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Blue Brains: *Aesthetic Ideologies* and the Formation of Knowledge Between Religion and Science

1 Introduction

1.1 The Case

This chapter takes its starting point from an observation made during a long-term research project on new scientific image technologies, and how they relate to cultural ways of meaning making. Since the 1990s, it has become possible to visualise the activity of brains in living creatures. This opportunity has not only changed the methods of researching the nervous system and the brain; it has also changed the concept of what can be studied, how emotions, cognitions and thoughts of a living being can be accessed, and what can be derived from this research. Since then, arguments and practices based on neuroscientific knowledge have reached, in one way or another, all areas of life. Asking for correlations between brain activity and social behaviour has become a guiding question in the study of culture; and analysing these correlations has inspired new discussions about what constitutes a human being, how learning can be understood, whether free will is still a concept with explanatory power and how we should live our lives according to what is good for our brain, or, how it might be optimised.

This chapter aims to critically accompany the interactions between brain research and cultural imaginaries and practices. It emphasises that these interactions are not secondary aspects of recent developments, to be delegated to ethic commissions alone, but that they are determinants of how we will treat ourselves and other human and non-human creatures in the future. This chapter is not meant to devalue neuro-scientific or brain research; on the contrary, it could not have been written without the insights that force us—and allow us—to rethink our concepts of subjectivity. Science is a cultural activity, interacting with other such activities and changing not only our knowledge, but also our perception of the world. It is in this sense that neuroscientific knowledge is both a tool of research for the study of religion and culture, and a factor to be studied.

As it has been the case with the *Human Genome Project* and genetics as the leading discipline (*Leitwissenschaft*) at the end of the 20th century, researching the brain is not only a matter of scientific knowledge and of public interest, but is a major national and media issue as well. This can be seen in activities such as former U.S. president George H. W. Bush declaring a "decade of the brain" from 1990–1999; the national funding of the *BRAIN Initiative* (Brain Research through Advancing Innovative Neurotechnologies) by the Obama administration; and the launch of the European *Human Brain Project* (both 2013). These major research projects relate to national, military and academic politics, and they are embedded in structures denoted as *big science* and *Grand Challenges*, a U.S. policy term. These organisational structures of brain research responded to a joint government-industry project, that was set up initially in Japan in the 1980s (the *5th Generation*), advancing computer-scientific development of Artificial Intelligence. All of these massively funded projects grew out of an envisioned super-computer, built to understand human intelligence through the medium and possibilities of the computer. As with genetics, the links with technology, business and politics are manifold. Communication is not confined to scientific knowledge and arguments; aesthetic forms are included some of which have gained the status of icons—for example the model of the double helix—and have impacted world-wide on the social imagination of what makes a human being.

In the course of the increasing public interest in neuroscientific research, images of the brain were presented as a new form of evidence. Besides coloured versions of the computer-generated scans of the brain a vast variety of stylised transparent "human heads" emerged on the front pages of magazines, on the internet, in advertisements as well as book covers in commercial and scientific media. Diverse styles of these heads could be observed, and changing fashions as well. One of these styles has been prominent since the 1990s, and still dominates the popular aesthetics of neuroscientific knowledge. It is immediately detectable in Figure 1 below which provides a summary in images of this observation about style as presented over the last two decades. The word entered into the Avira image search was 'mind'.

The characteristic blue, with sparks and beams and glowing effects, coupled with the computer-designed head containing different versions of brains capture the basic features of this style. Such styles are mostly assessed as unimportant for the understanding of academic knowledge which is viewed as abstract and rational, produced independently from aesthetic processes and imagination. The perspective taken in this chapter claims that this style is not confined to the popularisation of science. Rather, it can be shown that any such divide between scientific and popular expressions has itself become part of the ideologies
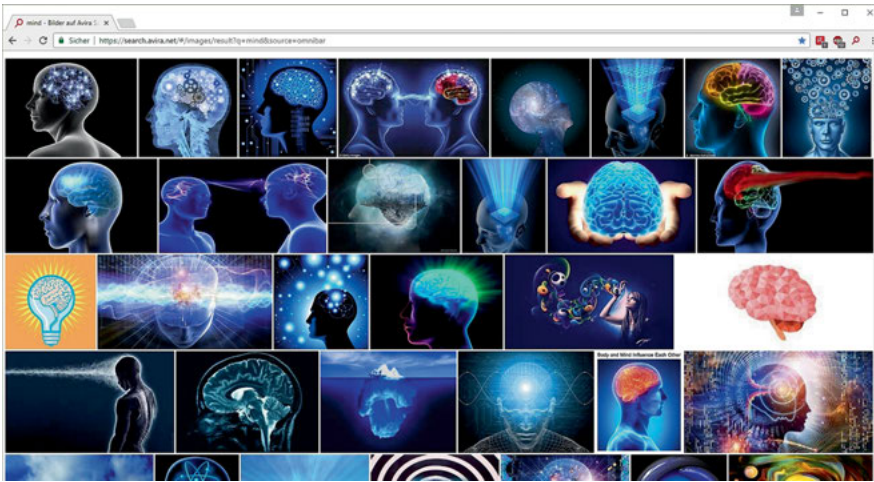
Figure 1: Result Avira Search; search word 'mind'; privately configured computer, Ireland; 22 March 2017; reproduced with permission of Avira Operations GmbH & Co. KG.

that govern what counts as knowledge and what does not. The relationship between the two is part of science understood as a cultural practice, and the mutual influence of both needs to be considered (Kretschmann 2003; Hüppauf and Weingart 2008). In addition, in societies that define themselves as *knowledge societies* features such as the "blue brains" impact on "ways of worldmaking" (Goodman [1978] 1985) that are often not even recognised yet remain influential. Applying an aesthetics of religion view to this case shall help to unravel how religious and scientific aesthetics interact in sometimes surprising ways.

1.2 The Approach

How can we account for the sensory, bodily and affective engagement of humans in the context of religion? And how can we provide a systematic framework that coordinates and advances methods, theories and a shared debate on this challenge within the academic study of religion? These questions have fuelled the development of an *aesthetics of religion* from the early 1990s onward, and it can be seen as one of the responses to the fundamental critique of text-centrism and the predominance of belief and doctrine in conceptualising "religion" as an

object of research.[1] Sharing with semiotic approaches the understanding of religion as a communicative system, an aesthetics of religion gives preference to *aisthesis*, the study of sensory perception. It is characterised by leaving behind the normative approaches to beauty and art and by providing analytical concepts for the study of culture instead. It focuses on an understanding of the interplay between intellect and sensorium, and on developing models that reach beyond such dichotomies overall.[2]

This first impulse for an aesthetics of religion resulted in a stronger focus on bodily and sensory engagement within religious contexts and opened up new fields of objects and topics for research. A second impulse, however, has led to a more general question: if we did not only study sensory practice *within* religious contexts, but rather approached religious practice *as* an aesthetic practice overall—as a specific mode of organising human perception of reality—to what extent would this give us a better position to understand the role of religion in contemporary societies?[3] In addition, this provides us with a new way to study the relations between the diverse societal sub-spheres such as religion, art and science or the sphere of healing and wellness, and how aesthetic practices and forms "migrate" between them.

Taking these preliminary questions as a framework, the goal of this chapter is threefold: first, I suggest that an *aesthetics of knowledge* can support an aesthetic approach to the Study of Religion. When investigating the interactions between religion and other societal sub-systems such as art or science it is helpful to distinguish them by different modes of how they produce and refer to knowledge. Second, the *case* I am making for an aesthetic analysis which applies the concept of knowledge to the relationship between religion and science refers to a popular aesthetic configuration observed in the context of the neurosciences, and how it reflects the cultural processing of the knowledge this academic field produces. Third, assuming that knowledge and its aesthetic forms are not confined to epistemological questions but are also involved in creating practical, political and ideological effects, the notion of an *aesthetic ideology* is discussed. Particular attention is paid to whether it allows us to complement semiotic and

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1 It is not by accident that the programmatic outline of the aesthetic approach was published in the first ever specific handbook for key terms in the study of religion that was dedicated to integrate the discipline into a concept of culture studies (*Kulturwissenschaft*) (Cancik, and Mohr 1988).

