HEAVY MATTER: A LABORATORY STUDY VIEW

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In the age of electronic media, the questions of material and immaterial, concrete and digital states have been posed. The euphoric celebration of digital media in the 1980s and 1990s made the material vanish behind the virtual, so that it seemed as if the world would be doubled in cyberspace, creating for each person, city or business a virtual identity and promising that we would soon be rid of our burdensome existence trapped in the material. However, this has not yet happened, and the focus on materiality currently seems to be returning to the arts and the discourse. Thereby the 'material turn' has increasingly emerged from a simple dichotomy of material and virtual properties, entering into a more advanced view on the processes taking place at the edges of materiality. These edges can be virtual, digital, electronic, but may also be located in psychological, invisible or poetical dimensions. Investigating these edges, borders or interfaces is the theme of the exhibition HEAVY MATTER.

Investigation, Transgression and Blurred Frontiers

Investigation is a concept everywhere in the arts. Artists undertake various kinds of research using artistic means of investigation, expression and mediation. 'Artistic research' and 'art as research' are widely discussed topics at the moment. Artistic research is seen here as an epistemic practice that explores certain aspects of reality (or virtuality).[1] In contrast to scientific research, the outcome is not a theory or invention, but an artwork, the purpose of which is to get the viewer involved – interactively or not. Therefore, an exhibition, an event or any other performance-based presentation is part of this kind of research. Whereas in the past, the artistic medium itself was often the object of experimentation, for instance, painters investigating the possibilities of colour and canvas, today's studies frequently transgress medial attributions.[2]

Art as investigation, mixed-medium artworks and new forms of getting the viewer involved, have been characteristics of Modern Art since at least the 1960s. So what is new? Probably nothing, apart from the fact that today new materials and mediums are at the artists' disposal and that in some places, artistic education and presentation have overcome traditional structures. However, there might be another important aspect: the changing relationship between art and society. Art is part of society, while simultaneously investigating and reflecting aspects of it. But society is changing and experimentation, exploration and investigation also seem to be current concepts of society. Experimenting with identities, role models, styles and cultures characterises the contemporary modes of experiences as floating ones. While art was often a movement against something – traditions, conventions, restraints etc. – today's floating conditions lack the feature of resistance. Little provocative potential remains for artists. Losing a solid backdrop against which art can act, is a huge challenge as the boundaries have become so blurred. Therefore, artists have to deal differently with themes and must find new points of access to society. Old role models have to be overcome. The novelty, perhaps, results from these ongoing changes.

Stabilization Rather than Deconstruction

The transmediality of artworks in the 'post-medium' age and the floating concepts of a 'post-modern' society are two main characteristics of the present, which raise the question as to how artistic practices are dealing with these circumstances. Losing resistance and groping around in the dark produces a different kind of work rather than deconstructing a given fact. However, there is a similar situation in scientific laboratories. In biological laboratories, in particular, scientists are forced to monitor the ambiguous behaviour of living matter, e.g. cells. These cells do everything other than what scientists expect from them. In order to create results, scientists have to stabilise the desired phenomena, and this process of stabilisation can take months or even years of work.[3] It doesn't take so long in art, but the concept of stabilisation seems to be a promising view on current art practices. This concept involves strategies of trial and error, tinkering, concretisation and designing the desired effect or phenomena. Interestingly, the sketchbooks of some artists can be read as laboratory logs.

If this view on art is an appropriate one, it comes along with two major shifts in looking at art. The first is that not the result, the presented artwork, is the object of interest, but the artistic practice of creating this work. The 'context of discovery', as it is called for studies on scientific practices, is the interesting one. How do artists develop their artwork? What strategies do they use? What do the results mediate? The second shift is in method.

