ARTS AND SCIENCES: WHEN THE PRECISE WORD IS NOT ENOUGH

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Abstract
This presentation aims to discuss today's communication concerning the arts and the sciences. Contemporary's objective/scientific paradigm seams to absorb the whole existence of true and to underestimates that which just "can be". The discussion focus on the double paradox: on the one hand society preserves over time things that once seemed minor and on the other hand it appears that this same society finds more security when letting itself be dominated by the ultimately less human paradigm – the non-subjective one. Are we afraid of the aesthetics discourse?

Key words*: arts and sciences, aesthetics discourse*

1. ON AN AESTHETICS DISCOURSE

The discourse on aesthetics (or on beauty) seems to be a difficult matter to put into practice today. It appears as an uneasy subject specially when confronting opinions (feelings?– as feeling was not a human capacity as relevant as reasoning). Today's society seems to be the truth/precision/proof's society.

In what constructing an aesthetics discourse concerns the lack of an adequate language and/or vocabulary allied to the protagonism of an objective knowledge independent and superior of a subjective one seems to be the main obstacle. And it is the lack of the precise word that implies the (apparently?) non-objectivity.

To express an aesthetic point of view or opinion on a specific object can be hard to consider. However, while discussing the aesthetic dimension of any object may imply the lacking of that exact and unequivocal vocabulary that discussion is based upon a common experience. Experience that we know although not equal may be, however, comparable. When subjectivism becomes intersubjectivism it can turn into a basic system of common communication, even if it cannot be expressed using the precise word. Classical aesthetics categories like gracious or pathetic can well illustrate the case: one knows what they mean although not being able to describe them in an exact and unequivocally way.

We all refer and report aesthetic experiences (and emotions), and even identify them with the fundamental qualitative aspects in what concerns the construction of the aesthetic value of a given object. The problems lies in turning that speech into a public one. We can take architecture as an example: an architectonic object's capacity to induce emotion is, if not the greater, at least, one of its main capacities and surely a very desirable one. Everyone knows it though almost every critic discourse avoid a declaration on this fact.

2. OBJECTIVNESS' REASON BASED PARADIGM

Today, reason (celebrated by the Enlightenment) – supposedly superior to emotion (celebrated by Romanticism) for emotion is inferior in its certainty – seems to be a principle on which there is no discussion whatsoever.

And it seems that this protagonism of the rational and the objective has led to a total adulteration of the themes and methods of debate and research concerning subjective matters; or, of those themes which seem more subjective – after all, the more human subjects. But wasn't post-modernity a definition created to put an end to it? If there was a struggle it has been a lost cause.

The dominance of reason over emotion (meaning thinking as the opposite of feeling) and the depreciation of the aesthetic dimension in art and science – two fundamental aspects so deeply rooted in the dominant cultural/intellectual paradigm – need to be discussed. Calling this dominant paradigm – the one that bestows god-like status upon science and, accordingly, upon "proof" – into question, we believe that the binomials intelligence/sensibility, reason/emotion, thinking/feeling, objectivness/subjectivness, require constant re-evaluation, considering that in each of them the two elements operate simultaneously and that isolated analysis of them is merely operative.

2.1. *Objectiveness, science and education*

It is easier to express objective ideas than subjective ones. Is this so because it is an *a priori* or is it the case that this is in fact an *a posteriori*: is it the case that we are so addicted to this fact that it makes us only apt to share the objective? Or, is it the case, that, on the contrary, subjective is so hard to share? Do we make an effort to express subjectivity? To what extent do humanity need this objectivity? Is there any kind of nostalgia for a "reason over emotion" existence? In this respect, science is this paradigma's perfect expression. Education well illustrates this situation:

> […] where education has in general adopted more and more 'liberal' principles, notably through the effect of the extraordinary development of 'interactive methods' which (justly) insist on the necessity of the students' participation in the acquisition of knowledge, the inculcation of science remains the only one in which the relativism of personal opinion can be neither appreciated nor encouraged. […] [science] represents the last remains of our relation to objectivity. (Ferry 1993, p.13)

Science is given a "god-like" status – sometimes more so by the general public than by scientists themselves – because it presents *the* solution. But can't we shift this reasoning and propose that that rationale can be inverted and it is possible to think that art presents more solutions than science? That in art solutions are infinite; in science, not so much? Is that not a greater wealth?

