WISSENSCHAFTSRAT

Stellungnahme zum Zentrum für Kunst und Medientechnologie (ZKM), Karlsruhe

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Vorbemerkung

Der Wissenschaftsrat ist vom Land Baden-Württemberg im Juni 2002 gebeten worden, das Zentrum für Kunst und Medientechnologie (ZKM), Karlsruhe, zu evaluieren. Eckpunkte für die Evaluation des ZKM sind nach Wunsch des Landes:

- Positionierung des ZKM im nationalen und internationalen Vergleich;
- Qualität der medienorientierten Forschung und künstlerischen Entwicklung des ZKM an der Schnittstelle zwischen Kunst, Medien und Forschung;
- Potenzial des ZKM zur Übertragung der Ergebnisse in die wirtschaftliche Praxis und zur Auslösung weiterer Entwicklungen in anderen kulturellen Einrichtungen;
- Kooperationsfähigkeit des ZKM mit Hochschulen, Forschungs- und Kunsteinrichtungen sowie mit der Wirtschaft;
- künstlerische Arbeit und Präsentation des ZKM im Hinblick auf seinen Satzungsauftrag unter Berücksichtigung der Einbindung des Museums für Neue Kunst (MNK);
- Struktur, Organisation und Ausstattung des ZKM;
- fachliche und strukturelle Weiterentwicklung des ZKM.

Der Wissenschaftsrat hat diese Aufgabe dem Evaluationsausschuss übertragen. Auf seiner Sitzung am 25. November 2002 hat der Evaluationsausschuss beschlossen, die Begutachtung des ZKM im Jahr 2003 durchzuführen und eine Bewertungsgruppe einzusetzen. Die international besetzte Bewertungsgruppe hat das ZKM am 24./25. Februar 2003 in Karlsruhe besucht und anschließend den vorliegenden englischsprachigen Bewertungsbericht verfasst. Nach Verabschiedung durch die Bewertungsgruppe ist der Bericht im weiteren Verfahren nicht mehr veränderbar.

In der Bewertungsgruppe haben auch Sachverständige mitgewirkt, die nicht Mitglieder des Wissenschaftsrates sind. Ihnen ist der Wissenschaftsrat zu besonderem Dank verpflichtet.

Auf Grundlage des Bewertungsberichts hat der Evaluationsausschuss am 3. Juni 2003 die wissenschaftspolitische Stellungnahme erarbeitet. Die Stellungnahme wurde vom Wissenschaftsrat am 11. Juli 2003 verabschiedet.

A. Kenngrößen des ZKM

Das Zentrum für Kunst und Medientechnologie (ZKM) ist eine Stiftung des öffentlichen Rechts mit Sitz in Karlsruhe. Als Einrichtung des Landes Baden-Württemberg und der Stadt Karlsruhe wird die Grundfinanzierung jeweils zu gleichen Teilen vom Land und der Stadt Karlsruhe bereitgestellt. Die Stiftungsorgane sind: der Stiftungsrat, der Vorstand und das Kuratorium. Vorstand der Stiftung ist der Direktor des ZKM; die Dauer der Bestellung des Vorstands/Direktors ist ebenso wie die Möglichkeit einer Wiederbestellung in der Satzung nicht festgelegt. Bisher wurde der Vorstand/Direktor vom Stiftungsrat für die Dauer von fünf Jahren berufen.

Das Museum für Neue Kunst (MNK) ist laut Zusatzvereinbarung vom 30.10.2000[1)] eine Abteilung des ZKM und wird von einem Direktor in eigener Verantwortung für Teilhaushalt und Personal des MNK geleitet. Die Gesamtverantwortung für das ZKM liegt beim Vorstand/Direktor des ZKM.

Im Haushaltsjahr 2001 standen dem ZKM institutionelle Mittel in Höhe von 13,4 Mio. Euro (zusätzlich MNK: 3,2 Mio. Euro) bei Gesamteinnahmen von 1,5 Mio. Euro (zusätzlich MNK: 202. 700 Euro) zur Verfügung. Davon entfielen 3,4 Mio. Euro auf Personalkosten (zusätzlich MNK: 664.700 Euro), 5,4 Mio. Euro auf allgemeine Verwaltungsausgaben (zusätzlich MNK: 1,8 Mio Euro), 884.500 Euro für Zuwendungen (inkl. Zuwendungen für MNK), 388.200 Euro für allgemeine Investitionen über 5.000 Euro (zusätzlich MNK: 47.500 Euro), 3,3 Mio. Euro für die Organisation von Ausstellungen und Veranstaltungen (zusätzlich MNK: 660.100 Euro) sowie 113.300 Euro für den Ankauf von Kunstwerken und Sammlungsgegenständen (zusätzlich MNK: 61.400 Euro). Das ZKM verfügt über insgesamt 64 Planstellen (zusätzlich MNK: 16,5), davon 19 (zusätzlich MNK: fünf) für wissenschaftlich-künstlerisches Personal und 45 für nichtwissenschaftliches bzw. nichtkünstlerisches Personal (zusätzlich MNK: 11,5). Von den insgesamt 24 grundfinanzierten Stellen für wissenschaftlich-künstlerisches Personal sind am ZKM elf und am MNK vier befristet besetzt. Hinzu kommen für den wissenschaftlich-künstlerischen Bereich am ZKM neun aus Drittmitteln finanzierte befristete Beschäftigungsverhältnisse.

[1)] Aufgabenverteilung für das Museum für Neue Kunst des ZKM Karlsruhe, Stand: 30.10.2000.

Die Summe der vom ZKM eingeworbenen Drittmittel betrug im Jahre 2000 1,93 Mio. Euro, in 2001 1,97 Mio. Euro und in 2002 3,3 Mio. Euro. Von den 7,2 Mio. Euro Drittmitteln insgesamt entfiel 37,2 % auf Mittel des Sitzlandes und anderer Bundesländer, 2,9 % auf den Bund, 3,2 % auf die Europäische Union und 24,8 % auf Stiftungen. Der Drittmittelanteil aus der Wirtschaft lag bei 22 %. Das MNK hat im Zeitraum 2000-2002 keine Drittmittel eingeworben.

Doktorandenstellen stehen am ZKM nicht zur Verfügung. Für externe Doktoranden bietet das ZKM verschiedene Möglichkeiten der Betreuung durch ZKM-Mitarbeiter bzw. der Arbeit in den Labors. In den Jahren 2000-2002 wurden insgesamt 15 Diplom- bzw. Magisterarbeiten und fünf Promotionsarbeiten von Mitarbeitern des ZKM betreut.

B. Auftrag

Die Stiftung hat laut § 2 der Stiftungssatzung „die Aufgabe, als Einrichtung der Forschung, der Kulturvermittlung und der Weiterbildung eine umfassende Auseinandersetzung mit Kunst und Medientechnologie, insbesondere in den Bereichen Bild, Musik, Wort und Verbindungen unter ihnen zu ermöglichen."

Im einzelnen hat die Stiftung folgende Aufgaben:

- „In den Experimentier- und Forschungswerkstätten und Labors sollen Künstler und Wissenschaftler projektbezogen und - soweit möglich - interdisziplinär künstlerische Anwendungsmöglichkeiten der neuen Medien in Theorie und Praxis erforschen und entwickeln.

- Eine Aufführungsstätte soll die Möglichkeit bieten, sowohl Gastaufführungen zu veranstalten als auch die in den Labors erarbeiteten Ergebnisse einem größeren Publikum vorzustellen; insbesondere sollen Veranstaltungen, die dem Ziel dienen, unterschiedliche Kunst- und Mediengattungen zu verbinden, gefördert werden.

- In einem Museumsforum, das sich in ein Medienmuseum und ein Museum für Neue Kunst gliedert, sollen die Geschichte der Medien und deren Anwendungsmöglichkeiten wie auch die Kunst der Gegenwart in ihren vielfältigen traditionellen und medialen Aspekten zur Anschauung gebracht werden. Sammlung und Ausstellungspraxis des Museums für Neue Kunst sollen einen Querschnitt geben durch die Kunstpraxis der unmittelbaren Gegenwart und den Vergleich der traditionellen Kunst mit der Medienkunst ermöglichen.

- Im Dienstleistungsbereich einer Bibliothek, Videothek, Audiothek und Diathek werden Werke aus dem Spannungsfeld zwischen Kunst und Technik gesammelt und dokumentiert und in einem Verbund mit anderen nationalen und internationalen Datenbanken für Künstler, Wissenschaftler und Bürger zugänglich gemacht.

- In allen Bereichen soll dem Bürger die Begegnung und der gestalterische Umgang mit den neuen Medien und die Fort- und Weiterbildung ermöglicht werden."[2)]

C. Kultur- und wissenschaftspolitische Leistungsfähigkeit

Im Kontext künstlerischer Produktionsprozesse werden am ZKM sehr erfolgreich neueste Kommunikations- und Medientechnologien weiterentwickelt und für kunstbezogene Anwendungen nutzbar gemacht. Auf diesem Gebiet hat sich das ZKM national wie international einen hervorragenden Ruf erarbeitet. Die hierfür notwendige Forschung wird teilweise eigenständig durch das ZKM erbracht, zumeist aber in beispielhafter Kooperation mit renommierten Forschungseinrichtungen wie z. B. dem Forschungszentrum Karlsruhe und einzelnen Fachbereichen der Universität Karlsruhe. Die enge Zusammenarbeit von Künstlern und Wissenschaftlern hat sich für beide Seiten als äußerst fruchtbar erwiesen und lässt auch weiterhin innovative Anstöße erwarten, die in der Kunst ebenso wie im Bereich angewandter Technologien zu neuen Entwicklungen führen können.

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2) Satzung der Stiftung ZKM vom 25.10.2001, § 2.

Als „Einrichtung der Forschung, der Kulturvermittlung und der Weiterbildung“[3] setzt das ZKM die Kernaufgaben Kunst- bzw. Musikproduktion, Ausstellungswesen und Sammlungstätigkeit in überzeugender Weise um. Insbesondere die beiden Hauptabteilungen (Institut für Bildmedien, Institut für Musik und Akustik) haben exzellente Arbeit geleistet, die auch international sichtbar ist. In enger Zusammenarbeit der beiden Institute sind in den vergangenen Jahren wichtige multimediale Kunstproduktionen entstanden, die entscheidend zur Profilbildung des ZKM im internationalen Maßstab beigetragen haben. Der Bereich Ausstellungen entwickelt und realisiert exzellente Ausstellungskonzepte, die komplexe Themen zu zeitgenössischen Medien- und Technologieentwicklungen und deren Auswirkungen auf die Gesellschaft behandeln. Im Kontext dieser Ausstellungen entstehen umfangreiche Katalogwerke, die den aktuellen Wissensstand zum jeweiligen Thema hervorragend dokumentieren und erweitern. Der Bereich Sammlungen (Medienmuseum, Mediathek, ZKM-Sammlung Zeitgenössischer Kunst) erbringt ebenfalls sehr gute Leistungen. Insgesamt verfügen die ZKM-Sammlungen über eine in Deutschland einzigartige Vielfalt an Beständen der Videokunst, interaktiven Kunst, elektronisch-akustischen Musik, Installationen, aber auch der Malerei und Plastik des 20. Jahrhunderts. Hervorzuheben ist auch das von der Mediathek in Zusammenarbeit mit dem Medienmuseum und den Instituten für Bildmedien und Musik und Akustik in Angriff genommene Projekt zur digitalen Restaurierung und Archivierung von Sammlungsbeständen, da in diesem Bereich erhöhter Handlungsbedarf besteht. Insgesamt ist die interdisziplinäre Arbeit der genannten ZKM-Abteilungen sehr gut aufeinander abgestimmt.

