Chapter 4

Artistic Research within the Fields of Science

Context

This chapter was born of bewilderment and unease. I was bewildered about how artistic research was mentioned only in passing in the Frascati Manual and then shoved aside. I was uneasy both about the negative attitude towards artistic research that prevailed in levels of authority in Dutch arts schools as well as about the line adopted by officials and government advisers, who felt they needed to protect 'research' from appropriation by others. My work in the Strategic Working Group on Research in the Netherlands Association of Universities of Applied Sciences (HBO-Raad) enabled me to probe into issues of research policy, in particular as regards the form and dynamics of knowledge production. My bewilderment and unease are echoed by the rhetorical tone in which I presented and arranged the chapter's sections.

So 'artistic research' was already known by the 1970s. The expression is not new, at any rate. A future historiography of artistic research will have to determine what this term was intended to mean in the period in question.

Imagine the following scene. Back in the 1970s, somewhere in the vast UNESCO complex in Paris, a public servant is cogitating one day about whether 'artistic research' should or should not belong to the field of science and technology, and specifically to 'research and development'. That official (assuming there is no more than one) is preparing the thirty-fourth agenda point for the Twentieth UNESCO General Conference, to convene in October and November 1978. Agenda point 34 is entitled Draft Recommendation concerning the International Standardization of Statistics on Science and Technology. The preamble to the ultimate recommendation (UNESCO 1979: 23) will state that

> it is highly desirable for the national authorities responsible for collecting and communicating statistics relating to science and technology to be guided by certain standards in the matter of definitions, classifications and presentation, in order to improve the international comparability of such statistics.[1]

Part of the recommendation deals with the various ways in which member states should classify data in research and development. One approach is to categorise it in terms of the 'fields of science and technology in which institutions belonging to the higher education and general service sectors carry out […] research and development [activities]' (UNESCO 1979: 27). This classification – later to be known as the 'distribution list' – contains the following main categories:

1. Natural sciences
2. Engineering and technology
3. Medical sciences
4. Agricultural sciences
5. Social sciences and humanities.

1. The text put before the delegates was later published in Annex 1 to the *Resolutions* of the conference (UNESCO 1979).

The recommendation further specifies which disciplines each of these areas should encompass. Natural sciences, for instance, includes 'astronomy, bacteriology, biochemistry, biology, botany, chemistry, computer sciences [… and] other allied subjects'. Social sciences and humanities is divided into two groups. Group II, the humanities, includes languages, philosophy, history, religion, as well as arts; the latter are further elaborated as follows: 'history of the arts and art criticism, *excluding artistic "research" of any kind*' (emphasis added).

So at some point thirty years ago in Paris, someone decided that artistic research should be categorically banned from the field of endeavour known worldwide as research and development. And to prevent any misunderstanding – should anyone claim that some form of artistic research might qualify as research and development after all – the exclusion was reinforced by adding 'of any kind', and the activity was negated yet again as a legitimate form of research by putting 'research' into inverted commas (which were rare in the rest of the text). In other words, no one should ever think this is *real* research, even though the term might be occasionally so misused.

Since 1979, the distribution list of science and technology fields has been an authoritative standard in the international world of institutions devoted to science and technology and to research and development. With a few minor changes, the list was later incorporated into the *Frascati Manual* (OECD 2002), a publication of the Organisation for Economic Co-operation and Development dealing with 'standard practice for surveys on research and experimental development'. The definitions and classifications laid down in the *Frascati Manual* now serve as *the* reference categories when it comes to describing and defining what research and development are. All self-respecting research institutes, and universities in particular, now use the manual as a guideline for their actions.

The *Frascati Manual's* distribution list (OECD 2002: 67) classifies Humanities as a separate category alongside Social Sciences, and subdivides it as follows:

- History
- Languages and literature
- Other humanities.

'Other humanities' is further specified as 'philosophy (including the history of science and technology), arts, history of art, art criticism, painting, sculpture, musicology, dramatic art *excluding artistic "research" of any kind*, religion, theology […]'(emphasis added). The modifications are noteworthy and odd, but they need no further comment here. The issue I am highlighting is the insistence with which artistic research is excluded here once again from the domain of research and development.

So what is actually wrong with artistic research to trigger such vehement reactions? Is it perceived as a threat? To what, to whom?

Artistic research versus scientific research

In the past ten to fifteen years, much has been said and written about artistic research, in relation to both philosophy of science and educational politics. A recurrent theme is to compare it with, or distinguish it from, what is generally understood as scientific or academic research. Can we identify elements of similarity or difference with respect to research in fields like humanities or natural sciences? Wherein lies the specific nature of artistic research? Is that in the research object – the uniqueness of artistic practice, of the work of art, of the creative process? Or does it lie in the research process – in the course it follows, the working procedures, the methods? Or, from a third point of view, does artistic research seek to reveal a special form of knowledge – tacit, practical, non-conceptual, non-discursive, sensory knowledge, as embodied in artistic products and processes?

In the world of academia, there is a broad degree of agreement as to what should be understood by research. Briefly it amounts to the following. Research takes place when a person intends to carry out an original study, often within a single discipline, to enhance our knowl-

In 2007, the OECD Working Party of National Experts on Science and Technology Indicators (NESTI) published a *Revised Field of Science and Technology (FOS) Classification*. It was created in response to the emergence of new fields of research like biotechnology and nanotechnology, including some interdisciplinary fields. It continued to classify arts research in a rather odd way (see the final section of this chapter). In the meantime, some have proposed ranking the arts at a higher level in the classification, placed on a par with the current six principal domains, rather than subsumed under one of them. Artistic research is certainly akin to the humanities at times, but sometimes also to the field of science and technology or to the social sciences. In November 2010, the Department of Higher Education Analysis of the Swedish National Agency for Higher Education submitted such a proposal to NESTI.