Not art critique or interpretation is the method to achieve this view, but 'laboratory studies'. Instead of discussing, criticising and interpreting existing artworks, laboratory studies investigate the context of discovery by observing artists in their 'natural environment' – the studio, the academy or the event location. The concept of laboratory study is borrowed from the field of sociological and philosophical research on science and technology (fields which have borrowed from ethnological investigations of the life and practices of tribes and local communities), mainly interested in the development, rather than the results, of research or art.[4] Borrowing such a concept, to gain insights into current artistic practices, also imports ideas of research, laboratory, experiments and material conditions into the field of art, without implying that artistic practices have or will become scientific ones.

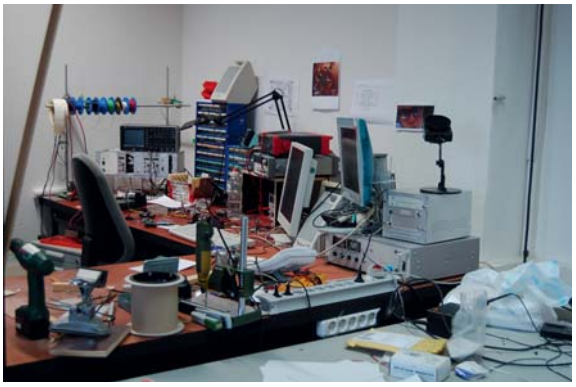

Fig. 1 View into an art laboratory at the KHM Cologne (lab3)

However, there is nothing more difficult than to observe ongoing changes and developments. It is much easier to analyse and reconstruct these movements historically from a distant perspective based solely on documentary materials rather than observation. Nevertheless, it can be more exciting to try to get a glimpse of transformations in progress.

Research on the Investigation of Materiality ...

The blurred edges of the material are the theme of the exhibition HEAVY MATTER. Transgressions between material and virtual states (sometimes digital) and between concrete and less concrete (psychological, invisible, or poetical states) sparked the interest of students and lecturers of the Academy of Media Arts Cologne during a three-semester seminar. The interesting aspect, from the perspective of a laboratory study, was the way the theme was conceived as a cluster of ideas, cases, concepts and association. The idea of the concretisation of psychological trauma in David Cronenberg's films, the magic imperative "Materialise!" of Manga heroes, the reality of the heavy (data) industry behind the virtual and its ironic icon, the data cyclotron, the transfer of data into matter via 3-D printing technologies etc., all framed the entire, broad spectrum of the theme. Unlike scientific research, the bonds constituting the field of investigation were very loose, creating heterogeneity in the concepts of artworks. This heterogeneity can be seen as a precondition to art's creativity. Science, too, needs heterogeneity and diversity, as research should discover (or create) the new and unexpected. In fact, most of the time, scientific research is an incremental endeavour based on evolving concepts and inventions. Flashes of genius are rare, if not a myth.

... Paradigms

However, an unexpected event altered the situation to some extent in the midst of the second semester in 2009. A unifying subject entered the heterogeneous and fluctuating field of interests, immediately exerting an attractive force on some students and lecturers. The attraction resulted from a documentary on an amazing activity at the site where the exhibition was to take place: the dismantling and export of a huge industrial coke plant from Dortmund to Zaozhuang, Shandong Province in China: 35,000 tons of material, 16,000 technical drawings and two containers of files.[5] Coke plants are used to produce pure carbon (C) needed for the production of steel. When the world market for steel collapsed, the slow time-scale of heavy industry stood in contradiction to the short time-scale of stock markets. This clash caused the coke plant to be closed down after only eight years of production. What was the most advanced plant at that time was sold to China. The coke plant – a monument to the everlasting solidity of business – was dismantled by Chinese workers within a few months. Only the fireclay crenel of the oven remained.[6] An industrial wasteland was left behind, which now has to be re-naturalised or re-industrialised by new sectors over the coming years. Ironically, exporting the coke plant also exported emissions of CO2 to China – another interesting case of material transformation in the age of anthropogenic climate change.