2 For an overview of this development, see the Introduction in this volume, and Grieser (2015b).

3 These discussions were raised in different national and disciplinary contexts: Welsch (1987); Featherstone (1992); Lash (1993); Lash and Urry (1996); Rancière (2010); Reckwitz (2012).

rhetoric analyses by concentrating on the perceptual aspects of communication processes.

2 Aesthetics of Knowledge: Outline of a Comparative Concept

Recent western industrialised societies assign to themselves the label of knowledge societies as a greatly accepted self-definition.[4] This label consists of normative aspects (knowledge is a *good*; everybody *should* know), of institutions such as schools and universities and of rights and laws that regulate access to knowledge. The dominant mode of knowledge this label refers to is scientific knowledge, and with it the idea that political decision-making should be informed and directed by academic specialists. Even in those approaches that theorise the role of knowledge in public communication—for instance in the tradition of the public sphere and its structures of communication, seen in the work of Jürgen Habermas—aesthetic aspects were mostly neglected, or they were seen as mainly a matter of popular knowledge or, more recently, of the populist rejection of expert knowledge.

In contrast to these approaches, an aesthetics of knowledge starts from the assumption that the production of knowledge itself implies aesthetic forms and practices, and that *all* modes of knowledge, no matter how practical or abstract, are intrinsically related to aesthetic forms. This assumption is grounded in the view that rational thought is not seperated from, but interacts in continuity with cognition, perception, emotion and action.[5] Theories of embodiment and enactment have introduced *imagination* as a concept that links these spheres to each other. While imagination is commonly identified with fantasy and art, embodiment theories rather consider imagination a functional ability to represent sensations and perceptions independent of an actual stimulus. Fiction and fantasy, in this view, are special forms that emerged from this fundamental

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4 This self-understanding, and the role of scientific knowledge in particular, is currently under attack through developments that have been labelled as "post-factual politics". These can be seen as the peak of the structural changes discussed in the framework of digital capitalism, networked societies and the impact of new media and the technologies of algorithms on knowledge cultures (see, for example, the analysis by Castells and Cardoso 2006). While it is still unclear how these developments will change public communication in the long term the societies in question are still largely based on their systems of education and knowledge production; it would be wrong to equal the challenge of knowledge as a value with the loss of its importance.
5 Glenberg (2015) explains the adoption of this position in the cognitive sciences in historical perspective.

capacity; memory would be another; or the ability to speak about absent persons, about past and future times, about abstract concepts or with entities such as deceased ancestors, spirits or gods.[6] It is this capacity to make present what is not present in a given moment that relates sensory and conceptual aspects to each other in any process of knowing: "Even in the absence of external stimulus, the brain can run imaginative simulations. [...] But the imaginative processes we detect in these seemingly exceptional cases are in fact always at work in even the simplest construction of meaning" (Turner and Fauconnier 2002, 6).

While embodiment theory is increasingly accepted in debates about dichotomies such as body and mind, feeling and thinking or nature and culture, and how they can be re-conceptualised or overcome, some of the positions remain astonishingly brain-centred; others seem to exclude abstract thinking from their materialist approaches entirely. Psychologist Margaret Wilson responded to these tendencies by clarifying that embodiment theory does not eliminate the differences between diverse modes of cognition and perception; rather, it makes clear that highly abstract ways of thinking and imagining are also based on bodily sensation and imagination (Wilson 2008, 375). It is this continuum, and the inseparability of bio-cultural aspects that require a *relational* approach to explain how the components work together in a specific situation, especially for phenomena that are claimed to be, or experienced as "beyond the body".[7]

For our purpose, which is to investigate interrelations between religion and science in functionally differentiated societies, these insights are important. Instead of treating both fields as ontologically separated spheres which are either essentially different, competing or in any way "reconcilable" this approach enables us to see religion and science as cultural practices that emerged from different ways of *cultivating* and *interpreting* the capacities described: perception, cognition, imagination. These forms differentiated in diverse historical processes and created different knowledge practices, institutions and claims. To a large part, but not exclusively, they developed in mutual relation to each other. Viewing imagination as being at play in both spheres provides us with a comparative concept that takes the *formation* processes of knowledge as its *tertium compara-*

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6 For a history and application of this concept of imagination, see Grieser (2015a); see also Thomas (1999) and Kaag (2014) for explanatory models.

7 For an in-depth discussion of the role of imagination in religious practice, and how imagination can be used as an analytical concept, see the collaborative volume on "religion, imagination, aesthetics" produced by members of the German research network on Aesthetics of Religion (Traut and Wilke 2014).

tionis, and the ways of how discourses *refer* to the aesthetic forms in use. In this sense, "migrating" aesthetic forms can be observed. Only *because* religion and science separated into different discourses and practices can we now observe how the borders between them are contested and maintained, and how aesthetic forms that have emerged in one field are used in new ways in the other. For instance, when 19th century Spiritualists conducted experiments and presented photography as data *in order* to prove an afterlife, such challenges to the borders between scientific and religious practices can be observed.

Given this interest in *aesthetic knowledge practices*, however, we need a broader concept of knowledge, neither confined to scientific ways of knowing, nor conveying a normative category that ranks knowledge according to its closeness to a scientific rationality. In her pioneering work on an epistemology for somatic studies of religion, Anne Koch provides an analytical synopsis of the diverse heritage of alternative knowledge concepts, and she offers a proposal herself (Koch 2007, 2015, 2016). Koch introduces a concept of *body knowledge*, which is outlined as an interdisciplinary project in process. Distinguishing popular from academic discourse on the body, Koch does not target "knowledge *about* the body, but knowledge acquired, and practiced *through* the body (Koch 2015, 21).[8] She outlines a concept of the body as an active "organ of knowing" (*Erkenntnisorgan*, Koch 2015, 21), rather than a passively processing sensing machine lead by a steering brain.[9] The focus lies on the bodily organisation of knowledge, as all modes of knowing "are represented and repeated on the basis of receptive formation" (Koch 2015, 24). Koch uses the *ex negativo* definition of non-propositional qualities of knowledge which are, in contrast to reflexes and instincts, subject to learning processes.[10] An example would be the ability to influence the experience of pain or the heart rate through bio-feedback methods or yoga practices. With reference to the work of W. Barsalou, it is made clear that religious visions or auditions, for instance, relate to a combination of embodied knowledge from cognitive levels (convictions, texts, concepts), aesthetic

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8 Translation of the quoted passage by Alexandra Grieser.

9 This concept is built upon reviews of embodiment philosophy, research in cognitive studies, perceptual psychology and the sociology of the body; for the use of knowledge in a broader sense than scientific knowledge, the work of Michael Polanyi ("tacit knowledge") and the re-interpretation of the sociology of knowledge by Peter Berger and Thomas Luckmann have been seminal (see Wehling 2007).

10 Arguments from the neuroscientific perspective support that somatic and somato-psychic processes are represented in older regions of the brain (e. g., amygdala) which are not monitored by the cerebrum and, thus, are not perceived consciously. They are, however, represented in the central nervous system and in this way connected to memory and to learning (Koch 2015, 30).

levels (images, haptic experiences, smells) and practices (cultivation of specific affects, movements and sensations). In order to go beyond a mere metaphorical concept of embodiment, Koch argues, we need categories and a sensibility for the "dimensions of somaticity" to describe the physical level in its importance.[11] Koch introduces three dimensions: the analysis of environmental data (a ritual setting: design of light, temperature, colours, sound); of bodily data (muscle tension, stimulation/deprivation, proprioception); and of mechanisms that regulate the interaction between the sensorium, bodily capacities and "world" (e.g., how face recognition organises emotional exchange; or how the affordance of objects regulates behaviour). Taking these dimensions—environment, body, and modes of interaction—as a model, more categories can be added in order to fine-tune observations as well as interpretations. For example, describing the qualitative interaction between humans and artefacts requires the whole range of aesthetic vocabulary such as shape, colour, contrast, composition and affectivity. In this way, the question of how to access the sensory-side of knowledge can be re-discussed and decoupled from a-historical claims about a shared experience of an assumed *sui generis* quality of religious experience in the sense of Rudolf Otto or Mircea Eliade. Rather, category building is fostered in the perspective of a developing "enactive aesthetics" (Scarinzi 2015), and the training of a specific attention needed for the analysis of aesthetic configurations. Skills, for example from the arts, can help to create an expertise in understanding the diverse religious ways of seeing or sensing, and concepts such as "detached immersion" (Johnston 2008, 187–217) enable us to reconsider the relationship between the aesthetic education of scholars and their objects of study.