This paragraph brings together the seven 'criteria' from chapter 2 into a single formulation.

edge and understanding. It begins with questions or issues that are relevant in the research context, and it employs methods that are appropriate to the research and which ensure the validity and reliability of the research findings. An additional requirement is that the research process and the research outcomes be documented and disseminated in appropriate ways.

Does 'artistic research' satisfy these criteria? Ostensibly, at least, there is much to be said for excluding artistic research on these grounds. Let us look into it more closely. For one thing, much artistic research is conducted not with the aim of producing knowledge, but in order to enhance what could be called the artistic universe; as we know, this involves producing new images, narratives, sounds, or experiences, and not primarily the production of formal knowledge or validated insights. Although knowledge and understanding may well emerge as byproducts of artistic projects, this is not usually intended from the beginning.

These three 'criteria' – *intent, questions, methods* – will be discussed in chapter 7 together with the four other criteria from chapter 2. At this point, they serve as a rhetorical stepping stone in order to emphasise below (under 'Kinship?') the often close relationships between artistic research and other academic research.

Perhaps more important is that artistic research as a rule does not start off with clearly defined research questions, topics, or hypotheses whose relevance to the research context or to art practice has been established beforehand. Much such research is not 'hypothesis-led', but 'discovery-led' research (Rubidge 2005: 8), in which the artist undertakes a search on the basis of intuition and trial-and-error, possibly stumbling across unexpected outcomes or surprising insights or farsights. Moreover, because the researchers are intimately intertwined with what they are exploring – much artistic research actually serves their own artistic development – they do not have ample distance to the research topic, a distance that is supposedly an essential condition for achieving a degree of objectivity.

In terms of method – understood as systematic and reliable working procedures – artistic research also seems to diverge from the prescriptions set out in methodology manuals. It is the very practice of unsystematic drifting and searching – of which serendipity, chance in-

spirations, and clues are an integral part – that takes artists onto new, unbroken ground. They thus do not operate within a well-circumscribed discipline that spells out what may and may not be part of the research strategy. In artistic research, both the research topic and the research questions and methods tend to become clear only bit by bit during the artistic search, which often transcends disciplines as well.

But does this really differ from 'scientific research'? As Robbert Dijkgraaf (2007: 31), an expert on string theory, recently put it, 'I would say that scientific research is about doing unpredictable things, implying intuition and some measure of randomness. […] Our research is more like an exploration than following a firm path.' The idea that the 'context of discovery' is more distinct from the 'context of justification' than was claimed by classical philosophy of science up to and including Karl Popper has been substantiated by Thomas Kuhn, Paul Feyerabend, and historians of science that succeeded them. In this light, artistic research may have more in common with scientific research than is often presumed.

The research hierarchy

Now let us step back for a moment. Research is currently a hot topic in Europe. In line with the political rhetoric about the knowledge society, the knowledge economy, knowledge management, knowledge circulation, and the like, heavy emphasis is now being put on research and knowledge production in our society, where the production of goods and services seems insufficiently competitive in the global economy, especially with the future in mind.

The art world and the field of arts education have also become afflicted by the research and knowledge virus. It is no longer sufficient just to master your trade, and from that basis to create beautiful objects, performances, compositions, or events. Artists are what are now being called 'reflective practitioners' (Donald Schön). This broadening of the artist's trade can be partly explained by prevailing external circumstances – the hybrid ('mixed') arrangements in which artists increasingly operate, their need to contextualise and position their work, their accountability to grant providers and to the public. Yet the focus on research and reflection can also be partly understood

through developments in art practice itself. Some years ago, Theodor Adorno (1997 [1970]: 12) observed that 'today it goes without saying that nothing concerning art goes without saying, much less without thinking. Everything about art has become problematic; its inner life, its relation to society, even its right to exist.'[2] The same still applies in our postmodern times, where it often only *seems* as though the art scene is not really worried about its own legitimacy. The current hype about knowledge and research in the arts is proof of the contrary. It can be understood as both an attempt to conform to the conditions that have been imposed on art and artists (an externalist perspective) and a manifestation of the reflexiveness of the arts themselves (an internalist perspective).

Yet at the same time we also witness here and there, and more and more, some irritation, or even aversion, arising in the art world and in arts education against the subject of 'research'. This can be attributed mainly to an understandable resistance to the disciplining effects of the frameworks defined in the academic world for the conduct of research. Artists are on their guard when it comes to issues that could impede their creativity, inventiveness, or freedom. This is not just an inconvenient legacy of an obsolete, late eighteenth-century notion of artistry (certainly it is that, too, but not that alone). There are good reasons to defend the framework-transcendent, destabilising, sometimes subversive effects of art against the ineradicable tendency of people and institutions to frame the unforeseen.

And so the art world, as well as the field of arts education, now find themselves caught in a balancing act. One minute they profess the importance and necessity of research and reflection, and the next minute they resist the real or imagined association with the perceived oppressive world of science and academia. This is an uncomfortable predicament, and the discomfort manifests itself in the agitated tone in which people waver between defending different standpoints.

