MODE-2 AESTHETICS

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> *You might think Aesthetics is a science telling us*
> *what's beautiful – almost too ridiculous for words.*
> *I suppose it ought to include also what sort of coffee tastes good.*
>
> *Ludwig Wittgenstein*

1. The Revival

The assumption that one can think today about aesthetics in terms of its revival apparently follows an observation (or merely an opinion) that aesthetics is no longer bursting with health. We do not hear or discuss much about the revival of biochemistry, computer science, visual media, consumerism, or even capitalism, but when we do – as for example in the former Socialist countries, where we talk about the revival of capitalism and democracy – then it is because such issues were for a certain period of time obscured, suppressed, outdated, or simply absent. However, when they return, they are never the same, there is always a difference between the first and the second occurrence, and the return is never unproblematic, as Jesus, Marx, and Freud have already taught us.

It is difficult to claim, though, that aesthetics has been repressed in some psychoanalytical sense, or that its first appearance in the eighteenth century was a tragedy. If there is some tragic moment within the narrative of aesthetics, then it is most likely related to its present-day reputation. For some contemporary philosophers, or as some rather call themselves, theoreticians, who seem to hold artistic and cultural achievements in high esteem, such as Alain Badiou or Fredric Jameson, aesthetics is either dead (probably ever since Hegel's *Lectures*) or at least directed at the wrong end. Arthur Danto in

a more modest tone declared: "Aesthetics seems increasingly inadequate to deal with the art after the 1960s […] a sign of which was an initial disposition to refuse to consider non- or anti-aesthetic art as art at all,"[1] and added: "it would be altogether wonderful if one could turn to aesthetics as a discipline for guidance out of the chaos."[2] If Jean-François Lyotard seems to be an exception that proves the rule, as probably the last proper aesthetician in the line that begins with Plato,[3] then one has to take into consideration the fact that in his works on art he focused mostly on traditional aesthetic concepts (the sublime, representation and the unrepresentable, and the image) and that even in his writings on the postmodern, he relied upon modernist authors (Marcel Duchamp, André Malraux, Barnett Newman, etc.).

For most authors engaged in cultural criticism, aesthetics is generally considered to be a discipline that is outdated, conservative, too formalist, and devoid of contact with real life. (Frequently in such cases, real life is related more or less to political life.) With the global expansion of cultural studies, which promotes itself as "a body of theory generated by thinkers who regard the production of theoretical knowledge as a political practice,"[4] aesthetics seems to be losing battle after battle.

But probably the situation is even worse, because in the eyes of younger generations of artists, curators, art critics, and even philosophers, aesthetics has lost its potential to say something essential, or at least meaningful, about contemporary art. It seems that after grasping the work of geniuses such as Shakespeare, Leonardo, and Bach, or eminent modernist (and some postmodernist) artists and authors, such as Cézanne, Le Corbuiser, Kafka, Godard, Duchamp, Schönberg, and Warhol, it lost contact with the living art. If the task of aesthetics is to reflect art, then many examples confirm that aesthetics today is not up to this task any more. Is it, therefore, useless? While according to the prevalent ideology of capitalism this is a very strong accusation, the question possesses also another dimension, for aesthetics as a discipline actually started its journey in the immediate vicinity of the concept of uselessness.

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[1] Arthur C. Danto, *After the End of Art: Contemporary Art and the Pale of History* (Princeton: Princeton University Press, 1997), p. 85.

[2] *Ibid.*, p. 94. In a certain sense it is better to follow the example of Terry Eagleton, who claimed that "[a]rt itself may thus be an increasingly marginal pursuit, but aesthetics is not." (Terry Eagleton, *The Ideology of the Aesthetic*, Oxford: Blackwell Publishing, 1990, p. 368.)

[3] *Cf.* H. Gene Blocker & Jennifer M. Jeffers, *Contextualizing Aesthetics: From Plato to Lyotard* (Belmont: Wadsworth Publishing, 1998).

[4] Chris Barker, *Cultural Studies. Theory and Practice* (London: Sage Publications, 2000), p. 5.

