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a ZKM book

Hans H. Diebner

Performative Science and Beyond

Involving the Process in Research

SpringerWienNewYork

Hans H. Diebner
Griengasse 4
79540 Lörrach
Germany
email: diebner@inm.de

The presented work has mainly been carried out from 1999 to 2005 in the Institute for Basic Research at the ZKM | Center for Art and Media Karlsruhe. Part of the work is co-authored by the Institute's members as indicated correspondingly.

a ZKM book


Lorenzstr. 19
76135 Karlsruhe
Germany
info@zkm.de

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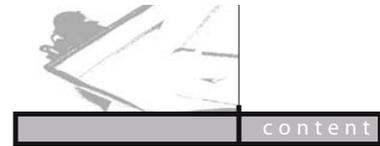
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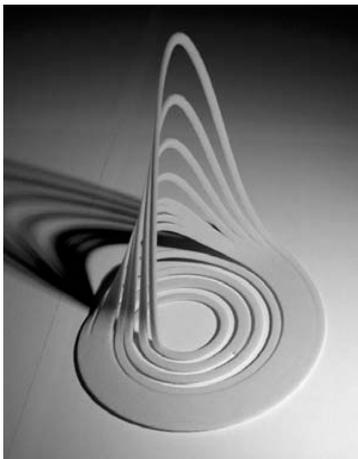
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The Rössler attractor made palpable via rapid prototyping by Florian Grond.

PREFACE

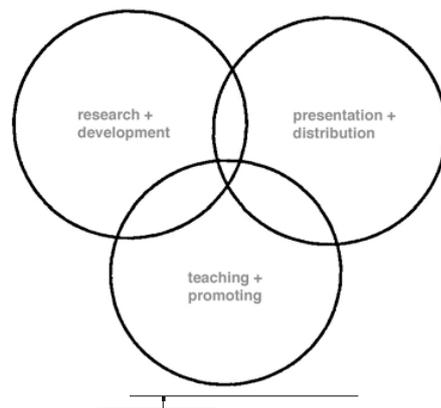
A Museum's Mission, by Peter Weibel

At the time I became chairman and director of the ZKM | Center for Art and Media Karlsruhe on January 1, 1999, the ZKM hosted the Media Museum and the Media Library, an Institute for Visual Media and an Institute for Music and Acoustics. Responding to the needs of the time, I founded immediately an Institute for Net Development and an Institute for Basic Research. Net Art was becoming a new medium after film, video and the computer, as I had stated in 1995 at the first global Net Art conference and exhibition, "Welcome to the Wired World". This was the theme of the Ars Electronica Festival in Linz, Austria, where I was then artistic director.



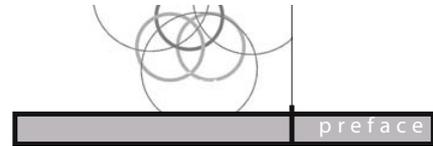
Jean Marie Leroux, *L'art s'illustre par la science, la science se perpetue par l'art*, copper engraving based on a drawing by Jean Galbart Salvage, 1812.

In establishing the Institute for Basic Research, I followed not only my lifelong conviction that "Scientia sine arte nihil est; ars sine scientia nihil est," as Jean Vignot claimed 1392, but also the statutes of the ZKM foundation. When the ZKM was conceived 1988 and realized 1989 as a foundation for the support of media art, three main activities and functions were defined.



In 1988, the ZKM was conceived as interdisciplinary institution in the fields of research and development, presentation and distribution, teaching and promoting.