Im Gegensatz dazu arbeitet die Abteilung Museum für Neue Kunst (MNK) weitestgehend isoliert ohne erkennbaren Bezug zur sonstigen Arbeit des ZKM. Der Grund hierfür ist in erster Linie darin zu sehen, dass das MNK bereits frühzeitig in ein Sammlermuseum umgewandelt wurde und so die ursprünglich intendierte Verzahnung von Medienkunst und traditionellen Künsten (Malerei, Plastik etc.) nicht umgesetzt werden konnte. Derzeit sieht sich das MNK vor allem den privaten Leihgebern verpflichtet, deren Sammlungen wissenschaftlich aufgearbeitet und ausgestellt werden. Die vorhandenen Ressourcen können deshalb nicht dafür eingesetzt werden, die ZKM-eigene Sammlung Zeitgenössischer Kunst in angemessener Weise zu be

[3] Ebd.

arbeiten und auszustellen. Um künftig dem Satzungsauftrag besser gerecht werden zu können und die internationale Bedeutung des ZKM weiter auszubauen, wird empfohlen, das MNK inhaltlich und administrativ in den Gesamtkontext des ZKM zurückzuführen (vgl. dazu auch die Ausführungen im beiliegenden Bewertungsbericht, S. 49f.). Sollte diese Reintegration nicht umgesetzt werden können, wird dringend empfohlen, das MNK auszulagern, um die Räumlichkeiten für die ZKM-eigene Sammlung bereitzustellen.

Auch die neu gegründeten Abteilungen Institut für Grundlagenforschung und Institut für Medien und Wirtschaft sind zu wenig in die Arbeit des ZKM integriert und lassen ein im Rahmen des ZKM umsetzbares Konzept vermissen. Die grundsätzlichen inhaltlichen Ausrichtungen der beiden Abteilungen sind zwar positiv zu bewerten, aber deren derzeitige institutionelle Umsetzung ist nicht überzeugend. Aufgrund der geringen Zahl von Mitarbeitern sollten diese Abteilungen nicht als Institute sondern vielmehr als inhaltlich wie personell flexible Arbeitsgruppen etabliert werden, die projektbezogen mit den Künstlern zusammenarbeiten. Das ebenfalls neu gegründete Institut für Netzentwicklung nimmt in erster Linie Serviceaufgaben im Kommunikationsbereich wahr und unterstützt damit die Arbeit der anderen ZKM-Abteilungen. Allerdings ist der Fokus dieser Abteilung zu stark auf Standardtechnologien ausgerichtet, und das vorhandene innovative Potenzial ist - gemessen an der Bedeutung, den dieser Arbeitsbereich für die weitere Profilierung des ZKM haben könnte - zu gering. Um die vorhandenen Ressourcen besser zu nutzen und auszubauen, sollte die inhaltliche Orientierung der drei neu gegründeten Abteilungen stärker den Kernaufgaben und -kompetenzen des ZKM angepasst werden. Von einem Ausbau naturwissenschaftlich orientierter Grundlagenforschung am ZKM ist prinzipiell abzuraten, da das erforderliche wissenschaftliche Niveau im Rahmen einer künstlerisch ausgerichteten Institution nicht gewährleistet werden kann. Vielmehr wird nachdrücklich empfohlen, die bereits hervorragend bewährten Kooperationen mit renommierten Forschungseinrichtungen auszubauen.

Insgesamt sind die Kooperationsbeziehungen des ZKM zu Forschungsinstituten, Universitäten, Kunsthochschulen, Museen und anderen kulturellen Institutionen im In- und Ausland sehr gut. Europäische und internationale Kooperationen im Bereich

Restaurierung und Archivierung von Medienkunst sollten allerdings ebenso ausgebaut werden, wie die Zusammenarbeit mit Wirtschaftsunternehmen. Auch die Kooperationsbeziehungen zu den Hochschulen in Karlsruhe sollten noch weiter intensiviert werden, z. B. durch gemeinsame Berufungen von Professoren und kooperative Studienprogramme.

Neben hausinterner Forschungsarbeit im Kontext künstlerischer Produktionen werden am ZKM neue technologische wie künstlerische Fragestellungen maßgeblich durch externe Künstler, Musiker bzw. Wissenschaftler eingebracht und bearbeitet, die im Rahmen des Artist-in-Residence-Programms projektbezogen in den verschiedenen ZKM-Abteilungen arbeiten. Dieses Programm adressiert ausschließlich etablierte Künstler aus dem In- und Ausland, deren Arbeit dem Profil und der am ZKM vorhandenen technischen Ausstattung entspricht. Den Gastkünstlern wird am ZKM ein attraktives technisches und vor allem intellektuelles Umfeld geboten, welches den sehr guten internationalen Ruf des ZKM mit begründet. Um dies auch weiterhin zu gewährleisten, ist künftig eine gezieltere Personalplanung sowohl für die Leitungsebene, die Ebene der künstlerisch-wissenschaftlichen Mitarbeiter als auch für den technischen Bereich notwendig.

Das ZKM hat sich mit einem abwechslungsreichen Programm von Kunst- und Musikveranstaltungen als Aufführungsort für aktuelle Produktionen der Medienkünste sehr gut etabliert. Es veranstaltet weiterhin sehr erfolgreich Konferenzen, Podiumsdiskussionen und Vorlesungsreihen mit national wie international renommierten Künstlern und Wissenschaftlern. Durch die sehr gute Arbeit der Abteilung Museumskommunikation werden die vielfältigen Aktivitäten des ZKM einer breiten Öffentlichkeit auf überzeugende Weise nahe gebracht.

Künstlerisch-wissenschaftliche Mitarbeiter des ZKM (außer Mitarbeiter des MNK) werden überdurchschnittlich häufig zu Tagungen anderer Einrichtungen im In- und Ausland eingeladen. Die Publikationsleistungen der ZKM-Mitarbeiter sind gut, allerdings könnte die Zahl der Veröffentlichungen in externen referierten Organen erhöht werden.

Die am ZKM in Zusammenarbeit mit Forschungseinrichtungen entwickelten Technologien sind auch für die wirtschaftliche Praxis von großem Interesse. Hier sollten von Seiten des ZKM gezielt Anstrengungen unternommen werden, um den Technologietransfer in die Wirtschaft zu fördern.

Während das MNK keinerlei Drittmittel akquiriert hat, ist zu begrüßen, dass das ZKM die Drittmitteleinwerbung in den letzten Jahren deutlich steigern konnte. Allerdings wäre künftig im Hinblick auf das Institut für Medien und Wirtschaft darauf zu achten, dass nur Drittmittelprojekte akquiriert werden, die dem Satzungsauftrag des ZKM entsprechen. Prinzipiell sollte die Drittmitteleinwerbung verstärkt und strategischer angegangen werden.

D. Organisation, Struktur und Ausstattung

Laut Satzung des ZKM nimmt der Stiftungsrat die Funktion eines Aufsichtsrats wahr, während das Kuratorium im Sinne eines Wissenschaftlichen Beirats tätig werden soll. Diese unterschiedlichen Tätigkeitsbereiche der beiden Stiftungsorgane sind derzeit zu wenig getrennt. Um seine beratende Funktion in fachlichen Fragen wahrnehmen zu können und damit eine externe Qualitätskontrolle zu etablieren, muss das Kuratorium insgesamt gestärkt werden. Grundsätzliche inhaltliche Angelegenheiten, wie z. B. die Einführung neuer Arbeitsschwerpunkte, sollten nur im Benehmen mit dem Kuratorium umgesetzt werden. Im Gegenzug sollte sich der Stiftungsrat auf seine Funktion als Aufsichtsgremium konzentrieren. Dies kann nur erreicht werden, wenn die in der Satzung festgelegte Zusammensetzung des Stiftungsrates verändert wird. Vertreter der Universität Karlsruhe und der Karlsruher Kunsthochschulen sollten nicht dem Stiftungsrat, sondern dem Kuratorium angehören und dort vor allem die fachliche, nicht die administrative Ebene der jeweiligen Hochschule repräsentieren. Grundsätzlich ist der Stiftungsrat im Hinblick auf seine Funktionsfähigkeit zu groß und sollte möglichst auf die stimmberechtigten Mitglieder und - falls notwendig - wenige Mitglieder mit beratender Stimme reduziert werden.

Zur Stärkung der internen Qualitätskontrolle sollte auch das Projektmanagement verbessert werden. Deshalb wird empfohlen, einen Projektkoordinator einzustellen, der für das Management aller ZKM-Projekte zuständig ist.

Um eine größere inhaltliche Flexibilität angesichts sich stetig verändernder künstlerischer Fragestellungen zu erlangen, sollten die drei neu gegründeten Abteilungen im Sinne von Arbeitsgruppen in die Hauptabteilungen des ZKM eingegliedert werden.

Die am ZKM gängige Praxis der Vergabe von befristeten Verträgen ist grundsätzlich zu befürworten, da auf diese Weise eine personelle Flexibilität gewährleistet werden kann, die angesichts der dynamischen Entwicklung der Medientechnologien für die Arbeit des ZKM von erheblicher Bedeutung ist. Dennoch muss stärker darauf geachtet werden, dass diese Flexibilität nicht mit einer zu hohen Personalfluktuation einhergeht. Um die Kontinuität der Arbeit des ZKM zu garantieren, sollte grundsätzlich die Möglichkeit bestehen, Arbeitsverträge zu verlängern bzw. längerfristige Arbeitsverträge abzuschließen, die den Projektlaufzeiten angepasst sind. Insbesondere im Hinblick auf das wissenschaftlich-künstlerische Leitungspersonal sollte die Möglichkeit der Vertragsverlängerung um weitere fünf Jahre in die Stiftungssatzung aufgenommen werden (d. h. Vertragslaufzeit insgesamt bis zu zehn Jahre). Zudem wird empfohlen, die Option einer Wiederbestellung des Vorstands/Direktors in der Satzung zu verankern.

Die technische Ausstattung, vor allem des Instituts für Musik und Akustik, ist hervorragend. Das derzeit verfügbare Budget und die Personalausstattung sind jedoch für eine effektive Ausnutzung der technischen Ressourcen nicht ausreichend. Außerdem sollten vorhandene Finanzmittel noch effizienter genutzt werden. Die geplante Einführung der Kosten und Leistungsrechnung wird ausdrücklich begrüßt.

E. Zusammenfassung und Empfehlung

Seit seiner Gründung hat sich das ZKM zu einem national wie international anerkannten Standort für Kunst und Medientechnologie entwickelt. Im Kontext künstleri

scher Produktionsprozesse entstehen am ZKM innovative Technologieentwicklungen und hervorragende künstlerische Arbeiten, die international wahrgenommen werden. Das ZKM hat sich auch als Serviceeinrichtung für Künstler und Wissenschaftler aus aller Welt etabliert, die im Rahmen des Artist-in-Residence-Programms projektbezogen am ZKM tätig sind. Mit einer umfangreichen Sammlungs- und Ausstellungstätigkeit werden museumsspezifische Aufgaben sehr gut wahrgenommen. Das ZKM führt darüber hinaus sehr erfolgreich Tagungen, Podiumsdiskussionen bzw. Vorlesungsreihen durch und fungiert als Veranstaltungsort für künstlerische Produktionen aus dem In- und Ausland. Die Zusammenführung von technologiebasierter Kunstproduktion, Museumsarbeit und vielfältiger Veranstaltungstätigkeit ist deutschlandweit singulär und kann als besonderes Verdienst des ZKM herausgestellt werden.

Der Wissenschaftsrat begrüßt die Absicht des Landes Baden-Württemberg und der Stadt Karlsruhe, die derzeitige Höhe der Zuwendungen an das ZKM in den nächsten Jahren beizubehalten und bittet darum, auch die langfristige Finanzierung sicherzustellen. Er empfiehlt, das MNK in das ZKM einzugliedern, um dem Satzungsauftrag gerecht werden zu können. Die Stiftungssatzung sollte im Hinblick auf die Zusammensetzung von Stiftungsrat und Kuratorium überarbeitet werden sowie um die Möglichkeit der Vertragsverlängerung für das künstlerisch-wissenschaftliche Leitungspersonal und der Wiederbestellung des Vorstands/Direktors ergänzt werden. Eine Verbesserung der internen und externen Qualitätskontrolle wird als notwendig erachtet. Der Wissenschaftsrat bittet das Land, ihm nach drei Jahren über die Umsetzung der Empfehlungen zu berichten.