It is quite clear from a passage written by Arthur Schopenhauer that a proper aesthetic experience cannot be related to any practical utility:

> The work of genius may be music, philosophy, painting, or poetry; it is nothing for use or profit. To be useless and unprofitable is one of the characteristics of works of genius; it is their patent of nobility. All other human works exist only for the maintenance and relief of our existence; only those here discussed do not; they alone exist for their own sake, and are to be regarded in this sense as the flower [...] of existence.[5]

However, it was not Schopenhauer that can be blamed for this original sin, committed by the division between the aesthetic and the practical, which in a sense enabled art to set up its autonomy, and aesthetics to establish itself as a discipline. The full development of philosophical reflection on aesthetic experience and art did not begin to emerge until the widening of leisure activities in the eighteenth century, when thoughts by distinguished authors made their first steps onto this terrain. Among the most influential ideas have been those of Alexander Baumgarten, Joseph Addison, Edmund Burke, Francis Hutcheson, David Hume, Charles Batteux, but probably above all, those of Immanuel Kant.

The work of Kant, and in particular his *Critique of Judgment*, generated a tradition, which was, and probably still is, decisive for our understanding of aesthetics, and the field of its enquiry, which is still dominated by art. If British aestheticians, from Addison to Hume, had already succeeded to develop theories of taste and beauty that were the forebears of contemporary aesthetics, it was essentially Kant who made the decisive move towards aesthetics as we know it. Claiming that "taste is the faculty of judging an object or a method of representing it by an *entirely disinterested* satisfaction or dissatisfaction [and the] object of such satisfaction is called *beautiful*,"[6] since "every interest spoils the judgment of taste,"[7] he tied together notions which became the key concepts of aesthetics: disinterestedness, the beautiful, and aesthetic judgment (judgment of taste).

For Kant, there was still no fundamental distinction between artistic and natural beauty. With his followers,[8] however, this relation changed, and

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[5] Arthur Schopenhauer, *The World as Will and Representation*, Vol. 2 (New York: Hafner Publishing Company, 1958), p. 388.

[6] Immanuel Kant, *Critique of Judgment* (New York: Hafner Publishing Company, 1951), p. 45.

[7] *Ibid.*, p. 58.

[8] The heritage of Kant's aesthetic thought is evident in the theories of Friedrich Schiller,

art (as *beautiful* art) became the foremost preoccupation of aesthetics. When art lost its connection with the beautiful during the first decades of the twentieth century, there were considerable efforts among aestheticians to replace the beautiful as a key concept in grasping the essence of art and aesthetics with some other comparable notion. Unfortunately the results were not satisfactory; sublime, form, expression, creativity, and other concepts have never achieved the importance of the beautiful. Nonetheless, a Kantian logic that related the beautiful to "an *entirely disinterested* satisfaction," survived in the autonomy of art, which was the essential condition of modernism in the arts, as well as of cultural modernity in general.

The strengths and weaknesses of aesthetics as a meta-discourse on art follow from the viewpoint that art forms an independent, autonomous field, which has its inherent logic, its history, authors, objects, and its own internal ways of determining the quality of its achievements, that is to say, which art is good. If aesthetics as an autonomous discipline was successful within this context of autonomous art, which it also helped to establish, serious problems occurred when art became a transgressive domain. Once seen as an autonomous space, itself the outcome of a struggle to win autonomy from market and political demands, art now became an integral part of both. It is actually by the way of the interpenetration of art and culture, politics and economy with the essential help of science and technology that this modification took place.

It seems that society has changed, but categorizations around which the world is organized are simply not following the pace of the change. It is believed that contemporary society on a general level is characterized by pluralism, diversity, transgressivity, volatility, and uncertainty, and the same characteristics describe sublevels, including the market economy, politics, science, and last but not least, culture and art.

Many still hold the (popular) view that "aesthetics may be defined narrowly as the theory of beauty, or more broadly as that together with the philosophy of art."[9] Let us, for a reason which will become manifest below, name it *Mode-1 aesthetics*. Mode-1 aesthetics is a traditional philosophical discipline, essentially related to bourgeoisie values, to modernist art production and cultural modernity, to the autonomy of art and culture, to concepts such as aesthetic judgment, aesthetic value, creativity, the artist, the artwork, form, and so on.

G. W. F. Hegel, Arthur Schopenhauer, Friedrich Nietzsche, as well as in the art criticism of Clement Greenberg.

[9] "Aesthetics," *The Internet Encyclopaedia of Philosophy*, http://www.iep.utm.edu/a/aestheti.htm.

