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## Neuro-based theories of beauty?

### Introduction

The principle of the neuroesthetics methods consists not in questioning concepts, but in sticking to operational definitions and in assimilating esthetic judgement to hedonic judgement.<sup>1</sup>

With the promise to answer the question of what it means to say that an object is beautiful, neuroestheticians have captured the attention of philosophers. With the project to build an esthetic theory based on the growing knowledge of neurosciences, they have revealed certain behavioural regularities of an unknown origin – which can have evolutionary explanations, and of which individuals are not necessarily aware – such as preferences for specific forms or colour schemes. According to them, these regularities tend to occur when individuals are confronted with a piece of art.

While neuroestheticians use classical esthetics extensively to develop their approach, they have missed important features of contemporary esthetics, such as the use of sociology, and, more generally, collaboration

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<sup>1</sup> Fernando Vidal, “La neuroesthétique, un esthétisme scientist,” *Revue d'Histoire des Sciences Humaines*, Vol. 25, No. 2 (2011), pp. 239–264: “Le principe même de la méthode neuroesthétique consiste à ne pas interroger les concepts, mais à s'en tenir à des définitions opérationnelles et à assimiler le jugement esthétique au jugement hédonique.”

of esthetics with other sciences and humanities. For example, sociologists of art tell us that an individual's brain represents one's personal and sociological history. Individual preferences have to be indeed considered in a specific social context. Furthermore, philosophical topics in neuroesthetics cannot be discussed in the same way they were discussed by traditional philosophers, such as Immanuel Kant, Edmund Burke, Plato, and others.<sup>2</sup>

While neuroscientists may experimentally test the emotions that have an evolutionary meaning because of certain advantage they give, the same approach does not consort with the complexity of "beauty" understood as a structural concept. Our sense of beauty depends on the structures in which we have evolved and continue to evolve.<sup>3</sup> It should therefore be emphasised that beauty may only be tested experimentally in the context of those structures. The conclusions to be drawn need to take into account geographical and historical contexts, and are valid in given context only because the definition and experience of beauty differ in various societies, in different periods of history, and even within different classes of a society.

This paper discusses the issues the neurally-based conception of beauty raises by asking the following question: what does it mean to test experimentally a concept such as beauty? Research in neuroesthetics has become questionable for philosophers of sciences and estheticians when neuroestheticians attempted to provide a neuroesthetical account of the concept of beauty. In this article, I analyse selected works of Sémir Zéki, Jean-Pierre Changeux and Vilayanur S. Ramachandran to demonstrate, first, the shortcomings resulting from the neuroestheticians limiting the theoretical background of their research; and second, the potential that interdisciplinary research on the concept of beauty offers.

This article is divided into four parts. First, we try to understand what makes beauty a social, structured and structuring concept, contrary to the way neuroesthetics approaches it. Then, we describe how neuroestheticians turn the contextual and localised context concept of beauty into a general concept selecting specific kind of art as their research material. In the third part, we investigate into how neuroestheticians propose to naturalise the experience of beauty. Finally, we present a way towards an interdisciplinary approach that takes into account both the social sciences and humanities, and analyse the challenges brought about by selected experimental inquiries into beauty.

<sup>2</sup> Sémir Zéki, "Art and Brain," *Journal of Consciousness Studies*, Vol. 6, No. 6-7 (1999) or Jean-Pierre Changeux, *Du vrai, du beau, du bien: Une nouvelle approche neuronale* (Paris: Odile Jacob, 2008).

<sup>3</sup> See Antonio Damasio, *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain* (Orlando, Austin, New York, San Diego, Toronto and London: Harcourt, 2003).

### Why is beauty a social, structured and structuring concept?

We would like to develop an argument that beauty is a social, structured and structuring concept; that it is not necessarily a natural fact, but arises from a historical and social construction and is a societal phenomenon. Saying that an object is beautiful does not mean that this object gives one pleasure or provokes some positive emotions – it is a misconception that is perpetuated by some neuroestheticians.<sup>4</sup> The term “beauty,” even though used casually in everyday life, carries with it a baggage of cultural and references.