Drs. 5701/03
Köln, 19. Mai 2003

ANLAGE

Report on the
Center for Art and Media (ZKM), Karlsruhe

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Preliminary remarks

The report about the Center for Art and Media (ZKM) in hand consists of two parts. The descriptive part has been finally adjusted in coordination with the institute concerning the correct rendering of facts. The assessment part describes the judgement on scientific performance, structures and organisational features.

A. Introduction and background

A.I. Institutional development and functions

The idea of founding a Center for Art and Media (ZKM) in Karlsruhe dates back to the middle of the 1980s. Facing the upcoming development of information technology, the new institution was conceived to demonstrate the possibilities of new media and their influence on people's life. Initiated by representatives of the city of Karlsruhe, several expert committees were established to help characterise the exact form and function of the center. In 1988, the "Konzept 88" defined an institution with research laboratories, studios and open workshops, a media theatre, and a media museum that should realise the working priorities "Image", "Music" and "Media for the public".[4)] The "Konzept 88" was jointly approved by the Municipal Council of Karlsruhe and by the State Government of Baden-Württemberg. The city and the state both agreed upon an equal share of the financial liability for this new institution and thus the ZKM was officially founded in 1989.

The first definition of ZKM was further developed by the founding director. He set a new focus on art and added the idea of a Museum of Contemporary Art for all genres and media which should be primarily directed towards the encounter of media art and the traditional arts (painting, graphic, sculpture). In his vision, the ZKM was to promote the evolution of interdisciplinary artistic applications of media technologies and to position these applications in the context of contemporary art as a whole maintaining all contemporary practices of art – from grand pianos to synthesisers, from paintings to computer installations.

Another idea conceived by the founding director was realised by the State Baden-Württemberg in 1991: the foundation of the State Academy for Art and Design (Staatliche Hochschule für Gestaltung – HfG) being associated to ZKM. Through a close co-operation of ZKM and HfG, artists and scientists should be given the possibility to pass their knowledge, gained while working at ZKM's laboratories, to the

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4) See Konzept 88: Zentrum für Kunst und Medientechnologie Karlsruhe. Karlsruhe, 24 March 1988, p. 15.

younger generation. For this reason, in 1993 the Wissenschaftsrat recommended to place ZKM and HfG in close proximity.[5)] With the relocation of ZKM and HfG to Hall A, a former ammunition factory in Karlsruhe, this recommendation was implemented in 1997.

Also in 1997, the Museum for Modern Art was founded (initially named Museum for Contemporary Art). At first, it was an integral component of ZKM as a regular department. In 1999, by taking up a former idea of the State Government, the Museum for Modern Art was opened as a collectors' museum that houses and presents selections of Baden-Württemberg's most important private collections. Consequently, the Museum for Modern Art (Museum für Neue Kunst – MNK) moved to a separate part of Hall A. Also, in terms of budgetary, conceptual as well as administrative issues, the MNK became practically an autonomous institution.

In 1999, the new Chief Executive Officer (CEO) of ZKM was appointed. Under his management, the interdisciplinary approach of ZKM has been intensified. Also, the area of research and development was expanded by founding, for example, three new Institutes: the Institute for Basic Research, the Institute for Net Development, and the Institute for Media and Economics.

The purpose of ZKM is to facilitate a comprehensive exploration of the arts and media technology, in particular, in the fields of image, music, word and their interrelationships. ZKM embodies a synergy of research and art production, presentation as well as art collection and archive, which are inseparable and have explicitly equal working priority. For this reason, ZKM is a unique institutional model being structured along the following lines of activity:

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5) See Wissenschaftsrat: Empfehlung zur Aufnahme der Hochschule für Gestaltung Karlsruhe in das Hochschulverzeichnis des Hochschulbauförderungsgesetzes, in: Empfehlungen und Stellungnahmen 1993, Cologne 1993, p. 136.

(1) Research and art production

ZKM is dedicated to research and development of artistic applications of new media technologies in the area of visualisation as well as acoustics with concentration on the transdisciplinary conjunctions of the various art forms as afforded by new media technologies. High level technological and intellectual resources are provided to guest artists and scientists to either produce new works of art and research on the theory and practice of artistic applications of the new media using a transdisciplinary approach. ZKM aims to research and develop new theoretical structures, hardware and software tools as well as interfaces that allow cultural development of new media technologies.

Since art and media academies are usually not able to offer their technical infrastructure to postgraduate media artists over extended periods of time, there is a veritable need for institutions where professional artists can realise projects that demand extensive amounts of time, equipment, personnel, and financial means. ZKM sets up a stimulating environment and further education for professional artists working with new media by giving them access to high level technical and intellectual resources and offering the opportunity to work over extended periods of time (artist-in-residence-programme).[6)]

(2) Presentations

ZKM defines itself as a site for information and communication. It is one of its main tasks to provide the public with the means of discovery of and creative contact with new media as well as to offer further and on-going education. Consequently, ZKM sees itself as a center of significant cultural value for the citizens of Karlsruhe and the neighbouring regions as well as for national, European and international visitors.

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6) The programme provides free use of high-level equipment over extended periods of time at ZKM's Institutes, office space at ZKM, access to the expertise of the Institute's staff as well as grants to cover living expenses.

ZKM places strong emphasis on variety in its public presentations. Exhibitions, symposia, podium discussions, lectures, workshops, concerts, film evenings, and performances mediate directly to a broad audience and give continuous insight into the media art production of ZKM as well as the international production of media art and its accompanying theories. Particularly through thematically concentrated exhibitions with a comprehensive approach, the public is introduced to the current, socially relevant issues in international cultural production thereby creating a permanent platform for discourse. Also, the exhibitions provide a cross-section of present-day art and facilitate a comparison between traditional and media art.

(3) Art collections and documentation

ZKM collects all kinds of media art as well as contemporary art using more traditional artistic techniques. In addition to works of art, all forms of documents and other testimonials, apparatuses from the early history of media art, from holography to early television sets are collected.

Although there are other institutes and museums world-wide that cover individual functions mentioned above, there is no other institution active in the field of art and media technology that provides a comparable combination of research, art production and traditional museum work.

A.II. Departments and working priorities

According to the organisational chart of ZKM from November 2002, ZKM is organised in nine departments and three functional areas. Five of the nine departments focus on research and art production. Another two departments and one functional area organise exhibitions and events; the latter two are also in charge of art collections. In addition, the Media Library is responsible for special collections and documentation. One functional area comprises Press and Public Relations, Publications, Museums Communications and the museum shop. Finally there is a department for administra-

tion comprising facility management and another functional area providing IT support.

Proposals and ideas for research, productions and events can come from each department and working group of ZKM. The department heads develop the topics in dialogue with their scientific colleagues and visiting artists. Exhibition topics are defined by the chairman and CEO of ZKM, who also accompanies the progress of the work topics in each department. Projects covered by the departments' budgets can be decided by the departments themselves. Joint projects are developed by the department heads (Programme Group), who currently meet once a month. As a rule, all projects are discussed by the Programme Group in the planning stage and during realisation. Larger projects are discussed and decided on by the Steering Committee comprising the CEO, the heads of the Institutes for Visual Media and Music and Acoustics as well as representatives of ZKM's administration. The final decision is left to the CEO.

MNK holds a staff meeting once a week to discuss scientific questions, the exhibition programme, and to elaborate plans for realising future projects. They define the exhibition and research programme, which is subsequently presented to the Collectors' Board of Trustees of MNK, which finally decides on the general programme of MNK. According to an agreement between ZKM and MNK issued in October 2000, their exhibition planning should be co-ordinated. For this reason, the CEO of ZKM attends the meetings of the Collectors' Board of Trustees of MNK, whereas the Head of MNK can attend the meetings of the Steering Committee, the Board of Trustees and the Advisory Board of ZKM.

Institute for Visual Media

Being founded in 1992, there was no change of management until 2002. The new head of department will be appointed in spring 2003. The Institute for Visual Media has five posts for scientific/artistic staff financed under its regular budget, of which one post is generally fixed-term, whereas one is presently fixed-term. In addition, one fixed-term post is financed by third parties.

ZKM's Institute for Visual Media provides a research and production environment for professional artists and scientists, where they can work with rapidly evolving image media technologies. It aims to enable the practical research and development of ap

propriate multimedia techniques, and to promote the application of these techniques in an artistic and social context.

Activities of the Institute for Visual Media include in-house research and development of new hardware and software tools in response to evolving artistic needs. In recent years, research and development efforts – often in co-operative, transdisciplinary projects by artists, companies, and other cultural institutions around the world – have been invested in the following areas:

- digital video – development of a virtual studio that allows the combination of virtually created images with captured live action;
- interactivity – special focus is given to developing innovative interactive interfaces between the audience and the work of art;
- virtual reality – development of custom virtual reality techniques for real-time graphics applications in interactive situations;
- simulation – for example, synchronising actual body movement and visual movements in virtual environments, using a hydraulic simulation platform developed at ZKM;
- telecommunication – experimenting with different forms of tele-presence using broadband, fiber optic networks available at ZKM, as well as distributed connectivity between remote locations;
- multimedia productions related to the extensive publication of original CD-ROM and DVD-ROM titles;
- new techniques for interactive cinema and consequently interactive narrative, based on innovative panoramic and full dome projection systems and real time 3D processing of digital video data.

Institute for Music and Acoustics

Being founded in 1989, there was no change of management until summer 2002. In April 2003, the new head of department will take over the position. The Institute for Music and Acoustics has five posts for scientific/artistic staff financed under its regular budget, of which one post is generally fixed-term, whereas two are presently fixed-term. Three posts are currently not occupied in order to leave the decision on staffing to the new head of the Institute.

ZKM Institute for Music and Acoustics combines artistic production with live event activities as well as research and developmental work. The spectrum ranges from live electronic pieces for the concert stage to musical theatre using interactive technologies, from digital sound synthesis and algorithmic composition to sound studio productions to film music, radio plays, and CD-ROMs.[7)] In co-operation with ZKM Institute for Visual Media, inter-media productions have been realised in which music was often the initial starting point.

In recent years, the international artist-in-residence-programme has moved to the center of activity. The Institute offers composers (and also artists, instrumentalists, developers) variable workspaces that can be described as open computer music

7) Approximately 200 productions have been completed so far.

systems. This working environment is further developed by the Institute's staff, because industrial guidelines do not always correspond with individual artistic wishes. Some of the projects are planned and carried out in co-operation with specialists from the Institute right from the start. Artists' requests can also be the starting point for special developments in the technical area (most recently, for *Heptameron*: development of sensor technology, wireless transfer of sensor data, further development of the Radio Baton by Max Mathews).

In the past years, many guest artists have worked at ZKM on specific software solutions, developed their own tools, and programmed algorithms. It is here that the process of software development, or programming, and that of composing come together. Often program technical solutions do not remain limited to a specific composition, but rather, can be applied in many ways. For example: filter algorithms for MAX/MSP, algorithmic composition software "slippery chicken" based on Common Lisp as well as automatic notation software "rmsps" in C++ or algorithmic integration of live score generation, live electronic, light control, image control, and sensorics in real time for stage performances.

The soon-to-be-released DVD publications are an example of the use of commercial standards for artistic purposes. In recent years, exploration has been done in the potential of DVD technologies, specifically for multichannel electronic music applications; especially the multitude of currently used codes/compressions and their influence on the tonal output result. From the start, the Institute has specialised in multichannel music, and since its opening has had at its disposal one of the first professional "Surround Sound" director/mixing/mastering rooms. The DVDs produced as multiformat DVDs with a DVD-audio, DVD-video, and DVD-ROM section are unique in that they publish the same piece in various audio formats up to an 8- channel 24-bit version – a novelty that enables the auditory comparison of various formats. Here, the Institute is dealing with a new paradigm of distribution and archiving of compositions that employ more than two channels, as made available on audio CDs.

