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Olaf Breidbach (1957–2014)

Thomas Bach

Actualized version of the obituary in the Jahrbuch für Europäische Wissenschaftskultur / Yearbook for European Culture of Science 8 (2013-2015), S. 7-15.

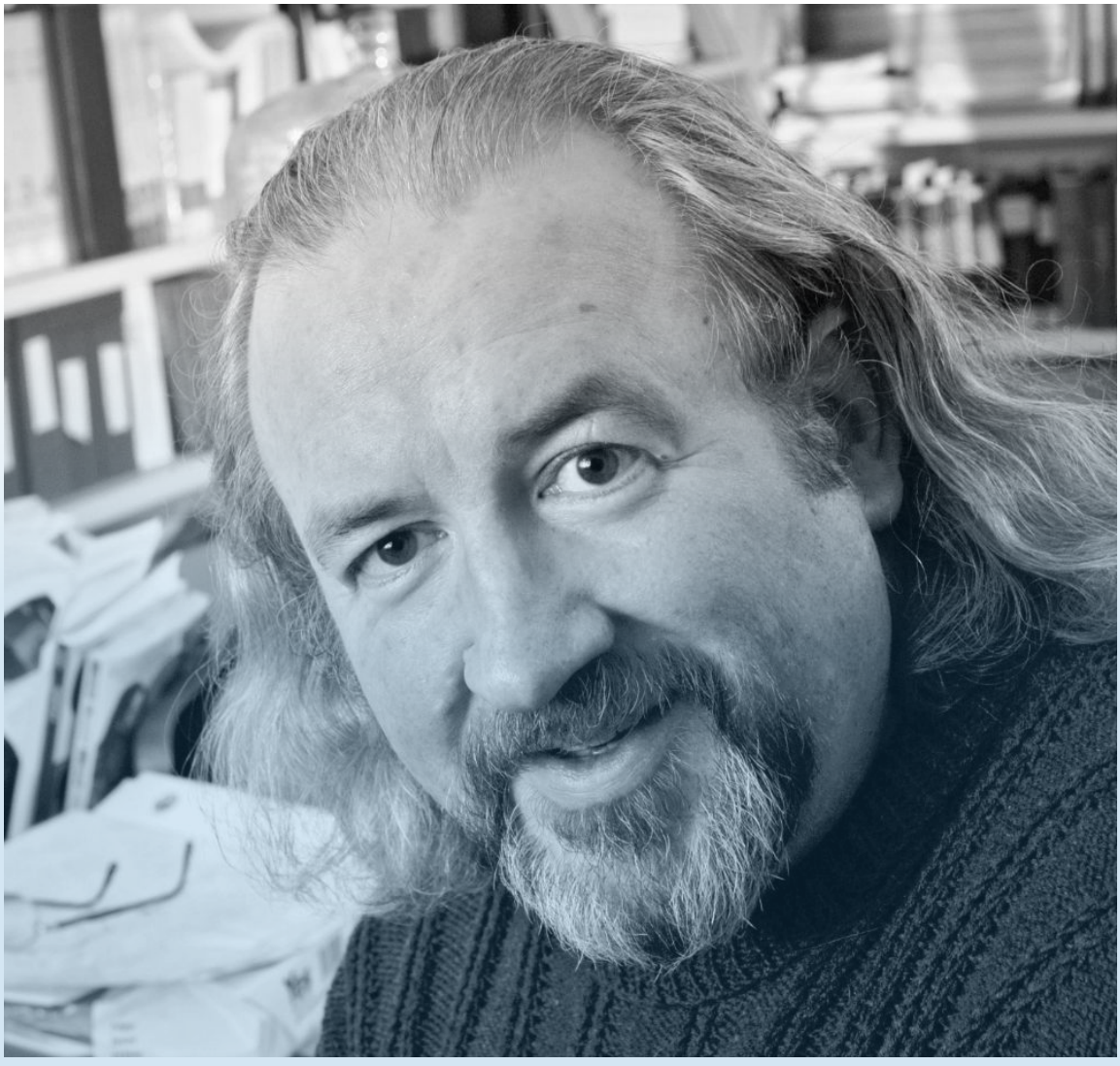


Figure 1: Olaf Breidbach

When Olaf Breidbach took over the directorate of the Ernst-Haeckel-Haus on 1 April 1995, the philosopher and neurobiologist officially commenced his career as an historian of science. For almost twenty years he held the chair of History of Science in the Biological-Pharmaceutical Faculty of the Friedrich Schiller University Jena, at the Institute for the History of Medicine, Science and Technology and the field of theoretical biology situated in the Ernst-Haeckel-Haus.