Several field trips to the wasteland were organised during the following months, engrossing students and lecturers with its industrial romanticism and through the apparent

Fig. 2 Remains of the coke plant at Dortmund

Fig. 3 'Remains' of the partly vacant shopping mall in the centre of Dortmund

association between this industrial wasteland and the commercial wasteland of a nearly abandoned shopping mall in the centre of Dortmund where the exhibition was to take place. However, in undertaking a laboratory study on artistic practices, the question immediately arises: Why was the coke plant so attractive at this stage of the course, although not everybody picked up on it? (It has to be mentioned that the coke plant later turned out to be a real trap, as for safety reasons, no further visits to the area were allowed and several projects had to change their concepts. Some 'remains' of the plant and its surrounding wasteland can still be found in some of the exhibited art works.) Is artistic practice so arbitrary, following each new idea like a butterfly attracted to each more colourful blossom? I guess not! In fact, similar cases can be studied in scientific laboratories, unveiling the intuition guided research as well as its social components. The coke plant became a paradigmatic concept that perfectly combined several aspects of interest for the exhibition's theme. Located in the town of Dortmund, it was reminiscent of the fading industrial age that promoted the Ruhr district as one of its key venues; it was an astonishing case of transgression from material to immaterial states. In fact, it transformed the everlasting solidity of heavy industrial, immovable properties into portable goods. Not only was the plant and its high-tech equipment sold and carried away, the blueprints were also shipped to China, so that the Chinese could copy them by building several new coke plants all around the world. In so doing, they materialised a 20-year jump of technological progress – a unique method of knowledge transfer.

Paradigmatic cases or concepts are familiar to research environments and these concepts do not always lead in the right direction. As a matter of fact, they sometimes mislead researchers through their overwhelming tendency to match nearly everything. Too good to be true! In the case of science, such paradigms may be simply false.[7] In the case of art, they can easily force the artist down a certain track. Interestingly, the coke plant and the location lost their attraction during the subsequent months of work.

... and Facts

An interesting aspect of paradigm shifts, new ideas, and intuition, as Ludwik Fleck already pointed out for scientific practices in the 1930s, is that "changes in thinking manifest themselves in changed facts."[8] Changing thought, of course, changes the outcome. In the case of art, it changes the presented artwork. What seems apparent for art challenges our thinking about science as a practice of discovering, rather than inventing facts. Although, keep in mind that the term 'fact' comes from the Latin word 'facere' (making). However, both disciplines create 'world views' and sometimes even new worlds. The intriguing aspect of laboratories is that they are places where phenomena are reconfigured and positioned. They alter the 'world-to-actors' relation[9] and this is an interesting feature for art, too, as long as artworks follow the purpose of getting the viewer involved. Like laboratories, artists create a new setting of phenomena and facts. Unlike laboratories, the viewers can participate in this new setting, for instance, as part of an exhibition or a performance. It is this condition which unfolds the epistemic power of artworks. Its success depends on at least two aspects: the successful transformation of the epistemic content while the work is progressing and the composition of epistemic and aesthetic components in the final result. In particular the latter, as students reported, is not easy to achieve.

The successful transformation of epistemic content is a matter of scientific as well as artistic practices. The 'travelling of facts' is a topic of current studies in science and technology;[10] it should also be one in studies of the arts. While objectivity and generalisation are claimed for the transformation of epistemic content in science, subjectivity and particularity are clearly the dominant strategies in art and this is not an inferior condition of artistic practice. Quite the contrary. The epistemic

potential of art is located in the individual, particular and unpredictable view as a method of investigating reality and virtuality. While science and technology increasingly narrow the plurality of phenomena by being bound to methodological constraints, art can open up this dominant view. These individual and unpredictable views do not have to be educational, informative or provocative. They merely have to be different. That is all. Therefore, the travelling and transformation of facts in art projects is guided by an individual vision, one that is not always easy to mediate due to its individuality. This epistemic individuality can be a process of "identity shaping", one of "contextual sensitivity", one of "fictional or playful adjustment", one of "improvisation" – to quote some students.[11] These strategies ensure the stabilisation of the desirable phenomena in an individual way. Of course, trial and error, tinkering, concretisation and designing are used to consolidate the vision.