2. In the German edition: 'Zur Selbstverständlichkeit wurde, daß nichts, was die Kunst betrifft, mehr selbstverständlich ist, weder in ihr noch in ihrem Verhältnis zum Ganzen, nicht einmal ihr Existenzrecht.'

The legitimacy of artistic research is also at issue in an entirely different way, even as artistic research gains a stronger foothold in the system of higher education and research. In the wider debate about research – and notably when it comes to government investment in higher education and research – artistic research is no party to the discussion at all. The discussion is still first and foremost about investment in basic scientific research, and preferably in top-rated, ground-breaking research in areas like nanotechnology, biophysics, or subatomic science. Perhaps a slight shift can be seen over the years towards what was formerly known as applied research and is now often called socially robust, Mode 2, or practice-led research – studies whose research questions do not arise primarily from theoretical curiosity, but from everyday practice. But that does not alter the fact that the largest relative amount of emphasis and money still goes into types of research that can be labelled as basic. From this point of view, other research areas, if they are not outrightly seen as insignificant, at least have less value as investment targets. In this value hierarchy – where socially and culturally oriented fields like economics and history occupy a mid-range bracket – doubts are even being expressed about the status of activities that have managed to gain a place in the universities under names like cultural studies, media studies, or communications.

As we move down the hierarchy, the word 'research' takes on gradually different meanings (if not to say *inferior* meanings). And the activities known as artistic research, which accompany the production of art, are not at all taken seriously in the world of 'genuine' scientific research. The inverted commas around the word 'research' as quoted from the *Frascati Manual* say everything. They stand as a warning against devaluation. Although it may be understandable (they seem to say) that the respectable status of scientific research tempts people to present their 'research' as scientific or systematic in order to gain an equivalent standing, this 'academic drift' must not obscure the fact that these are two totally dissimilar domains and activities.

Fortunately, the reasoning continues, the scientific world has self-purifying mechanisms. Against this tendency to promote any old thing into 'research' and into an academic discipline, there is movement in the opposite direction. In the ostensibly egalitarianised landscape of uni-

versities and higher professional schools, where at first sight everything seems to be thrown together into an amorphous mass, the 'research universities' are now drawing sharper lines between themselves and the rest, and the research training programmes are setting themselves apart from professional training courses. It is argued that achievements at polytechnics and higher professional schools should no longer be referred to as 'research', but as 'design and development' (cf. AWT 2005). And that applies to the arts as to none other. After all, aren't they primarily just involved in designing and producing new artefacts and training artists? They have no reason to annex this commonly understood word 'research'; that just raises questions and causes misunderstandings – again, according to this line of reasoning.

Kinship?

This chapter was also published in Dutch in *Krisis*, a journal for contemporary philosophy (2009.1: 56-71), in a special issue on science and technology studies. One reviewer rightly pointed out that the term 'rational reconstructions' has particular connotations in Habermas. To avoid associations with Habermas's ideas about the current tasks of philosophy, it is perhaps better to use the term 'rational justifications' here.

Let us leave the war of words behind us and concentrate on the essential issue here. What is artistic research all about? We have already seen in the explorations of artists and scientists – the 'contexts of discovery' – that they have something in common. Their ways of justifying research outcomes, however, seem highly different at first. Rational reconstructions (logical arguments, empirical-deductive inferences, quantitative and qualitative analyses, historical-critical interpretations) seem to have little in common with artistic, aesthetic evaluations. The latter, of course, belong the domain of art criticism. But some remarkable parallels do exist on closer inspection. For one thing, there is the manner in which a rational reconstruction or an aesthetic evaluation is *itself* assessed. In neither case is it possible to invoke an epistemological[3] or an aesthetic ground that will provide the ultimate justification for the research findings. The rules for assessing the results are not derived from any criterion external to the research, and hence independent of it. They are defined within the research domain itself. That applies equally to scientific research and to

3. Nowotny, Scott, and Gibbons 2001: 179-200.

artistic research. The basis for the assessments is furnished by intersubjective standards which are shared *within* what is called a forum, a community of equals. Peer review has just as much authority in the art world as it does in the world of science. The peers in both realms are very well able to pass judgments on quality.

But perhaps a more remarkable kinship between science and art, between scientific research and artistic research, becomes evident when we view the motives that underlie the research, the issues that inspired it. In both cases (ignoring, for convenience' sake, false motives like money and power), these are driven both by a desire for a fundamental understanding and by a desire to develop new products, with the emphasis alternating between the two. These characteristic motives for conducting research will be discussed in more detail below. It will suffice for now to point out that both artistic research and scientific research are seeking to broaden our horizons and to enrich our world.

An additional similarity between scientific and artistic research, which is at least as important to the present context, is the function that the research fulfils within the respective professional fields. In both cases, successful research contributes to the development of the discipline and to the flourishing of talent within it. If there is an intimate bond between research and development, it is located here. Cutting-edge scientific and artistic research moves the frontier onto previously unexplored territory by discovering new paths and outlooks, by enabling new observations and experiences. We may therefore understand artistic research as a careful investigation, exploration, and testing of unbroken ground in function of developing the discipline and broadening perspectives as well as nurturing talent. Both scientific research and artistic research are capable of constituting worlds and disclosing worlds; therein lies their performative strength – in generating and revealing new ideas, understandings, perceptions, and experiences.

Peer review will be addressed further along in this chapter (on pages 89-94). It is also (more polemically) the topic of the first brief intermezzo in chapter 6. The viewpoints and arguments I have brought together in this book will ultimately culminate in a framework for the assessment of artistic research (chapter 10), which will then be tested and put into operation in the peer review guidelines for the *Journal for Artistic Research*.

