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SOCIAL COGNITION, COLLECTIVE IMAGINATION, ARTS AND ZEITGEIST

COGNIÇÃO SOCIAL, IMAGINAÇÃO COLETIVA, ARTES E ZEITGEIST

COGNICIÓN SOCIAL, IMAGINARIO COLECTIVO, ARTES Y ZEITGEIST

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ABSTRACT
Cognition and imagination are human faculties that are often thought as individual processes. In recent decades, however, they have been studied as one collective experience. Cognition and imagination are so strongly linked to both mind and body that they characterize what it means to be human. Body, brain, cognition and imagination are, in turn, related to culture; culture is manifested by the Arts. We propose that community art reflects its own zeitgeist and changes when collective cognition changes. Thus, humans continuously modify their understanding of themselves and the world. Here, we describe the changing of Arts from the Middle Ages to the Renaissance when Arts became known by their authors and each work individualized. Concomitantly, advances in Medicine lead to the developing of a detailed human Anatomy as Perspective became increasingly visual. Shifting trends from the Renaissance to the Baroque also accompanied the manifestation of body movement in Arts as Physiology emerged in Medicine, altogether with collective cognition and imagination changing.

KEYWORDS: Cognition. Imagination. Arts. Zeitgeist. Language. Metaphor.

RESUMO
Cognição e imaginação são faculdades humanas que frequentemente são entendidas como processos individuais. Nas últimas décadas, no entanto, têm sido estudadas como uma experiência coletiva. Cognição e imaginação são tão fortemente ligadas a corpo e mente que caracterizam o que significa ser humano. Corpo, cérebro, cognição e imaginação são, por outro lado, relacionadas com cultura; a cultura é manifestada pela Arte. Nós propomos que a Arte comunitária reflete seu próprio *Zeitgeist* e muda com as mudanças da cognição coletiva. Assim, as pessoas continuamente modificam seu entendimento delas mesmas e do mundo. Neste trabalho descrevemos a transformação das Artes da Idade Média ao Renascimento, quando as Artes se tornaram conhecidas por seus autores em cada trabalho individualizado. Concomitantemente, avanços na Medicina levaram ao desenvolvimento da Anatomia humana detalhada, na medida em que a Perspectiva passou a ser visualizada. Modificações do Renascimento ao Barroco também acompanharam a manifestação dos movimentos do corpo nas Artes e a Fisiologia emergiu na Medicina, conjuntamente com mudanças na cognição e na imaginação coletiva.

PALAVRAS-CHAVE: Cognição. Imaginação. Arts. Zeitgeist. Idioma. Metáfora.

RESUMEN
La cognición y la imaginación son facultades humanas que a menudo se entienden como procesos individuales. En las últimas décadas, sin embargo, han sido estudiadas como una experiencia colectiva. La cognición y la imaginación están tan fuertemente ligadas al cuerpo y la mente que caracterizan lo que significa ser humano. El cuerpo, el cerebro, la cognición y la imaginación están, por otro lado, relacionados con la cultura; la cultura se manifiesta en el Arte. Proponemos que el Arte Comunitario refleja su propio Zeitgeist y cambia con los cambios en la cognición colectiva. Por lo tanto, las personas modifican continuamente su comprensión de sí mismas y del mundo. En este trabajo describimos la transformación de las Artes desde la Edad Media hasta el Renacimiento, cuando las Artes fueron conocidas por sus autores en cada obra individualizada. Concomitantemente, los avances en la medicina condujeron al desarrollo de la anatomía humana

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detallada, hasta el punto de que la perspectiva comenzó a visualizarse. Las modificaciones del Renacimiento al Barroco también acompañaron la manifestación de los movimientos corporales en las Artes, y la Fisiología surgió en la Medicina, junto con los cambios en la cognición y el imaginario colectivo.

PALABRAS CLAVE: Cognición. Imaginación. Artes. Zeitgeist. Idioma. Metáfora.