This paper questions neither the possibility of testing certain emotions experimentally, nor the idea of experimental investigations into the biology of these emotions, or the neuronal or physiological responses to these emotions. However, it aims to underline that beauty cannot be reduced to pleasure or positive emotions. The concept of beauty involves a set of philosophical, historical, and sociological references, and thus, it is complicated – if possible at all – to use the word in a scientific frame without determining the exact limits of the concept and without discussing it.

Indeed, beauty was one of the main subjects of the discussions and writings of traditional philosophers interested in art. Naturally, none of their definitions of beauty is now considered more truthful than others. However, a sociological and historical analysis highlights common points in the way dominant social classes think about art. An upper-class culture is typically brought to consider beauty as the “real culture” opposed to barbarism. We can observe this way of reasoning in particular in Kant’s work, as analysed by Pierre Bourdieu in his famous book *La Distinction*.<sup>5</sup> Neuroestheticians use this concept of beauty, but omit the fact that this notion of beauty is a construct. It seems that they still refer to the ideas promulgated by traditional philosophers. Behaving as if they were the protectors of this cultural heritage who are sophisticated enough to discuss Kant or Plato easily, they do not seem to question their social biases in their analyses and discussions about beauty, esthetics and art.

It seems that ideas like beauty are used by neuroestheticians without a deeper understanding of their meanings and conceptualisations. Indeed, from the word neuroesthetics, the mentioned researchers keep the prefix neuro- and seem to disregard esthetics in their current state of research. Zéki, Changeux and Ramachandran write about a certain type of aesthet-

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<sup>4</sup> This is especially visible in the further-discussed works of Sémir Zéki, Cinzia Di Dio and Vilayanur S. Ramachandran.

<sup>5</sup> Pierre Bourdieu, *La distinction, Critique sociale du jugement* (Paris: Les éditions de minuit, 1979), p. 565.

ics, i.e. the one of classical art. Those authors are neurologists – rather than trained estheticians – and write about Plato, Kant, or Hegel but dismiss contemporary authors. Moreover, they write mainly about classical and modern pieces of art, but completely disregard contemporary art. As one can notice when reading Sémir Zéki: “Kant perspicaciously asked questions that lend themselves to experimental investigation,”<sup>6</sup> or “the question was especially well formulated, in a neurobiologically accessible way, by Edmund Burke.”<sup>7</sup> An important point is that the debate about the experience of beauty and ugliness does not exist in contemporary esthetics the same way it existed in classical theories.

If neuroestheticians do not explain better what they want to go over, it is maybe because – as much as we can judge by their bibliographies and their argumentations – they are only weakly informed. They quote Plato or Kant, but especially to remind us that they did not have the opportunity “to see directly what happens in the brain” when, for example, we see a piece of art.<sup>8</sup>

Neuroestheticians keep speaking about beauty. They do so due to lack of choice. If they abandon this concept in their research, it would mean they abandon the “esthetics” component in the term neuroesthetics which is their banner. But what happens, in point of fact, is that neuroestheticians jump from a descriptive approach – based on their research on pleasure and displeasure, and therefore, on scientific facts – to an approach based on common-sense prejudices, ingrained in them by traditional philosophy. A researcher in neuroesthetics has to explain of which idea of beauty he or she speaks. Does he speak about a feeling of pleasure or does he speak about beauty as defined by traditional philosophers? Currently, these notions are often mixed up and confused,

### Universalisation and neuroesthetics

Besides being Western-centered, research in neuroesthetics is ahistorical and disconnected from what art is at the moment. This universalistic

<sup>6</sup> Hideaki Kawabata and Sémir Zéki, “Neural Correlates of Beauty,” *J Neurophysiol*, Vol. 91, No. 4 (2004), p. 1699.

<sup>7</sup> Sémir Zéki and Tomohiro Ishizu, “Toward A Brain-Based Theory of Beauty,” *Plos One*, Vol. 6, No. 7 (2011), accessed June 15, 2017, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0021852>.