Since the beginning of 1999, there has also been a steady increase of integration of musical forms generally classified as belonging to an experimental DJ culture, which on the one hand derives from youth culture, but is conceptually located in the tradition of electroacoustic avant-garde music.

In light of recent technological transformations resulting in new forms of music production and reception, ZKM has also increasingly enabled and supported productions of net based works and concerts in co-operation with the ZKM Institute for Net Development. The Institute for Music and Acoustics has also participated in the development of installation works for the exhibition context and developed an exhibition area with ZKM productions for the Sony Music laboratory at Berlin Potsdamer Platz.

Institute for Basic Research

The Institute was founded in 1999 and managed by the same person since that time. It has one fixed-term post for scientific staff financed under its regular budget, and two fixed-term posts financed by third parties.

The Institute dedicates itself to research in the field of complex systems as well as to the discussion of epistemological topics. In general, the Institute is involved with human beings' relationship to their environment. As the brain is the central switchboard for perception, neurophysics is of central importance in this. Since relativity theory and quantum mechanics, the influence of the observer on that which is observed, has also been a recognised line of questioning in physics. Thus, a parallel arises between studies of the observer-dependency in physics and the observer-dependency in media art. Starting from the assumption that a contemporary science of the image cannot survive without the images of science, the Institute strives for investigations on the functions of the image and the observer in the natural sciences, particularly in physical systems. These investigations should also contribute to better understanding and innovative developments in artistic production.

A systems theory approach - derived from the study of complex systems consisting of many parts interacting in a non-linear fashion - has been chosen for the study of complex interactive image systems as made possible by the computer and corresponding interface technologies. The Institute is concerned with the computer's possibilities as an instrument for simulation. The knowledge thus gained, which stems from the research areas of quantum mechanics, statistical physics, and thermodynamics, as well as systems theory and cybernetics, enables the further development of media technologies in the most sophisticated areas. Here it is possible to point out, for example, the development of interface-technologies in which observers advance from the macroworld into the microworld and can even become an intrinsic observer of the system that they are watching. The observer, who is a part of the system being observed, is a prerequisite of central importance for interactive media art, as well as for quantum physics, cybernetics, and cognition sciences. The repertoire of scientific research includes not just the evaluation of brain activities but also (to name only the most significant): microphysical and system theoretical simulations; the development of human-computer-interfaces for relativistic computer experiments; applications of visual-haptic interfaces for fundamental experiments in the area of "object-subject-relationship". The methods comprise different feedback and interaction mechanisms between simulated subsystems of dynamical systems as well as between real operators and virtual realities.

Systems that contain observers are of particular interest and at the same time difficult to model and analyse. According to the results from modelling, observers react to a system, which becomes self-referential and can no longer be rationally analysed, which is why such systems are frequently called "bounded rational systems". An adequate analysis of complex systems containing observers includes psychophysical methods of cognition and other psychological processes. The methods used for research of such systems are neural networks and dynamic adaptive cognitive systems developed primarily at the Institute.

For example, the Institute models and investigates complex systems with the goal of finding prediction and intervention strategies such as multi-compartment systems whose parts often interact in a nonlinear fashion, sometimes leading to chaotic behavior. A more concrete example is heart dynamics, which is intensively investigated at the Institute.

Other projects of the Institute cover:

- entropy in multi-component systems and observer-dependency;
- immuno-epidemiologic dynamics;
- pattern formation in networks of coupled oscillators;
- audification of dynamic systems;
- analysis of physiological dynamics;
- stability of dissipative systems;
- Lyapunov exponents and their meaning;
- augmented reality to support sports education and dynamical cognitive systems;
- neural networks and cognition.

The application of computer-based simulations at the Institute for Basic Research covers a wide spectrum from biochemistry and mathematical modelling to the visualisation of very large datasets. In an interdisciplinary approach physicists, mathematicians, programmers, and artists develop complex audio-visual simulations, which are realisations of abstract models of physical processes. These installations are meant to be epistemic tools for scientists and, at the same time, mediate scientific insights to the public.

Institute for Net Development

The Institute was founded in 1999. In December 2002, the new head of department took over the position. The Institute has one fixed-term post for scientific/artistic staff financed under its regular budget, and one fixed-term post financed by third parties.

The Institute deals with the conditions and possibilities of practice and mediation of art and culture in the new activity fields of digital space. Its work is organised on the website according to the areas of research and development of new net-based applications as well as the mediation of the work of ZKM.

The Institute for Net Development established a dynamic net presence with an editorial system based on an object-oriented databank. A constantly growing base of information on all departments with artists, scientists, works, exhibitions, events, and publications can be called up online from anywhere in the world. The entire documentation has been converted into exchangeable formats and integrated into a fully searchable online archive. ZKM Net Development runs its own XML-based content management and archiving system that operates on all major platforms: UNIX, Windows, and Macintosh. In its final developmental stages the content management system is planned to be capable of handling MIDI, audio, and video data from international net artists and GPS information and metadata delivered from other web servers. Further central working priorities are streaming media (online video and audio), panorama photography suitable for the net (spherical projections), XML-based integration of various server and databank environments, and mobile computing (Palm).

A further central field of work is the conception of artistic projects, or the realisation of projects in co-operation with guest artists. The projects are both purely net-based and integrated in performative projects.

The Institute for Net Development also works on net appearances for major exhibitions at ZKM and offers developments for new forms of exhibition and documentation online such as “The virtual museum” (in collaboration with the Badische Landesmuseum Karlsruhe), or the project “Learning from History. National Socialism and the Holocaust in German Education” (in collaboration with the Goethe Institute Munich and other institutions). In the near future, the Institute will increasingly turn its attention to areas such as internet streaming, distributed archive systems and mobile applications/communications.

Institute for Media and Economics

The Institute was founded in May 2001 and managed by the same person since that time. It has two fixed-term posts for scientific staff financed by third parties.

The Institute for Media and Economics links economic and social research within the field of new media to an equally theoretic and empirical approach. The department primarily carries out the obligations of “Konzept 88”: media for the public. It explores and demonstrates the social effects of society’s media-induced transformation. The integration of economic and social research at ZKM is expected to permit the early detection of new media trends. This information is planned to be put to good use in a variety of disciplines in both industry and politics. Scientific policy consulting should provide decision-makers with prompt and detailed information about changes in new media.

The Institute’s research programme comprises the following subjects:

- new media at home and on the job;
- new media as innovative training tools;
- media-supported information systems in industry.

At the moment, the focus is on projects related to educational research which can be divided into three areas:

- The educational activity that has been transformed by new media is investigated (in terms of cost) with regard to consequences for the relationship of businesses, private households and the state.
- Following the scientific discussion about “development of expertise”, theoretical learning processes in business and private spheres are examined.
- In order to develop environments that are conducive to working and learning, theoretical knowledge is applied and innovative ways of using media for education are developed. The Institute aims, for instance, to create “education parameters”. These involve using popular television to get across both the value inherent in education and the biographies of selected role models. Together with

partners from public-service television and large television production companies, a concept for a project is at present being formulated.

Media Museum

The Media Museum opened in 1997. It has two fixed-term posts for scientific staff financed under its regular budget and one fixed-term post for scientific staff financed by third parties. The managerial post is vacant. Instead, the current CEO manages the post by himself in order to ensure a close connection between the Media Museum's programme and the changing exhibitions that are carried out by the Exhibition Department.

According to ZKM, the Media Museum is the first museum for interactive art on an international scale. The thematic spectrum extends from interactive film to cyberspace simulation technology to current internet software applications. The Media Museum focuses on history and critique of the new media that have changed human life over the past fifty years. In nearly all of the works displayed and created specially for the Media Museum, visitors are challenged to interact. The goal is to make the technical conditions of the new visual world more understandable for the recipient in this way.

The Media Museum defines itself as ZKM's "show case." Here, the aim is to make all projects and developments of ZKM available to the audiences. Also, in a specific exhibition series, thoughts of significant twentieth-century personalities about the relationship between art and philosophy are reflected, e.g. *Guy Debord and the arts* (2001), *Foucault and the arts* (2002), *Deleuze and the arts* (2003).

The permanent collection of the Media Museum is internationally unique due to its breadth and its early media art works. Of central importance is the question of preservation and restoration, as, for example, the uncompressed conservation of data from media installations, or the preservation and restoration of media installations. This includes a consideration of the correspondence of original artistic intention and technological developments as well as the handling of sculptural elements and modifications of the used technology.

Media Library

The Media Library has one post for scientific staff which is currently not occupied, and one fixed-term post for scientific staff financed by third parties. It includes a library, a video collection and an audio collection (see chapter "Resources"). In order to establish a close connection between the collections of the Media Library and the Media Museum, the scientific responsibility for the video collection lies with the curator of the Media Museum.

Works of media art and documents must be continually transferred to the most recent recording media technology. For this reason, the Media Library deals with the techni

cal part of archiving, conservation and restoration of analogous as well as digital video and audio material.

The Media Library digitises analogous material of the video and audio collections for direct access on CD-ROM via a jukebox system. It is planned to enlarge the storage of the jukebox by a hard disk server system and to completely transfer the data to the server which would enable in-house streaming. Another possibility could be a new development for archiving uncompressed data (a prototype was developed for the exhibition “Future Cinema”).

Also, in collaboration with ZKM‘s Institute for Visual Media and the Institute of Music and Acoustics a conservation programme is being launched for the archival materials of the Media Library. For instance, a special research project is planned for digital restoration of early video materials. The first initiative of digital audio preservation was the uncompressed digitising of the International Digital Electro-Acoustic Music Archive (IDEAMA) target collection in 1996 on 140 CD-Roms, which is now completely stored on hard disk. At present, the audio-studio of the Media Library is being upgraded with the most recent audio-formats and restoration-software.

In addition, the Media Library produces video and audio DVDs for exhibitions, presentations, and archiving.

MNK - Museum für Neue Kunst (Museum for Modern Art)

The MNK has one permanent and four fixed-term posts for scientific staff financed under its regular budget.

MNK houses and exhibits four private contemporary art collections (Siegfried Weishaupt collection, Froehlich collection, FER collection, Grässlin collection) that provide an overview of contemporary art since 1960. The museum’s task is to put these collections on display in permanent exhibitions in a comprehensive order, to preserve the works of art housed in the museum and to conduct research on the art and artists in the collections. Taking the permanent collections as a starting point, the MNK also designs temporary exhibitions four to five times a year that focus on individual artists, specific topics or special groups of works connected with the collections. Also, MNK invites artists to realise new works or installations, and produces catalogues designed in collaboration with the artists. Finally, the museum provides information as well as scientific and educational programmes to the public.

Exhibition and Events

The functional area Exhibition and Events is headed by the current CEO of ZKM. It has one fixed-term post for scientific staff financed under its regular budget and one fixed-term post for scientific staff financed by third parties.

A changing programme of temporary exhibitions aims to present a dialogue between media art and traditional art. Two large changing exhibitions and several small exhibitions are presented annually. Large exhibitions address current topics in the new media and their social relevance, whereas smaller exhibitions present artistic devel

opments at ZKM's Institute and the archive collections. The exhibitions are curated by employees of ZKM in co-operation with the various in-house Institutes as well as by international guest curators that are invited to develop exhibition concepts for specific topics.

As most important exhibitions of the years 2000 to 2002, ZKM points out the following selection:

- "net_condition/netz_bedingung", 23.09.1999 – 27.02.2000;
- „The Anagrammatic Body. The Body and Its Medial Construction", 08.04.2000 – 27.08.2000;
- "Olafur Eliasson. Surroundings Surrounded", 01.05.2001 – 26.08.2001;
- "Guy Debord – Agent of Criticism Against Its Own Recognition", 29.09.2001 – 03.02.2002;
- "CTRL[space]: rhetorics of surveillance from Bentham to Big Brother", 13.10.2001 – 24.02.2002;
- "Iconoclash. Beyond the Image-Wars in Science, Religion and Art", 04.05.2002 – 30.09.2002;
- "Future Cinema. The Cinematic Imaginary After Film", 16.11.2002 – 30.03.2003.