Constructivist realism

The standard model of research and development

The authoritative *Frascati Manual* (OECD 2002: 30) also provides the standard definitions of research and development that currently prevail in the world of science and technology. The generic definition is as follows:

> Research and experimental development comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.

The manual goes on to distinguish three activities within this definition: basic research, applied research, and experimental development. It defines these as follows:

> Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective. Experimental development is systematic work, drawing on existing knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed.

This threefold distinction is encountered (always in the same hierarchy) in the mission statements of national and supranational research organisations that monitor research quality. The League of European Research Universities, for instance, is 'committed to the creation of new knowledge through basic research, which is the ultimate source for innovation in society' (LERU n.d.). The Royal Netherlands Acad-

emy of Arts and Sciences states in its mission (which is 'to ensure the quality of scientific research in the Netherlands') that 'the fundamental research carried out today will provide a basis for the applied research of tomorrow and, in turn, for the practical application of science in the future' (KNAW n.d.).

The primacy of basic (pure) research over applied research (including strategic research and action research) and over experimental development which emanates from these statements can be traced back to governmental policies as formulated in the final years of the Second World War, particularly in the United States. In 1945 a report was published entitled *Science: The Endless Frontier,* which was commissioned by President Franklin D. Roosevelt and written by Vannevar Bush, director of the Office of Scientific Research and Development, which had been so important to the US war effort. Through this agency, Bush had already demonstrated that investment in (often secret) scientific research had substantially contributed to winning the war. He was now asked to extrapolate his findings to peacetime. 'There is […] no reason why the lessons to be found in this experiment cannot be profitably employed in times of peace' (from Roosevelt's commissioning brief, cited in Bush 1945: 3). In his extrapolation, Bush employed two postulates which together would prove to be a golden formula: 'Basic research is performed without thought of practical ends' and 'Basic research is the pacemaker of technological progress' (pp. 18, 19). This formula – which defines basic scientific research as the motor of technological development, economic growth and public welfare, while prescribing that it should not be judged directly in terms of utility – represents the conceptual framework that, until recently at least, has inspired government policies with respect to scientific research in

The Royal Netherlands Academy of Arts and Sciences has meanwhile modified its mission statement, removing the hierarchy. The mission now reads as follows:

'As the forum, conscience, and voice of the arts and sciences in the Netherlands, the Academy promotes quality in science and scholarship and strives to ensure that Dutch scholars and scientists contribute to cultural, social and economic progress. As a research organisation, the Academy is responsible for a group of outstanding national research institutes. It promotes innovation and knowledge valorisation within these institutes and encourages them to cooperate with one another and with university research groups.'

As long as the arts (and research in the arts as I understand it here) have not been integrated into the divisions of the academy, the word 'arts' in this statement refers to humanities, law, behavioural sciences, and social sciences.

Bush's postulates have been analysed in detail by Donald E. Stokes, to whom I am indebted here (see below, pages 96-100).

the Western world. The institutional mission statements quoted above still bear witness to this.

In recent decades, this conceptual framework has been expanded a little, as research funders and government bodies have gained more awareness of research that cannot immediately be associated with basic research, but which both generates knowledge and aims at results such as designs, images, and performances, and which employs a broader conception of what qualifies as a scientific method. The Research Assessment Exercise (RAE 2005: 34) in the UK, for example, applies the following definition:

> 'Research' […] is to be understood as original investigation undertaken in order to gain knowledge and understanding. It includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction.

And as part of the Bologna Process to integrate European higher education, the principles known as the Dublin Descriptors (JQI 2004: 3) emphasise that

> the word [research] is used in an inclusive way to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological fields, including the humanities, and traditional, performing, and other creative arts. It is not used in any limited or restricted sense, or relating solely to a traditional 'scientific method'.

Notwithstanding this wider concept of research, the standard model remains, for many people, the criterion for demarcating 'true' scientific research from research activities that some still prefer to label as design and development.

The standard model amended

The standard model of scientific research as set out by Bush and as crystallised in guidelines such as the *Frascati Manual* has attracted criticism from various quarters. Research on the history of science and on science policy has shown that the factors now important to technological advancement and economic growth are more complex and multifarious than the standard model would lead us to believe. The intellectual and social organisation of the sciences in the early twenty-first century is likewise highly diversified, and different types of knowledge are generated in different specific contexts (Whitley 2000: ix).

In their book *The New Production of Knowledge* from 1994, Michael Gibbons and his colleagues sparked considerable debate with their proposed amendment to this standard model. They described how 'Mode 1 science' must now make increasing room for 'Mode 2 knowledge production'.[4] Mode 1 refers to traditional, discipline-bound research that takes place in academic contexts (mostly universities); it is characterised by organisational homogeneity, uniformity, and stability. The quality of Mode 1 research – which is primarily focused on the finding of truths or the justification of beliefs – is assessed and controlled within each discipline by a peer review system, in which largely individual contributions are assessed by colleagues who are considered competent to judge quality by virtue of their own previous individual contributions.