<sup>8</sup> Fernando Vidal, “La neuroesthétique, un esthétisme scientifique,” *Revue d'Histoire des Sciences Humaines*, Vol. 25, No. 2 (2011), p. 239–264: “Si les neuroesthéticiens n’expliquent pas mieux ce qu’ils disent vouloir dépasser, c’est peut-être parce que – autant qu’on puisse en juger par leurs bibliographies et leurs argumentations – ils n’en sont que faiblement au courant. Ils citent Platon ou Kant, mais surtout pour rappeler que ceux-ci n’ont pas eu l’occasion ‘de voir directement ce qui se passe dans le cerveau lorsque, par exemple, on rencontre une œuvre d’art.’

vision of beauty in art is a vision inherited mostly from Immanuel Kant who had a major impact on the subsequent research in esthetics and art. Consequently, the philosophical references these neuroestheticians use are traditional, while their artistic references are mainly taken from classical art, sometimes from modern art. This is of the utmost importance because these are the works of art that are presented to the subjects of their experiments.

Contemporary art is a part of what is seen as “legitimate art,” and yet – along with the non-Western pieces of art – it is not included in the research materials of these neuroestheticians. Artworks of modern and classical art have penetrated the “collective unconscious,” and have other criteria of legitimisation. That is, the objects used in the analyses of neuronal response to beauty are works of art legitimised by the “art world” and general public. Because they are labelled as the “great art,” these artworks are recognised as having universal qualities, and being beautiful. Nevertheless, these statements do not concern all the research in neuroesthetics. Some proposals have been made about contemporary dance in particular, but remain to be made in the visual arts.<sup>9</sup>

In the present study, we investigated the aesthetic effect of objective parameters in the works of art by studying brain activations (fMRI) in viewers naïve to art criticism who observed images of sculptures selected from masterpieces of Classical and Renaissance art that are commonly accepted as normative Western representations of beauty.<sup>10</sup>

In his work, neuroesthetician Di Dio uses masterpieces of the “great art” to test beauty experimentally. Without saying by whom exactly these works are accepted as “normative Western representations of beauty,” her proposal is that in these artworks there would be something objective allowing us to understand what the normativity of beauty is. Besides the question of normativity, there is every reason to believe that neuroesthetics has given itself the task to explain why the “great art” is the great art, and thus, has taken a step further away from pure data analysis. By using empirical data, which they collect from their brain experiments, the researchers intend to give a definition of the “great art” and beauty:

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<sup>9</sup> See project *LaboDanse*, accessed June 6, 2017, <https://labodanse.org/>.

<sup>10</sup> Cinzia Di Dio, Emiliano Macaluso, Giacomo Rizzolatti, “The Golden Beauty: Brain Response to Classical and Renaissance Sculptures,” *Plos One*, Vol. 11, No. 2 (2007), accessed June 15, 2017, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0001201>.

Great art can thus be defined, in neurological terms, as that which comes closest to showing as many facets of the reality, rather than the appearance, as possible and thus satisfying the brain in its search for many essentials.<sup>11</sup>

This is why Sémir Zéki, finally, wrote that “Shakespeare and Wagner [are] among the greatest of neurologists” – in his view, they are capable of finding something universal in the brains of others. According to Zéki, they have found something profound and universal in humanity.<sup>12</sup> Ramachandran in turn believes that art is what shows us – as far as it is possible – reality, rather than appearances. The “great art” shows reality or rather essentials of reality:

Indeed this was almost the basis of Kant’s philosophy of aesthetics – to represent perfection; but perfection implies immutability, and hence arises the problem of depicting perfection in an ever changing world. I shall therefore define the function of art as being a search for constancies.<sup>13</sup>

For Zéki, works of art imply a certain kind of timeless perfection. He speaks about “immutability” because these works please their audience after many centuries. It consequently means that – in the Kantian way of thinking he adopts – art itself is timeless and does not depend on a social, historical or cultural context. By leaning openly on the Kantian philosophy, the neuroesthetician emphasises that art searches for constancies of the brain, as if there was something deep in the nature of *Homo sapiens* that art could reveal. Following this postulate, one can think that beauty ignores any social construction, whether it is the construction of a social class or whether it is the construction of a broader culture. Ramachandran writes: “Maybe there can never be a science of high art, but I suggest there can be of the principles of aesthetics that underlie it.” To this Semir Zéki adds that the “great art” can now be defined in neurobiological terms. Once again, we can observe a jump between a descriptive and a scientific approach – based on the possibility of certain individual and even human preferences – to

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<sup>11</sup> Sémir Zéki, *Inner Vision: An Exploration of Art and the Brain* (Oxford: Oxford University Press, 1999), p. 22.