Along with the exhibition programme, the department also contributes to the development of the film programme *ZKM_Cinema on Wednesdays* that is co-ordinated with the exhibition programme. Furthermore, the department organises and presents symposia on large exhibitions as well as intensive accompanying programmes with lectures, performances, concerts, and artist presentations.[8)]

Museum Communications

The department Museum Communications has one post for scientific staff under its regular budget. It offers the following services to visitors and different target groups:

- Guided tours are offered in eleven languages. School groups, for which specific curriculum-based programs are offered, make up approximately 40 percent of the total number of guided group tours. Also, university classes are supported by the department through special thematic tours and instruction.
- Regular workshops introduce children as well as adults to the creative use of the computer.
- The department initiates, organises, and publishes conferences on current topics of media education, museology, artistic training and the impact of new information and communication technologies on society. For example, an international con

8) Special event series and symposia have been: the series *Profile* with Jean Baudrillard, Benoit Mandelbrot, Max Mathews, and Oswald Wiener; the lecture series on basic research *Komplexität: Theorie, Experiment, Simulation*; the series on the future of theater, *ghost dances//landscapes of time*; the accompanying lectures for the exhibitions *net_condition*, *Der Anagrammatische Körper*, *ctrl_space*, and *Iconoclash*; and the symposia, *cITy:: Data on the city under the conditions of information technology* with Saskia Sassen and Richard Sennett, *The Sciences of the Interface*, *Digital Video – the democratization of the cinema*, *The regime of the image. Between mimic display and corporate branding,* and *Image wars and image floods*.

ference scheduled for October 2003 will deal with topics in the field of art education within the context of the PISA study.

- The department runs a teachers' educational program on multimedia design.
- Target-oriented consulting is provided to external partners, cultural institutions, municipal bodies, and companies on all topics related to the development of institutions and museology in the area of new media.

A.III. Organisation and resources

The ZKM is a foundation under public law having its registered office in Karlsruhe. First-level supervisor and highest authority to all employees and civil servants of the ZKM is the mayor of the city of Karlsruhe. The statutory organs of the foundation are the Board of Trustees (Stiftungsrat), the Chief Executive Officer (Vorstand), and the Advisory Board (Kuratorium). In 2001, the foundation‘s statutes have been updated.

According to the statutes, the Board of Trustees comprises eighteen seats that are allocated as follows:

(a) one representative from the Ministry of State;
(b) one representative from the Ministry of Science and Art;
(c) one representative from the Ministry of Finance;
(d) the Mayor of the city of Karlsruhe;
(e) two representatives of the city of Karlsruhe;
(f) the vice-chancellor (Rektor) of Karlsruhe University;
(g) the vice-chancellor of the State Academy of Fine Arts Karlsruhe;
(h) the vice-chancellor of the State Music College Karlsruhe;
(i) the vice-chancellor of the State Academy for Art and Design Karlsruhe (HfG);
(j) up to four more representatives from the federal state;
(k) up to four more representatives from the city of Karlsruhe.

The chairman and deputy chairman are alternatively nominated for three years terms by the city and federal state; one party nominates the chairman and the other one the deputy chairman. The meetings of the Board of Trustees are called as required, normally twice or thrice per calendar year. According to ZKM, the Board of Trustees has grown in the last few years to almost thirty members, whereas only six of these have voting rights.[9)]

[9)] Members indicated under items (a) to (e) have voting rights whereas those indicated under (f) to (k) act only in advisory capacity.

Being the policy-making body of the foundation, the Board of Trustees is responsible for the basic direction of ZKM's planning in terms of research, development and expansion, in particular the long-term planning for collaborations with other institutions and the conclusion of co-operation agreements. The board is also accountable for intermediate and long-term financial planning as well as the establishment of a budget and staff plan. In addition, it approves projects that are or may acquire major cultural, scientific, or economic importance. The Board of Trustees appoints and revokes the Director, his deputy, and the heads of the Institutes for Visual Media and Music and Acoustics.

The Director and CEO of ZKM is in charge of representing the foundation in and out of court, and managing the foundation. In particular, the CEO is responsible for the elaboration of research, growth, and financial plans as well as for investment and personnel planning. He/she prepares the resolutions of the Board of Trustees and their implementation and co-ordinates current and proposed research and development projects within ZKM and with other co-operating institutions. Also, the CEO decides on the appointment and dismissal of the foundation's employees, whereas for nomination and appointment of senior staff (see above) he/she needs the prior consent of the Board of Trustees.

The Advisory Board of ZKM comprises sixteen representatives from the fields of art, science, and the public life. They are appointed for a term of four years by the Prime Minister of the federal state of Baden-Württemberg in agreement with the Mayor of the city of Karlsruhe, upon recommendation by the CEO of the foundation. The chairman and its deputy is elected for a term of four years each. The meetings of the board take place no less than once per calendar year, mostly twice a year. Its task is to advice the Board of Trustees and the CEO in all important cultural and scientific matters whenever it is desired. The chairman of the Advisory Board is invited to attend all meetings of the Board of Trustees.

The statutes of ZKM include the MNK as a division of the foundation. However, a formal agreement, issued in October 2000, regulates the allocation of main responsibilities between ZKM and MNK. According to this agreement, the Head of MNK man

ages the MNK in his/her own responsibility with regard to the artistic and scientific conception and represents the MNK in all external relations. The Head of MNK is responsible for the partial budget of MNK, whereas the Board of Trustees of ZKM allocates the funds contributed by ZKM to this budget. The personnel of MNK lies within the responsibility of the Head of MNK. Recommendations regarding personnel decisions for the purposes of MNK made by the Head of MNK are submitted to the Board of Trustees by the CEO of ZKM. Only unlimited contracts need the approval of the CEO.

In general, if the CEO of ZKM and the Head of MNK are unable to agree, the chairman of the Board of Trustees of ZKM has the right of final decision.

The Collectors' Board of Trustees of MNK is held three to four times a year. It consists of the Head of MNK and his deputy, the collectors present in the museum, the CEO of ZKM, two representatives of the Ministry of Science and Art, and guests from other cultural institutions, who are consulted on special matters. The Collectors' Board of Trustees of MNK decides on the general programme of MNK and its budget policy that is proposed by the Head of MNK.

The ZKM changed over from cameralistics to commercial accounting in 2002 being still in a transitional phase from one system to the other. In 2001, the application of fund statement displays a total expenditure of ca. 13.4 million Euro of which 3.4 million Euro concern personnel, 5.4 million Euro administrative expenditures for material[10], 884.5 k Euro for donations and contributions (including the contribution to the partial budget of MNK), 388.2 k Euro for general investments over 5 k Euro, 3.3 million Euro for the organisation of exhibitions and events (including expenditures from third party funds), and 113.3 k Euro for the purchase of works of art and collection items. In 2002, the estimate for personnel related expenditures was increased in correspondence with the prospective filling of currently vacant posts. Also, with regard to the procurement of replacements and the maintenance of the technical infrastructure, much larger investments were budgeted for 2002. In addition, due to the costly exhi

[10] That is general maintenance of the building, electricity etc., and other investments under 5 k Euro.

bition projects and urgently needed repairs of the Media Museum, the amount for exhibitions, events and project was increased in 2002. For this reason the budget for purchases of art works had to be reduced. ZKM roughly estimates that the proportion in its base financing amounts to 45 % for exhibitions and presentations, 35 % (without third-party funding) for research and development, and 20 % for service provision.

The allocation of the budgets between the different ZKM institutes varies from year to year. In 2002, the individual departments and functional areas received the following basic budgets out of ZKM's total budget:[11)]

ZKM Department/Functional Area	Budget
Institute for Visual Media	250,000 Euro
Institute for Music and Acoustics	180,000 Euro
Institute for Basic Research	20,000 Euro
Institute for Net Development	100,000 Euro
Institute for Media and Industry	0 Euro [12)]
Media Library	90,000 Euro
Media Museum	200,000 Euro
Museums Communications	26,000 Euro
Exhibitions and Publications	approx. 2 million Euro [13)]

ZKM's administrative income in 2001 amounted to 1.5 million Euro including revenues from admission fees, sales of publications, revenues from third party commissions, sales form the museum store etc. The institutional donations of the federal state of Baden-Württemberg and the City of Karlsruhe are equal; both donated 4.5 million Euro in 2001. In 2002, the donations of the two founders were increased to approximately 10 million Euro.[14)] With this, the entire infrastructure as well as the base financing of the departments can be ensured being a subsidy for soliciting third-party funding. However, with regard to the further development of the art collections

11) These budgets do not include expenditures for personnel and general infrastructure (covered by the total budget of ZKM).
12) This institute is exclusively financed through third-party funding.
13) Including accompanying publications and events, marketing, transport, insurance, and museum guards/security personnel.
14) Within this basic budget, the fixed costs amount to approx. 7.2 million Euro. Approx. 2.8 million Euro are left for exhibitions/events, and for research and development at ZKM's institutes (without third party funds).

and the Media Library, this base financing is not seen to be sufficient. From the point of view of ZKM, 12 million Euro base financing would be, however, appropriate.

In 2000, the ZKM acquired 1.93 million Euro third-party funding, in 2001 1.97 million Euro, and in 2002 3.3 million Euro. For this period 2000–2002, 37.2 % of third-party funding came from State Governments, 24.8 % from foundations, 22.0 % from companies, 3.2 % from the European Union, and 2.9 % from the Federal Government.

In 2001, the application of fund statement of MNK displays a total expenditure of 3.2 million Euro, of which 664,7 k Euro concern personnel, 1.8 million Euro administrative expenditures for material, 47.5 k Euro for investments, 660.1 k Euro for the organisation of exhibitions and events, and 61.4 k Euro for the purchase of works of art and collection items. In the years 1999-2001, the costs for the maintenance of the building, for security, and especially for the art insurance have been steadily rising. For this reason, the 2002 budget for administrative expenditures for material and investments had to be increased. MNK's administrative income in 2001 amounted to 202.7 k Euro. The institutional donation of the state Baden-Württemberg was in 2001 2.2 million Euro, whereas the contribution from the ZKM-budget totalled 768.5 k Euro. MNK roughly estimates that 20 to 25 % of the general budget are devoted to research, art production, exhibitions and service provision.

The staff plan of ZKM lists 64 regular posts (presently occupied by 59 persons), of which 19 posts are for scientific/artistic staff. In addition, 15 posts are financed from third-parties, of which nine posts are for scientific/artistic staff. Technical staff, trainees as well as staff working at the Documentation and Promotion's department and the archives also participate in the artist's and researcher's work. According to ZKM, especially the newly founded Institutes for research and production are understaffed. The new financial regulations in the new bookkeeping system allow for greater flexibility within the staff budget. ZKM plans to transfer scientific posts that become vacant into a pool of posts and to fill them according to need and project. At present, four scientific/artistic posts are occupied by permanent employees. The remaining 15 posts for scientific/artistic staff are of limited duration in order to guarantee the highest possible degree of flexibility needed for innovative work. However, due to the two-

year time limitation for contracts as stipulated by BAT (Federal Employee Tariff) no continuity can be built on. In order to achieve a more continuous staff base, ZKM aspires an adjustment to the limitation possibilities of contracts as they are usual at Institutes of higher education (2 to 6 years).

The staff plan of MNK lists 16.5 regular posts, of which five posts are for scientific staff. In addition, two trainees financed from annexe funds support the staff in scientific work.