From the very beginning he fulfilled his post with a fine sense of flair and ability for the unique possibilities offered at the institute with its museum, archive and the graduate study in the history of science as well as firmly anchoring this institute in the field of theoretical biology within the Biological-Pharmaceutical Faculty. In one of the oldest institutions for history of science in Germany he understood its *genius loci* as both an educational and research centre, as well as the importance of a cultural orientation of the history of science that facilitated leading dialogues and encounters between the natural sciences and the humanities. He was very much aware of his responsibility towards the University. The University of Jena acknowledged his interdisciplinary work when he was awarded an additional membership of the philosophical faculty. His reputation as an historian of science was acknowledged and recognized far beyond Jena as well. Since the 1990s he had already established particularly good relations with Italy, most notably with Gian Franco Frigo (Padua) and Stefano Poggi (Florence). In 2004 he was appointed a member of the German Academy of Sciences Leopoldina, and the following year he was elected as a corresponding member in the Mathematical-Physical Class of the Academy of Sciences at the University of Gottingen. From 2009 he was co-editor of *Sudhoffs Archiv* and took responsibility for the section for history of biology and the life sciences. He worked in this function for barely five short years. Olaf Breidbach died in Jena on 22 July 2014 after a severe illness; he was only 56 years of age. The history of science has lost an outstanding research personality who was a captivating university teacher in his lectures, seminars and papers, and a truly farsighted scientific organizer.

1 Early Scientific Career and Qualifications

Olaf Breidbach was born on 8 November 1957 in Monheim at the Rhine and grew up in Altenberg in the Duchy of Berg, a part of North Rhine-Westphalia. He attended a Catholic primary school in Altenberg-Blecher and finished secondary school at the Freiherr-vom-Stein-Gymnasium in Leverkusen. He began studying philosophy, biology, art and education at the University of Bonn in the winter semester of 1977/78. After the interim exam in biology in 1979, he

was given a scholarship by the *Studienstiftung des deutschen Volkes* with which he was again affiliated as an academic from 1995-2005. This choice of subjects at the University was indicative of his different research interests and talents that would later on all interlock and chime one another in his work as an historian of science, in a unique manner. In 1980 Breidbach ended his art studies with a practical examination, he proceeded to form an interdisciplinary work group entitled "Neurobiology" and started – parallel to his biological studies – a doctorate in philosophy under the supervision of Peter Baumann at the University of Bonn. He was only 25 when he received his PhD in 1982 for a thesis on the topic of the organic in Hegel's thought *Das Organische in Hegels Denken – Studie zur Naturphilosophie und Biologie um 1800*. The thesis was awarded the Heinrich-Hörlein Memorial Award of the University of Bonn. In 1983 he passed the state exam in biology, and a year later working under the Bonn zoologist Werner J. Kloft he received his biological PhD for a thesis on the morphological conditions and simple behavioural patterns of the 'European house borer' beetle (*Morphologische und ethologische Bedingungen einfacher Verhaltensmuster des Cerambyciden Hylotrupes bajulus (L.) (Insecta: Coleoptera) – dargestellt in vergleichender Betrachtung*). In 1984 and 1985 Breidbach was a research assistant at the Institute for Applied Zoology in Bonn and taught seminars on the development and structure of the nervous system, as well as on diverse theoretical questions pertaining to evolutionary research. As a Liebig Fellow (1985-1987) he visited Valentino von Braitenberg and the Max Planck Institute for Developmental Biology in Tübingen and worked for a considerable time in the laboratory of José Campos-Ortega at the Institute of Developmental Physiology at the University of Cologne. In 1987 – now as a research fellow at the Institute for Applied Zoology in Bonn –, he established a research group on "The development of the nervous system" and from 1988 to 1993 he was a member of a Priority Program on "The dynamics and stabilization of neuronal structures". In 1988 he submitted a thesis on the metamorphosis of beetle's nerve tissue: *Die Metamorphose des Käfernervengewebes. Das Redifferenzierungsprogramm eines komplex strukturierten neuronalen Gewebes – studiert am Modellsystem Tenebrio molitor L. (1753)* for his habilitation in zoology that he completed in 1989 at Bonn University. In 1989 Breidbach was promoted lectureship (*Oberassistent*) supervising a working group on "The development of the nervous system" and in the same year he held a C2-professorship in animal ecology. During the years 1990 to1992 he held a temporary C3-professorship in the Faculty of the Mathematic and Natural Sciences at the University of Bonn. A project on the simulation of neuronal computing processes in 1990 won him a prestigious research award from the state of North Rhine-Westphalia. From 1991 onwards in a DFG (German Research Foundation) project on "neural networks" he undertook a comparative examination of the neuro-architecture of the central brain of mandibulates.