An aesthetics of knowledge-perspective is further interested to integrate perception, the historicity of aesthetic forms and the social and political qualities of knowledge. This means in practice to consider the diverse aspects of knowledge formation, for example how knowing is performed in everyday life. Today, for example, in all kinds of educational situations, knowledge is transmitted by presenter slide shows. This not only impacts on perceptual habits, but also prefigures structures of knowing, for instance through the use of "smart art" which provides ready-made categories such as "list", "process" or "hierarchy". This leads to the situation that people might not first structure what they want to say, but they intuitively adapt their content to the structure the programme sug-

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[11] For healing rituals, for instance, physiological and psychological components are demonstrated in their interplay: how the change of neurotransmitters, muscular relaxation, immune markers and neuronal activity are related to expectations to be healed, processes of body learning, the direction of attention and the reduction of tension and anxieties are examples (Koch 2015, 31).

gests. A second aspect of an aesthetics of knowledge refers to creative processes, and what fosters or inhibits them. The use of mind mapping, or "sense-less" activities such as scribbling or aimlessly drawing on a piece of paper while thinking are examples of supporting intuitive synthetic processes. Thirdly, academic forms of knowing cultivate disciplined ways of perceiving. Analytical ways of looking and listening are trained, and creative interpretation is limited. Mathematic formulas are an aesthetic form, and besides their symbolic function as a tool of thinking maths they may evoke memories of school, as diverse as talent and experience.

A fourth quality is addressed when metaphors are considered that make the abstract character of knowledge concrete. Connotations of value and meaning go along with these metaphors. Knowledge is identified, for example, with *books* containing true knowledge, a concept which is fuelled by notions of sacred books. These concepts lived on in the Enlightenment ideals of the French "encyclopaedists" in the 18th century. They envisioned their project, the *Encyclopaedia, or a Systematic Dictionary of the Sciences, Arts, and Crafts*, as a *body of knowledge* that—with the progress of science—would reach comprehensiveness. This idea of a *comprehensive* knowledge, coming to an historical end, is linked to *libraries* as sites where knowledge is stored, preserved and accumulated, independent from human memory and bodies as a "carrier" of knowledge. The internet has radically changed this conceptual metaphor, not only by implementing *hypertext* and knowledge as a *network*, but also through the acceleration of changing, updating and superseding older knowledge, the logics of crowd knowledge in wiki formats and the difference between consuming and using knowledge. Evaluative notions go along with those metaphors and play a role in determining what is known in a society, and what is *not* known. Only in recent knowledge studies, attention is payed to mechanisms of forgetting, ignoring and the dynamics of non-knowledge being related to any production of new knowledge (Wehling 2007). This view challenges the predominant analogies for non-knowledge in European history, such as the narrative that scientific knowledge develops in a linear progression, minimising or wiping out non-knowledge through its growth. This notion is linked to another narrative about knowledge as an activity of exploring and conquering unknown land, bringing light to the "dark continent" and "dark periods" of non-knowledge and applying knowledge in order to tame and liberate, abolish and dry out the swamps and dangers of nature (Blackbourn 2007).

Perspectives that recognise formative processes as intrinsic to knowledge production have been deployed in science studies, and they characterise a

well-researched field.[12] Yet the subject is mainly treated as a relation between science and art,[13] and it is rarely linked with religious perceptual traditions in an analytic way.[14] In the history of science, religion is often approached either in its institutional forms or as the ontological "other" of science, which includes that religions are associated with beliefs, and not with knowledge at all. In our understanding, however, the question of what can be considered *religious knowledge* does not address the classical themes of philosophy of religion: whether religious knowledge is justifiable, what knowledge we can have of god, or through god/s, or whether knowledge about an afterlife is possible. Rather, religious systems can be described with regard to the modes of knowledge they are producing or referring to. What do we need to know in order to perform a ritual correctly, for example, or what has to be done to care for the dead are typical areas of religious knowledge (we can think of the success of the *Tibetan Book of Living and Dying* in the West). Other themes include how religions regulate what is worth knowing, or how the borderline between what we can know and what we cannot know can be dealt with (Knibbe 2007). Distinguishing different forms of authorising knowledge, and how religious and scientific systems determine the scope of their knowledge are more helpful for the analysis of cultural knowledge practices than entering the debate about ontological truths. In the Weberian sense, all modes of knowledge are relevant for the understanding of culture, because they interact with and respond to each other. Even the most specific areas of religious knowledge—concerning the existence after death, eschatological and salvation knowledge (*Heilswissen*)[15]—are not confined to their relevance to believers. They are part of cultural discourse, for example, when financial ethics are re-discussed or when debates about "brain-death", or euthanasia challenge the norms of a society.

All points presented here should make clear that applying an aesthetics of knowledge approach does not necessarily corroborate the familiar borderlines between scientific and religious discourses; it might turn out that knowledge about healing overlaps with ritual and scientific approaches; that religious systems are open to argumentative critique and that scientific systems act in doctri-

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12 See for initial concepts that have been applied and developed further by others: Rheinberger (1997, 2009); Knorr-Cetina ([1999] 2003); Krohn (2006); Bredekamp, Bruhn, and Werner (2008); Daston and Galison (2010); Epple and Zittel (2010).
13 See Jones and Galison (1998); Daston (2004); Tufte (2006).
14 See Latour and Weibel (2002); Latour and Porter (2010); Stuckrad (2010, 2014).
15 On the categories of redemption and salvation knowledge (*Erloesungswissen*, *Heilswissen*), subsumed by Kant under orientation knowledge (*Orientierungswissen*) and later theorised by Max Weber, see Meusburger (2015).

nal ways. However, this would not make religious systems scientific, or science "a" religion. The important point is that observing migrating aesthetic forms and the ends and effects of how they are deployed enables us to analyse shifts in discourse boundaries and how processes of differentiation and de-differentiation are changing.

3 Aesthetic Analysis

3.1 Brain Imagery as Cultural Practice

For cultural approaches to neuroscientific imagery, the shift in visual culture studies is seminal. Iconography—an approach that has often been confined to the study of symbolic repertoires—had been linked to the dimension of historical and cultured perceptual systems (Mitchell 1992; Meyer 2011), and to an anthropological understanding (Belting 2005) of seeing as a performative *image act* (Bredekamp 2010). Comparable with other turning points in visual history—for example, the first photograph from orbit of the earth as the 'blue planet'—the view "into the head" introduced a new imaginary repertoire. Since the 1990s, literature that investigated the changes arriving with the new scientific image technology (most significantly with functional Magnetic Resonance Imagery [fMRI]) reflected on the history of the brain as a scientific object.[16]

The first concern is to provide an understanding of the mediality of scientific images.[17] The most immediate aspects are the many steps, methods and skills that are applied to move from the generated and measured sounds[18] to storing them as digital data packages, via refined selections of what data are meaningful (among the many others recorded), to the transformation into images which translate these decisions and data into a form perceivable to the human eye. In contrast to the impression given, we are not eye witnesses[19] "watching the

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16 This body of work provides the current development with historical and aesthetic consciousness; religion as a formative background, however, is mostly absent: Gere (2004); Borck (2005); Bredekamp, Schneider, and Duenkel (2008); Hagner (2009); Laring (2011).

17 For a technical explanation that presents images see Anonymous (1998).

18 Comparing the sensory approaches to understanding the brain, it is impressive to listen to the crackling sounds recorded, and to learn about the selection and interpolation process (and intuitive skills of "listening") at work; with gratitude to Luca Nanetti, Neuroscience Department, University of Groningen, for demonstration, explanation and patience.

19 For the epistemology of witnessing in the historical sciences, see Uehlinger (2007).

brain at work"; rather we have created a communication medium that allows us to visualise activities that we are only beginning to understand.