The following statistic numbers relate to 33 members of scientific/artistic staff both at ZKM and MNK (incl. staff financed by third parties, excl. trainees and PhD students): One scientist is older than 60 years, three scientists are between 50 and 60 years old, five between 40 and 50, 16 between 30 and 40, and four under 30 years old. Accordingly, the average age of staff members at ZKM and MNK is 38,5. The share of female staff members at ZKM and MNK amounts to 27,6 %. One person has been working at ZKM 10 up to 15 years, one person 5 up to 10 years, whereas the length of employment under 5 years applies to 27 staff members of both ZKM and MNK.

ZKM recruits its scientific/artistic staff from very different areas, such as informatics, engineering sciences and electronics, the fine arts, music and design, art and media sciences as well as sociology. In general, there are no difficulties to find new staff due to ZKM's good reputation. Managerial positions arouse much international interest. However, to international applicants it is sometimes problematic that employment contracts for managerial staff are generally limited to five years and that an appointment is not linked with a professorship. Altogether 22 staff members have left ZKM in the last three years, seven of them had received an appointment at an Institute of higher education.

MNK recruits its scientific staff from universities and museums. There are no difficulties to hire new staff. Two scientific staff members have left MNK to take up new appointments.

Currently, ZKM has reached the limits of space available for offices, studios, and storage. In several departments, more working and storage space is required. At MNK, office and exhibition space is sufficient, and technical facilities meet with international standards. However, the infrastructure for public events and academic conferences should be improved. Also, costs for storage space rented outside the museum need to be reduced.

ZKM Media Library offers one of the most extensive collections of contemporary music, media art, and literature on twentieth century art and media theory. Also, it is the academic library of the HfG. It comprises around 30,000 books (with an increase of 2,000 copies per year), CD-ROMs, DVDs, and around 120 periodicals, all available for public use in the reading room. The audio collection being specialised in contemporary, particularly electroacoustic, music has 12,000 music titles in stock plus musical scores, specialised books, historical photographs, and posters. The International Digital Electro-Acoustic Music Archive (IDEAMA) contains over 500 historical electronic music pieces since 1970. Besides main modern works and the archive of DeGeM (German Society for Electroacoustic Music), the collection also hosts blues, jazz, rock, pop, and movie soundtracks, as well as one of the world's largest soundscape collections. The video collection currently comprises approx. 3,600 titles of the most important positions in the history of video art. Altogether, 650 titles contained in the juke box can be viewed at the work stations that are set up for public use. In addition, 2,300 titles are available for scientific work.

At ZKM, high-level facilities are available, such as graphics supercomputers, digital video, a virtual studio with motion control camera, and a multimedia laboratory. In the computer ateliers and studios, artists and scientists find a flexible working environment that can be specially configured for each project's needs. The Blue Cube offers an excellently equipped sound studio complex which also serves as a venue for pure musical and inter-media presentations and performances. However, six years after the opening of ZKM at Hall A, extensive new and re-investments for the technical equipment are necessary.

A.IV. Publications and conferences

The ZKM publication programme attends to the creation of catalogues accompanying major exhibitions. These catalogues comprise comprehensive text collections that provide theoretical treatises on the exhibition topics. Since 1999, there is an ongoing collaboration with MIT Press. Exhibition catalogues, e.g. for “net_condition”, “ctrl[space]”, “Iconoclash” and “Future Cinema”, were published with this internationally renowned publishing house.

Also, Hatje Cantz publishes productions from the Institute for Visual Media in the series “zkm digital arts edition”, including the series “artintact” with artist projects for CD-ROM as well as individual productions such as the DVD-ROM “Dis(Locations)”, or “William Forsythe :: Improvisation Technologies”. CDs and DVDs from the Institute for Music and Acoustics have been issued by WERGO, for example, “Surround Music” and “->THRILL<-“ in the series “EDITION ZKM”. In 2001 and 2002, three audio CDs were published by ZKM.

The Institute for Media and Economics is currently preparing a scientific book series. A ZKM magazine, to be issued three to four times a year, is in the planning stages with Hatje Cantz. Also in preparation are two publications with the publishing company Suhrkamp: a conference volume for the symposium “Foucault and the Arts”, and an anthology on image theory.

In 2002, the scientific/artistic members of ZKM staff published 31 monographs (2001: 14; 2000: 16), 41 articles for collective publications (2001: 23; 2000: 40), six essays in journals with referee system (2001: 5; 2000: 3), eleven essays in other journals (2001: 9; 2000: 7), and 70 contributions to in-house publications (2001: 45; 2000: 14). Staff members presented their working results in 75 lectures (2001: 51; 2000: 62) to the scientific public as well as to the public at large.

The scientific staff members of MNK published in 2002 ten monographs (2001: 4; 2000: 9), six articles for collective publications (2001: 4; 2000: 6), two articles in journals without referee system (2001: 0; 2000: 0), and 51 contributions to in-house pub

lications (2001: 7; 2000: 11). In addition, ten lectures were given in 2002 (2001: 7; 2000: 4).

The international reputation of ZKM is assured by participation in festivals, international presentations, collaborations, publications etc., as well as by travelling exhibitions. For example, the exhibition “Future Cinema” produced by ZKM will also be seen at Kiasma, Helsinki; ICC, Tokyo; and in Sydney.

ZKM’s website not only presents the work of the ZKM Institutes, but also offers additional information and comments about international exhibitions, events and projects dealing with current issues in the various fields of new media (ZKM.Online-Magazine). The website is visited by 50,000 to 60,000 persons monthly.

Every year, approximately 150,000 to 200,000 visitors come to exhibitions and events, to the Media Museum, and the Media Library of ZKM. Furthermore, every year 1,500 to 1,800 articles on the ZKM and its activities appear in the national press. The yearly number of visitors at MNK is 50,000 on average.

In order to ensure a consistent appearance of ZKM in the public, the CEO of ZKM and the head of MNK agreed in 2000 to co-ordinate the public relations and marketing work of ZKM and MNK. However, in the point of view of MNK, there were difficulties regarding the public presentation of the museum, as the MNK could not stress its museum profile within the global ZKM policy.

The ZKM regularly organises national and international conferences, panel discussions and lecture series that often accompany the exhibitions. As most important conferences of the years 2000 to 2002, ZKM points out the following selection:

- “The New Image of the Human. On the Constitution of the Human” with Alain Finkielkraut, Michel Houellebecq, Peter Sloterdijk and Peter Weibel, 03.05.2000;
- “cITy – Data on the City under the Conditions of Information Technology”, with Richard Sennet and Saskia Sassen, 11.11.2000;

- “Education in demand” with Petra Bahr (FEST), Eckhart Marggraf; further participants: Christian Albrecht (Evangelical-Theological Faculty, University of Tübingen), Frieder Meyer-Krahmer (Fraunhofer Institute for Systems Technology and Innovation Research), Donata Elschenbroich (German Youth Institute), Christoph Mehl, Wolfgang Schäuble (Member of Parliament, CDU), Wilfried Härle (Theological Faculty, Heidelberg), 13.12.2001;
- “Image Wars and Image Floods”, with W.J.T. Mitchel, David Freedberg, Brian O’Doherty, Bruno Latour, Peter Galison, Jan Assmann, Othmar Keel, Henk van Os, Dario Gamboni, Martin Schulz, Peter Weibel, Peter Sloterdijk, Sigfried Gohr, Friedhelm Mennekes SJ, Lydia Haustein, Hubertus von Amexunxen, Anne-Marie Bonnet, Claudia Honegger, Joseph Leo Koerner, Gerhard Wolf (11.-12.07.2002);
- “Michel Foucault and the Arts. Problems of a Genealogy”, with Peter Gente, Ulrich Raulff, Daniel Defert, Thomas Lemke, Alessandro Fontana, René de Cecatty, Wolfgang Ernst, Thierry de Duve, Ulrich J. Schneider, Walter Seitter, Friedrich Kittler, Wilhelm Schmid, Michael Glasmeier, Dominique Séglard, Arne Klawitter, Tom Lamberty, Andreas Hiepko, Judith Revel, Pravu Mazumdar, Bernd Stiegler, 19.09.2002;
- “Kurt Gödel: The Boundaries of Mathematics and Rotating Universes”, with Michael Stöltzner, Werner DePauli-Schimanovich, Gregory Caitin, Thomas Beth, Georg Süßmann, Peter Weibel, Wolfgang Ullrich, 06.10.2002.

Between 2000 and 2002, scientific/artistic staff members from the ZKM have received 222 invitations to congresses, and workshops, whereas scientific staff from MNK has been invited two times to contribute to external conferences. In all cases, their participation was financed by the organisers.

A.V. Co-operations, teaching at institutions of higher education, and promotion of young scientists/artists

When ZKM was founded, co-operation agreements were made with Institutes of higher education in Karlsruhe such as the State Academy for Art and Design (HfG), the University of Karlsruhe and the State Music Academy.

State Academy for Art and Design Karlsruhe (HfG)

The closest and most important co-operation relationship exists with the HfG which was founded in conjunction with the ZKM. According to the statutes, ZKM is to make its staff, resources, and facilities available for the purposes of the HfG. This guideline was recommended by the Wissenschaftsrat in 1993.[15)] Furthermore, the statutes of ZKM call for a co-ordination of ZKM's and HfG's organisational structures.

The ZKM realises these guidelines in the following way:

- Managerial staff of ZKM occasionally teaches at HfG.
- In the past two years, HfG and ZKM have co-operated in the context of the graduate program "Image - Body - Medium. An Anthropological Perspective", funded by the Deutsche Forschungsgemeinschaft (DFG).
- Professors of HfG and employees of ZKM co-operate in art productions, research projects, events, symposia, and publications.
- Students of HfG temporarily use workspace at the Institute for Visual Media as well as at the Institute for Music and Acoustics being technically supported by staff members of ZKM. The "Forum HfG at ZKM" offers the opportunity to advanced students of HfG to present selected works and projects in a two-months rotation. HfG students usually present temporary exhibitions at ZKM, and also take part in the event programme of ZKM, e.g. they showed films within the ZKM programme "Digital Cinema". Furthermore, students are involved in various productions and projects of ZKM such as print and exhibition design.
- ZKM and HfG carry out joint film projects, and accomplish joint events (e.g. conferences, film presentations, lecture series), especially in the area of image theory and film.
- Occasionally, ZKM and HfG jointly finance research positions for special projects.

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15) Wissenschaftsrat: Empfehlung zur Aufnahme der Hochschule für Gestaltung Karlsruhe in das Hochschulverzeichnis des Hochschulbauförderungsgesetzes. In: Wissenschaftsrat: Empfehlungen und Stellungnahmen 1993. Cologne 1993, p. 133: „Der Wissenschaftsrat unterstützt (...) die Absicht des Landes, im Sinne einer standortbezogenen Ressourcenoptimierung die personellen, apparativen und räumlichen Möglichkeiten des ZKM für eine intensive Zusammenarbeit mit der HfG mit einzusetzen."

- ZKM and HfG have jointly applied for the equipment of a Streaming Studio in the framework of the project “Supporting teaching with net-based video technology” initiated by the Ministry for Science and Art in Baden-Württemberg.

University of Karlsruhe

- Several symposiums have been realised jointly by ZKM and the Institute for Applied Cultural Studies (IAK) as well as the Faculty of Architecture. Together with the Institute for Algorithmics and Cognitive Systems the ZKM developed the “laser film” for the Media Museum.
- ZKM supervises graduate students from the Faculty of Informatics who are working on their dissertations. Also, ZKM and the Faculty of Informatics jointly developed the software “xfrog”. ZKM’s Institute for Basic Research collaborates with the Institute of Applied Informatics and Formal Description Methods. For instance, the head of the Institute for Basic Research gave a lecture series on “Complexity” which was incorporated into the general studies programme (“Studium Generale”).

State Music Academy Karlsruhe

Students and professors of the Academy of Music present concerts and multimedia performances on a regular basis at ZKM. The ZKM also supports and realises electronic projects which need a special electronic support. Currently, a festival for young composers is being planned (for May 2003) that is based on a close collaboration of the State Music Academy Karlsruhe, the HfG and ZKM.