All these concepts serve as a means of mediation between **three ontologically hierarchical**, but also permeated levels that in fact constitute aesthetics as a discipline. On the first level of object-discourse, one finds art (and cultural) production; this is the level of art's manipulation of the material world in its broader sense that includes conceptual art, body art, happenings, and all kinds of hi-tech and virtual arts. The second level, or the level of meta-discourse, is the level of theory of art production. The third level is then the level of the discourse on theory of art production (meta-discourse of the second order), which actually forms aesthetics in a narrower sense – aesthetics that follows the development of (aesthetic) concepts through history, authors, disciplines, artistic styles, media, and so on. It is obvious that problems arise when the second and the third level are not able to follow the lead set at the first level – that is, when the theory and philosophy of art lose their thread in the labyrinth of contemporary art and culture.

If "products" of art are no longer artworks (but *projects*), or, if "producers" are no longer artists (but, for instance, curators or disc and video jockeys), if art has no autonomy, and if it is commodified, and there is no difference between art and culture, then this should be read as a clear sign that aesthetics should move beyond its own disciplinary conditions in order to meet the new demands posited by art (and culture).

There exists no such aesthetics at the moment, at least as far as I know, even though there have been very good attempts to replace traditional aesthetics with an updated version of it. (These attempts include transcultural aesthetics, aesthetics focused on the aesthetization/artification of everyday life,[10] the philosophy of culture, environmental aesthetics, etc.) For the same reason as above, we shall label the new variation of aesthetics *Mode-2 aesthetics*, and turn to a close reading of the theory of *modes*.

The argument is simple. If society has changed, most notably after the Second World War, and especially during the last few decades, then not only art and aesthetics, but also other fields and disciplines have had to respond to this change. It seems that what has arisen is, above all, a situation in which there are only *hard cases* left to further investigation and treatment. In his pathbreaking work *The Postmodern Condition: A Report on Knowledge* Jean-François Lyotard already pointed to the core of the problem – to the production of knowledge: "Our working hypothesis is that the status of knowledge is altered as societies enter what is known as the postindustrial

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[10] The most outstanding effort to deal with art and culture in such terms is probably related to Wolfgang Welsch. *Cf.* Wolfgang Welsch, "Aesthetics Beyond Aesthetics", in Martti Honkanen (ed.), *Proceedings of the XIIIth International Congress of Aesthetics: Practical Aesthetics in Practice and Theory*, Vol. III (Helsinki, 1997), pp. 18–37.

age and cultures enter what is known as the postmodern age."[11] It was obvious for Lyotard, and it is still recognizable for us, that for the most part the co-evolution of society and science is responsible for the change that we are witnessing. This is the reason why we focus on changes in contemporary knowledge production in order to understand this change, in the hope that it could be enlightening to aesthetics as well.

2. The New Mode of Knowledge Production

In 1994 an international group of researchers working in the field of social sciences published a book focused on changes in the mode of knowledge production in contemporary society. In this volume, entitled *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*, Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott, and Martin Trow put forth a new theory of knowledge production, and since they could not find a better name, they simply used the term *Mode-2*.[12] Although it has so far not yet been universally accepted, the concept of Mode-2 knowledge production has attracted considerable interest, and in 2001 Nowotny, Scott, and Gibbons published the sequel *Rethinking Science: Knowledge in an Age of Uncertainty,* in which they extended their analysis to the implications of Mode-2 knowledge production for society at large, and in which they also proposed the emergence of Mode-2 society.[13]

It should be added here that from the middle of the 1990s there have been several efforts to elucidate the differences between the "new" and the "old" ways of doing science. In his book *Real Science* John Ziman made a distinction between *academic science* and *post-academic science*,[14] and Camille Limoges claimed that we "now speak of 'context-driven' research, meaning research carried out in a context of application, arising from the very work of problem solving and not governed by the paradigms of traditional disciplines of knowledge."[15]

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[11] Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, [1979] (Minneapolis: University of Minnesota Press, 1997), p. 3.

[12] Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott and Martin Trow, *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies* (London: Sage Publications, 1994).

[13] Helga Nowotny, Peter Scott and Michael Gibbons, *Rethinking Science: Knowledge in an Age of Uncertainty* (Cambridge: Polity Press, 2001).

[14] John Ziman, *Real Science. What it is, and what it means* (Cambridge: Cambridge University Press, 2000).