The absence of the aesthetic discussion begins in early teaching. Art-related matters – whether they have to do with art itself or with aesthetics – are less accessible to the general public because that is also already the case at school. Aesthetics is the one aspect we do not talk about. Education is based on a non-aesthetic culture – it means in a scientific "one". Aesthetics is put to one side: it is the "extra" bit.[1] At the lower education levels there emerges a pretend aesthetics which, in reality, is a disguise for artistic expression techniques that do not discuss their true essence and serve as a vehicle for the idea of technique as the object and not as the means. It is also common to hear speeches on art that are not indeed speeches on art but rather descriptions of aspects that are accessory to art: objective and objectifiable aspects. Because there is no established language with its own vocabulary or even jargon. Even free history of art classes end up relating the history of the "painting" and not art itself (or even the history of art itself): in other words, there is more discussion on the pretext/vehicle than on the (artistic) object.

Or, as Siân Ede (2005, p.1) points out:

> Contrary to the claims of some in the science community, the public is better informed about contemporary science than it is about contemporary art. Scarcely a news bulletin passes which does not contain the words 'scientists have discovered that…' followed up with accessible explanations. All school children in the West […] must compulsorily learn the basics of genetics, chemistry and physics.

Paradoxically, and parallel to this, it has become an habit to discuss at ease everything that can be related to subjectivity – moreover, art (arguing, with that very subjectivity, that there is no need to

[1] See the irrelevance to which the disciplines of music and fine art are condemned in Portugal. See also, in relation to this question, the (still valid) UDC bibliographic classification system, which places works from the areas of the Arts alongside those on Entertainment in bookshelves.

master a certain subject as if subjectivity meant randomness, and therefore, a "banal" matter). For the reason that unlike scientific matters this is an everyone's knowledge, not subject to specific study. People can comment unreservedly on art but in relation to any science it is common to claim ignorance of the field. No opinions are forthcoming. In this sense, the museum, or art gallery, for example, is a contemporary paradox once it is a public place that houses the least public of matters.

Another paradox seems to be the fact that what has been proven – science – turns to be obsolete while that which has not been proven, has ever been subjective – art – turns to be always "right".

Society promotes and preserves that which it cannot verbalize. What distinguishes a masterpiece of art – one that we very much want to preserve – from a non-masterpiece? It is precisely that which you never speak about.

3. THE AESTHETICS DIMENSION AND THE DISCOURSE IN ART AND SCIENCE

It seems that sometimes the fact that the aesthetic dimension exists not only in art, but also in science, has been forgotten. When we make the distinction between art and science we are distinguishing that which is (supposedly) almost (or absolutely) purely rational from that which has a strong aesthetic component. What can be proofed.

But science also has an aesthetics component. However, as the cultural paradigm intended to annul it, or at least camouflaged it, unlike the arts, science does not have to deal with this problem every day. Perhaps we could come up with an alternative to the dominant paradigm: instead of art wanting to come close to science – mainly, and traditionally, through numbers and geometry –; why not science wanting to come close to art through a reference of its aesthetics dimensions?

3.1. *Between art and science*

Steven Holl (2006, p.144) refers to these questions, indicating an urgent need to create a "thought-to-feeling bridge". Holl uses Kepler's world model as an example to express this idea. And it is indedd an elloquent way to do so.

Kepler's world model is a good example of this kind of reasoning. In Padovan's line of argument (2003, p.247): Kepler's work can only be understood within a vision of the world as purely physical as it is religious and aesthetic. Or as Strosberg (2001, p.72) states: "Aesthetics and mysticism played a role in Kepler's theories. Moreover, he considered architecture, music and astronomy all to be related." Kepler also treated the universe – and he was the last to do so – "not just as a mechanism, but as a divine work of art: as (to borrow Copernicus' phrase) a 'magnificent temple', a gigantic architectural construction, governed by geometry and mathematical proportion" (Padovan 2003, p.247). For Kepler, whose world had been created by God as one enormous harmony, a mathematically ordered whole in which things were to be determined and inter-related mathematically, numbers and measurements could not be arbitrary and separate facts but were intimately connected (as they were for Plato) by proportion (Padovan 2003, p.248).

On his classic *Abstraction and Empathy*, Worringer states on the possibility of mathematics as an art form (2007 p.19):

> We frequently find the, at first sight, astonishing idea put forward by modern art theoreticians that mathematics is the highest art form; indeed it is significant that it is precisely Romantic theory which, in its artistic programmes, has come to this seemingly paradoxical verdict, which is in such contradiction to the customary nebulous feeling for art. Yet no one will venture to assert that, for instance, Novalis, the foremost champion of this lofty view of mathematics and the originator of the dicta, 'The life of the gods is mathematics', 'Pure mathematics is religion', was not an artist through and through.