In 1994 he joined Jürgen Jost at the Mathematical Institute of the University of Bochum where he worked on neuronal networks, structural dynamics and structural evolution until he was eventually called to Jena.

2 The Path to a Historian of Science

At the time of his appointment in Jena Olaf Breidbach had with four books and more than sixty scientific articles to his name established himself within the field of biology most notably as a neuro-anatomist and entomologist. He had also published three books and ten papers as a philosopher. What already qualified him as an historian of science about this time was the manner in which he pursued the fields of philosophy and biology. In his philosophical dissertation on *The Organic in Hegel's Thought* (1982) he had reconstructed the theoretical discussions and the history of science background from within the milieu of the life sciences around 1800. He also had looked at the philosophical implications of the concurrently emerging idealistic philosophy of nature. As a devoted reader of Kant's writings, it was clear to Olaf Breidbach from the very outset that the idealistic thoughts of a natural philosophy of the organic would be empty without biological content. By implicitly taking into account the context of the history of science in the emerging biosciences, he succeeded in adding a new emphasis to what had largely been ignored for a long time within philosophy and history of science, that is Hegel's philosophy of nature. Breidbach remained steadfastly committed to his approach and the resultant combination of philosophical and systematical issues in the history of science. Numerous published articles on Schelling's and Hegel's idealistic philosophy of nature illustrated how fruitful this new approach was. Breidbach contributed widely to international discussions on Hegel in the *Internationalen Arbeitskreis zu Hegels Naturphilosophie* founded in 1983 by Wolfgang Neuser and Dieter Wandschneider and supported by Breidbach.

As a practicing scientist, any contrary approach and an examination of biological notions without taking heed of theoretical concepts reflected in the history of science itself, struck him as being similarly blind. An essay he published in 1987 on analogical inferences in the sciences (*Analogieschluß in den Naturwissenschaften*) illustrates this well. As a scientist, Breidbach reflected upon the structure and the status of the sciences. He especially challenged the concept of experience that was being used here. One of the questions, first vehemently raised in this essay related to the quality of the empirical and the presuppositions of scientific propositions. This issue would run like a common theme throughout all of his later works. The question of the evaluation of cognition in the neurosciences, initially led him towards the recent past of his own field and then much further back into the history of his discipline, directly to the history of science. Without an

awareness of the genesis of knowing, Breidbach thought it surely bereft of any adequate understanding of its validity. He did not want to simply accept in an uncritical fashion, scientific facts, in the sense of given conditions or statements of facts. In his next work which addressed the pupation of the brain, in the model of the brain of a beetle: *Verpuppung des Gehirns / Modell Käferhirn* (1988), he brought the conceptual aspect of the project entirely into the foreground. Instead of a simple mediation of facts, the presentation of this research project was accompanied with a plea that the results of the program ought not be accepted as solutions in an uncritical manner.