The second point of discussion in this literature is that the images are presented as de-coupled from the historical and cultural framework in which scientists operate. Contextualising them historically, however, it has been shown that powerful metaphors provide the imaginary tools for understanding the brain: as a machine that makes the body work; a commando bridge, resembling the military idea of central leadership; a map that can be "read" from outside in early phrenology; as a "brain in a vat", decoupled from the body; and, most influential, the brain as a computer that processes inputs into outputs, relies on bodily "hardware" and is organised by immaterial programmes. This influential metaphor—the man-made thinking machine—created an interpretive unit (see Figure 2b). Brains are understood in terms of computers, and computers are developed to imitate human thinking, to the extent that robotics, artificial intelligence and neuroscience are merged. The reconstruction of the brain in the medium of the computer turns into the construction of a computer-simulated brain.

Recent research does not share the head-centred concept of the brain as the leading body force. Rather, it focusses on a decentred understanding of the brain as interacting with the whole body's nervous system, and with other bodies in the social environment. The guiding metaphor here is the network, which allows for thinking in terms of feedback-loops and a permanent rearrangement of a complex balance between environment and all bodily functions. The insights into the plasticity of the brain are no longer compatible with the computer metaphor of the brain, and yet, the computer metaphor persists in connection with the logics, the practices and the business that developed around what has been called a "neuroculture" (Vidal and Ortega 2011). Especially in the area of neuro-enhancement (using drugs that impact on emotions, energy levels and intellectual performance for non-medical purposes), but also in everyday life situations, neuroculture is seen as the shift from the view that humans "have" brains to "the belief that human beings are essentially their brains" (Vidal and Ortega 2011, 7).

This historical and aesthetic contextualisation of scientific practice is often in turn misunderstood as dismissing scientific research, or its objectivity. Most critics, however, consider an awareness of imaginary and aesthetic forms at work not as a "contamination" of scientific work, but as a necessary support, as being part of the data. Monitoring *how* we integrate the results from the various fields of highly specialised knowledge, and with *what models* we generalise from this detailed knowledge determines how knowledge is put into practice. Critics as well as many neuroscientists agree that the interpretation of measured brain activity in relation to social behaviour is an open question (Borck 2014;

Slaby and Choudoury 2012). The "loose heads"[20] that surround us contribute to the frameworks of interpretation in diverse ways. In investigating blue brains as elements of the highly productive "neuroculture" beyond a history of ideas, three exemplary aspects will be addressed: figuration, colour and position.

### 3.2 Figuration: Ways of Seeing and Their Multiple Histories

In the prototypical version of the blue brains (see Figure 2a), the strong contrast between the royal blue and black, the centred position and the lack of blurring elements creates a figure-ground constellation that suggests an unambiguous recognition of "what we see": an idealised human head with a brain inside. However, we know that many preconditions are necessary to be able to decode even this seemingly simple and clear-cut pictogram.[21] This decoding is based on cultivated modes of seeing, and these modes are related to multiple "sensory histories".[22] As demonstrated in Figure 1, the variety of "loose heads" is part of a medical and scientific history and the imaginations and practices that emerged from them. Early anatomy, for example, was highly contested and went along not only with new medical techniques, but with changing ideas about the body and the soul as well (Bredekamp, Bruhn, and Werner 2008).

Comparing the image from the 14th century with the contemporary ones, the long tradition of beams and sparks linking body parts (heart, hands, head) with the divine becomes obvious. Whilst the mystic *receives* inspiration and knowledge from the heavenly *dramatis personae* (from their left hands, heart side), the modern "brain-self" provides the source of the beams itself; whilst the beams for the mystic connect the individual with the blue of the heavenly/spiritual sphere, the blue has moved *into* the neuro-heads, their corona sending out blue light into the dark space that would be enlightened by the human subject and its technologies. Examining figuration, colour and positioning in these images demonstrates a *longue durée* of a changing imaginary about the place of the subject in the world.

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20 On the history of "disembodied heads" in the Middle Ages and early modernity, see Santing et al. (2013).

21 Research on this topic has been fuelled, for example, by the necessity to find ways of warning future generations about the dangers of nuclear waste, anticipating that over a period of 10,000 or 100,000 years media and structures of communication will change fundamentally. Since the 1980s, the field of *nuclear semiotics* brings together physicists, behavioural scientists, anthropologists and designers.

22 For a discussion of a history of the senses, and a sensory history, see Smith (2007).
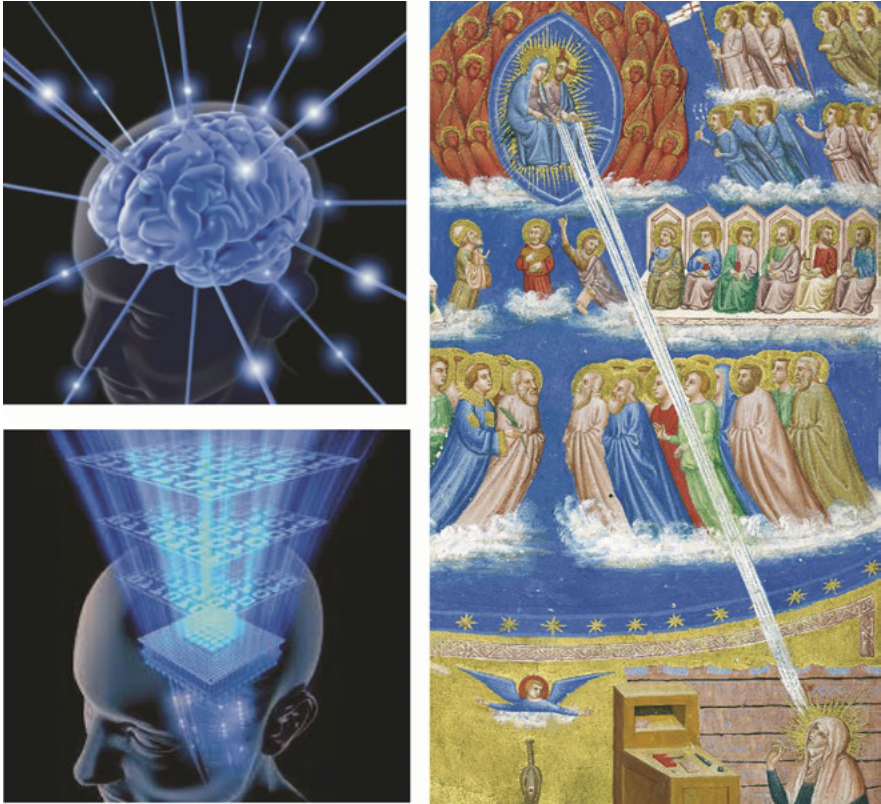
Figures 2 and 3: prototypes of the observed "blue brains" style; present since the 1990s; since then, more colourful and abstract motifs have been added. The proptotypes were produced by a graphic designer, Andrew Ostrovsky; they were traded via the agency http://de.fotolia.com, and commercial online community http://www.deviantart.com/ (a commercial online community for digital artworks; in 2010: 10 million registered users, 100 million publications; source: Wikipedia, last accessed 20 February 2016). The original is no longer traceable. Both images can be found as logos, in commercials, on book covers, power point presentation both in popular and academic media (as shown by figure 1). © Andrew Ostrovsky. Reproduced with permission of the artist.

Figure 4: Detail from St. Bridget's Eucharistic Vision, from St. Bridget of Sweden, *Revelations and Other Texts*, in Latin; Italy, Naples, late fourteenth century. Reproduced with permission of The Morgan Library & Museum, New York. MS M.498, f. 4v. Purchased by J. Pierpont Morgan (1837–1913) in 1912.