<sup>12</sup> *Ibid.*, p. 2: “Millions of people have been moved by the words of one and the music of the other. The poetry of Shakespeare has been used in so many different contexts, and to such effect, that it would be foolish to deny the universality of his language or its ability to move men of diverse backgrounds and inclinations in a profound sense [...] Both, in other words, understood something fundamental about the psychological make-up of man which depends ultimately upon the neurological organisation of the brain.”

<sup>13</sup> Sémir Zéki, “Art and Brain,” pp. 76–96.

a normative approach – based on the normativity of beauty, which these neuroestheticians seem to find in the works of the “great art.”<sup>14</sup>

### How do neuroestheticians speak about beauty?

Using traditional philosophers’ ideas as the starting point for their inquiries about artworks, these neuroestheticians emphasise the assumptions about beauty that this part of my essay will explore. Indeed, one of the purposes of these neuroestheticians is to build theories about art, esthetics, and beauty, that have a neuronal basis. The neuroestheticians capitalise on the old view of esthetics, i.e. that beauty is an experience based on the feeling of pleasure. This relation between beauty and pleasure was established by traditional philosophers, who are then quoted by the mentioned neuroestheticians. This assimilation of concepts is already questionable as pleasure and beauty are often plainly mixed and confused as this analysis attempts to prove. The neuroesthetical project of testing beauty experimentally needs to be understood in a broader context. For these neuroestheticians, the experience of beauty occurs when their subject is pleased by the object at which he or she looks.

First, one can explore Ramachandran’s proposition to rethink esthetics, art, and beauty, in the light of evolutionary explanations:

Yet that is my goal for this chapter and the next: to convince you that our knowledge of human vision and of the brain is now sophisticated enough that we can speculate intelligently on the neural basis of art and maybe begin to construct a scientific theory of artistic experience.<sup>15</sup>

Ramachandran emphasises that our preferences may be explained by evolutionary theories, and he lists a few examples to justify this proposal. First, he draws a comparison between humans and other animals, such as bowerbirds, that build “esthetic” nests to mate. This assumption is problematic because the link between what we call an “esthetic work” done by other species and art created by human beings is not obvious. Then, Ramachandran presents his famous nine “universal laws of aesthetics and art.” Even if he is cautious with this assumption, these laws are to lead us to something essential about beauty and art. The example of what is called beauty in sexual selection among animals is used by Ramachandran to justify, at least partially, some of the proposed laws of aesthetics and art

<sup>14</sup> Vilayanur S. Ramachandran, *The Tell-Tale Brain, A Neuroscientist’s Quest for What Make Us Human* (New York: W. W. Norton & Company, 2011), p. 223.

<sup>15</sup> Ramachandran, *The Tell-Tale Brain*, p. 156.

(based on evolutionary characteristics of the human brain, such as our preferences for symmetry or order).<sup>16</sup>

Furthermore, he adds that “[b]ecause both art and aesthetics require the brain to respond to beauty, there is bound to be a great deal of overlap [between art and esthetics].” This kind of emphasis may suggest that theories about art and aesthetics will be, from now on, more legitimately introduced and developed by neuroscientists rather than by researchers in other fields. Indeed, these assumptions seem to be confirmed by Ramachandran’s further work – for example, the title of the seventh chapter of his book reads as follows: “Beauty and the Brain: The Emergence of Aesthetics.”<sup>17</sup>

These assumptions are also related to Sémir Zéki’s question: “It thus raises an important question: would the experience of beauty derived from different senses, say the visual and auditory, correlate with activity in the same or different brain areas?” Zéki’s challenge is to propose a “brain-based definition of beauty.” What does it mean exactly? The researcher tries to correlate the experience of beauty with the activation of cerebral zones. In one of his papers, Sémir Zéki correlates the experience of beauty with the activity of the mOFC (medial orbito-frontal cortex). When a given subject finds an object beautiful, be it a visual or an auditory object, the mOFC is activated. Sémir Zéki concludes that he can build a brain-based theory of beauty with the use of these observations.<sup>18</sup>