[15] Camille Limoges, *L'université à la croisée des chemins : une mission à affirmer, une ges-*

Bruno Latour, who shares with Gibbons *et al* some common ground concerning the changes in the relation between science and society, wrote about the transition from *the culture of science* to the *culture of research*:

> Science is certainty; research is uncertainty. Science is supposed to be cold, straight and detached; research is warm, involving, and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions and emotions; research feeds on all of those to render objects of inquiry familiar.[16]

It follows from Latour's observation that in traditional society science (Mode-1 science, as Gibbons *et al* would put it) was *external*, and that in contemporary society, by contrast, Mode-2 science, or in Latour's terms research, has become *internal*. Latour argues that science and society cannot be separated, and that what has changed is their relationship. If science in traditional society formed an autonomous sphere, which means that it is autonomist, reductive, and self-referential, it has now become more open, as well as populist and pluralist. This moment in Latour's exposition is important, because it sheds some light upon the difference between Mode-2 knowledge production (i.e. research) and postmodern science described by Lyotard. For the latter, "[t]he relation between knowledge and society [...] becomes one of mutual exteriority,"[17] indicating that he is actually still referring to traditional (i.e. modernist) science, and that there never was a postmodern science.

Gibbons *et al* argued that a new form of knowledge production started emerging in the mid-twentieth century, and that it should be distinguished from traditional or usual form, which they accordingly labeled *Mode-1*. In its primary meaning they related it to scientific and technological knowledge production, and in this sense the term Mode-1 refers to a complex of notions, methods, values, and norms, which have the task of managing the spread of the Newtonian scientific model to more and more fields of enquiry and ensure its conformity with what is considered sound scientific practice. Mode-1 therefore summarizes the cognitive and social norms that must be followed

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tion à reformer, Actes du colloque ACFAS.CSE.CST (Québec: Gouvernement du Québec, Ministère de l'Éducation, 1996), pp. 14–15.

[16] Bruno Latour, "From the world of science to the world of research?", *Science*, vol. 280 (1998), pp. 208–209.

[17] Lyotard, p. 25.

in the production, as well as legitimation and distribution, of knowledge which is regularly identified with science itself.

> Its cognitive and social norms determine what shall count as significant problems, who shall be allowed to practice science and what constitutes good science. Forms of practice which adhere to these rules are by definition scientific while those that violate them are not.[18]

Science in this sense stands for a key notion that describes the practice of knowledge production; similarly the concept of the scientist represents a model for a subject that is actively engaged in this form of knowledge production. Nevertheless, while it is conventional and even legitimate to speak of science and scientists in Mode-1, it is necessary, according to Gibbons *et al*, to use more general terms such as knowledge and practitioners when describing Mode-2. The starting point for the analysis of the new mode of knowledge production was the conviction that there is already sufficient empirical evidence to indicate that a new form of practices has emerged not only in natural and social sciences, but also in the humanities, and that these practices (social and cognitive) are essentially different from those found in Mode-1. To specify and clarify the differences between the two modes, a set of analytical attributes has been used, and I will try to set out the most relevant among them below.

2.1. Copernican Turn: Context of application

Definitely the most important difference between Mode-1 and Mode-2 concerns the context in which problems are set and solved. If we claim that there is a "Copernican turn," in its metaphorical sense to be found in the theory of Gibbons *et al*, then this is the right place to search for it. The context of setting and solving problems in Mode-1 is governed largely by academic interest. This means that scientific work follows the rules and codes of practice which are relevant to a particular discipline. The context is "defined in relation to the cognitive and social norms that govern basic research or academic science. Latterly, this has tended to imply knowledge production carried out in the absence of some practical goal."[19] Knowledge produced under Mode-1 therefore implies the form of *pure* science, detached from all the needs, demands, and concerns in the world out there. To put it harshly, Mode-1 science is nothing but *science for science's sake*.

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[18] Gibbons *et al*, pp. 2–3.
[19] Gibbons *et al*, p. 4.