In the same way as images of the opened skull followed from anatomy, and the phrenological head followed from physiognomy, imaging the inside of the brain was linked to the new experience of X-rays and films produced in the

1980 that took the viewer on a journey through the inner body. Today, this view is extended through camera-supported minimal invasive operation methods. Conceiving of the blue brain in an unharmed transparent head moves this imagery away from the dead or injured body, and from techniques which touch and handle the brain as (dead) body tissue. As a part of media history, looking at digital scans presents a highly skilled form of analytical seeing for professionals; for an untrained viewer, however, the images do not contain specific information. They rather communicate an atmosphere and implicit assumptions that impact on unconcsious ways of how people perceive themselves—observe, for example, the gesture many people make when they talk about psychological themes or emotions, raising both hands to their head and "locating" what they are talking about in the head, rather than the heart or the chest. Such changes in the perceptual and imaginary repertoire linked to media history are a core theme of Hans Belting's work. Belting states that media technologies foster specific ways of seeing that make us see what we are led to see:

> The new technologies of vision [...] have introduced a certain abstraction in our visual experience, as we no longer are able to control the relation existing between an image and its model. We therefore entertain more confidence in usual machines than that we trust our own eyes, as a result of which their technology meets with a literal blind faith. Media appear less as a go-between than as self-referential systems, which seem to marginalise us at the receiving end (Belting 2005, 313).

Our scientific heads are a good illustration of Belting's point. While being designed for popular use by a graphic designer, Andrew Ostrovsky from Seattle, the aesthetics of the transparent heads originate in scientific computer technology. The heads serve as visual referential frameworks, for example when brain tumours need to be located and the best possibilities for operation are simulated. Individuality is not the issue in this function, and they are designed to be neutral and universal—which is precisely what they are not. Most of them carry male proportions, and if we added features of Asian or African faces we would instantly recognise how cultured, and how white, male and European these (blue) heads are. This might appear as an over-interpretation. However, the point here is neither whether these aspects lead to a correct interpretation of the meaning of the images, nor whether they were designed intentionally like this; it is rather, that these aesthetic features are effective *apart* from their intentionality, and that they are presented in other *contexts* of meaning-making. The specific features have become invisible, because they serve and corroborate the perceptual habits of the (Western) addressees. Changes in these configura-

tions[23] reflect that more is at issue than political correctness. The functional necessity to generalise has led to a blindness towards the empirical diversity of brain features. Only in recent years it has been acknowledged that medical products are designed according to male norms, for example; it is now discussed that the neurosciences could be setting problematic universal norms around what is a healthy well-functioning, and what by implication is a "deviant" brain. Engaged scholars and self-help groups critically emphasise that it is the diverse brain that is "normal".[24]

The other prominent feature in the blue brain figuration is the beams and sparks that may denote the electro-magnetic activity of the brain (see Figure 2a). The beams visually originate in the brain, arranged as an annular rim and directed into a dark space. The sparks that would logically be located within the brain (as they are in other styles of brain depictions) transcend the human skull. For this feature, it is important to note that in sensory history as well as in the history of science, religious aesthetic traditions have been largely ignored. If we put aside whether motifs like the sparks and beams should "express" a belief or a doctrine, we can clearly see that religious modes of perception live on in different aesthetic forms and their usage. Considering religious ways of seeing does not mean that these forms, when migrating into other spheres, *create* religions elsewhere; however, ignoring religious repertoires misses an important dimension of imagining beyond the factual, especially in settings that have an interest in appearing as secular and independent from "religious heritage" entirely.

For our case, the history of locating abstract qualities in a specific part of the body is relevant, and it is well-known in all cultures and epochs. Whether it is "wisdom" situated in the liver of ancient Greeks, or "love" and "courage" being assigned to the heart, a rich iconography and metaphoric language is grounded in, and impacts on, body images and practices. Before today's dominant medicalisation of the body, these attributions to body parts were also close-

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23 Only recently, female heads and right-directed figures appeared; features of conventionally pretty faces, comparable with styles of animated science fiction movies, change the impression of neutrality and create an aesthetic of attractive androgyny.

24 This aspect opens up a new research field, asking how natural scientific knowledge production and the practices following from them trigger social and institutional responses. As one example of many, see the lecture with the telling title "Brain Differences are not always Deficits", given by Morton Anne Gernsbacher, Professor for Psychology, University of Wisconsin-Madison, at the 25th Annual Convention of the Association for Psychological Science 2013: http://www.psychologicalscience.org/index.php/video/celebrate-brain-diversity-gernsbacher-suggests.html (last accessed 20 December 2015). Another example is provided by a field study on psychiatric patients who reject being reduced to what the scans of their brains represent and who founded self-help groups for the acceptance of brain diversity (see Cohn 2012).

ly related to comprehensive interpretive systems such as astrology or to religious hierarchies of the senses. In addition, religious communication with divine entities and spheres is related to body images and how they are linked to religious theories of the human faculties (such as the soul, reason or *imaginatio*). The eyes and the heart are body parts that often serve as the sensory interface between god/s and humans. Particularly in mysticism, the upper head and the sparks and beams as means of communication are well known (see Figure 2c).[25] The evidence of sparks as the medium for non-human, disembodied communication can be traced back to the aesthetic potential of fire. Late medieval mystic Eckhart of Hochheim ("Meister Eckhart"), for example, writes about the "little spark" (*funkelin*) as a medium between reason (*Vernunft*) and God. A new plausibility for beams and sparks as convincing perceptual and interpretive patterns later emerged from the discovery of electricity and the study of "human magnetism", including esoteric notions of an all-connecting life-force and romantic vitalism. Against this backdrop, the beams and sparks sent out by the blue brains keep open a repertoire that exceeds the notion of brains being communicative organs. They can be seen as perpetuating a "religious history of electricity" and its aesthetic forms.

Returning to Hans Belting's statement that we see what we ought to see rather than what we could see when looking a bit closer, the blue brains provide a double figuration, one that functions as an icon for scientific knowledge *about* the brain, and one that supports a universalising and de-historicising depiction *of* the brain. It is clear that these figurations are initially attributable to the practical and representational. For example, the "loose heads" are shown as separated from the body, because this is what an anatomic atlas does: showing different body parts in detail. In contrast to didactic media, however, these figures do not explain anything and they are not surrounded by other images which provide different perspectives. Through an aesthetic lens the isolation of this universal brain from other brains and from the body is amplified beyond these practical considerations, especially through the inclusion of colour and light.

3.3 Colour: The Aesthetics of Screens and the Theologies of Light

Studying the effects of colour provides a good example of the dilemma mentioned above: colour psychology often oscillates between modes of traditional popular knowledge and natural scientific research on questions so specific

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25 See Santing et al. (2013).

that they are difficult to apply to an understanding of behaviour.[26] The main area of recent colour research is marketing and design studies. The comparative understanding of cultural colour symbolism is directed to making transnational branding predictable and successful. The utility lies in understanding effects in terms of both the conditions of evolutionary history that sets the physiological parameter *and* a cultural, social and individual history that prefigures the preferences based on taste, symbolic systems and habits of perception.[27] However, the division is not between cultural interpretation and natural sensation: both are entangled and provide a stable yet changeable way of perception-interpretation.

As summarised by Labrecque and Milne, blue as perceived by the human being is a colour rarely present in nature; however, where it presents its dimensions belong to the formative experiences of existence: the sky and atmosphere of the earth; the ocean, deep water, thick ice and snow and distant objects (e.g., mountains) appear blue to the human eye. Blue is a cold colour, not only in a metaphorical sense, but according to the wavelength measures in optics. It is the other end of the scale compared to red. In visual effects: blue "steps back" and creates distance and depth in an image; red "moves" towards the viewer; the use of red as a warning colour, or symbolising life force and activity is not mere convention (Labrecque and Milne 2012). These effects are measurable, and they are constantly used in art and advertisement, and in scientific imagery as well. Research shows that in blue or red environments the human pulse rate differs (considerably lower with blue). People working in light blue offices experience the effect as "clarity" and turn the heating slightly higher than in warmly coloured rooms (Madden, Hewett, and Roth 2000). On this basis, it is plausible that blue is an "agreeable" colour (with no bodily excitement related to it).

In religious colour codes these effects are combined with other aspects. Hell and heaven in Christian depictions clearly divide and validate the function of blue and that of the brownish-green-red-yellow (fire; "bilious green and sulphur

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26 For a critical review of colour psychology, see Whitfield and Wiltshire (1990).