Thus precisely at the moment in which he reflected upon the validity of his science, and the accountability of his actions as a scientist Breidbach in effect became an historian. His book on the 'materialization of the self' and an historical account in the 19th and 20th centuries of brain research, *Die Materialisierung des Ichs. Zur Geschichte der Hirnforschung im 19. und 20. Jahrhundert* (1997) was a carefully narrated history of neuroscience and marked the beginning of a wide-ranging investigation of the History of Science. The Ernst-Haeckel-Haus and his chair in the history of science and the field of theoretical biology offered him the opportunity to explore this idea more thoroughly in an institutional setting. He pursued this broad history in his introductory lecture on the history of science from antiquity to the recent day. The lecture series consisted of four semesters, and between the years 1995-2013 he managed to complete this series nine times. It was his intention to develop these lectures into a textbook. Attention to other plans however, delayed this project, and sadly, it was only shortly before his death that he was able to send the first volume, which had dealt with antiquity, to the printer (cf. *Geschichte der Naturwissenschaften. Bd. I: Die Antike* (2015)).

3 Academic Recognition: externally funded projects and research stimuli

If the success of an academic is measured, as it is often done so today, solely by the amount of externally funded projects, Olaf Breidbach was an extremely successful historian of science. With some of his own projects in Jena he was able to directly link up to his research activities as a biologist and a neuro-anatomist. From September 1996 until August 1998 he worked with one of his colleagues from Bochum, Klaus Holthausen, in a project that was sponsored by the Thuringian Ministry of Science, Research and the Arts, on the "analysis of dynamic stochastic structured systems using the example of computed dynamic associative neuronal systems". With the results obtained here and the outcome of valuable patents, he laid down the foundation for a similarly financed project from the same funding body on the "Automated evaluation of EEGs for the early detection of an impending

SIDS (Sudden-Infant-Death-Syndrome) (05/1999-04/2001) as well as a "research unit for structural dynamics and system evolution" and a "TheorieLabor" (06/1999-12/2002) which was co-directed by Frank Pasemann, and bundled together the work within the field of theoretical biology.

In addition to these projects in theoretical and biological fields there were increasingly more externally funded projects on the history of science. He obtained broad approval for a project that was originally initiated by the germanist Klaus Manger at the University of Jena, and then later continued by the historian Georg Schmidt and Breidbach himself. This was the interdisciplinary Collaborative Research Centre (SFB, Sonderforschungsbereich 482) „Ereignis Weimar-Jena. Kultur um 1800", which from 1st July 1998 until 30th June 2010 was granted funding by the DFG (German Research Foundation) through four successive phases of applications. From the outset of the SFB 482, Breidbach coordinated the history of science projects, and from 2007 through to 2010 he was the director responsible for the final report and from April 2010 to June 2011 for the transfer project for public engagement work (see the catalogue: *Die Welt aus Weimar – Zur Geschichte des Geographischen Instituts*, edited by Andreas Christoph and Olaf Breidbach, 2011). Throughout the twelve years of the SFB 482, he supervised a project entitled "Empiricism versus speculation? Conceptualised and experienced nature" with notable success in which he analysed the position of the sciences around 1800 with his colleagues (see *Naturwissenschaften um 1800* (2001) edited by Breidbach and Paul Ziche, as well as the work he co-edited with Roswitha Burwick: *The Transformation of Science in Germany at the Beginning of the Nineteenth Century: Physics, Mathematics, Poetry, and Philosophy* (2013)). He analysed the sciences not only from the perspective of the history of ideas, but together with colleagues Jan Frercks and Heiko Weber, he reconstructed the scientific practices as well, in the sense of an experimental history of science (see *Experimentelle Wissenschaftsgeschichte*, edited by Olaf Breidbach, Peter Heering, Matthias Müller and Heiko Weber (2010)). In this project he interpreted Schelling's philosophy of nature, but also looked at it as an intra-scientific discourse on structured science teaching (cf. the published essay in Sudhoffs Archiv: *Jenaer Naturphilosophien um 1800* (2000), as well as the volume *Naturphilosophie nach Schelling*, co-edited with Thomas Bach (2005)). In the wider context of embracing the theme of philosophy of nature at Jena, he also launched an edition of a work by the philosopher Karl Christian Friedrich Krause from 1804, the *Entwurf des Systems der Philosophie. Erste Abtheilung enthaltend die allgemeine Philosophie, nebst einer Anleitung zur Naturphilosophie* (Edited and introduced by Thomas Bach and Olaf Breidbach, 2007), as well as the *Gesammelten Werke* of Lorenz Oken (Edited by Thomas Bach, Olaf Breidbach and Dietrich von Engelhardt, 2007ff.). After the Collaborative Research Centre (SFB) had ended, Breidbach

was engaged with the *Laboratorium Aufklärung* initiated by the Friedrich Schiller University Jena as a focus point for research. He also worked on an evaluation and inventory of the correspondence held in the Ernst-Haeckel-Archive.