Mode 2 research, in contrast, is said to take place in the 'context of application'. It is interdisciplinary or transdisciplinary, involving both academics and other parties. Research is not conducted exclusively in homogeneous, uniformly structured universities, but is more localised in heterogeneous, diversified, often transitory configurations, made up of universities, governmental agencies, industrial research centres, non-governmental organisations, and other actors that assemble around a particular set of problems. Specific attention is given to whether the outcomes are socially, economically, or politically relevant, competitive, or feasible. The quality of the research is assessed

4. Gibbons et al. 1994; see also the sequels to this work, Nowotny, Scott, and Gibbons 2001 and 2003.

and controlled by the various parties involved. Both 'disciplinary peers' and other stakeholders critically examine research questions and priorities as well as findings. This 'extended peer review' is one of the attributes that distinguish Mode 2 knowledge production, in conjunction with the demand for social robustness and reflexivity, the organisational diversity, and the problem-focused teamwork that transcends disciplines.

The *Frascati Manual* defines six fields of science: natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences, and humanities. The first five areas dominate the science debate. Although Gibbons and his coauthors did pay some heed to the status and role of the humanities in the academic system, they focused mainly on new developments in such areas as biomedical sciences, information technology, and environmental studies. That makes it difficult to determine whether, and if so how, an activity like artistic research might be understood within the entire realm of 'knowledge production'. The growing institutional and intellectual autonomy of scientific research vis-à-vis academic research in the humanities (Whitley 2000: 278)[5] has sharpened the contrast between 'scientific' knowledge and other types of knowledge and understanding, thus further complicating any comparison. Artistic research has only just begun its 'academic advance', and much of this research still takes place in institutions of higher arts education that are organisationally and intellectually rather segregated from the rest of the academic and university world. Furthermore, its claim to have a unique research object, a specific kind of embodied knowledge, and a distinct methodological framework [see chapter 2 above] has kept artistic research outside the debate from the very beginning. On closer inspec-

Whitley: 'Previously combined in the universities, the humanities have largely remained there while natural science, and some of the social sciences, developed a considerable degree of institutional autonomy from academic ideals and structures. This autonomy and correlative prestige has increased the degree of dependence between scientific fields and sharpened the distinction between scientific knowledge and other forms of understanding. [The natural sciences] have today become a separate institutional entity claiming considerable resources and a monopoly over truth production and validation.'

5. Whitley opposes here 'scientific' research – increasingly accommodated in autonomous research institutes – to 'academic' research in universities.

tion, artistic research does not even readily fit into the Mode 1/Mode 2 dichotomy of knowledge production as proposed in Gibbons et al. With a bit of goodwill, artistic research can sometimes be understood within the frameworks of traditional Mode 1 academic research, and at other times as a prime example of Mode 2 'knowledge production' – depending on which topics, questions, objectives, and methods of research have been chosen. In the discussion that follows I will examine to what extent the five characteristics of Mode 2 knowledge production – context of application, transdisciplinarity, heterogeneity and diversity, accountability and reflexivity, and extended peer review – may be pertinent to artistic research.

It is curious to observe that some European universities of applied sciences have attempted to describe the kind of applied research done there by citing Gibbons's Mode 2 knowledge production, whereas an agency such as the Advisory Council for Science and Technology Policy (AWT) in the Netherlands by contrast has invoked Stokes's quadrant model (see below, page 98 in this chapter) to argue that activities like this amounts to 'design and development' and not 'research'.

Artistic research and Mode 2 knowledge production

Owing to its close ties with the art world and with art criticism, artistic research is not primarily an academic (university) matter, but is carried out in what Gibbons et al., in their description of Mode 2, call the 'context of application'. The research questions and topics, the methods, and the means of documenting and communicating the research are often motivated by what seems appropriate within art practice – a practice which, since it transects the realms of knowledge, morality (politics), beauty, and daily life, has its own dynamic and logic that cannot be corralled into traditional academic structures. Yet all this notwithstanding, artistic research can sometimes very well be understood as purely disciplinary experimental research into the aesthetic and formal qualities and universal regularities of elements that constitute an artwork or creative process. Materials research is one example, and so are the more conceptual research practices in traditions like fundamental art, experimental theatre, or electronic music.

Context of application

If multidisciplinary research is understood as collaboration between different disciplines around a particular topic, whereby the theoretical premises and working methods of the separate disciplines

Transdisciplinarity

remain intact (typical of many art-science collaborations), then interdisciplinary or transdisciplinary research is characterised by a partial interpenetration of practice, theory, and method, in response to research questions arising from highly specific, local contexts. Especially the type of artistic research that combines the aesthetic project and the creative process with questions and topics from broader areas of life (such as globalisation, identity, gender, or mediality, to mention some common ones) may be characterised as transdisciplinary research if the synthesis achieved in the artwork has something additional (or different) to offer, both conceptually and perceptually, as compared to the outcome that would have resulted from a disciplinary approach. Such transdisciplinary research is characterised by a relinquishment of one's own specific (epistemological or aesthetic) disciplinary ground (which wasn't there anyway), a continual adaptation of the recursive research process based on the input from the various fields of endeavour, and a certain pragmatism and diversity in the choice of concepts and methods. In the creation of images, sounds, narratives, and experiences, the research delivers context-related knowledge and understandings of the life domains it touches upon. But, as pointed out above in relation to the research context, *intra*disciplinary research (research operating within the frameworks defined by a particular discipline) is also very common in the realm of the arts. For instance, research *in* performance practice *on* the performance practice of historical music, or choreographic research *in* and *on* specific movement repertoires, often cannot be, and does not wish to be, understood as research that transcends disciplines. Hence, transdisciplinarity, the second attribute of Mode 2 knowledge production, is also not wholly compatible with what we understand by artistic research.