27 Differences in symbolic usage between cultures are sometimes taken as proof that these are to be understood as arbitrary entirely; other authors aim at explaining art and colour use as fully determined by evolutionary patterns (Dutton 2009). The interesting point of combining both concepts is that it allows to investigate the specific interactive dynamics at play. The differences between white and black as colour of mourning, or for weddings, for example, show cultural differences; both choices, however, make use of the "non-colours" of the spectrum and are, in this sense, not arbitrarily chosen. In addition, the use of colours (in branding or fashion styles, for example) effects back on the perception. Pink as a colour for promoting the concerns about breast cancer has been discussed in design studies as such a case.

yellow"). After all, the heavens are bright blue and the underworld is dark. However, this perceived naturalness is already part of the politics of colour and the "polemics of light" (Grieser at al. 2011) which associate the sites where the god/s are located and which set the scene for the symbolic competition between "darkness and light", be it in the encounter between Chthonic and "heavenly" religions, or the divide between "enlightened" and "dark" continents of the world. A material history of colour comes into play too in the deployment of blue: it was an extremely expensive colour to produce and to fix (based on the materials of *lapis lazuli* or *cobalt*). The assignment of blue to the garments of Mary, Jesus's mother, is a material acknowledgement of the relevance of this figure in the Christian *dramatis personae*. At the same time, she is spiritualised by the closeness of the blue to the sky/heaven and the symbolic codes of blue as cold, transparent and "distanced" colour of the spirit or the mysterious.[28]

The material and media history of royal blue is likewise embedded in the cultural habits of using it to denote "seriousness and trustworthiness", the blue of uniforms, of authority and function (business suit) and to its use in businesses that depend on association with safety and reliability such as banks, insurance and the health service.[29] Another pragmatic field of blueness is its association with cleanness. Medical institutions use blue in their environments and corporate identities; cleanness and "purity" go together in most brands of "power cleaners" ("killing all germs") as well as disinfection fluids.

The materiality and pragmatics of our royal blue is linked to media history and the technology of colour. In its glowing quality, it occurs as coloured neon gas which was instantly used by artists, in the disco culture of the 1980s and as a way to immerse stage events in effectual light, comparable to the fog machines creating a specific atmosphere. As a colour fitting the conditions of digital media, this glowing blue has become ubiquitous in TV and on websites. Game shows dye their moments of excitement in this blue light, together with tension-raising music. At the same time, contemporary spirituality makes extensive use of this colour, and where religion adapts to event culture, blue stages provide the framework for a transcendent atmosphere. For example, public performances of the passion of Christ on Easter in Dutch cities since 2013 have been im-

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28 Observing colour codes in relation to the dichotomies spirit/mind and maleness/femaleness would make an interesting approach to gendered processes of divinisation and the theological reasoning about colour.

29 See, for instance, the collection of websites using blue for their self-presentation, presented as teaching format for design students:

http://www.onextrapixel.com/2010/01/22/anatomy-of-colors-in-web-design-blue-and-the-cool-look/ (last accessed 20 February 2016)

mersed in blue light. What we can see in this colour practice of "dyeing" a whole scene in this special blue is an overlap between religious aesthetics and the aesthetics of event culture. While religions, in fact, do not consist of the "wow" factor only, the effect of overwhelming sensations plays a seminal role in the experiential construction of religious transcendence and its maintenance through repetition and routines.[30]

Depicting brains in the same quality of light and colour places the popularisation of neuroscientific knowledge in the range of religious as well as event aesthetics. Amplified by the contrast between the royal blue and the black, the impression of an empty space is created, and the heads dwell in it. The light comes from below (an effect known from horror films), and this evokes a specific atmosphere. Based on the conditions of computer screens and digital imagery the brain is turned from a medical object—grey-fleshy coloured on white paper—into a clean and cool object that is even further detached from its mucous character than the anatomic brain. The impression of a plastic surface and the brilliance of the computer screen reinforcing the shiny hardness of the "object" sets the brain apart from the rest of the body, far beyond the pragmatics required for an anatomy atlas.

The act of seeing, as outlined above, involves and engages all senses in an "offline modus" (linking smells and sounds, emotions and memories to each other).[31] The sensory experience created, or triggered, by the blue brains viewed on the computer screen is one of a disembodied object with no sensory features such as smell or texture. In the framework of computer design, even the "hand" of the artist is missing as an individuated feature—the personal streak of an artist, or the surface of an oil painting. The skills of the designer lie in the handling of the programme which provides ready-made atmospheres such as "romantic" or "business". In a short interview about one of his images, the designer of blue brain images notes: "Additional compositional integrity was achieved with central light and a 'mystical' colour scheme."[32]

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30 For theorising "how to capture the Wow", see Meyer (2016).

31 As Margaret Wilson puts it, an embodiment theory of imagination needs to be able to explain how—in contrast to the environment-dependent situated cognition—an "embodied cognition can go off-line" – decouple from situation-bound reactivity and use body-based resources for other purposes" (Wilson 2008, 380). For integrative theories of imagination applied to scientific imagery see also Grieser et al. (2011).

32 Andrew Ostrovsky. 5 May 2015. "Story behind the Image: Light of Ideas", fotolia image agency, https://blog.fotolia.com/us/2015/05/05/story-behind-the-image/ (last accessed 20 December 2015).

Identifying the human being with a brain that appears cool, blue and disembodied and dyed in a transcending light organises imagination and corresponds with specific practices and attitudes. David Morgan has drawn consequences from embodiment and actor-network-theory and states that certain objects are not only icons or symbols, but function as "focal objects" (Morgan 2014), binding together practices, agents, debates and discourses. The brain can well be investigated as such a focal object, and the blue brain-design is an important element of *how* this object becomes dominant and exerts its binding force.

3.4 Position: Seeing and the Placement of the Self

As pointed out for the perception of colour and surface, vision functions as an entry to a *synesthetic* experience "offline", interrelating sensations with emotions, thoughts and memory. In the same way, the act of seeing places the viewer in a position—a perspective. This interaction of seeing and being affected by the object has been examined extensively by David Morgan in his work on the heart of Jesus (Morgan 2012). With the brain as body part, we encounter an "object" that bears a more reflective potential, not externalised as the heart of the religious figure opposite the viewer, but as a mirror of "our universal self". By understanding the brain as the instance that defines who we are, when we look at the brain, it is suggested, we are looking at the brain understanding itself.

Historian of science Lorraine Daston reminds us that the investigation of the senses, and of the relationship between the knower and the knowable, took place in response to the "epistemological shock" of the Copernican turn—the insight that, for centuries, the senses had delivered the false view of reality and can, thus, not be trusted (Daston 2005). Daston explains that modern subjectivity is linked to the necessity to "re-locate" humanity, after having been pushed out of the centre of the universe, and to the differentiation between science and art as well. Securing "objective knowledge" as independent from the human self, and separating the natural *fact* from the human *imagination* "running wild", Daston states, takes place as "the polarization of the personae of artist and scientist, and the migration of imagination to the artistic pole" (Daston 2005, 17). What Daston underestimates, however, is that the differentiation between science and art is linked to religion, too.

From this viewpoint, aesthetic history and the astonishing attention paid to beauty and the sublime in 18th century philosophy can be seen in a different light. In the aesthetic discourse of romantic art, the scientific interest in the senses was reflected. It presented the shift from depicting an outward (God-made) beauty of nature to the subject that conceives of the beauty through

sense perception. The scientific de-mystification *of* the senses, however, goes together with a re-mystification *through* the senses in romantic art. The famous "back figures" of romantic imagery which show the figures from the back, (see Figure 3b) invite the viewer to identify with the figure, and to see and experience what he sees. In contrast to the emergence of a scientific gaze, however, seeing and sensing is re-enchanted in romantic aesthetics. Friedrich Schleiermacher, the theologian of German romanticism, re-defined religion as "sensing and feeling" and an "intuition of the universe".[33] However, the relevance of Schleiermacher's theology for the renewal of Protestantism is not what interests us here in the first instance.[34] Rather it is that, what romanticism, in its many national and later variations, succeeds in: to provide a modern aesthetic religion that draws on feelings and individual experience rather than a personal God or doctrines. Setting the sensation of "the infinite" as an experiential ideal, romantic art strives to evoke precisely those affections which are envisioned. Art, nature and sensation become religious media by *designing* them as spiritual objects, and by cultivating practices of appreciation. The influence of this emotional and sensuous configuration is enormous. The aesthetics of overwhelming sensations in the film industry is related to it as much as new forms of spirituality and the expectations related to them.