Jean-Pierre Changeux seems to be more careful in his book in which he approaches the subject of beauty. He writes that the naturalisation of the traditional subjects of social sciences and humanities, which is in progress at the moment, “should nevertheless bring a clarification of the ideas.”<sup>19</sup> Changeux expresses the opinion that the project of explaining the idea of beauty by neuroesthetics challenges the humanities. It is as if he is saying that humanities have not succeeded in clarifying the idea of beauty and that neurosciences open a way to more legitimate answers.

Indeed, the above-mentioned neuroestheticians assign a great importance to studying beauty and finding related answers in their neuroscientific experiments. For the researchers that we have just adduced, beauty is a complex mixture of subjectivity and objectivity. Human beings seem to

<sup>16</sup> Ibid. The nine laws of esthetics: grouping, peak shift, contrast, isolation, perceptual problem solving, abhorrence of coincidences, orderliness, symmetry, metaphor.

<sup>17</sup> Ibid., p. 250.

<sup>18</sup> Zéki, and Ishizu, “Toward A Brain-Based Theory of Beauty.”

<sup>19</sup> Changeux, *Du vrai, du beau, du bien*, p. 113: “L’entreprise en cours d’une naturalisation de la contemplation du beau devrait néanmoins apporter une clarification des idées.”



have evolved to recognise certain types of figures, layouts, colours, and movements, and the experience of beauty is related to this evolution. This means that our preferences for some forms over others, which arise from our evolutionary past, explain our esthetic preferences. We can therefore, by observing the brain, discover the essence of beauty. As we have seen, Di Dio argues that some parameters in works of art can be related to our experience of beauty. It means that our brain can respond to some criteria of beauty present in objects, such as symmetry and golden ratio proportions. Because nothing is explained about beauty with the observation that “[t]he artist, after all, can only deal with those attributes of nature which his [or her] brain is equipped to see,”<sup>20</sup> and because beauty, as social, structured and structuring concept, is not just a response to an arrangement of colours schemes, forms, etc., we can, therefore, legitimately wonder if such approaches, that seem reductionist or, for some, eliminativist,<sup>21</sup> can be defended. Can beauty be understood in these terms?

Neuroestheticians tell us that the experience of beauty is formed on the grounds of natural selection. In their key papers and books, they add that the beauty one experiences – e.g., when standing in front of specific pieces of art – has universal bases.<sup>22</sup> This is why searching for the universal brain functions implied in this experience is such an important goal for them.

### **How interdisciplinarity could challenge experiments on the experience of beauty as they are performed today**

If neuroesthetics is a result of an attempt to link neurosciences and esthetics – and neuroestheticians tell us that there cannot be a theory of esthetics without the support of brain sciences – then, it might be of use to re-evaluate “the perception of certain humanistic modes of study as impediments to be swept aside, rather than as allies to be cultivated, set an unfortunate, if understandable (and probably unavoidable), initial context for interaction.”<sup>23</sup> This kind of interdisciplinarity would include all the thus-far investigated factors and would rethink experimental process in light of

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<sup>20</sup> Zéki, *Inner Vision*, p. 3.

<sup>21</sup> Eliminativism or eliminative materialism is a philosophical approach whose main researchers are Paul and Patricia Churchland, in which common sense emphasis, considered as non-sense, should not be base for scientific research, and should be replaced by neurological visions and sciences.

<sup>22</sup> Zéki, *Inner Vision*, p. 8.

<sup>23</sup> Stephen Jay Gould, *The Hedgehog, the Fox, and the Magister's Pox, Mending the Gap between Science and the Humanities* (London: The Belknap Press of Harvard University Press, 2003), p. 16.

other sciences and philosophy.<sup>24</sup> Now we will try to address the question of interdisciplinarity in light of the analyses that we have made. For neuroesthetics, one of the possibilities to consider is to restrain its conclusions to a certain part of the investigated population. To do that, neuroscientific teams should work with social scientists, such as sociologists who would conduct an investigation into the individuals that are the subjects of a given experiment. Conclusions may be used to understand the concept of beauty in the selected group of a particular society. Another possibility is to drop the concept of beauty, and talk only about pleasure. Although, in this case, the idea of “neuroesthetics” would lose its point because it would not talk about art and esthetics anymore, but only about how our brains are pleased.