This fascination promoted by abstraction seems to be a common discussion throughout history. We can also mention here the apposite reflection of Nuno Crato at a round table debate[2]. The author asks if mathematics is not closer to *art* than to *science*, referring in this case to a conception of "science" as applied science, as opposed to an idea of abstract science, as is the case of mathematics. Here, the proximity is supported on the abstraction.

Paul Valéry (Cited in Strosberg 2001, p.14) to whom being a poet did not inhibit himself form styding mathematics for almost his all lifetime stated:

> Science amd art are crude names, in rough oppostion. To be true, they are inseparable […] I cannot clearly see the differences between the two, being placed naturally in a situation where I deal only with works reflecting thinking matters.

And Roger Penrose (1990 p.123-124) points out:

> How 'real' are the objects of the mathematician's world? From one point of view it seems that there can be nothing real about them all. Mathematical objects are just concepts; [...] It is as though human though is, instead, being guided towards some external truth – a truth which has a reality of its own, and which is revealed only partially to any one of us.

On the other hand imagination takes this world much further than reality:

> Scientists weave incredible stories, invent extraordinary hypotheses and ask difficult questions about the meaning of life. They have insights into the working of our bodies and minds which challenge the way we construct our identities and selves. They create visual images, models and scenarios that are gruesome, baffling and beguiling. They say and do things that are ethically and politically challenging and shocking. Is science the new art? (Ede 2005, p.1)

Luc Ferry (1993, p.12) goes further pointing out the universality in science: "An even superficial acquaintance with the debates within contemporary research should be enough to rid us of the idea that the field of science is par excellence that of consensus."

Creation can be a strong concept for it implies both reason and emotion. Both reasoning and intuition. Science and art can come close by the creative act:

> What is common to art and science? Creation. Or rather the drive that impels creativity. The thrill of the world and sound, of the color, lines and shapes of art. The temerity of the scientific hypothesis which extends beyond reality. What is the aim of a creative act in art or science? To surpass reality. (Mayor 2001, p.5)

3.2. *Science as the (a) model to art*

When, for example, proportion was applied in classical architecture it was so because those were the proportions – the laws – that were believed to ruled the universe. And today? What are these rules? Can we imagine a type of architecture were we could apply today's rules? If so, what attitude towards (architecture, to keep the example) should translate this attitude?

The endeavour to justify art using reason, which is very much present throughout the whole history of art, manifested itself in the 20th century, for example, in a unitary construction between art and science in which the former was justified through the latter, following unitary constructions based on morphological studies and the presence of mathematics or numbers (albeit with a more or less esoteric character).

2 "Arte e Ciência: conversa em torno de uma obra de arte", moderated by João Caraça, part of the colloquium cycle "À Luz de Einstein", Calouste Gulbenkian Foundation, Lisbon, 27 October 2005.

This aspect emerges expressively in the Renaissance. In architecture, for example, the idea that architecture is a science and that each part of a building – interior and exterior – should be integrated in one and the same system of mathematical relations can be considered, as Wittkower argues, as the basic axiom of Renaissance architects (Wittkower 1998, p.104).

It is also reflected in the protagonism of mathematics as a certainty and the loss of intuition due to the defeat of the experiment. Pérez-Gómez asserts that modern science privileges the conceptual model to the detriment of the experiment (Pérez-Gómez 1996, p.11).[3] The truth, according to this new science, is no longer perceivable in the sensible world; it emerges only through the intermediary of human action. One example of this aspect is the Copernican celestial system, which entails that man negates what his own senses tell him, considering that these easily tell him that the sun revolves around the Earth. Or, in the words of Leonardo: "There is no certainty in sciences where one of the mathematical sciences cannot be applied, or which are not in relation with these mathematics."[4] (Cited in Hall 1988, p.26).

3.3. *Precision in art*

The two worlds – the artistic and the scientific – would seem to have a lot more in common than common sense would indicate. Besides other aspects, rigor and/or precision which is usually associated with the scientific is present in art as well.

It is extremely interesting to see how science comes closer to art: "Occasionally, when science reaches beyond its frontiers, it merges with philosophy. Likewise, art can be dematerialized – boiled down to pure ideas." (Mayor 2001, p.5)

Artists exercise the same self-discipline and rigor as scientists." (Mayor 2001, p.5). Or in the words of Ortega y Gasset (1963, p.391): "In one of its dimensions, poetry is investigation and it discovers facts as positive as those habitually discovered in scientific research." [5]

3.4. *Non-precision in art*

Claude Perrault declared the relativity of the aesthetic judgement and vehemently disagreed with the idea that certain proportions are beautiful *a priori*, declaring that the proportions in the "rules of architecture" were agreeable only because people were used to them and, parallel to this and consequently, musical consonances, for example, could not be translated to visual proportions.[6] This paved the path towards greater protagonism for subjectivity, but also, paradoxically, a relegation of the status of art and aesthetics…