Coming back to the "re-location" of the subject, we can see that blue brains are linked with the question of self-reflection and the position of the individual in the cosmos. This "self-placement" can be understood as an aesthetic aspect of epistemology. Literally the positioning of the body plays a role in these images of the brain and the subject-object relation in its research. Figure 3a exemplifies another recurring variant of the blue brains:[35] how the subject can gain knowledge

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33 In the famous second of Friedrich Schleiermacher's Speeches ([1799] 1996), the central argument is based on an analysis of sensations and how they are related to perceptions and feelings; an aesthetic-argumentative reading can demonstrate how the knowledge about the senses is turned into a figure of evidence that religion is a specific form of sensation, culminating in the momentary "holy embrace" of intuitive knowledge (Schleiermacher [1799] 1996, 22–31). For the specific interest in the brain and the senses in romantic art and philosophy see Richardson (2005, 2010) and Jackson (2008).

34 The relationship between aesthetics, art and the Protestant ideal of the self-investigating subject, however, belong to the religious history of the differentiation process, as mentioned. The "invention of the inner human being" can hardly be understood without the impact of secularised religious concepts (see *Die Erfindung des inneren Menschen*, Assman and Sundermeier 1993).

35 For example, neuroscientist Andrew Newberg made use of this image as a cover for a CD he published, containing explanations and advice about religious practices which are healthy for the brain, and which ones should be avoided (Newberg 2012).

about reality without an Archimedian point outside of the world. Scientific knowledge is visualised as a given rather than as a process—represented in iconic aesthetic forms such as the double helix, computer matrices, a model of atoms, the waves of oscillography and the blue brain! The relation between brain and knowledge is depicted as identical: no reflectivity, no complication. The image positions us as looking from above on the centred subject, whose brain has turned into the colourfully arranged representations of science, being both producer and the product of scientific knowledge: subject, object and knowledge are one.

Figure 5: Andrew Ostrovsky. "Molecular Thoughts"; number 28624526 on http://de.fotolia.com/p/201652684 (last accessed 20 March 2013); re-used in many significant applications, for example, Audio CD Cover of Andrew Newberg. 2012. Spiritual Practices for a Powerful Brain. Nightingale Conant Corporation, NP. © Andrew Ostrovsky. Reproduced with permission of the artist.

Figure 6: Caspar David Friedrich. *Der Wanderer über dem Nebelmeer* (Wanderer above the Sea of Fog), around 1817/18, Hamburger Kunsthalle, Hamburg, Germany. Free of copyrights.

To conclude, we can ask what kinds of knowledge these aesthetic features transmit, and what knowledge is required to make sense of what we are seeing. These images do not impart neuroscientific knowledge; they target the level of affective attitudes rather than content and arguments. If we accept, however, that knowing includes affects, attitudes and aesthetic forms; and that engaging with images establishes multi-sensory ways of knowing through the body—body knowledge—then it is reasonable to state that the brains we are confronted with impact on how we relate to our brains, and to ourselves. The brain, we have learned, is a cool, clean, serious thing. It is detached from the rest of the body, from warmth, from flesh, blood and from the social and natural environment. Situated in an

evocative dark, empty space,[36] this object covers the symbolic and perceptual configurations once occupied by notions of the spirit and the soul. At the same time, blue brain images act as a mirror, suggesting the viewer should identify with the blue brains, and sense the essence of humans in this object. Identified with scientific knowledge as well, the isolated brain is not only an *object* of investigation, but also the *target* of methods to improve and perfect it.

Ironically, the isolated, clear, clean and plastic-like brains, separated from interactions with other brains, contrast with recent findings in the neurosciences, which suggest that the brain is formed through body activities, through the way we sense, feel and act as whole bodies and with other bodies. Instead of unfolding the challenges and consequences of these findings[37] the aesthetics of disembodiment—of the brains as well as the scientific knowledge (see Figure 3a)—promote an aesthetic ideology that excludes the connectedness of both the subject and the knowledge we have about it. Putting the brain-subject in the place where once the earth was imagined to be in the geo-centric worldview, gives human cognition the highest importance. If this brain-subject, for example, is diagnosed with an Attention-Deficit Hyperactivity Disorder (ADHD), this aesthetic of disembodiment does not, in the first instance, suggest a body therapy.

There is a paradox at work in this aesthetics of disembodiment. While the computerisation of the brain fosters transhumanist dreams of replacing the susceptible human "wet-ware" by technology, bodies are at the centre of optimisation strategies through fitness sports, aesthetic surgery, enhancement drugs and in 'spiritual' ways of improving one's life.[38] This tension between dislocating and simultaneously fetishizing the body invites a discussion of disembodied brains as *objects of fascination*.

Fascination can be understood as an ambivalent state between "rejection and desire" (Kohl 1987, 2003). A history of fascination refers to aesthetic forms by which humans cope with the fear of suffering and death (Grieser 2009). Look-

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36 How this empty space is made a coloured space-scape by adding the spectacular photos produced by the Hubble Space Telescope, see Figure 1, middle right, and Grieser (2015a).

37 These challenges concern both the complexity of *understanding* the functionality of the brain functions, and the questions how to *respond* to the findings, put on the agenda, for example, by philosopher Catherine Malabou. She targets the tension between the emancipatory potential inherent to the growing knowledge, and the neo-liberal subordination of body and brain under capitalist and exclusivist norms (Malabou [2004] 2008).

38 Research shows that in surgery, for example, the majority of people do not use these technologies for individualisation, but rather to adapt to norms that promise advantages on the job and marriage market. See Wehling (2005).

ing through this lens at the blue brain formation, they appear as part of the long history of separating the mind, the spirit and the soul from the body and also conceptualise modes of existence beyond death. To think of the brain as the organ of the highest capacities and the essence of the human self, creates a rupture with the fact that this organ is not only inseparably entangled with the mortal body, but *is* itself mortal body. The psychoanalytical category of *narcistic mortification* comes into play when understanding that the physical grey, mucous mass is aesthetically unacceptable for the cultural status that the brain has achieved. The mechanism of de-mystification—the brain as object of scientific research—and re-mystification—the brain as the seat of pure and abstract knowledge—supports the distinctive status of the human being, and the distinctive status of scientific knowledge as well. This distinctiveness is evoked, not by arguments but by the atmosphere the images are creating. It can only work on the basis of the divide pointed out by Daston: a science devoid of aesthetics, and an aesthetics devoid of body, politics and thought. Calling this an aesthetic ideology shall allow us to describe how meaning is created below the level of signification, effective yet largely unnoticed.

4 Aesthetic Ideologies

What can the notion of an a*esthetic ideology* add to the study of culture, especially in relation to rhetorical and semiotic approaches? The concept of aesthetic ideology complements rather than opposes rhetorical and semiotic approaches. It starts from the premise that ideologies not only consist of the *content* of ideas or doctrines, but also of structures: *how* we make sense. Anthropologist and semiotician Webb Keane has pursued this question, and applied C.S. Peirce's distinctions to his study on *Christian Moderns* in the colonial Dutch East Indies (Keane 2007). Keane is interested in the category of "Thirdness" (Keane 2003, 414) which allows him to include the social interaction of signs, and the materiality of artefacts. In this way he extends the scope of semiotic analysis, explicitly aiming at overcoming the separation between signs and the material world. Keane—as others in recent discussion of New Materialism[39]—turns to things, objects and their agency as the counterpart of the language paradigm. While speaking about the sensuous qualities of things (Keane 2003, 414–415), however, the *sensorium* as the interface of human interaction *with* things, is not addressed. Consequently, Keane's analysis continues to concentrate on discursive practices (Keane 2003,

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39 For an overview of positions in New Materialism, see Hazard (2013).