1. INTRODUCTION

Cognition is a mental process characterized by abilities to acquire and apply novel information. Those abilities are generally related to neuropsychological factors. Although cognition is typically considered an individual capacity, recent decades have witnessed increasing study of collective and social cognition, including research concerning social network topology (Momennejad, 2022). Momennejad reviewed empirical and computational investigations of how the structures of communication networks shape collective cognition. This is the so-called social network “topology”. It was studied the interaction of network structures with psychology and cognition in behavioral studies of collective memory; collective beliefs and behavior; collective discovery and cultural accumulation; the neuroscience of social and non-social navigation of large networks; the emergence of communication in machine intelligence and multi-agent systems. Momennejad concludes that human memories, beliefs and behaviors synchronize with their social ties; human brains process the network status of others in social communities; the brain has ability to encode a broader network topology beyond the brain’s ability to learn non-social topologies; deep learning algorithms connect to collective cognition in multi-agent machine learning. So, the brain’s ability to acquire and navigate topologies of complex and large neural networks co-evolved with growing network size and diversity of social topologies. The studies go on, but all of those confirm the concept of collective cognition.

In modern and contemporaneous art there are studies about cognition. As said by Kesner, in the last years the “predictive coding theory” of brain function and cognition has been used as a model to study neurocognitive aspects of aesthetics, symbolic forms and behaviors. But, in visual arts has not been often applied as in language, literature and music. One possibility that can explain that difference is the concept of “predictive error minimization” (PEM) that can be used in anticipatory structures. The difficulty of acceptance of such kind of art has psychological and cultural bias together with neurocognitive factors, all implying subjective impressions interfering in hermeneutics considerations. The author concludes, based on PEM, that the ability to recognize pictorial content require un update of expectations to optimize the gap between priors and sensations (Kesner, L., 2023).

Similarly, imagination is also frequently considered an individual category although research concerning collective imagination has become apparent in literature (Hawlina et al., 2020). How collective mental characteristics are defined can also be applied to bodies and cultural characters of urban crowds. Communities can be seen as metaphors of bodies and people (Sennet, 1997).

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The anthropologist Gilbert Durand wrote that Occidental thinking has a tradition to not value the image or function of imagination, implying that it has been considered a cause of error since Socrates. Durand uses the word “imaginary” to talk about imagination and images functioning as semantic and archetypal symbols for humanity (Durand, 2012). More recently, imagination has been considered mainly as a creative process; one that provides access to a different space and time as well as an alternate modality of thinking that terminates upon a return to reality. Temporally, imagination could be situated in either the past or future. At the same time, it can assemble an otherwise fragmented experience of the world as well as expand understanding of oneself, others and the world at large. Importantly, imagination possesses specific cultural aspects that connect an individual to a community. As such, imagination helps one make sense of disorder in life (Zittoun; Cerchia, 2013).

We propose that Art can bridge cognition, imagination and emotion. Here, the word Art in singular with a capital A refers collectively to the visual, writing and performing arts. We are going to use that meaning in the following text. With the word art in lower case, we are going to use it in the most general meaning.

The creation of an artistic work is preceded by creativity, a uniquely human capacity that arises from the interaction of a wide range of conditions and can be present in any kind of art (Demarin *et al.,* 2016). Such art can be seen not only in artistic works but also in any human creation, including those of a technological nature. Creation and imagination can walk together. In 1916, Carl Gustav Jung developed his concept of creative imagination. In this concept, an image of a dream or a phantasy is related to an inner, imaginary dialogue with an inner figure. For Jung, active imagination was essential to the maintenance of psychological balance and analysis (Schwartz-Salant, 1998).

When we hear or read the word “art” almost immediately we think about the visual, performing and other similar fields of art. At the same time, we seldom consider the origin of this word. That word “art” comes from the Latin “*ars*” which, in turn, corresponds to the Greek “*techne*”. Since Aristotle there have been two kinds of art (or *techne*): the liberal and service arts. For Greek society there was a kind of hierarchy between these two arts, with the liberal directed to a supposed “higher class” of aristocratic individuals.