Valéry questions aesthetics in the strict sense of the term – particularly its intended universality. He makes an apologia for the arbitrary: "[…] all the possibilities that exist in us." (Valéry 1995, p.52).[7]

> I believe I saw in Leonardo a thinker; in Spinoza, a kind of poet or architect. I was wrong, without doubt. However, it seemed to me that the exterior form of expression

[3] In Pérez-Gomez's opinion, this suspicion can be traced back to the theological controversies that disfavoured Aristotelian theories in the Middle Ages, a period which saw the emergence of the possibility that God, in his omnipotence, created the world in a way that is different to the way in which we perceive it, with the argument that the latter would represent a restriction of his creativity.

[4] [our translation]

[5] [our translation]

[6] This idea represents a fundamental schism, given that Humanism promoted the connection (and even the union) between the arts under the aegis of harmony. See Wittkower, 1998.

[7] [our translation]

> of a being was less important than the nature of its desire and how it sequences its thoughts. (Valéry 1995, p.45).[8]
>
> Art suggests the infinite variations of reality's manifestations, which are impossible to capture with the usual senses. That such expressions are part of a long and complex chain is all that we know. (Mayor 2001, p.5)

3.5. *Aesthetics dimension in science*

The aesthetic "capacity" sometimes claimed as an exclusive by art, is also claimed by science:

> Mathematicians never stop talking about the beauty of the structure of their arguments and their demonstrations. Their discoveries are made by means of the perception of analogy of forms. At the end of a conference held at the Institut Poincaré, Mr. Einstein said that to perfect his ideal construction of the symbols he had been obliged to "introduce some architectural viewpoints". (Valéry 1995, p.49)[9]

Moreover, we also find a reticence in speaking about aesthetics within what should be its privileged field, that of the arts. On the contrary "[scientists] use frequently a word that is scarcely ever heard in the arts. That word is 'beauty'." (Ede 2005, p.13). Or, "Contemporary scientists often talk about "beauty" and "elegance"; artists hardly ever do." (Ede 2005, p.1) This is the strong beginning with which Siân Ede begins *Art and Science*.

See also how a definition of beauty can be common to both art and science; presented here by science: "Much like a work of art, a beautiful equation has among its attributes much more than attractiveness – it will have universality, simplicity, inevitability and an elemental power." (Farmelo 2003, p.xiv).

Graham Farmelo (2003, p.xv) reports on Einstein:

> The concept of beauty was especially important to Einstein, the twentieth century's quintessential aesthete. According to his elder son Hans, 'He had a character more like that of an artist than of a scientist as we usually think of them. For instance, the highest praise for a good theory or a good piece of work was not that it was correct nor that it was exact buy that it was beautiful.

And Bertrand Russell has passionately stated before (1959, p.60):

> Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show. The true spirit of delight, the exaltation, the sense of being more than man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as in poetry.

4. TOWARDS A NON-PRECISE WORD DISCOURSE (NOT ONLY AN AESTHETICS ONE)

Thus, it would appear to us truly urgent to save something that is paradigmatic and fundamental; to save the Human. To save intuition – subjectivness – as a zone of indiscernibility. A zone that does not have its own vocabulary. A zone in search of a language of feeling (even if it is "still" without – and will it ever have? – a vocabulary). Why not "I feel, therefore I am"? Why reason over emotion and objectivness over subjectivness?

8 [our translation]

9 [our translation]

May be we are still living in a primitive humane language phase that is not yet sufficiently mature or prepared to describe what are the different aspects of the aesthetics experience. May be there will one day an evolution concerning this matter. Perhaps we need more words. Or, should we accept, at least, foe now, the non-precise word as a deep human aspect?

After all it seems that like love (as a common but not by that a minor example) every emotional aspect of humanity – which includes artistic and scientific objects – can be moving in many different ways – being beauty a fundamental one – cannot be precisely described. The precise word is not enough.

Turning into the Romantics, shall we cite John Keats (2001, p.492):

> [...] a Man of Achievement, especially in Literature, and which Shakespeare possessed so enormously - I mean Negative Capability, that is, when a man is capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason - Coleridge, for instance, would let go by a fine isolated verisimilitude caught from the Penetralium of mystery, from being incapable of remaining content with half-knowledge. This pursued through volumes would perhaps take us no further than this, that with a great poet the sense of Beauty overcomes every other consideration, or rather obliterates all consideration.

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