422). While fully acknowledging the importance of discursive practices, an aesthetic analysis emphasises that sensation and perception are not limited to providing the "raw material" for discursive modes of meaning making. Rather, embodiment theory, enactive aesthetics and theories of imagination have shown that meaning is prefigured and organised on the level of sensation and perception as well. What can be felt, imagined and thought in a society is organised in the repertoires of signs *and* in the perceptual orders and practices that cultivate ways of imagining. If we concede with Keane that *semiotic ideologies* regulate the economy of representations, then *aesthetic ideologies* can be said to regulate the "economy of affects" (Richard and Rudnyckyj 2009). Affects, however, are not limited to emotions, but they are understood as a configuration consisting of sensations (hot, cold), perceptions (pleasant, disgusting) and affective responses (stimulating, boring, exciting, hampering or fostering movement). An exhibition in a museum, for example, can be guided by an aesthetic ideology which—on the basis of affects—creates affordances to either consume the presentations or rather to reflect or interact with them.[40] The efficacy of an aesthetic ideology is always dependent on both the aesthetic arrangement (the object or material world, endowed with agency) and the recipient's skills and habits. To develop this further, it would be helpful to draw on work that investigates the qualities of affective knowledge;[41] observations about the aesthetic quality of morality (Norton 1995; Hauskeller 1996); and approaches that think of normativity as being rooted in the process of cognition rather than in ideas, beliefs or doctrines acquired (Jensen 2013). Two arguments shall be made for recognising a specific aesthetic ideology that pre-figures what is possible to feel and perceive at all.

4.1 The Political of the Aesthetic

Aesthetic ideologies are particularly prominent in the extreme case of totalitarian political systems and how they implement, maintain and immunise their self-identity and practices (Barck and Faber 1999). This is done mainly by aesthetic means, and by influencing the perceptual orders in a way that the reality constructions appear as the natural way to perceive how reality "really is". Racist societies, for example, implement their regimes not only through racist thought or theories, but foremost on the perceptual level which establishes an order of

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40 For *museality* as an aesthetic principle in itself, and the practices related to it see Kugele and Wilkens (2011).
41 For example, the Affect Control Theory formulates cross-cultural relations between perception an emotion; for the initial impulse, see Osgood, May, and Miron (1975).

stereotypes and evaluations. It is the "slaveholders nose" that is convinced that the black human smells differently from the white one (Smith 2007, 846). The bodily sensed uncomfortable feeling evoked when sharing a room with the racial other then needs to be overcome actively before a new way of mutual perception can be established.

Another example of aesthetic ideologies as an aspect of the political is the work of Leni Riefenstahl, the filmmaker and photographer who visually arranged the rise of the Nazis (1935, *Triumph des Willens*; "Triumph of the Will") and the Olympic Games in Nazi Germany (1938, *Olympia*). After the war, she produced photo books about the African Nuba peoples (*1973, Die Nuba, "The Last of the Nuba"*). This book has been understood as an attempt by Riefenstahl to atone for the heroic staging of the "blond beast" for the Nazi regime. However, the aesthetic strategies are not different from Riefenstahl's earlier work, and it could be argued that beauty is timeless and non-political. An analysis based on aesthetic ideologies would target the question of what makes the difference between celebrating the beauty of the human body in a way that includes, or excludes, its weakness, varieties and vulnerability. Moreover, the political quality of the aesthetic is not confined to what is visible: ideologies lie as well in what *cannot* be seen or felt, and what is made invisible through the sheer power of presence. As shown by the blue brains, it takes an effort to recognise alternative ways of imagining the brain—complexity often creates the weaker images.

4.2 The Semiotic and the Aesthetic: Can They Contradict Each Other?

Understanding the relationship between perceiving and signifying—as previously discussed—requires a research project rather than a neat solution.[42] A strong argument for adding aesthetic ideologies as a category for analysis could be founded upon demonstrating that aesthetic and semiotic ideologies can contradict each other. How can we, for example, describe the phenomenon that an organisation, which promotes a plurality of worldviews, uses a corporate design that emphasises hierarchies and centrality? Or can we learn more about radicalisation in the religious context by paying attention to the embodiment of norms, or that people change their interpretive frameworks because their affective knowledge perceives a "loss of dignity" (and what would this be in somatic terms)?

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42 See for his discussion Yelle (2013), and in this volume.

As quoted earlier, Hans Belting states: "There is no automatism in *what* we perceive and *how* we perceive despite all attempts to prove the contrary" (Belting 2005, 310). The distinction he makes, between representation and perception, highlights what distinguishes an aesthetic ideology from the rules of signification. Perception can be trained and educated as much as ways of thinking can, and the neurosciences tell us that Belting is right: the plasticity of our body/minds is what makes us responsible for how we perceive. Belting concedes that in the politics of images, "representation is meant to rule over perception"— we see what we ought to see, otherwise, a shared reality would be hard to create. However, perception "may also lead us to resist the claims of representation". This means, perception has the capacity to generate a knowledge *differing* from representation, and therefore providing us with a position from which aesthetic ideologies can be critiqued.

Distinguishing aesthetic from semiotic aspects does not mean excluding language and text, as a last example shall demonstrate. The former leader of the prestigious European Human Brain Project, Henry Markram, gave a TED talk before being granted funding in 2009. He closed his talk by suggesting that "In summary, I think that the universe may have evolved the brain to see itself, which may be a first step in becoming aware of itself".[43] This utterance can be called a case, because Henry Markram was seen by many as a visionary scientist aiming for a paradigm shift in the neurosciences. In July 2014, however, colleagues from within the project issued an open letter to the European research commission, flagging problems with Markram's authoritarian leadership style, but also with the scientific purpose of the project. The significant point of contention is that the simulation of a brain in/as a supercomputer conflates the model with reality—as, for example, a map in relation 1:1 would likewise do. Meanwhile, more than 800 scientists have signed the letter and Markram had to step back from his position.

It is not our concern to decide about Markram's qualifications. Rather what is of concern is the phenomenon that scientists, in relation to their work and their reputation, make statements about the interpretive framing of scientific results that they would probably never accept within their scientific work. Let us not speculate whether there is a Hegelian concept of the *Weltgeist* (world spirit) coming to itself behind Markram's utterance, or esoteric patterns of a universe actively acting on us humans. The implications of conceiving of the history of the universe coming to consciousness of itself have to be left open, likewise

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43 Henry Markram. 2009. "Henry Markram builds a Brain in a Supercomputer", https://archive.org/details/HenryMarkram_2009G (last accessed 20 December 2015).

whether it comes to itself only in the brains of those neuroscientists who will be able to build one, or in the ganglia of fruit flies, viruses, or in carrots too. This is meant less polemically than it may sound; rather it addresses the exclusivism which is related to the politics of identity between "a human" and "the universe".[44]

Comparable patterns of evoking a romantic identity between humans and "the universe" can be observed in several popular science media: slogans such as "We are all stardust" are taken up in discourses which refer to science as the formative principle of a worldview (Grieser 2015a). The point is that these patterns are not arguments, and they add nothing to the propositional knowledge about the brain. "The universe seeing itself" is an *aesthetic* suggestion which literally positions the universal human subject within the imaginary space created, and which endows "the universe" with agency and with senses. It is an *aesthetic* concept to perceive human beings as a universal unit; to imagine the universe as an agent of evolution; and "us" as being seen by this entity, and being part of a development with a *telos*. As an aesthetic ideology, however, it structures practices and discourses of knowledge, just as the blue brains do as "focal objects". If science was ever meant to provide a mode of knowledge production that limits its *semiosis* to the frames of reference they are produced in, this aesthetic ideology stands opposite to it. It hampers the exchange between different knowledge cultures, and it not only claims to replace theology and religion, but the social and cultural sciences too. In order to bring into conversation the really exciting news from the neurosciences, attention needs to be payed to aesthetic forms and the way imagination is used.

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44 Without suggesting that H. Markram subscribes to such positions, it is justifiable to hint at the compatibility of this aesthetics of identity with transhumanist concepts. Main theorist of transhumanism, Ray Kurzweil, promotes singularity (with a different meaning) as the core concept of the envisioned ideologies and practices of the future. See Kurzweil (2005), and related media such as websites, videos, talks.

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