In ancient Rome, the Latin world “*ars”* was more related to Liberal Arts, and this term conveyed that a certain general knowledge could offer freedom to those who studied it. Such Liberal Arts became one of the four faculties of the medieval university. Liberal Arts were composed of two groups of disciplines: *trivium* (grammatic, rhetoric, dialectics) and *quadrivium* (arithmetic, geometry, astronomy, music). Another group of arts, however, was defined as mechanical arts. Thus, there were the *artes liberale* and the *artes mechanicae*. Mechanical arts, however, were considered as something to be better acquired with the hands and less so with the mind. Interestingly, modern European languages possess the word “technics” that was derived from *techne*; technics is not at present synonymous with the word “arts” in any aesthetical sense, although there are technics in each form of art. The division between the two art groups is one way to understand, for example, the division

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between surgery and medicine. Surgery was first considered to be among the *artes mechanicae* while medicine was among the *artes liberale* (Rüegg, 1992). The mechanical arts included weaving, blacksmithing, making war, sailing, agriculture, hunting and healing (i.e. surgery). Occasionally, acting was even included (Mongelli *et al.,* 1999). We postulate that Art acquired self-identity in the transition from the Middle Ages to the Renaissance. Interestingly, the art of medicine (not surgery) was closely related to the Liberal Arts for centuries, even after the establishment of the earliest Middle Age universities, with a separate faculty for medicine. Medieval universities consisted of four faculties: Arts, Theology, Medicine and Laws. The Faculty of Arts corresponded to the old *trivium* and *quadrivium*. Entry into the other three faculties required study of the Arts (Liberal) first.

In studies on the history of collective cognition and imagination, the concept of zeitgeist can be useful. The author Maike Oergel in her book Zeitgeist – How Ideas Travel, explains that there is a scarce literature in English about such a concept, although whether in English or German, most individuals grasp the idea of its meaning. More recent German studies cited by Oergel detail a neutral sense of zeitgeist, or rather a sense that may be helpful in historical research. Oergel proposes an intellectually useful concept of zeitgeist derived from her own studies on the emergence of a modern understanding of this term (Oergel, 2019).

2. HYPOTHESIS

Any form of Art reflects a larger context in a way that makes it possible to understand the general mode of thinking in each historical period. Such Art is continuously changing; when it does to any significant degree, so does the collective cognition and collective imagination. To understand those processes, we examine two cases: the first, a change from medieval to Renaissance Art (i.e. from the thirteenth to sixteenth centuries); the second, early baroque Art in the seventeenth century.

3. CASE 1: FROM THE MIDDLE AGES TO THE RENAISSANCE

In Umberto Eco's book Art and Beauty in the Middle Ages the theory of Art is the most anonymous component of medieval aesthetics. The understanding of art among medieval persons was anchored in the classical doctrine of "human doing". So, art was the principle of doing and the reflection of things to be done. The artisan, as the word suggests, was someone that created a specific kind of aesthetic art. At the same time, Art had a certain transcendentalism and symbolism. More precisely, individuals who lived in the Middle Ages saw nature as a reflection of transcendence (Eco, 1987).

In terms of zeitgeist, several factors converged to produce modifications in that mentality as relevant to collective cognition and imagination, thereby modifying perception and creativity. Changes in historical, political, economic, cultural, religious, and geographic factors all resulted in an altered understanding of the world. No work of Art produced in the Middle Ages bears the name of its author and thus was created anonymously. A personal signature could perhaps, at that time, be considered as a sign of boasting (i.e. the sin of pride). The medieval painting was mainly symbolic and not at all a

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retreat from reality. It was considered not according to visual perspective but according to varying sizes of figures depicted and colors used to convey symbolic meaning. At some point in the transition from the Middle Ages to the Renaissance, social understanding of the world changed. What was before considered aesthetics suddenly lacked any previous symbolic and anonymous meanings; a new type of Art characterized by individual authorship appeared.

In the Renaissance, Gothic beauty was no longer appreciated while Gothic architecture and sculpture became perceived as strange and even ugly among European society. Panofsky described the style of the medieval painting as a plane with some perspectivations and proportions were not considered. In Byzantine art, a type of proportion was suggested in the *Mount Athos Painter's Guide* that preceded the notion of perspective. Gothic Art subjectively rejected any concept of proportion but utilized cosmologic symbology. During the Italian Renaissance the ancient proportions of the Roman architect Vitruvius (80 B.C.–15 B.C.) were re-evaluated. From the fourteenth to fifteenth centuries, some descriptions of proportion were made by Cennino Cennini (1370-1440) and Albrecht Dürer (1471-1528) and entered European Culture (Panofsky, E., 1955). This was the start of a modern conception of the world, metaphorically from several perspectives.