The second aspect is perhaps the more challenging one. The bringing together of epistemic and aesthetic components seems to be a big challenge for artists. Scientists can mediate their 'facts' by describing them directly, but such description would create boring artworks. Furthermore, non-scientists are not necessarily supposed to understand these facts. The cryptic manner of science is a source of both its power as well as its fascination. Such an enigmatic presentation is not necessarily the aim of artworks, but it can be. However, fusing the epistemic and aesthetic realm is not easy. Here, the choice of media, materials, arrangements etc. must be taken into account. The knowledge gained from working on the theme should not be read off a sign explaining the artwork. Rather, it "should become an experience"; it should be "palpable". This leads directly to the core of artistic practice as the know-how of aesthetic transformation, as "virtuosity in creating material arrangements". (Aesthetic, not in the sense of beautiful, but of aesthesis as an unelaborated, elementary awareness of stimulation, a sensation of touch.) Thereby, materiality can easily become a "source of irritation" – either supporting the desired outcome or not. What's more, technology, such as software, can "stamp its own characteristics on the outcome", which does not necessarily promote the artist's intention.[12] In science, this is called the agency of objects, methods, and technologies.[13]

Changing artistic practices, new materials and new locations

As this first glance shows, a laboratory study view on artistic as well as scientific practices can be based only on an individual case study. This makes laboratory studies laborious and time-consuming, but they can provide insights into ongoing developments. They can also help to constitute a new image of the arts, as has already been achieved for the sciences. For the discourse on 'artistic research' such insights are especially needed.

The outcome of this small-scale study, based on observations during the three-semester seminar and interviews with students and lecturers, is that artistic practices are changing as a result of new materials (and media) as well as locations. Of course, old practices, materials (and mediums) and locations do not disappear. There will always be painters, sculptors and photographers as well as paintings, sculptures and photographs, not to mention classes facilitating the same. There will always be a difference between 'high art' and others, mainly for economical reasons. There will always be the request for purity.[14] Transmediality, floating concepts, prosaic approaches and "anti-gallery art productions" (remarked by one student) are also part of the artistic endeavour, at least of the individual (and maybe idealistic) endeavours of young artists. One very personal assumption of this study is that these changing artistic practices may be the future of art, while the former avant-garde and traditional mediums have turned into top-selling and tourist-attracting capital, displayed in signature museums furnished like 3-D coffee-table books.[15] The main argument here is not the potential of art to affect the masses, but the chosen access point to society. As in science, the trend is moving toward open-source, low-tech and participatory strategies. These strategies obviously interfere with 'high art', with purity and ingenious behaviour as well as with the associated traditional institutions and locations. Art is a personal relationship with the world and therefore a part of the artist's life and identity. The interesting aspect of this is the unconstrained view on phenomena and the epistemic potential of this view, as opposed to the somewhat constrained one of the art market, critique, or funding institutions.[16]

Finally, how to make use of this unconstrained view on phenomena? Where are the sites of their presentation and production? If the experience of it should be a "palpable" one, then only the encounter with the artwork itself can provide an answer to the first question. Therefore the performance-based presentation will always be an essential part. Usually this will be an exhibition, but other forms and site-specific presentations are also conceivable in "urban spaces, schools, clubs, theatres, etc." This goes along with "adaptivity", as one student mentioned. Adaptivity in the sense of adapting the project to the location, the context, the situation. Adaptivity is somehow contrary to purity. It involves the open-access approach, it is not afraid of low-tech and places, but it also can turn out to be a trap, as the artist's identity and autonomy can slip away. As long as the artists are students, they can enjoy the support of the institution to which they belong. Outside the academic realm, it is more difficult to survive with such an experimental approach. "The precarious situation of the so called 'creative industries,'" as a lecturer mentioned, should be a warning. Experiments and unconstrained views are not necessarily commercially successful and the art market may not be the right place for this. As for science, society has to decide whether this kind of investigation is worthy of funding to provide an important outlook to ongoing developments.