The remarkable growth in the number of collaborative ventures involving artists and scientists, artists and civic organisations or communities, or artists and businesses, seems to point towards a heterogeneous, diversified organisation of artistic research. Research no longer takes place exclusively in studios, rehearsal rooms, and workspaces, but also 'on site' – in the communities and settings where the collaboration arose. Many of the research findings, too, are disseminated

beyond theatres, concert halls, and museums. Nevertheless, heterogeneity and organisational diversity are still not distinguishing characteristics of artistic research. The bulk of the creation and transfer of knowledge and understandings which are articulated in artistic research still occurs in settings built or fitted out for artists – in places like studios, theatres, filmhouses, music venues, performance spaces, and galleries, which, for all their differences, are characterised by a certain organisational homogeneity and similarity. Obviously there are also 'alternative providers': creative workspaces, informal artspaces and organisations, fringe venues, and other locations. But such organisations and venues in the margins of the art world demarcate the mainstream. The institutional and social partitions between art practice, scientific practice, and moral practice that arose in the eighteenth century can still be seen today in the relative homogeneity and uniformity of the organisations and spaces where these practices are carried out.

Heterogeneity and diversity

Social accountability and reflexivity – that is, an awareness of the impact that research has (or might have) on the public sphere, and the associated feedback that may influence the choice of research topic, the direction of the research, and the interpretation and communication of the findings – are further characteristics of the type of research that Gibbons et al. call Mode 2. When the aim (to use Marx's words) is not just to interpret the world but to change it, then the research agenda is determined not only by the challenges arising within a discipline, but by the demands of the surrounding contexts as well. Yet the agenda of artistic research seems to run counter to this kind of accountability and reflexivity. Art often takes an antithetical stance towards the existing world, and it delivers the unsolicited and the unexpected. That is its very strength. At the same time, engagement and reflexivity are inseparably bound up with the production of art – not in the form of demand and supply, but in the conveyance of a 'narrative' in the materiality of the medium which can be understood as a commentary on what we have here and now and as an opening to the 'other', the unknown. That applies equally to text theatre as to the most abstract kinds of music. The performative, world-constituting, and world-revealing power of art lies

Accountability and reflexivity

in its ability to disclose to us new vistas, experiences, and insights that bear upon our relationship with the world and with ourselves.

On the assessment of quality in artistic research I have already made some remarks above. Just as peer review is the basis of quality control in the scientific world, the art world also conducts its own form of 'peer review'. The prominent role played today by mediators like curators, programmers, and critics might make us forget that the artists themselves ultimately also belong to the 'forum of equals' that determines what matters and what doesn't, what has quality and what does not. As we have seen, Mode 2 research is subject to extended peer review – the value and quality of the research is judged by the stakeholders involved in the research process. To a certain extent, the same is true of artistic research, albeit mainly where collaboration with others takes place or where the research is done in the service of others or is commissioned by them. And in activities like doctoral research, the tendency is to involve academics as well as artists in evaluating the artistic research, since they have qualified themselves in assessing the merits of the discursive practice that accompanies the research. This is not the right place to discuss this type of extended peer review. By and large, though, the quality of artistic research is judged by the art field itself, as is customary in Mode 1. The fact that artists use other channels for this than academic articles in top-ranking journals does not alter this principle.

Extended peer review

The five characteristics of Mode 2 knowledge production – context of application, transdisciplinarity, heterogeneity and diversity, accountability and reflexivity, and extended peer review – thus apply to artistic research only some of the time, and usually not at all or only partially. What can we learn from this? In one way, it could give support to the argument that artistic 'research' was kept out of the *Frascati Manual* for good reason. If it really does differ so much from Mode 2 research (and from Mode 1 research as well), then one might be justified in asking whether it is even research at all in the real sense of the word. Its context is entirely different – the context of the art world, not that of science or technology. Academic research *on* art (as performed in the meanwhile well-established humanities disciplines) is certainly a respectable undertaking,

but even though sports sciences and political sciences also have their own places in the university system, no one would dream of elevating sports or politics *per se* to the status of research activities. Mutatis mutandis, that should apply to the arts as well, however reflexive or exploratory their practices might be. Hence, the interdisciplinary or transdisciplinary nature of many artistic practices, their organisational diversity, their engagement with other life domains, and their quality assessment procedures would not be sufficient grounds in themselves for lifting 'artistic research' to the level of academic or scientific research.

A second, opposing conclusion can also be argued. The sui generis nature of artistic research practices can actually be seen as casting a critical light on the very dichotomy between Mode 1 and Mode 2 as put forward in Gibbons et al. That dichotomy has already been criticised from various quarters (e.g. Whitley 2000) as excessively rigid. It does insufficient justice to the divergent ways in which knowledge and understandings are defined, generated, and disseminated in the widely different domains of research and development. The dissimilarities between academic disciplines as biotechnology, economics, historiography, and law are so great in terms of epistemology, methodology, internal dynamics, and social organisation that it is hard to identify either Mode 1 or Mode 2 research there. From this point of view, artistic research practice differs no more from the practices in laboratories or cultural historiography than the latter differ from econometrics or architecture. There are therefore no good reasons to exclude artistic research from the broad domain of academic and technological endeavour, or of research and development in the sense of the *Frascati Manual*. In fact, even though artistic research may not always be easy to incorporate into existing disciplinary or academic structures, its distinctive ontological, epistemological, and methodological framework, its social and intellectual organisation, and its specific forms of engagement, talent development, and quality control all serve to highlight what academic research could also potentially be – a thorough and sensitive investigation, exploration, and mobilisation of the affective and cognitive propensities of the human mind in their coherence, and of the artistic products of that mind. This means that artistic research, through its quest for fundamental understanding, is equally dedicated

to broadening our perspectives and enriching our minds as it is to enriching our world with new images, narratives, sounds, and experiences.