In the transition from the Middle Ages to Renaissance society the focus of medicine also changed. Interest in Anatomy shifted from a symbolic to a three-dimensional representation in a kind of elaboration of anatomical perspective. As such, anatomic designs shifted from symbolic depictions to a kind of retreat that was nevertheless closer to the "real body". This can be seen, for example, comparing the work of Hieronymus Brunschwig (1450-1533), concerning mental functions performed in the cerebral ventricles, with the anatomic schemes of Leonardo da Vinci (1452-1519). Although the work of Brunschwig still utilized a symbolic notion of cognitive functions and maybe was produced after da Vinci's work, no particular concern regarding exact representation of neurological or anatomic structures is apparent. The work of da Vinci is closer to anatomical reality probably because he studied the notion of perspective and had special interest in depicting exact proportions. Da Vinci studied anatomy using human corpses but did not study comparative anatomy, as did Galen. Nevertheless, da Vinci kept the Galenical notions of cognitive functions that Middle Age medicine ascribed to the ventricles and *spiritus* (Bramly, 1988) (Finger, 1994).

From the fourteenth to sixteenth centuries, a change in the collective cognition relevant to an understanding of Art shifted focus from a symbolic to a spatial perspective. At that same time, Art became known by its authorship. Indeed, this can be seen already in the thirteenth century, with, for example, the Italian painter Cimabue (1240-1302) as one of the first artists to become known by name. A Cimabue's disciple, Giotto (1267-1337) was probably the first known painter to use perspective. (Panofsky, 1977). In one note concerning the biography of da Vinci, Serge Bramly mentions that Masaccio (1401-1428) was the first to write an inscription under an Italian painting, noting the "triptych of Cascia" in Roman numerals as April 23, 1422. Afterwards, Fra Filippi signed a work in 1442, and Mantegna signed a work in 1448. Indeed, the practice of inscribing the name of a work's creator in a painting began at the end of the fifteenth century in the north of Italy, but not yet in

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Florence. Da Vinci, interestingly, ignored this practice completely; finding his signature in any given work would allow for straightforward identification of a forgery (Bramly, 1988).

What is considered an important work reflecting and determining this transition is the book of Giogio Vasari “Life of Artists”, publicized in 1550, in the middle of the sixtieth century and is considered by many scholars as a mark of foundation for the Arts and the artists in general (Vasari, 2020). It is a consolidation of the things that were coming with the authorship among several factors in a big shift for collective cognition and imagination. The book itself is a kind of written picture of the zeitgeist in that period.

The above, however, does not relate necessarily to a change in collective cognition in a general sense. For example, the publication of the text that initiated what is now known as the Copernican Revolution in 1543 did not impact all social groups. That so named “revolution” truly was not of interest for all people of those days (Kuhn, 1957) (Hallyn, 1990), although implied in a new perspective of the universe.

Panofsky wrote about the geometrical and the psychophysiological notions of space in perspectival images, and the illusion produced under what he called of an objectification of subjective. Maybe in a similar way, to understand Heliocentrism, it is necessary to use space imagination. Even the perspective in paintings, provided the impression in question of a three-dimension nature, possesses a kind of imagination that visually conveys irreality in some grade. Thus, any representation, symbolic or apparently realist can be related to the collective imagination Panofsky, (1977).

4. CASE 2: FROM THE RENAISSANCE TO THE BAROQUE

In the transition from the Renaissance to the Baroque, the notion of movement dominated paintings and sculptures. This is illustrated by comparing the sculptures David by Michelangelo (1475-1564) and David by Bernini (1598-1680). Michelangelo’s David, created in the sixteenth century, was a perfect representation of human anatomy; standing still in a moment of decision for the shepherd against the giant Goliath. Bernini’s *David*, created in the seventeenth century, illustrated continuous movement: throwing the stone and posturing the body accordingly (Wölfflin, 1929).

As the focus of medical science shifted from Anatomy to Physiology, movement was also emphasized in Medicine: William Harvey discovered and described the circulatory system while Thomas Willis detailed various structures of the nervous system. In the sixteenth century, the French physician Jean Fernel (1497-1558) coined the term Physiology, that would be better fit to the next century. Fernel wrote: “Anatomy is to Physiology as Geography is to History; it describes the theatre of events” (Tubbs, (2015). Similarly, from a macrosocial perspective, urban areas gained veins, arteries and nerves in a quotidian sense. The historian Huertas cited Richard Sennet when explaining that modern anatomical and physiological approaches influenced urban conceptions. Since the discoveries of Harvey cities gained a pulse, great arteries and veins for traffic; since those of Willis

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and his successors human communities similarly gained some kind of nervous “energy” (Huertas, 2004).