Figures
Fig. 1 courtesy of Gabriele Gramelsberger
Figs. 2 and 3 courtesy of Ute Hörner and Mathias Antlfinger

Gabriele Gramelsberger is a philosopher of science. Since 2008, she has been a member of the academic staff of the KHM. During the lead-up to the exhibition HEAVY MATTER, she conducted a laboratory study on the development of the projects. Laboratory studies provide an individual view on ongoing processes following a personal intuition on artistic research.

[1] Cf. Elke Bippus (ed.): *Kunst des Forschens. Praxis eines ästhetischen Denkens*, diaphanes, Zürich, Berlin 2009.

2 Instead of sticking to traditional mediums and their materiality like painting, sculpture, drawing or architecture, artists use all kind of materials and technologies in order to create mixed-media art works. The convergence of media has inspired art historians to speak of the post-medium age and about transmediality. Cf. Rosalind Krauss: 'Reinventing the medium', in: *Critical Inquiry*, 1999, 25(2.): 289-305; Roberto Simanowski: 'Transmedialität als Kennzeichen moderner Kunst', in: Urs Meyer, Roberto Simanowski, Christoph Zeller (eds.): *Transmedialität: zur Ästhetik paraliterarischer Verfahren*, Wallenstein, Göttingen 2006, 39-81.

[3] The laboratory study of Hans-Jörg Rheinberger presents the long-term process of the stabilization of synthesizing proteins in biological laboratories. Cf. Hans-Jörg Rheinberger: *Towards a History of Epistemic Things. Synthesizing Proteins in the Test Tube*, Stanford University Press, Stanford 1997.

[4] For instance: Bruno Latour, Steve Woolar: *Laboratory Life: The Social Construction of Scientific Facts*, Beverly Hills: Sage Publications 1979; Karin Knorr Cetina: *Epistemic Cultures. How the Sciences Make Knowledge*, Harvard University Press, Cambridge (Mass.) 1999.

[5] Cf. documentary 'Losers and Winners' by Ulrike Franke and Michael Loeken, 2006, 96 min., first broadcast on WDR on 13 November 2008; 'Herr Mo holt die Fabrik, in: Die Zeit, 23 September 2004.

[6] Interestingly, fireclay can be used only once. When cooled down from 900°C to 1,400°C the material bursts. Therefore a coke plant has to be operated permanently. A shut-down amounts to its demise.

[7] Well-known examples of misleading paradigms include Earth-centered cosmology and the phlogiston theory in 18th century chemistry. Cf. Thomas Kuhn: *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago 1962.

[8] Ludwik Fleck: *The Genesis and Development of a Scientific Fact*, University of Chicago Press, Chicago 1979, p. 50.

[9] Cf. Karin Knorr-Cetina: *The Manufacture of Knowledge - An Essay on the Constructivist and Contextual Nature of Science*, Pergamon Press, Oxford 1981.

[10] Cf. Mary Morgan & Peter Howlett (eds.): *How Well Do 'Facts' Travel?*, Cambridge University Press, Cambridge 2010 (in print); London School of Economics: Nature of Evidence: how well do 'facts' travel?, URL: http://eprints.lse.ac. uk/view/sets/LSE_RC_69.html.

[11] Phrases in double quotation marks ("...") are answers by interviewed students and lecturers.

[12] This is a core topic of art theory and history, of course, but to explore the current and individual practice of achieving it could be a topic of detailed laboratory studies that involve participatory observation over a longer period of time.

[13] Bruno Latour: *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford University Press, Oxford 2005.

[14] Cf. Clement Greenberg: 'Towards a Newer Laocoon', in: Frascina, F. (ed.): *Pollock and After, The Critical Debate*, Harper & Row, London 1985.

[15] Cf. Clement Greenberg: 'Avant-garde and kitsch', in: *Partisan Review*, 6(5), 1939, p. 34-49.

[16] In science, the power of 'thought collectives' (Fleck), 'paradigms' and 'normal science' (Kuhn), of 'epistemic cultures' (Knorr Cetina) are widely known, as well as of citation and review cartels.