Artistic research and Pasteur's quadrant

In an attempt to give artistic research a 'home' in academia, some people compare it to the kinds of applied research and experimental development we encounter in the field of engineering and technology; others compare it with the socially engaged strategic and action research more readily associated with the project of social engineering in the applied social sciences; and still others liken it to the search for fundamental understandings of specific phenomena which is characteristic of the humanities. Yet all such attempts remain caught up in the standard model of basic research, applied research, and experimental development that has been widely accepted since Bush and is codified by the *Frascati Manual.* As we have seen above, this model was criticised in Gibbons et al. for its limited capacity to describe the value of the types of research that are the motor of technological innovation and economic growth. In particular, the priority given to basic research over applied research and experimental development is seen to no longer reflect the diverse reality in the science system, where the relatively autonomous Mode 2 knowledge production is gaining increasing ground.

In his book *Pasteur's Quadrant: Basic Science and Technological Innovation,* Donald E. Stokes (1997) likewise opened the attack on the standard model of scientific research and development. He followed a different line of reasoning, however – one that might be better suited to understanding artistic research within the framework of research and development. In his criticism of the standard model, Stokes identifies two aspects of the model which he argues are dominant. He sees these as direct consequences of Bush's golden formula that basic research is the pacemaker of technological progress, and is performed without thought of practical ends. The first aspect concerns the model's orientation; its point of departure is basic research. This is viewed as the original source and motor both to progress in science and to offshoots of basic research like the more applied research and experimental development of new products that are important to economic and social life. As pointed out above, the ascendancy of basic research over applied re-

search and experimental development is still recognisable in the mission statements of national and supranational research institutions. As a constraining paradigm both inside and outside the academic world, it continues to dominate the minds of many. The accomplishment of Stokes, as well as of Gibbons et al., is that they expose the inadequacy of this well-nigh causal logic. In reality, applied research is just as likely to elicit fundamental questions as basic research is likely to motivate the development of applications. At best, the standard model would have to operate in two directions.

Basic research therefore does not constitute the foundation on which the edifice of science is built, but it is simply one form of scientific practice – a very respectable form, to be sure, but it is unwise to justify substantial government investment in this type of research *solely* on the grounds of its potential longer-term benefits for technological and economic development (which it unmistakably has). It stands here in competition with other types of research, and it might even risk losing out in the long run. No, the justification for subsidising basic research should also be founded on an appreciation of the never-diminishing need of human beings to ask fundamental questions – driven by curiosity, by a hunger to know. This quest for fundamental understanding is, as it were, indelibly programmed into the human species.

> *To be always seeking after the useful does not become free and exalted souls*,

wrote Aristotle as early as 350 BC.[6] This maxim would better become the mission statements of the research institutions cited above than the implicit references they currently make to the economic profitability of the research efforts in fields of basic research.

Back to Stokes. His criticism is directed chiefly at the second characteristic of the standard model – its unidimensionality. The standard model leaves no choice: research must be positioned somewhere on a one-dimensional line running from pure 'basic research' to fully

6. Aristotle, *Politics* (1963), Book VIII, 1338 b3.

'applied research'. Every study must be located at a single point somewhere along that line. Research that pretends to contribute both to fundamental understanding *and* to the development of applications is neither fish nor flesh in this model, since it is positioned near the middle of the line and is consequently less 'basic' and less 'applied' than the ideal cases at the two extremes. Stokes, in contrast, has good reasons to assume that much, if not most, scientific research is not classifiable as either basic or applied research, and that particularly those studies that seek to substantially contribute to societal development can often also be labelled as basic research. In his analysis, Stokes (1997: 71-72) cites the impressive work of Louis Pasteur in the field of microbiology as a perfect synthesis of the aims of 'understanding' and 'use'. Pasteur strove to achieve a fundamental understanding of the bacteriological processes he studied, but he was equally interested in controlling the effects of those processes in humans and animals. The unidimensional model, for its part, forces Pasteur's research into a murky middle ground.

Against this linear model, Stokes posits a two-dimensional conceptual plane that does justice to research inspired both by the quest for fundamental understanding and by considerations of practical use and application.

Quadrant model of scientific research
Stokes (1997: 73)

Research is inspired by:

		Considerations of use?	
		No	*Yes*
Quest for fundamental understanding?	*Yes*	Pure basic research	Use-inspired basic research
	No	Pure applied research	

The work of the theoretical physicist Niels Bohr typifies the upper-left quadrant: pure, basic research carried out with no practical aim, even though many applications were potentially there. On the lower right is the quadrant of pure applied research, exemplified by the work of Thomas Edison, who, as Stokes observes, restrained his employees from investigating the deeper scientific implications of the findings they made in their pursuit of commercially profitable electrical light. In Pasteur's quadrant, we find research that both seeks to expand the frontiers of understanding and draws inspiration from practical considerations. In addition to Pasteur and others, Stokes cites here research by John Maynard Keynes and by the Manhattan Project.