It seems that neuroesthetics should look towards contemporary esthetics rather than try to reinterpret authors such as Kant or Hegel by means of the neuroscientific language. Moreover, this contemporary esthetics is further linked with other sciences. Also, as we have already said, the debate on the beautiful and the ugly is not framed in the field of esthetics as it was in traditional philosophical theories. Modern and contemporary artistic movements are now beyond the expectation that art should be beautiful.

What does it mean to respond, today, to the problems traditional philosophy raises if they are not related to contemporary social reality, and what is the point of testing such ideas on contemporary subjects?

Being an interdisciplinary research program, neuroesthetics should consider contributions from social sciences in order to improve its results and methodological approaches. Neuroesthetics should look at proposals, debates and questionings of sociology and anthropology because these branches of knowledge work with social facts and – in the special case of art – with the so called total social facts:

They [total social facts] set in motion in certain cases all of the society and its institutions and only in other cases, a very large number of institutions, in particular when these exchanges and these contracts tend to concern individuals.<sup>25</sup>

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<sup>24</sup> Also, maybe the concept of interdisciplinarity should be thought anew and replaced by others like multidisciplinary or transdisciplinarity. Each of them has their own definitions and conceptual approaches of how to make sciences work together. However, it seems that interdisciplinarity is more appropriate for our questionings.

<sup>25</sup> Marcel Mauss, *Essai sur le don. Forme et raison de l'échange dans les sociétés archaïques* (Paris: PUF, 1983), p. 274: “Ils mettent en branle dans certains cas la totalité de la société et de ses institutions et dans d'autres cas seulement un très grand nombre d'institutions, en particulier lorsque ces échanges et ces contrats concernent plutôt des individus.”

This social aspect is called upon by neuroestheticians but it is also avoided in their major works. One can understand that a part of their task is to set forth a neuronal basis of our experience of beauty or, more realistically, of our sense pleasure. But naturalisation and reductionism of social and human sciences should not be pursued. We should remember that neuroesthetics is still a young field, and, even if neurosciences constitute a revolution in history, they still have much to learn from other sciences that study social facts.

On the one hand, Sémir Zéki proposes a general theory of beauty – a brain-based theory of beauty. On the other, Ramachandran emphasises the nine laws of esthetics based on his observations of pathologic brains. But, as we can notice, this debate takes place only at the level of natural sciences with almost no consideration for human and social sciences of which neurosciences speak. Researchers in those disciplines emphasise that human behaviour can only be explained in the light of biology.<sup>26</sup> With the development of new neuroscientific tools, this idea has become more and more attractive. Cultural objects appear to be explainable solely with knowledge of the brain evolution.

Moreover, as pointed by Joseph Heinrich, one can imagine an interdisciplinary approach which would include these other fields. The concept of beauty has been discussed in philosophy and esthetics, but it has also been analysed in sociology (the concept of taste is an important part of sociological studies).<sup>27</sup> Moreover, the concept of beauty is not only defined differently by intellectuals, especially by philosophers, or, generally, by societies; it is also perceived differently, depending on, for example, an individual's social class, history or culture, etc. These issues should be considered in neuroesthetics as well.

For example, neuroestheticians may benefit from reflexivity, an attitude that is assumed in many sociological works.<sup>28</sup> There is a number of reasons why traditional philosophers, and now neuroestheticians, are interested in the concepts of beauty and ugliness – the concepts which played an important role in the field of classical art. Those interests have sociological, cultural, political and historical causes. By exploring these causes with sociological methodologies, one may be able to understand with more certainty why those concepts are so important for the present-

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<sup>26</sup> Sober Elliott, "Models of Cultural Evolution," in: *Trees of Life: Essays in Philosophy of Biology (Australasian Studies in the History and Philosophy of Science)*, ed. P. Griffiths (Dordrecht: Kluwer, 1991), pp. 17–38.