From the beginning, the ZKM was not only a museum with the traditional functions of collecting, exhibiting and conserving; it was also envisioned as a place for production (like a theater, an opera house) and research (like a scientific institute) and therefore called a "center". As a museum, the ZKM wanted to be a "museum for all



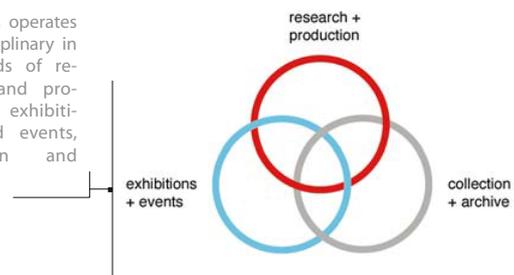
media" in the tradition of the German Bauhaus and the MOMA, New York, where painting, sculpture, photography, film, architecture and design meet as equal partners. Following the evolution of art, it was clear that video and digital art had to be added. Since video and film are time-based art forms, it was logical that the mother of all time-based arts, music, must also have its place in the center. This is especially valid because a moving image is not silent like a painting but is always accompanied by sound and since in the digital era computer music has played a pivotal role. Therefore the ZKM was the first museum in the world to include a music department, where production and research in acousmatic music could take place. Research and production is also a goal of the Institute for Visual Media. Both institutes work not only with their staff members but also with guest artists.

With this emphasis on production, development and research from the start defining the profile of the ZKM as competence center, I wanted to give a scientific basis to all this research and therefore founded the Institute for Basic Research. Here physicists and mathematicians could develop their theories in relation to topics that are also interesting to artists like interfasciology, observer experiments, dynamic and complex system theory, computer simulations, statistics, neurosciences and the like. Primarily intended as a think tank with its output in research reports, papers, symposia, lectures and publications, the institute could also produce installations in an artistic context. From a considerable amount of theory published in scientific magazines followed a lot of scientific and artistic projects and finally public presentations.

The head of the Institute was Dr. Hans Diebner, a mathematician and physicist of outstanding talents with a background in endophysics, molecular dynamics simulations and systems theory. Over the course of his six years, he has developed his own distinctive theory and field of operation, to which he gave the name "Performative Science," between art and philosophy.

With this "magic triangle" he positioned himself in the tradition of the Enlightenment, which is so central and basic to all my own activities and serves as the foundation of the ZKM, too. The relation of art, technology and science, as defined in the 35 volumes of Diderot's and d'Alembert's "Encyclopédie," became the basis for the Borromean Rings into which I have transformed the first three fields of activities since 1988.

The ZKM operates interdisciplinary in the fields of research and production, exhibitions and events, collection and archive.



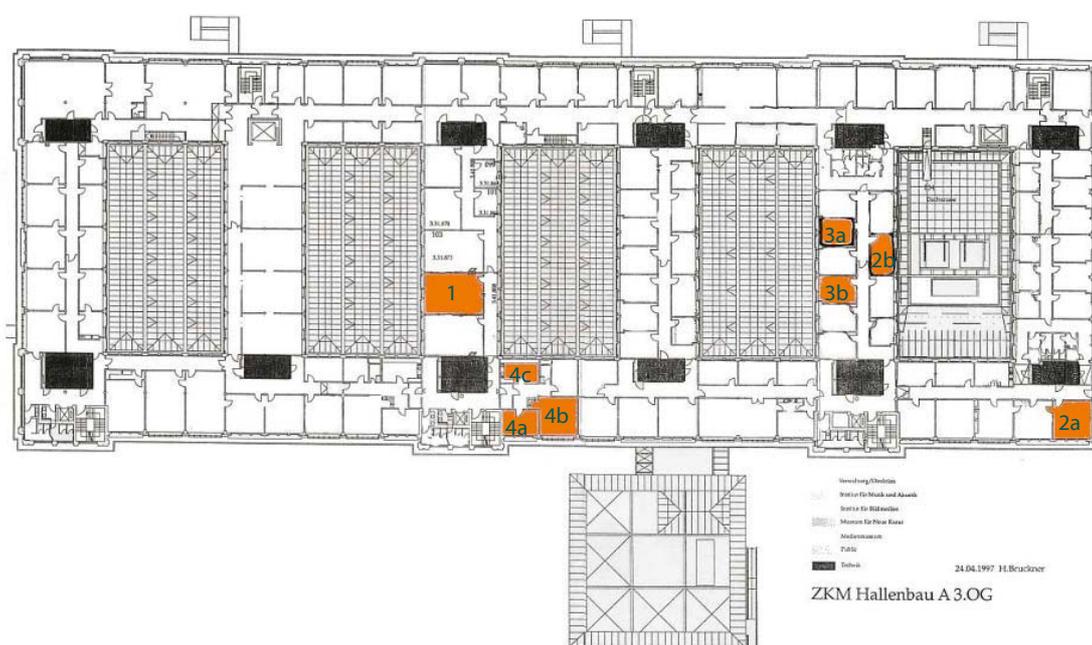
In the context of this evolution it is clear why the foundation of the Institute for Basic Research was a logical and necessary step. The ZKM is the only museum in the world that is not only devoted to visual media and arts but also has a department for music and acoustics - and a department for science. The ZKM is the first and only museum with a residency program for visual artists, scholars, curators and musicians - and for scientists. The ZKM has guest artists, and guest curators - and guest scientists. With this expansion of a museum's mission to include media and science, the ZKM is anticipating the future function of a museum. Therefore Hans Diebner and his team can indeed correctly be called "pioneers of the future" as happened when they got a "doIT" software award in 2005. The ZKM is piloting an ambitious mission and thanks Hans Diebner and his team for the productive time they have spent on board the ZKM. This book is devoted to demonstrating their achievements within six years and to sharing their competence with the artistic and scientific communities.