This had already been developed between the years 1998 to 2000 in a financed project by the DFG (German Research Foundation) and was to be made available in the form of an edition of the correspondence. Jointly with the curator Thomas Bach and in cooperation with the German National Academy of Sciences Leopoldina, Breidbach succeeded in securing a long-term project of the Union of German Academies of Sciences and Humanities: "Ernst Haeckel (1834-1919): Edition of Letters" which has been funded since 2013 and is expected to last for 25 years.

Parallel to these projects Breidbach designed, coordinated and directed other parts of the Haeckel correspondence, and the popular scientific background to Haeckel; to spatial intuition, the history of the theory of evolution and on the naturalist Lorenz Oken, as well as the Jesuit Athanasius Kircher: "Ernst Haeckel (1834-1919) – Wilhelm Bölsche (1861-1939): Correspondence 1891-1919" (DFG project 04/2001-03/2004); "The popularization of science in Germany and their intermediaries, an analysis of the popular scientific background of Haeckel" (DFG project with Gernot Böhme 04/2004-03/2006); "Spatial intuition: mathematics – technology – art. The presentation and perception of space in the 18th and 19th centuries" (Ernst Abbe Foundation with Reinhard Wegner 07/2006-04/2007); "Evolution without genetics – alternatives in 20th century evolutionary biology" (DFG project with Uwe Hoßfeld 10/2002-10/2006); "Mendelism and Genetics in Bohemia and Moravia, 1900-1930" (DFG project with Uwe Hoßfeld 10/2007-09/2010); "The business of knowledge – Lorenz Oken and Isis. Commercialization, politicization and popularization of knowledge in the first half of the 19th century."(DFG Project 07/2006-06/2009); "Edition, commentary, a primary focus on the evaluation and analysis of the correspondence between Lorenz Oken and the publisher Friedrich Arnold Brockhaus between 1814-1850" (DFG project 07/2009-06 2011); "A Scientific introduction and commentary of a reprinted edition of the main works of Athanasius Kircher (1602-1680)" (Gerda Henkel Foundation with Anne Eusterschulte and Wilhelm Schmidt-Biggemann since April 2009).

4 Organization of Science

With all these projects Olaf Breidbach established his reputation as a historian of science, and increasingly distinguished himself as a prolific scientific organizer. He understood the organization of science not simply as the procurement of positions. He was continuously active as a consultant

and peer reviewer; he created new publications as well as editing his own and entered into close cooperation and editorial participation with foreign journals and series. He secured the availability of important original texts in the history of science. A particular focus of his was on the history and theory of biology. From 1997 onwards together with Michael Weingarten, he continued the *Biologische Zentralblatt* under the title *Theory in Biosciences*, and established for the works emerged within the Ernst-Haeckel-Haus the series *Ernst-Haeckel-Haus-Studien. Monographien zur Geschichte der Biowissenschaften und Medizin*. He also bundled some of his own and other works into the series *Neuronale Ästhetik* in the Springer publishing house in Vienna. Addressing the theme of the culture of science, together with Stefano Poggi, he edited the *Yearbook for European Culture of Science* as well as a series intended for considerably larger works *Wissenschaftskultur um 1900*, both appearing with Steiner, the Stuttgart publishers. With great commitment he also participated in the periodical series *Historia Scientiarum* at Olms publishers. He not only coordinated here works from the field of life sciences, but he also published himself several volumes, on the writings of scientists such as Fritz Müller, Carl Gustav Carus, Karl Ernst von Baer and Conrad Gessner.