By contrast, Mode-2 knowledge is carried out in the context of a particular application, and it is intended to be useful to someone. The most important contrast between Mode-1 and Mode-2 is that this imperative is present from the very beginning: "Knowledge is [in Mode-2 form of production] always produced under an aspect of continuous negotiation and it will not be produced unless and until the interests of the various actors are included. Such is the context of application."[20] This implies that science can no longer be regarded as an autonomous space, which is clearly demarcated from other spheres of society, e.g. from culture, and even (though more arguably, as Gibbons *et al* themselves admit) from economy. They claim that even though knowledge production in Mode-2 is the result of a process in which supply and demand factors are operative, this process includes much more than commercial considerations, and consequentially "it might be said that in Mode-2 science has gone beyond the market!"[21] This is not a self-evident claim, although it is beyond the scope of this paper to argue for or against it. In any case, Gibbons *et al* argue that the factors which play an active role in the process of Mode-2 production of knowledge, are complex and diverse. As a consequence, knowledge production becomes diffused throughout society, and knowledge itself becomes socially distributed. In this sense, it is crucial to point out one important characteristic of Mode-2 science in relation to Mode-1. If Mode-1 science is pure, this does not imply that Mode-2 science is applied. There isn't any knowledge, prepared and waiting, ready to be applied when and where needed. This logic of applied sciences still conforms to Mode-1.

Research carried out in the context of the application in fact characterizes a number of disciplines that mostly belong to the field of engineering and applied sciences, among them, for example, aeronautical engineering, chemical engineering, and also computer science. When they appeared for the first time, however, they were neither science nor applied, since they were – in the first place – the answer to a specific problem, to a lack of the relevant science, and they were genuinely new forms of knowledge. Therefore, even though these sciences became established in universities, in their formation there was a necessary condition for the Mode-2 production of knowledge. Nevertheless, after the new form of knowledge was established and the need for new knowledge fulfilled, these new applied sciences soon turned back to the disciplinary knowledge production in the style of Mode-1. For a brief period in their formation, applied sciences share some aspects of the attribute

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[20] *Ibid.*
[21] *Ibid.*

of knowledge produced in the context of application, characteristic of Mode-2, but soon after that the process of regression into Mode-1 takes place, and knowledge production becomes again, as Latour would have put it, cold, straight and detached.

2.2. Transdisciplinarity

Gibbons *et al* derive all the other important attributes of Mode-2 from the premise that knowledge is produced in the context of application. While problems in Mode-1 were still set and solved within the field of a specific discipline, in Mode-2 this is no longer the case. Problems originate in a context so complex and heterogeneous that it exceeds the possibilities of any particular discipline to set, let alone solve, given problems. Apparently, an interdisciplinary approach based on a diverse range of specialists who work in teams on the problems, is the key to the proper solution; however, Gibbons *et al* argue that a still more radical step is needed.

Both modes of scientific knowledge production share an unambiguous demand, which is nonetheless decisive: "To qualify as a specific form of knowledge production it is essential that enquiry be guided by specifiable consensus as to appropriate cognitive and social practice."[22] Whereas in Mode-1, this consensus is derived from the appropriate discipline, in Mode-2

> the consensus is conditioned by the context of application and evolves with it. The determinants of a potential solution involve the integration of different skills in a framework of action, but the consensus may be only temporary, depending on how well it conforms to the requirements set by the specific context of application. In Mode 2 the shape of the final solution will normally be beyond that of any single contributing discipline. It will be transdisciplinary.[23]

There are several distinct features of transdisciplinarity, pointed out by Gibbons *et al*. At the beginning of a research project a framework to guide problem solving is developed. This framework is generated and sustained in the context of application, which means that it evolves within the context and it is not developed first and then applied to that context (this is the main difference between Mode-2 science and ordinary applied science). The knowledge produced is not necessarily disciplinary (or is usually not),

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[22] *Ibid.*
[23] *Ibid.*, p. 5.

and therefore it may not be located on the prevailing disciplinary map. Nevertheless, transdisciplinary knowledge – despite the fact that it emerged from the context of application – has its own distinct theoretical structures, research methods and modes of practice.

Transdisciplinarity, however, is dynamic; it is a problem solving capability "on the move". Knowledge obtained during the process of problem solving within a specific context can became a starting point from which further advances can be made, but where this knowledge will be used and how it will develop is difficult or even impossible to predict:

> New knowledge produced in this way may not fit easily into any one of the disciplines that contributed to the solution. Nor may it be easily referred to particular disciplinary institutions or recorded as disciplinary contributions. In Mode-2, communications in ever new configurations are crucial.[24]

The transdisciplinary character of Mode-2 demands a different way of communicating results in comparison to Mode-1, which is manly disciplinary. While in Mode-1 communication flows through institutional channels (reporting results in professional journals or at conferences), in Mode-2 results are communicated to those who have participated in the process of knowledge production. Therefore, the diffusion of the results is accomplished in the process of their production.