Karlsruhe, April 2006

Peter Weibel

I N S T I T U T E

INSTITUTE FOR BASIC RESEARCH



- 1** August 1999: in the office of the Online department.
- 2** from September 1999 on: in the former office of the general manager.
- 3** from January 2000 on: in the corridor of the ZKM post office.
- 4** since October 2001: in the former apartment of the caretaker.

Ground plan by H. Bruckner.
 The fourth floor: the ZKM | Institute for Basic Research left its scent mark in the orange-coloured rooms.

This book is a compilation of projects developed at the Institute for Basic Research at the ZKM | Center for Art and Media Karlsruhe; the concept of "Performative Science" is its unifying theme. We have attempted to adopt a characteristic implicit in art and performance, especially in the fields of complex systems research, which is lacking in mathematical analysis. Just as a performance is far more than its "libretto", an abstract model of a highly complex system is only meaningful in an interactive way. Issues from the field of performative studies and ontological philosophical questions concerning knowled-



ge acquisition are transformed into physical examples involving all the senses. Interactive visualized simulations of chaotic as well as pattern forming systems and audifications of geophysical abstract time series data are amongst these examples. This book aims to promote a fruitful collaboration between the arts, hermeneutics, and the sciences.



Men at work.

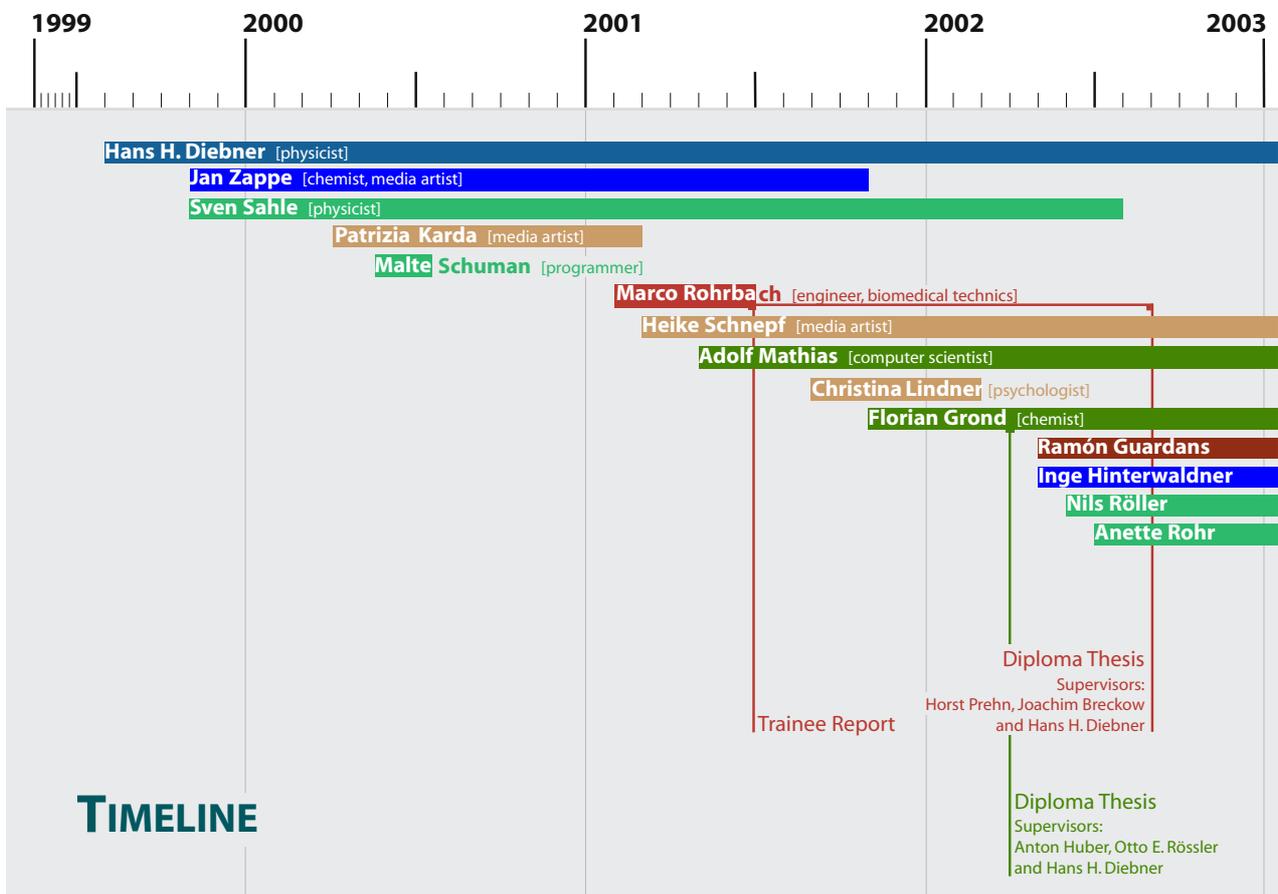
The ZKM | Institute for Basic Research has been established in August 1999. For three months it comprised its founding head Dr. Hans H. Diebner alone. The beginning was somewhat impromptu. For lack of office space he found refuge in the office of the online department, hosted by the institute's head Thomas Fürstner. Three months later Hans H. Diebner moved to the former General Manager's office directly next to the Director Peter Weibel. This was an intensive time allowing a rapid inauguration but also a rapid introduction to the "art