In addition, there are numerous co-operation projects between the various Institutes of ZKM and national as well as international universities, art academies, and colleges. Between 2000 and 2002 several staff members of ZKM offered lectures and seminars at national and international institutions such as the Academy of Art, St. Petersburg; the Bern University; or the Zürich College for Design.

ZKM also co-operates with non-university research institutions, museums, theatres, opera houses, and festivals:

- Since 1990, ZKM has been collaborating with the Research Center Karlsruhe. Together with the Institute for Applied Informatics/Fluidic Robotics the realisation of a larger installation outside the ZKM is in the planning stage. Further joint projects are being realised with INA-GRM Paris; ACROE, Grenoble; Fraunhofer Institute for Algorithms and Scientific Computing, Bonn; Fraunhofer Institute for Industrial Engineering, Stuttgart; and The British Film Institute, London.
- In the area of art production the ZKM has collaborated with other major media centres throughout the world such as ICC, Tokyo; ACMI, Melbourne; V_2, Rotterdam; and Ars Electronica Linz. Also, there are co-operations with theatres, opera houses, and festivals such as schauspielfrankfurt; Hebbel Theater Berlin; Munich Biennale; Salzburg Festival; Ruhr Triennale 2003; Festival EXIT-Maison des Art de Cretail; Festival VIA - Le Manege Scene Nationale de Maubeuge.
- ZKM Institute for Music and Acoustics co-operates with comparable institutions throughout the world, such as the IRCAM in Paris; the research Institute ACROE in Grenoble; the experimental studio of the Heinrich-Strobel-Stiftung in Freiburg; and the CCRMA at Stanford University. The collaborations are especially relevant for the exchange, spread, and further development of the individual Institutes' software and hardware.
- The ZKM has collaborated on various exhibition and online projects with national and international museums such as the Badisches Landesmuseum Karlsruhe; the Sprengel Museum Hannover; the Neue Galerie im Johanneum, Graz; the Guggenheim Foundation; and the Museum of Modern Art, San Francisco.
- The ZKM has been partner in European Union research projects such as "eRENA", and "eSCAPE", both projects carried out in co-operation with various European institutions such as the University of Lancaster; the University of Manchester; EPFL École Polytechnique Fédérale de Lausanne; Geneva University's MIRALab; the Royal Swedish University of Technology; and the University of Nottingham. The European project "Scalex" is currently being worked on.

Every year, approximately 15 artists-in-residence work in the different departments of ZKM for a period of ½ to one year. They also give lectures, and present performances or exhibitions at ZKM.

The ZKM offers training for employment in museums and research institutions through trainee positions (“Volontariat”). Also, ZKM supervises and supports master’s and doctoral candidates in their work. Special emphasis is put on providing support in the post-graduate phase. Either they are promoted by the artist-in-residence programme or are part of a post-graduate co-operation programme, such as exists with MECAD (Media Centre for Art & Design), Barcelona; V_2, Amsterdam; and with the University of North South Wales, Sydney. By offering grants, ZKM enables young scientists and artists to develop their own projects. With subsidies, advice, and institutional settings the ZKM supports young scientists in preparing applications for research grants in order to put them in the position to manage their own projects as early as possible. In addition, internships for students are offered. At the moment, 11 staff members of ZKM are working on a PhD.

MNK offers two trainee positions to scientific assistants, who are typically art history graduates preparing to enter a museum job. These posts offer the graduates the chance to work closely with museum staff, take part in all museum projects and acquire a set of practical skills for museum work. At present, both assistants are studying for PhDs, and will graduate during their time at the MNK. Also, MNK offers the opportunity to German as well as foreign students to work for one to three months at the museum, using the files and having direct access to the collections to conclude their scientific research.

A.VI. Future development of ZKM

According to ZKM, the goals of the foundation and of “Konzept ‘88” are to be further developed regarding the future developments of art and technology thereby taking into account the requirements of society. Examples are: the increased use of new media in dance and theatre, the return of film into the new media, the use of artificial intelligence in everyday life, the change from physical to virtual mobility, or even the change from fixed-location technology to ubiquitous mobile devices. The work of art will expand within the area of multi-user virtual environments that has been usurped by the game industry; at the same time it will attempt to implement previous ‘image-

only' practices into three-dimensional reality (robotics). The results of neuronal aesthetics, cognitive research and artificial intelligence are expected to play a major role in this development. Within this context, the ZKM should further strengthen its position as a centre for discourse, theory production, and knowledge transfer. To achieve this, the ZKM plans to invite critics-in-residence and scientists-in-residence for research and publication projects.

ZKM plans to further develop the artist-in-residence-programme by opening it up to the Third World and Eastern Europe. This endeavour already resulted in a project on the "Post-Communist Condition" (beginning in March 2003), and a symposium in collaboration with the Sarai Media Collective, New Delhi, being planned for autumn 2004.

Co-operations with industrial partners should be intensified in the context of new technical developments and the artistic research projects resulting from them. In scientific research, ZKM is striving to co-operate more closely with institutions that work on similar fields, e. g. with the Fraunhofer-Gesellschaft. The existing co-operations with the University of Karlsruhe, the Research Center Karlsruhe, and the State Music Academy Karlsruhe should be expanded.

The archive's activities and associated issues concerning media equipment are to be intensified. Technical problems such as transcoding from one media to another will be tackled. One of the foremost future tasks of the Media Library is the restoration of the early videos in the collection, and the expansion and continuation of the collection of interactive net art.

MNK plans to accentuate its exhibition policy, to broaden its co-operation with international museums, and to participate more intensively in research programmes by presenting its work at universities as well as organising lecture series or colloquiums. There are plans to increase documentation of research and current museum projects on the internet, and in a periodical book series on contemporary art.

B. Assessment

B.I. National and international relevance

Taking into account that media and technology play an increasingly important role in society, artistic analysis and converting of these developments continue to be a challenging task. ZKM, being dedicated to the broad field of art and media technology, is the only institution in Germany that combines art production and technology development with extensive exhibition and communication activities as well as art collecting. Apart from other international institutions working on similar fields like the Ars Electronica Center, Linz, the InterCommunication Center, Tokyo, the V2, Rotterdam, or the IRCAM, Paris, ZKM has found its place at the forefront of supporting international developments in media art.

One of the main tasks of ZKM is responding to, supporting and anticipating emerging artistic practices. Experimental workshops and laboratories provide an interdisciplinary environment for artists and scientists to research and develop the theory and practice of artistic applications of new media. In the past decade of its existence, ZKM has become a major centre for research and technology based art and music/acoustic production. Pioneering synergies between art and technology have been achieved. On the one hand, these achievements have resulted from a targeted in-house research and developmental work. The other main force for promoting artistic research has been the artist-in-residence-programme that offers ZKM's variable workspace and expertise to selected international artists for a certain amount of time. For instance, at ZKM's Institute for Visual Media there have been over 60 artists coming from 15 countries so far. The advantage of ZKM is not only the excellent technical equipment of the studios, but rather its focus on artistic and technological expertise supporting artist's work. Since many artists can meanwhile do their work at home computers, it is less a question of hardware and idiosyncratic machines but more of qualified and highly inspired personnel that has become most important. For this reason, special attention has to be paid to future staff recruitment and personnel planning for longer periods.

In addition to the focus on research and technology based art and music production, an important collection of contemporary music, media art, paintings and installation works has been put together that is unique in Germany and can compete on an international scale. Comprehensive exhibitions and conferences on issues related to art, technology, and society also ensure the high international reputation of ZKM. What ZKM mainly distinguishes from other international institutions dealing with art and media is its statutory mission to provide a cross-section of contemporary art production as a whole and to facilitate a comparison of traditional art (painting, sculpture etc.) and media art. In order to accentuate ZKM's internationally unique position, this aspect should be stronger kept in view.

In recent years, ZKM has gradually enhanced its field of activities. Sociological and natural-scientific investigations have been introduced to further strengthen ZKM's position as a centre of discourse, theory production, and knowledge transfer. However, in order to more effectively use existing resources and to strengthen its profile, a clear focussing of ZKM's work is necessary.

B.II. Departments and working priorities

Most of ZKM's departments are called "Institute" in order to attract third party funding. However, due to the fact that the majority of "Institutes" only have a few employees, the term "working group" is judged to be more appropriate for these units. This term also implies more flexibility regarding changing artistic needs.

Institute for Visual Media

Being one of the two founding departments of ZKM, the Institute for Visual Media has become one of the world's leading places where innovative artistic applications of multimedia techniques are developed. The developmental work done from 1992-2002 under the management of an internationally reputed head of department resulted in a broad range of generic hardware and software tools designed specifically

for artistic needs. Benchmark achievements of the Institute have been exhibited all over the world and received several international awards.

Being specialised on motion platforms and 360-degree image production, e.g., the Institute developed a pioneering technology for compression and interactively controlled playing of film footage encompassing a spherical panorama. The *Panoramatic Navigator* developed by the Institute was patented. Also, a unique software for 3-D modeling and animation of organic structures akin to those produced in natural environments called *Xfrog* was developed within six years work of research in cooperation with the University of Karlsruhe, Faculty for Informatics. Currently, new technologies in the field of interactive digital cinematography are being developed which is judged to be a highly innovative field of technology development. In general, the excellent quality of the Institute's work is, among other things, based on a close collaboration with some of ZKM's Institutes and with external renowned research institutions.

In the past, there have also been examples of transfer of ZKM's developments into applications that extent artistic usage. For instance, staff members adopted the *Panoramatic Navigator* to the needs of the Karlsruhe Business Promotion Agency which was used for presentation purposes at the ExpoReal fair in Munich 2000 and 2001. Also, the software *Xfrog* being commercialised by outside partners attracted customers like Digital Domain, Disney, and Sony. Because at ZKM there is much more potential of technology transfer into society and industry, this practice should be intensified.

For the future perspective of the Institute, there is, however, a concern regarding the efficient filling of the currently vacant post of the head of department. In order to continue the highly successful work of the Institute, a strong and inspired personality is urgently needed that both has an artistic as well as technological background.

Institute for Music and Acoustics

Being founded in 1989, the Institute for Music and Acoustics started its work at the very beginning of ZKM. It was the first German studio using digital technology for music and acoustic productions. From the start, the Institute has successfully specialised in multichannel music, and since its opening has run one of the first professional direction, mixing, and mastering studios for surround sound. Also, what the Institute distinguishes from other international institutions producing contemporary music is its excellent productions in particular in the performing arts that synthesise visual and acoustic media. These projects were mostly realised in close collaboration with ZKM's Institute for Visual Media.

Within the period 1990-2002, the internationally reputed head of department consequently developed a convincing profile that comprised music productions, performance series, workshops, as well as research and software/hardware developments. Regularly, the Institute presented its productions on an international platform and contributed to external festivals all over the world. It has become a leading institution in the development of artistic applications of newly available technologies. Software developments concentrating on acoustic research were very successfully carried out like, e. g., research on sound sources for the measurement of room impulse responses, and on artificial reverberations for spherical rooms. Also, a highly innovative sensor technology as well as a technology for wireless transmission of sensor data was developed by the Institute's staff for the stage production of Gerhard E. Winkler's *Heptameron* shown at the Munich Biennale in 2002. This production was a prominent example for the Institute's successful efforts to merge different media and art forms. In general, the Institute pursued close collaborations with some of ZKM's Institutes as well as with external renowned research institutions. It is very much appreciated that the new head of the Institute plans to concentrate on multimedia projects (e.g. integration of dance and video) continuing the excellent work of the Institute which can compete on a world-wide scale. The conception and realisation of multimedia projects also benefits from the other ZKM Institutes/working groups and thereby contributes to an optimal integration of ZKM's technical and artistic resources.