2.3. Heterogeneity and organizational diversity

Mode-2 knowledge production is heterogeneous in terms of the skills and experience people bring to it. The framework of problem solving is without given boundaries, and it is evolving; the composition of researchers involved changes over time as well, in order to follow the requirements set by the context of application. This process is neither planned nor coordinated from above by any central body. Moreover, the number of potential sites where knowledge can be produced in Mode-2 has increased. These are no longer only universities, but also independent institutes, research centers, government agencies, industry, and think-tanks and consultancies that serve in their interaction as sites of knowledge production. These sites are linked together not only through networks of communication, but also organizationally. However, because of the differentiation of fields of study into subfields, and because of the constant reconfiguration of these subfields, the

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[24] *Ibid.*

organization of research becomes diverse and in the last instance productivity moves from disciplinary activity into more societal contexts.

In Mode-2 research groups are not so firmly institutionalized as in Mode-1. People join certain projects and work on them for a certain time, they form various networks, but these work teams and networks dissolve when a problem is solved or redefined. Members of the former research group then reassemble in different groups, which involve different people, usually in different places, and also around different problems. As Gibbons *et al* claim,

> [the] experience gathered in this process creates a competence which becomes highly valued and which is transferred to new contexts. Though problems may be transient and groups short-lived, the organization and communication pattern persists as a matrix from which further groups and networks, dedicated to different problems, will be formed.[25]

It follows that knowledge within Mode-2 is produced in very different environments, from public and government institutions to research universities, laboratories, and institutes, and to network and hi-tech firms and multinational corporations. If Mode-1 is marked by homogeneity and hierarchical organization, by contrast, Mode-2 is marked by heterogeneity, and its organization is less hierarchical and more transient.

2.4. Reflexivity

Another attribute of Mode-2 knowledge production is related to the social accountability and reflexivity of the research. In recent years we have been witnessing strong public concern – nowadays mostly in relation to global warming and biotechnology – for the issues of science, technology, and knowledge production in general. More and more groups are interested in the process and outcome of the research, and some of them even want to influence the results. As Gibbons *et al* claim, in Mode-2 sensitivity to the impact of the research is built in from the start, because it forms a part of the context of application; "working in the context of application increases the sensitivity of scientists and technologists to the broader implications of what they are doing."[26] Operating in Mode-2 therefore makes all participants more reflexive.

This claim obviously goes contrary to public opinion and to what one usually thinks about contemporary science and technology (in relation, e.g.

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[25] *Ibid.*, p. 6.
[26] Gibbons *et al*, p. 7.

to human cloning, the military-industrial complex, etc.). However, the reason for a more reflexive stance is in the assumption that the issue which is being researched cannot be answered in scientific and technical terms alone. In Mode-2 there is no traditional boundary between inside (science and technology) and outside (individuals and groups with their own values and preferences) of the knowledge production. The research towards the resolution of such problems has to incorporate options that form a part of the context, but they are not necessarily related to traditional scientific or technological research. The aforementioned individuals or groups now become active agents in the definition and solution of problems, as well as in their evaluation, which means that their values and preferences have to be taken into an account. Trying to operate from the standpoint of all the actors, researchers have to include an understanding and reflection of all possible factors, including values, aspirations, pressures, anxieties, and so on.

Gibbons *et al* claim that a deepening of the understanding of all these factors has an effect on the structure of the research itself, since the reflexivity relates to the question of what is worth doing – what in the field of research makes sense, and what does not. In Mode-1 science such reflexivity was considered to be something coming from outside of knowledge production, and traditionally reflexivity was a concern of the humanities. In contemporary, that is Mode-2 knowledge production process, where reflexivity becomes a part of this process itself, and spreads within it, the humanities are experiencing an increase in demand for the knowledge they have to offer. But Gibbons *et al* give the impression that the humanities do not have much to offer:

> Traditionally, this [reflexivity] has been the function of the humanities, but over the years the supply side – departments of philosophy, anthropology, history – of such reflexivity has become disconnected from the demand siteside – that is from businesspeople, engineers, doctors, regulatory agencies and the larger public who need practical or ethical guidance on a vast range of issues (for example, pressures on the traditional humanities for culturally sensitive scenarios, and on legal studies for an empirically grounded ethics, the construction of ethnic histories, and the analysis of gender issues).[27]