The Italian philosopher Paolo Rossi did not believe in continuity between the culture of the Humanists of the fifteenth century and what was later called the Scientific Revolution (in the sixteenth century), stating that Francis Bacon (1561-1626) and René Descartes (1596-1650) opposed humanistic culture (Rossi, 1989). The zeitgeist changed. The seventeenth century witnessed general advancement in the use of mechanical and technical instruments. The telescope allowed observation of distant objects, while the microscope facilitated the seeing of very small objects that were nearby yet invisible to the naked eye. Rossi mentioned that in the seventeenth century, some reflections of the physician Pierre Borel (1620-1671) written in 1657 praised the invention of Galileo Galilei (1564-1642) that helped visualize planets and moons and thus reinforced an ancient belief that celestial objects were inhabited. At the same time, collective imagination produced several phantasies about the so-called New World in American Continent. In that era of new knowledge, the collective cognition was adapting to recent discoveries and many imaginative conjectures. In those days, not all physicians supported use of the microscope or wished to see what it could reveal. Notwithstanding the work of Marcello Malpighi (1628-1694), distrust of microscopic images endured until the nineteenth century. It is interesting to cite that all images registered from the microscope were handily copied by the observer like an art of the invisible (Meli, 2011).

In accordance with the reasoning, baroque Art reflected bodies moving in all directions driving the looking to dislocation of members and faces. The attention was not anymore to the depth of perspective as in Renaissance times. It may also reflect shifting in collective cognition and imagination.

5. **DISCUSSION**

The use of imagination involves features of the metaphoric use of language. Metaphor was and remains crucial for the transition from a formal to a colloquial language and vice versa. As an example, let us consider the word “cell” in relation to its origin when it was formulated by Robert Hooke (1635-1703). As one of the first scholars to use a microscope, Hooke termed components of an image of a cork he had seen through the instrument a “little Cell” (cellule) (Hooke, 1665). It possessed a structure that resembled a kind of room, like those inhabited by monks and which name was cell. Here, it is possible to note human imagination in action, visualizing metaphorical concepts in the mind. That word “cell” escaped the limits of formal language imposed on it by the investigator and entered colloquial language to describe the same biological concept as well as several meanings via a metaphoric use of imagination. As illustrated by this example, imagination works to amplify cognition, whether individual or collective. This occurs continuously and interchangeably among different cultures and languages (Baake, 2003).

Like the word “cell”, Art can be examined during transitions between historical ages from the perspectives of collective cognition, either of the Middle Ages or early Modern Age. Art can operate in

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metaphorical ways and use all senses to influence both cognition and imagination. As a wordplay we can even study the word “perspective” in its inception. The word could come from the Latin *perspicere* “to see through”, or *per-spicere* “to see clearly.” The Italian *perspettiva* had a transformation into *prospettiva.* The former evokes the mathematical procedure to study it while the last is more correlated to the artistic conquest of spatial depth (Panofsky, 1977). We can see that, as the word cell, the use of the words art and perspective in several zeitgeist can have some specific aspects related to different conditions.

It is difficult to insert emotional or imaginative factors into the traditional scientific process, although studies concerning cognition should be more open to such considerations. In some way, Art complements a strictly scientific approach to the acquisition of knowledge. As Art develops in concert with a collective cognition, Art can also offer a different vision of the world in ways that amplify human cognition. Nowadays, however, Art is primarily understood to benefit the artist and the cultural consumer. Truly Art can benefit the developing of neuropsychological system of anyone who is in contact with it.

Our illustrations of two cases of historical transition reinforce conceptions of both collective cognition and collective imagination, with Art bridging these entities, and all relevant attributes converging within a uniform zeitgeist. The so-called Modern Age possesses one peculiarity of individuality expressed as citizenship and human rights. Although such concepts were not completely absent in Middle Ages, they were also not completely present after the Renaissance. In some factors, Moderna Age brought numerous problems, such as the rise of the slave trade, the worsening of the Inquisition and colonialism. Art gradually evolved not only into a critically important component of human life but also into a swift agent of human freedom that impacts both social cognition and collective imagination contextualized in some zeitgeist in history.

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