The fourth quadrant is not empty, but is occupied, according to Stokes, by 'research that systematically explores *particular* phenomena without having in view either general explanatory objectives or any applied use to which the results will be put, a conception more at home with the broader German idea of *Wissenschaft* than it is with French or Anglo-American ideas of science' (Stokes 1997: 74, italics in original). This is the quadrant (if we may interpret Stokes in this way) of disciplines such as art history, which, in their focus on specific phenomena, are not primarily searching for the fundamental understandings referred to here, nor are they seeking any kind of practical application. Obviously this is a simplification. After all, interpretation, for example, often plays a significant role in describing artworks, while the results of the research can also be put to use for mediating purposes in the art world. Stokes himself cites *Peterson's Guide to the Birds of North America,* which systematically describes the characteristics and distribution of bird species, as an example of a worthy endeavour that neither pursues fundamental understanding nor envisages any direct application.

The irony will escape no one. By suggesting a connection here between art history and the writing of a bird guide, I show that I fell into the same trap in preparing this chapter that I have criticised others for: unnecessarily and unproductively distancing oneself from people that could actually be allies.

Now what help does this conceptual framework give us in understanding and positioning artistic research in the broad realm of research and development? Unlike Gibbons and his colleagues, Stokes devotes virtually no attention to the field of humanities, let alone discussing an often small-scale activity like artistic

research. This does not, however, relieve us of the task of investigating what significance his model could have for the type of research we are studying here. Although artistic research, as we have seen, operates on many of its fronts at a considerable distance from the practices and mores of 'science', the quadrant model can be interpreted in ways that can shed light on that synthesis of creative design, performative engagement, affective reflexivity, and talent development which is so unique to the artistic quest. In artistic research, art practices are deployed methodologically in the research process, and in part they are also outcomes of the research themselves. The research seeks both to broaden our understanding of the world and of ourselves as well as to enrich that world by experimentally developing new artefacts: compositions, designs, choreographies, images, art installations. Artistic research is (to borrow Stokes's words) motivated both by a 'quest for fundamental understanding' and by 'considerations of use'. It therefore belongs to Pasteur's quadrant.

In the *Critique of Judgement,* Immanuel Kant drew a distinction between pure aesthetic judgment and the judgment of art. Art judgment surpasses aesthetic judgment, because it focuses on the cultural value of artworks as well as on their beauty. That cultural value lies in their capacity to 'leave [something] over for reflection' and to 'dispose [...] the spirit to Ideas.'[7] Although these principally undefined, but fundamental, 'ideas' are a different type of insights to the scientific explanations or interpretations obtained through 'basic research', they are no less fundamental. That is because, as we experience art, we articulate what it means to have *any* experiences, knowledge, and understanding at all (to remain in the transcendental spirit of Kant). This is the reflexive nature of art; this is the engagement which is immanent in aesthetic distance. Hence, in addition to producing artefacts in the form of artworks and artistic practices, artistic research also generates fundamental ideas and understandings which, although non-discursive as a rule, make the world into what it is or could be. Here lies the performative and critical power of research in the arts.

7. Kant (1978 [1790/93]: §53, §52) alludes to a quality of artworks which 'etwas zum nachdenken übrigbleiben läßt', 'den Geist zu Ideen stimmt'.

'… excluding artistic "research" of any kind'?

Officials at the OECD headquarters in Paris have recently held out the prospect of a new edition of the distribution list from which the phrase 'excluding artistic "research" of any kind' will be scrapped. The Humanities classification will then be as follows: History and Archaeology; Languages and Literature; Philosophy; Ethics and Religion; Art; and Other Humanities. What 'other humanities' is meant to include has not been specified. The Art section will then read:

The *Revised Field of Science and Technology (FOS) Classification in the Frascati Manual* has meanwhile been published on the website of the OECD.

> Art (arts, history of arts, performing arts, music)
> - Arts, Art History; Architectural Design; Performing Arts Studies (Musicology, Theatre Science, Dramaturgy); Folklore Studies
> - Studies on Film, Radio and Television

A Dutch government spokesperson who took part in the revision explained that 'this must involve activities of a research nature – therefore not the specific subdivisions of the arts themselves, but the activities that study them'.[8]

This explanation is only of limited help to us, and the classification remains peculiar. Nonetheless, it is definitely meaningful to distinguish between art practice per se and artistic research – assuming, at least, that not all art is also research, as some people claim.[9] In the foregoing text I have mainly used the term *artistic research* to denote that domain of research and development in which the practice of art – that is, the making and the playing, the creation and the performance, and the works of art that result – play a constitutive role in a methodological sense. This type of research is also described as 'research in and through artistic practice', 'art research', or 'practice-based' or 'practice-led' research in the creative and performing arts. I have opted for the term 'artistic research' here because that succinctly, and rather provoca-

8. E-mail correspondence, 20 October 2006 (my translation from Dutch).
9. See chapter 2 for a discussion of this distinction.

tively, claims a place for this endeavour in the world of research and development (as laid down in the *Frascati Manual*) – and also, of course, as a tongue-in-cheek reference to the OECD distribution list.

But let us come back to the issue at stake. What is artistic research all about? It is about cutting-edge developments in the discipline that we may broadly refer to as 'art'. It is about the development of talent and expertise in that area. It is about articulating knowledge and understandings as embodied in artworks and creative processes. It is about searching, exploring, and mobilising – sometimes drifting, sometimes driven – in the artistic domain. It is about creating new images, narratives, sound worlds, experiences. It is about broadening and shifting our perspectives, our horizons. It is about constituting and accessing uncharted territories. It is about organised curiosity, about reflexivity and engagement. It is about connecting knowledge, morality, beauty, and everyday life in making and playing, creating and performing. It is about 'disposing the spirit to Ideas' through artistic practices and products. This is what we mean when we use the term 'artistic research'.