In the series *Ostwald's Classics of the Exact Sciences*, he took care of the publication of classical texts such as those by Caspar Friedrich Wolff and Sigmund Exner, in which he provided very informative introductions to their works. In his last remaining years he was responsible as one of three editors, for the book series *Laboratorium Aufklärung*.

Breidbach's undoubted talent for scientific organization also found expression in the way he led the Ernst-Haeckel-Haus, right from the very beginning in a quasi operational mode as a laboratory itself. He expected from all of his staff and colleagues to be in attendance as well as being committed to the institute. This insistence upon presence enabled him at almost any time to be able to discuss with his team topical tasks at hand. A short knock at the door, and one entered into far reaching philosophical discussions, socio-political analyses, or was involved in the design of pending research tasks that were to be carried out or newly formulated proposals. As director of the institute and university teacher he was considerate and caring with his colleagues as well as students and postgraduates: they all were able to approach him anytime with their questions and problems. A clear visible sign of this willingness to talk was the almost always open door to his office.

5 Motif Chains and Topics of his Thought

As a trained biologist and director of the Ernst-Haeckel-Haus Olaf Breidbach inspired further research and raised public awareness about

Haeckel in many of his works. For a comprehensive assessment of his extensive oeuvre it is certainly far too soon. The number of topics that are covered in his various writings is simply too vast that this could be presented here in a meaningful way. However, a few so called, motif chains and topical fields can be mentioned that perhaps help to characterize his thinking (a full list of his all published works can be found on the homepage of the Ernst-Haeckel-Haus at:

http://www.ehh.uni-Jena.de/Institut/Mitarbe-iter/Prof_+Dr_+Dr_+Olaf+Breidbach/Ver%C3%B6ffentlichungen-p-74.html).

As Olaf Breidbach came to Jena in 1995 he brought with him two distinct theoretical approaches that he had previously established and which accompanied his work on biological neural networks, and in addition one that he would continue to refine and conceptualize in the coming years. Firstly, there was one that had been developed together with his colleague Klaus Holthausen, i.e. the approach of "internal representation" that also became the title of some collected essays that he edited and published in 1996 along with Gerhard Rusch and Siegfried J. Schmidt. This concept is based on the thesis that the brain can only be properly understood from within. The outside world, when it is assessed according to the internal representation of the brain is not a fixed quota of structurally determined and fixed partial reaction chambers of the brain, but rather the result of a steady flexible response to stimuli, and thereby itself a restructuring texture of reaction which through new stimuli are being continuously restructured. In this way the brain generates a grid of the perception of the world itself, it therefore not simply preserves the impressions of an outside world. Breidbach understood this concept of internal representation as a discursive offering to the philosophy of constructivism, and led this philosophical discussion himself in numerous papers and above all continued this approach in his book: *Deutungen. Zur philosophischen Implikation der internen Repräsentation* (2001). The second approach that Breidbach undertook was to enter into a dialogue with aesthetics and cultural studies, and thereby explore the explanatory challenge of a "neuronal aesthetics". At first at Bonn in a conference that had been organized by him, and then again in a book which he edited of collected essays: *Natur der Ästhetik – Ästhetik der Natur* (1997) he outlined here for the first time the specific field of neuronal aesthetics. He further elaborated these considerations in another book *Das Anschauliche oder über die Anschauung von Welt. Ein Beitrag zur neuronalen Ästhetik* (2000) and, to the extent that already the subject of a 'practice of seeing' had been addressed, followed this line in a further work a cultural history of scientific perception: *Bilder des Wissens. Zur Kulturgeschichte der wissenschaftlichen Wahrnehmung* (2005). Later he collaborated with Federico Vercellone on an essay on intuition and thinking *Anschauung Denken* (2011). In 2013 he undertook a comprehensive review of some twenty years of work in this field, with a monograph entitled