and science life" at the ZKM - and probably not only there. Towards the end of the first year Sven Sahle and Jan Zappe joined the Institute and from then on it started to grow. After an intermediate lodging in the "postoffice corridor" we moved to our ultimate quarter in the former accommodation of the facility manager.

Hans H. Diebner's migration from Tübingen to Karlsruhe was due to a lucky coincidence. He finished his PhD supervised by the chaos research pioneer Otto E. Rössler only a few months before. The "endophysics" ansatz by Rössler was well known within the media art and media theory community. Endophysics is an interface theory which found a quicker recognition in the "media environment" than in physics. Peter Weibel, who very early anticipated the impact of endophysics asked Otto E. Rössler for a recommendation for an endophysics researcher.

Highly influenced by the artistic strategies, Diebner and his colleagues continued with endophysics research in line with Rössler's approaches but also with its own identity. The essential evolution can probably be seen in the opening from a strict first principle approach to a hermeneutic reasoning. Our argument is that an impact of the observer on the observed world treated in a purely physical way becomes too metaphysical and, therefore, self-referential. It is inevitable to embed endophysics into a science theoretical framework. Thus, the interface in focus is an "onto-epistemic" interface and, therefore, also the interface between science and humanities.

The book in hand can be regarded both as the Institute's report as well as a scientific monography. It comprises our more than six years lasting research dealing with cognitive systems, the design of interfaces, "Performative Science" and "Operational Hermeneutics." The theoretical considerations and the practical projects are linked to each other in a coherent way. The concept of "Performative Science" runs right through it. Ultimately, it is the attempt to bring art, science and philosophy together.

STAFF



TIMELINE