2.5. Evaluation and quality control
In Mode-1 the quality of the research is mostly determined through peer

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[27] *Ibid.*, p. 8.

review evaluations of the contributions made by individuals. Since Mode-1 is essentially disciplinary, peer review operates so as to channel individuals to work on problems that are held to be central to the advance of the discipline, and these problems are usually defined in terms of criteria which reflect the preoccupations and interests of the discipline and its contributors. Quality in this mode is therefore maintained by a careful selection of those judged competent to act as peers, which is in part determined by their previous contributions to the discipline. In this sense evaluation begins and ends in the context of a discipline.

In Mode-2 knowledge production this is nevertheless not enough, and another criteria has to be added to the process of evaluation and quality control. The key is again the context of application, which includes a range of various interests, ranging from intellectual, social, economic, to political ones. For example, it is not enough that only intellectual or scientific interests are fulfilled when the solution to a certain problem is achieved; there are always further questions to be posed: "Will the solution be socially and ethically acceptable?" "Will it be competitive in the global market?" And so forth. Consequentially, an evaluation of the achieved knowledge becomes much more complex, heterogeneous, and above all, difficult. Nevertheless, it does not follow that the quality of work will be reduced because of the complexity. Even if it is more difficult to say what a "good science" is, this doesn't mean that it is impossible. It only means that the answer will have a more complex, multidimensional nature, and that sometimes it will be difficult to get it, precisely because of the importance of the context of application.

3. Conclusion

The intention behind this close reading of Mode-2 theory was to emphasize the obvious: structural changes that started to emerge from the mid-twentieth century on, within the field of science and technology, resemble at first glance contemporary modifications in art and culture. If we change the word science for art and reread the attributes that separate Mode-2 from Mode-1, it is not at all difficult to see how similarly these two fields behave. It is actually striking that so many analogies are to be found, if one seriously takes into consideration that there existed autonomous spheres of science and art.

In both cases Mode-1 represents a modern, institutionalized concept of science or art, and the question that inevitably follows is: Does Mode-2 represent its postmodern form? Because if it does, then we could simply re-

write the distinction between Mode-1 and Mode-2 onto a modernist versus postmodernist approach. Nevertheless, as the case of Lyotard, who opened the debate on postmodernist science, shows, there has never been a truly postmodernist science.[28]

Henry Etzkowitz and Loet Leydes stress the fact that although Mode-1 science could be compared to a modern, institutionalized concept of science, Mode-2 does not represent a *post*modern concept. The fact is namely that:

> The so-called Mode 2 is not new; it is the original format of science before its academic institutionalization in the nineteenth century. Another question to be answered is why Mode 1 arose after Mode 2: the original organizational and institutional basis of science, consisting of networks and invisible colleges. [...] Where have these ideas, of the scientist as the isolated individual and of science separated from the interests of society, come from? Mode 2 represents the material base of science, how it actually operates. Mode 1 is a construct, built upon that base in order to justify autonomy for science, especially in an earlier era when it was still a fragile institution and needed all the help it could get.[29]

Therefore, there are structural similarities between science before Mode-1 and after Mode-1, so that it would be better to consider Mode-2 to be a *non-* or *un-*modern form than a *post*modern one. It seems that in the case of art, the role of autonomy was raised to a higher power, and became not only accepted but also an inevitable constituent part of art. If Etzkowitz and Leydes raise a question about the scientist as the isolated individual, aesthetics answers simply: genius is genius is genius, as well as art is art is art. **While the work of Kant, Hegel** *et al* generated a tradition, in which the central issue was the autonomy of art (or, later, the autonomy of culture), it has now become clear that both art and culture have gradually lost their autonomy and that consequently aesthetics as a discipline has to confront the new conditions.

One way of doing that is to understand the past. Following the example of science, it could be stated that **Mode-2 art is art before it achieved its autonomy**, before it became *art for art's sake*. In this sense it is not new, and it could even be claimed that somehow it is not at all art; or at least it is, in the

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[28] See footnote 17.