<sup>27</sup> See, for example, Bourdieu, *La distinction*.

<sup>28</sup> Encyclopedia Universalis, s.v. "réflexivité."

day neuroestheticians. More generally, it would be interesting if researchers asked themselves why they use such concepts.

Another problematic question of those laboratory experiments is the following: who are those subjects on the basis of which the researchers draw their conclusions about art and the brain? If one takes a look at neuroesthetic papers, one can observe that most of the time, the subjects of experiments are students from big Western universities (in fact, the same phenomenon has been observed in other experimental disciplines that deal with human behaviour). The subjects in these experiments are more likely to come from relatively similar social groups, to be more or less of the same age and, more generally, have the same type of behaviour and generational habitus, which represents a minor part of the occidental population and an even more minor part of the world population.<sup>29</sup> But these social characteristics are not taken into account and the main hypothesis in neuroesthetics is: if we take as our basis that all human beings have the same brain chemistry and the same brain constitution, by studying a “pool” of brains, we understand the brain.

If one wants to preserve the idea of neuroesthetics, more importance should be assigned to communication between esthetics and neurosciences. Researchers in neuroesthetics should be more aware of philosophy as it exists today in its link with other disciplines of social sciences. Philosophers may also enlighten neuroestheticians about the problems that are fuelling contemporary debates.<sup>30</sup>

## Conclusions

Bernard Lahire wrote that “social order is too complex in our societies to be found entirely in a single brain.”<sup>31</sup> The concept of beauty is not an exception: studying beauty in individual brains is extremely complicated. It is necessary to remember that societies are complex structures, and it seems difficult to extract this concept and study it outside those complex struc-

<sup>29</sup> Encyclopedia Universalis, s.v. “habitus”: “Principe générateur (et unificateur) de pratiques reproductrices des structures objectives,” is an important sociological term with which to reach an understanding of the problem with which we are confronted.

<sup>30</sup> John Searle, *Freedom and Neurobiology: Reflexions on Free Will, Language, and Political Power* (New York: Columbia University Press, 2007), p. 6: “One of the tasks of the philosopher is to get the problem into such shape that it can be subject to experimental testing in neurobiology.”

<sup>31</sup> Bernard Lahire, *Ceci n'est pas qu'un tableau, Essai sur l'art, la domination, la magie et le sacré* (Paris: La Découverte, 2015), p. 60: “L'ordre social est trop complexe dans nos sociétés pour pouvoir se sédimer entièrement dans un seul cerveau individuel.” Fernando Vidal, “Historical and Cultural Perspectives on Why We Are Our Brains,” lecture delivered at the *Neurocultures* conference, Bielsko-Biała, September 26–28, 2016.

tures. This is why I advocate studying the experience of beauty in the light of social sciences – to understand, first, that its definition is not fixed, and second, that this complex concept is probably impossible to be studied in the light of evolution only, contrary to the feeling of pleasure, which may be experimentally tested with less difficulty.

Indeed, the concept of beauty invokes even more complex structures than art, such as the “art world,” social classes or socio-professional categories, and cultural history. As we have said, when researchers study such fields as esthetics, they are confronted with total social facts that are not only complex but also already studied by other sciences. Indeed, “neuro”esthetics should focus again on its “esthetic” part. By doing so, it will reintegrate philosophy and other sciences, like sociology, anthropology, history, etc., and turn to beauty as it should be studied, that is as a complex total social fact integrating many aspects.

Donna Jung

#### **Neuro-based theories of beauty?**

Neuroesthetics proposes to experimentally test beauty – a social concept developed in traditional esthetic theories by traditional philosophers – and by doing so, it omits not only an entire part of contemporary esthetics but also other disciplines studying social phenomena, such as sociology or anthropology. Therefore, my question is: what does it mean to experimentally test beauty outside of other scientific or philosophical fields, traditionally associated with the research on beauty? I argue that it is crucial for neuroesthetic research to consider disciplines devoted to studying questions of art, beauty and esthetics? Neuroesthetic research should not be only “neuro”scientific but also “esthetic.”

**Key words:** neuroesthetics, art, sociology, esthetics, epistemology