time. These terms defined modern architecture, but the following were also found: Problem = Center = Shape, which serve as a correlation for creating the object. The materiality conception for this group is guided by the following chain of words: MAT = Building = Project = Construction = Living Space, a completely atomistic orientation. The pejorative views their definition of architecture in the same way, from NONMAT ideals and according to the following word sequence ~ Architectonic = Work = History = Style = Craft. We also found the following words associated to formal creation = Principles = Meanings = Theory = Time = Expression. For this group, the materiality conception is especially discontinuous where atomist, pluralist and dualist conceptions are present as follows: MAT~ Building = Form = Project, going from building to Project.

Figure 4. Analysis of clustered codes of materiality

Finally, it could be identified that the notion of materiality in the pejorative speeches is focused on the form, showing a more dualist trend which is evidenced in the terms related to formal creation such as style, principles, theory and meaning; all revealing the intention of this side of modern architecture to be more of a temporal field of study. These constitute abstract symbols that appear to account for the concern of the era for responding to a social valuation which means to be governed by cultural conventions; as Tournikiotis and Tafuri said, "stalls on the objectual and does not present a clear understanding regarding these two dimensions" (Fig.4.).

5. Conclusions

The results obtained should be understood as the preliminary achievement of a work in progress, since we are in search of a theoretical and practical production to guide material generation in architecture, and we are aware that the method is such a powerful device that there is still a lot of information to be analyzed in depth.

According to the general objective of this content analysis, it was possible to condense a general description of the notion of materiality as well as to establish useful concepts for the comprehension of modern architecture. The method and digital methodological tools proved useful in the study of architecture in terms of the understanding of the exercise of creation, historical review and theoretical construction. For this specific case, two situations were verified. First, that the studies of opinion generated in the current transmission media may have been valid as a basis of information for research. Secondly, that idealism is a strong resource for architectural practice and creation, and in many cases, for the conception of the world.

The exercise of coding ideas related to materiality in modern architecture verified the qualitative evaluations of the main bibliography of reference, as well as it helped to visualize the concepts from which the design intention in architecture can be revised. In this case, two contributions to the understanding of modern architecture were made: the identification of a clear atomist trend, which shows an object centered on its production to such an extent that sometimes its object disappears, and its operative function seems to have more material weight, at the same time that it is taken as universal. And the dualistic trend, which not only denies the past while generating uncertainty and projecting creation into the future without understanding the present or the relations between temporal dimensions, but also gives more validity to the idea and to abstract thought. Both, ultimately, are profoundly idealist.

Note: all figures are created by author.

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Notes

[1] Materialism (n.) word in use since 1748, "philosophy that nothing exists except matter" (from French matérialisme); 1851 as "a way of life based entirely on consumer goods." From material (n.). idealism (n.) Word in use since 1796 in the abstract metaphysical sense "belief that reality is made up only of ideas," from ideal (adj.). Probably formed on model of French idealism. Meaning "tendency to represent things in an ideal form" is from 1829. Meaning "pursuit of the ideal, a striving after the perfect state."

[2] Of the digital searches carried out as of July 2016, Plato's Timaeus and Aristotle's On the Soul, texts that deal specifically with the nature of things and the concept of matter, lead the citation indexes.

[3] The Milesian School introduces the perspective that the world is organized under the responsibility of a concrete act or a natural phenomenon; that is, that lives the same life as the nature of the world (Thales of Miletus, Anaximander and Anaximenes). The tradition of thought of the Eleatic School describes a visible universe generated from the concept of transformation, homogeneousness, and uniqueness (Xenophanes, Parmenides, Zeno). The Atomist School upholds the physical conception of entities and presents matter as self-created and comprised of atoms (Democritus and Epicurus).

[4] At the heart of the dualism is the rational thinking I explicitly represented in Cartesian dualism, the subject/object separation = body/mind. This thinking I seeks consciousness by isolating itself from the rest of the world and other human beings, so it is therefore necessary to reference I with the outer world, and in most cases, it is the living thing that appears to have been annulled in the representative exercise. The Platonic and Aristotelean points of view were inherited by two modern epistemological currents: French rationalism (René Descartes, methodic doubt) and British empiricism (John Locke, tabula rasa). The unifications of matter include the transcendent idealism of Kant; the absolute spirit, matter and spirit achieved through a dynamic dialectic process; and finally, Marx, who proposes the adaptation of the dialectic process in the interaction between he who knows and the known object: mutual adaptation.

[5] At present it is defined as the philosophy of the mind, and it is also developed by some cognitive authors. First, Husserl and his proposal of the pure consciousness as a process of phenomenological reduction that leaves aside objective knowledge; Heidegger understands the condition of being of things as beings in the world (*dasein*), with existence characterized by maintaining active relationships. The physical cognitive action in Merleau-Ponty; Dewey clarifies that ideas are worthless if they do not become actions that reconstruct the world; the logical positivism of Wittgenstein introduces the theory of action in the problem of language, the way in which people describe their world through images. Finally, the problem of existence as intentionality stated by Sartre, where the reality of being is acting and this act must be defined by an intention.

[6] Digital tools used: qualitative data analysis software (no names are stated since this is commercial software). The open coding test was applied to the 11 historiographies consulted and validated by referencing processes; no response was obtained regarding the "nature of architecture" search, which yielded a coding with the reference "essence".

[7] Databases consulted: Biblos (Pontificia Universidad Javeriana), Luis Ángel Arango Library, Universidad Nacional Library, eBRARY, Ebscohost (all databases), eLIBRO, Science Direct, Google Scholar. Terms of query: (((materialismo OR materialism) AND (filosofía OR philosophy)) OR ("filosofíamaterialista" OR "materialist philosophy")). Consultation period: April to June 2016

[8] Citations were analyzed by author and by work; in those cases, in which the name of the book was not known, the authors corresponding to the classical era were categorized according to the number of citations, given that many of its works are not known.