[29] Henry Etzkowitz and Loet Leydes, "The dynamics of innovation: from National Systems and 'Mode 2' to a Triple Helix of university–industry–government relations", *Research Policy*, vol. 29 (2000), p. 116.

words of Hans Belting, art before the beginning of art.[30] The question why Mode-1 arose after Mode-2 is a basic question related to the autonomisation of different fields within the development of modernity – science/technology, art/culture, ethics/politics – and it points to Kant, to *bourgeoisie*, and to the development of a capitalist mode of production.

Mode-1 production is a construct whether we apply it to science, or to art and aesthetics. And this holds for another issue as well: the ideas of the subject as an isolated individual and of his discipline as separated from the interests of society, are so similar that they probably come from the same background. Nevertheless, it would be too simple to state that Mode-2 represents only the return of something pre-modern, either in art or in science. It would be more correct to say that Mode-2 exposes the limits of Mode-1, which has been probably connected to the most flourishing period of art and science in all of history. Mode-2 arises from the view that the most important things in science (and art) have already been done, and what remains to explore is a task too difficult for the disciplinary Mode-1 approach.

It is important to note that Mode-2 in its recurrence does not represent either a break with or a continuation of Mode-1. This is yet another distinction that distinguishes the Mode-1/Mode-2 approach from a modernist/postmodernist one. That is to say, Mode-2 is not an *Aufhebung* of Mode-1 in some Hegelian sense, and there is no urgent need to use concepts such as the "end" or "death" of art to explain the contemporary situation within the field of art. Mode-2 appears as a parallel form, which does not suppress Mode-1.

As has been stated, the context of setting and solving problems differs significantly with the transition from Mode-1 to Mode-2 (transition is probably not the right word to explain the occurrence of a new mode in this case). While in Mode-1 the context is related to the closed academic sphere, in Mode-2, on the contrary, the context of application determines the production of knowledge (or art) from the very beginning. In this case the relation between science and art is more complex, since not only pre-modern art, but also the art of the avant-gardes, and some other forms of contemporary art, correspond to Mode-2. Several movements, including artistic avant-gardes, however, from impressionism to *Neue Slowenische Kunst*, show another interesting characteristic distinctive of scientific disciplines: after the clash with academic and institutional art, they themselves end in an academic and institutional form which is distinctive of Mode-1.

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[30] Hans Belting, *Likeness and Presence: A History of the Image before the Era of Art* (Chicago: University of Chicago Press, 1994).

There are, nonetheless, forms of Mode-2 art that do not have the ambition to regress to Mode-1. Very striking examples are environmental and social art, from Joseph Beuys' 7,000 oak trees, planted in 1982 in Kassel for Documenta 7, to Mel Chin and Mierle Ukeles. One could count under the same rubric also, as was the case already in the times of the classic avant-gardes, political and ideological art, and last but not least bioart. In all these examples it is obvious that problems that artists (but also artistic teams and curators) intend to solve with their projects, originate in a context so complex and heterogeneous that it exceeds the possibilities of any particular approach to find a solution for (or, at least a proper attitude towards) them.

Transdisciplinarity within art operates on a different level when compared to scientific knowledge production; however, it still is one of the distinctive features of Mode-2 art, and probably the essential one for Mode-2 aesthetics. It follows from this characteristic that aesthetics − in order to grasp Mode-2 art − has to go beyond itself, that is, beyond the border established by its Mode-1 precursor. This actually means that aesthetics has to open itself to heterogeneous discourses and knowledge productions beyond its traditional range. (Which in most cases is also beyond the range of philosophy.)

This task is very demanding, for, as already stated, only the hard cases remain, and more and more issues now depend on them. This doesn't mean that Mode-2 aestheticians will have to be biologists, political scientists, environmentalists, neurologists, and so on. It only means that they will have to open conceptual space for issues that are related to these fields, if the context of an artwork demands it. This also does not necessarily mean that we need a new form of normative aesthetics, because aesthetics is either normative or doesn't exist at all, and we have lost any possible norm to say what is good art.

It is true that we may have lost this norm now, but there is still one more important task facing Mode-2 aesthetics, and that is to open a conceptual space for understanding contemporary art that does not follow old and common ways. There is still a lot of contempt and negative reactions related to Mode-2 art that are the consequence of a lack of a proper theoretical or conceptual approach. Mode-2 art becomes art that is more hermetic and obscure than it was during its most notorious avant-garde times. It is the task of Mode-2 aesthetics to show that this art matters, and that by not understanding it we are losing an important part of our self-understanding.