Neuronale Ästhetik. Zur Morpho-Logik des Anschauens. The "morphologic" mentioned in the subtitle of this work refers, in fact, to a third thematic field that Breidbach developed in his Jena period – a productive engagement with Goethe's theory of the metamorphosis of plants and morphology (cf. *Goethes Metamorphosenlehre* (2006) and *Goethes Naturverständnis* (2011)). Breidbach interpreted Goethe's principles of metamorphosis as a manifesto of an all-pervading experiential doctrine. It is precisely the cognition of that which is fleeting and finds itself constantly metamorphosing; plants that are germinating, growing, blossoming and dying, that are the benchmarks in our cognition of nature. According to Breidbach Goethe's *Metamorphosis of Plants* is not simply a botanical work, but it is "exemplified in botany, how nature can be experienced at all". Goethe's later morphology is above all a methodological pathway "to perceive and conceive of nature as a whole". Breidbach maintained that this approach to morphology did not only possess a historical value but was of contemporary interest as well. Together with his Italian colleague Federico Vercellone, he founded the *Centro Interdipartimentale di Ricerca sulla Morfologia* at the University of Udine, an interdisciplinary centre that pursued both historical and contemporary issues (cf. Olaf Breidbach, Federico Vercellone: *Concepts of Morphology*, 2008).

In addition to internal representation, neuronal aesthetics and morphology there arose a fourth major theme of his, "radical historicization". In the book of the same name from 2011 (*Radikale Historisierung. Kulturelle Selbstversicherung im Postdarwinismus*), Breidbach made an appeal that we should relinquish the idea that there was a secure point of departure for our knowledge. As an evolutionary biologist Breidbach argued that since Darwin at the very least, we have to depart from the idea that in nature there is a standard to discover for our actions or our knowledge. Nevertheless the book is not a pessimistic one; the subtitle 'cultural affirmation of self in post-Darwinism' underlines the fact that regardless of the insight into the relativity of our cognition in nature and culture, an affirmation of self is possible via the indirect route of culture and history. In a programmatic manner Breidbach develops the idea that relative determinations can also lead to coherent descriptions and views of the world.

Based on this insight into the relative determination of all things, he argued that we should divest ourselves of any self-doubts connected to this, to accept our historical conditionality [*historische Bedingtheit*] and in so doing firmly locate ourselves in history: "Only when we subsequently relativize our position we can find a reference base from which we are able to secure our position and are then able to lookout beyond the borders of what it is that is offered us." In this situation the study of the history of science acquires a particular significance because it were these "thematic structures, concepts and skills" and the corresponding border conditions, "to which

they can be well secured, and see how far they can direct us with their explanations of the areas of interest." the history of science itself can "accurately demonstrate that a radical historicization does not lead to randomness, but instead towards fixed standards".

6 In Memoriam

These four briefly outlined concepts are different modes of a fundamental insight that was arrived at much earlier. What Olaf Breidbach has written about in his last work *Radikale Historisierung* also applies to internal representation, neuronal aesthetics as well as morphology and corresponds exactly to his activity as an historian of science: "We can only reach back to historically established and determined entities. We do not operate with fixed objects, but with references, that is, with determinations that can be determined and conceived from out of their historically established structures of assignments". The interweaving of these various concepts vividly demonstrates that the patterns of thought, explanatory statements and patterns of interpretation encountered in Breidbach are all linked up and connected together in diverse layers of reception. Breidbach's oeuvre is an exclusive cosmos of interlocking and overlapping motif chains, that lead across text and boundaries of discourse, lines are drawn and strands that were once left behind are taken up again. Thus in all of these networks "to be able to look out beyond the border of what is offered to us", was one of Olaf Breidbach's special gifts. Together with his truly encyclopaedic knowledge he was capable in an outstanding manner of pursuing interdisciplinary collaborations with other scientists, most recently in 2012 in the newly established *Leopoldina-Study Centre for the History of Science and Academies*. From its inception he was a member of the section for the history of science and medicine and was jointly responsible for its practical orientation. Between his first publication that appeared in 1979 and his early death Olaf Breidbach had only 35 years to pursue and examine these lines of thought and motif chains within neurobiology, philosophy and the history of science. In all these years as a university teacher, faculty member, researcher, scientific organizer, he practiced these extensive and varied duties and obligations with an unremitting curiosity and an unbroken commitment. With his immense creative power he has left us an oeuvre that will stimulate us to retrace (*nachspüren* – one of Breidbach's favourite terms) his ideas for a long time to come.