The Institute also started co-operating with industry by, e. g., developing an exhibition area for the Sony Music Laboratory at Berlin. In the future, collaborations with industrial and academic partners should be further strengthened similar to what has already done by ZKM's Institute for Visual Media, i.e. through an intensified adaptation of new and existing technologies as well as research for artistic projects.

Exhibition Department

One of the main activities of ZKM is realising large exhibitions on different topics that concern the broad field of art, media, and society. These exhibitions are mostly developed by a close co-operation of the different ZKM Institutes/working groups, and also frequently involve external curators.

The exhibitions produced at ZKM contribute to a great extent to the international reputation of ZKM. The conceptual development of such comprehensive thematic exhibitions is judged to be highly demanding research work. Some exhibitions directly emerge from the artistic work done at ZKM. For instance, "Future Cinema" presents artist's contributions to possible future developments of new cinematographic techniques and modes of expression. This exhibition is a good example of how technology based art productions carried out at ZKM and curatorial work can result in an excellent exhibition project.

Media Museum

The primary task of the Media Museum is collecting, restoration and presentation of media art in a permanent exhibition. The museum also organises a series of changing exhibitions titled "Philosophy and Art" and provides a platform for works that are produced at ZKM's Institutes.

The Media Museum's collection comprises almost exclusively interactive media art. Together with the ZKM collection on Contemporary Art (being at MNK) and the Media Library's video and audio collections, the quality of these collections can compete on an international scale. It is highly appreciated that the exhibition and collecting activities of the Media Museum are closely connected to the artistic work done at ZKM.

Museum for Modern Art (MNK)

Originally, MNK was founded as a regular department of ZKM that was conceived to be in charge of ZKM's collection of Contemporary Art. Due to a couple of circumstances regarding political and personnel matters, the State Government's idea of founding a collectors' museum in Baden-Württemberg was taken up. In 1999, the initially named Museum for Contemporary Art was transformed into the Museum for Modern Art (MNK).

Presently, the MNK is in charge of four important collections owned by private collectors who live in or originally come from Baden-Württemberg. Altogether, these collections provide a selective insight into European and American art since 1960. As a collectors' museum, the MNK sees its main task in preserving, exhibiting, and doing research on the artists included in these collections. In the past, the MNK has primarily designed meritorious exhibitions on individual artists that supplement the work of a number of Museums on Modern and Contemporary Art in Germany.

In addition, MNK is in charge of the Contemporary Art collection owned by ZKM. However, due to the fact that the two courtyards of MNK are being occupied by the private collections, this important collection is presently not on display. Only single pieces are being presented by ZKM's Media Museum and sometimes in temporary exhibitions at ZKM and MNK.

From an organisational point of view, the MNK is still one of ZKM's departments though, right from the start, it has been operating autonomously to the greatest possible extent. However, in the past years of work it has turned out that MNK, being mainly committed to private collectors, could be barely integrated into the overall conception of ZKM. Recently, this was confirmed by a vote of the collectors who aim at a clear separation of ZKM and MNK. An autonomous MNK would be, however, just one more museum of Modern Art in Germany, whereas in close connection to ZKM, it would be unique on an international scale. Hence, in order to further on demonstrate and strengthen the national and international reputation of ZKM, the function of MNK within the ZKM context needs to be rethought. This will be facilitated due to

the upcoming retirement of the current head of department. Furthermore, since it is possible that current loan contracts with private collectors might expire soon, the chance should be taken to reconsider the original concept of ZKM. This concept, prepared by the founding director of ZKM, envisioned a productive encounter and integrated presentation of traditional arts (painting, sculpture etc.) and media arts. Through this combination, the ZKM would have the worthwhile opportunity to overcome the still very common separation of traditional art forms and media art. This reorientation would finally correspond to ZKM's statutory mission.[16)]

In case that the private collectors withdrew their collections, ZKM would also get the opportunity to exhibit its own collection which mostly comprises installation works. These art works are considered to better fit into the particular spatial situation of the two courtyards of Hall A than the private collections that mainly consist of paintings and smaller objects. In case that MNK would still be transformed into an autonomous institution, it should definitely get a new location since the two courtyards of Halls A are urgently needed for presenting ZKM's own collection.

On the other hand, it should also be tried to attract the private collectors to this reorientation with the aim of keeping parts of the private collections at MNK that certainly would complete ZKM's own collections. The collectors should be persuaded that the national as well as international visibility and reputation of MNK would be strengthened by a closer connection to ZKM which would also attract more visitors to the private collections.

Media Library

As an academic library for ZKM as well as for the State Academy for Art and Design (HfG), the ZKM Media Library is specialised on literature on contemporary art and

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16) ZKM Statutes of the Foundation, Karlsruhe, 25.10.2001, § 2: „The museum forum, comprising a Media Museum and a Museum of Modern Art, is intended to illustrate the history of the media and their traditional applications as well as to display contemporary art with its manifold traditional and media-related aspects. The collection and exhibitions of the Museum of Modern Art are intended to provide a cross-section of present-day art and to facilitate a comparison between traditional and media art."

design, media theory, and philosophy. In addition, it offers impressive collections of contemporary, particularly electroacoustic, music and video art.

In recent years, collaborating with ZKM's Institutes for Visual Media and Music and Acoustics the library has started a conservation programme for archival material. A pilot project on digital audio preservation was successfully completed for the International Digital Electro-Acoustic Music Archive (IDEAMA) being part of ZKM's audio collection. A research project on digital restoration of early video and film material is well underway. In fact, there is an urgent need for preserving, i.e. digitising, early video art which meanwhile is a common problem to all media art collections worldwide. In order to benefit from experiences already gained at other institutions, ZKM should look for more European partners. Also, it would be advantageous to initiate a co-ordinated and nationally funded programme for archiving videos in Germany like, e. g., is the case in the Netherlands. ZKM has the potential to take over the leadership in such a concerted action.

Institute for Net Development

Since this group started working in 1999, it has established an internet presence for ZKM that is based on a dynamic content management system. In order to make this system capable of handling MIDI, audio, video data, GPS information, and metadata from other web servers, the group is constantly working on the improvement of configurations. The group also realises the transcoding of the CD-jukebox-system to a harddisc array which is needed for the rearrangement of the archival system at the Media Library. In addition, the group designs online presentations of exhibitions with interactive elements such as video streams and panorama images.

All these activities are necessary, overdue in order to keep up with international practices and, eventually, support ZKM's overall work in terms of communication. However, the present orientation of the group is too much focussed on standard technology and functionality; more innovative potential is needed. For this reason, the mission of the group needs to be rethought, and a clear decision has to be taken whether they should merely carry on providing service or, e.g., better get into the

emerging net art. Taking into account that personnel and financial resources are short, it is recommended to integrate the group into the Media Library, whereas if the group would start dealing with net art, it should be integrated into ZKM's Institute for Visual Media.

Institute for Basic Research

ZKM's artistic work is based on scientific and technological developments and needs to be supported by science. For this reason, apart from technological research serving artistic production, the idea of integrating scientific research into ZKM came up resulting in the creation of the Institute for Basic Research in 1999. The current head of department strives for a comprehensive research programme that in a very special way tries to combine different approaches for investigations on the functions of the image and the observer in natural processes, particularly in non-linear physical and cognitive systems. As a result, the group develops audio-visual computer simulations that sensualise abstract models of complex physical processes.

The addressed research topics are sensible and very ambitious. However, much more personnel and financial resources would be necessary for realising this broad programme in a scientifically convincing way. On the other hand, intensifying basic research at ZKM is not judged to be promising because ZKM, being focused on art and art production, can not and should not compete with basic research activities done at universities and extra-university research institutes. In order to better use the existing in-house resources and specific competence, the general mission of the group as well as its contributions to the work of other ZKM Institutes/working groups have to be defined more clearly towards a stronger integration into ZKM's working priorities. The modified orientation of the group should be supervised by the Advisory Board.

Institute for Media and Economics

The group started working as recently as 2001 and aims at investigating the effects and applications of new media in society and industry. The focus of the group is on policy consulting. Currently, the group is, among other things, dealing with new me

dia applications in public administrations and issues of knowledge mediation via entertainment television. The group is completely financed by third party funds.

The general orientation of the group is important and implies promising research topics. It is also appreciated that this group for the first time tackles realising an idea that was suggested in the very first conception of ZKM („Konzept '88")[17]. However, the current projects of the group do not seem to be focussed enough, and regarding content a comprehensible connection to the work of the other ZKM Institutes/working groups is lacking. Thus, it is strongly recommended to exclusively acquire third party projects that fit into the overall mission of ZKM as laid down in the foundation statutes. The general mission of the group as well as its contributions to the work of other ZKM Institutes/working groups have to be defined more clearly towards a stronger integration into ZKM's working priorities. The Advisory Board should supervise the modified orientation of the group. If it turned out that not enough third party projects could be acquired that would fit into the overall strategy of ZKM, it is recommended to outsource the group as a spin-off company of ZKM.

Museum Communications

This functional area provides various visitor oriented activities that are adapted to different target groups. The programme comprises guided tours, workshops, conferences, and special offers for teacher's further education.

The educational and communication activities are judged to be very impressive. They vitally contribute to a transfer of knowledge into public life. In addition, these activities are very important and necessary for the local acceptance of ZKM at the Karlsruhe region. For further developing the educational programme, e-learning would be a promising field. It is also recommended to investigate the impact of ZKM's work on the public by targeted evaluations of selected activities.

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[17] The "Konzept '88" suggested to establish a line of action „Media for the public". See Konzept '88: Zentrum für Kunst und Medientechnologie Karlsruhe. Karlsruhe, 24 March 1988, pp. 24-27.

B.III. Organisation and resources

The statutory organs of the foundation are the Board of Trustees, the Chief Executive Officer (CEO) and the Advisory Board. According to the statutes, the Board of Trustees is the governing body of the foundation being responsible, among other things, for the basic direction of ZKM's planning in terms of research, development and expansion of the foundation, whereas the Advisory Board should give advice in all important cultural and scientific matters. Currently, these different functions are not enough separated. In fact, the Advisory Board is only marginally involved in defining new topics and future perspectives of ZKM and thus needs to be strengthened. The board should be enabled to provide a wider frame of scientific and artistic advice as well as to give orientation for the present and future work of ZKM. In addition, the Advisory Board should undertake the currently vacant task of external quality control of ZKM's work. In contrast, the Board of Trustees should concentrate on its function as a governing body that controls the operative work of ZKM.

In order to achieve this, different compositions of the two boards are recommended. The four rectors of Karlsruhe's academical institutions, who, according to the statutes, are members of the Board of Trustees, would be more effective as members of the Advisory Board. Also, the Board of Trustees has been growing over the years resulting in too many members that only have a few votes. In order to keep the board capable of acting, a numerical reduction of members is recommended. On the other hand, the Advisory Board should comprise representatives from industry besides scientists and artists. The aim is to closer connect ZKM to technology developments; and new contacts to industry should be established.

In order to improve internal quality control at ZKM, a more stringent project management is necessary. There should be clear guidelines for resources, time schedules and result checking. Hence, it is recommended to set up a post for overall internal management of projects.

Taking into account that media is a very fast moving field, flexibility in personnel decisions is needed. This demand is met by ZKM's general policy to mostly place tem

porary contracts. Normally, contracts for scientific/artistic staff are limited to two years, whereas contracts for managerial staff last five years. In order to establish more continuity in project work and secure medium term planning, it should, however, be possible to prolong contracts in justified cases, or alternatively place longer contracts (between three to maximal five years). Five years for managerial staff should be the rule, though extensions up to ten years should be possible if the person had done excellent work. This procedure is expected to facilitate the search for new departments heads on an international level. Also, the CEO should have the possibility to manage ZKM up to ten years. In order to keep and attract the best people at ZKM, a limited number of tenure positions that can result in permanent positions is furthermore highly recommended. These positions could be realised as joint professorships with the two art academies of Karlsruhe, the HfG and the State Music Academy.

Qualified personnel is the most important resource. For this reason, staff contracts at ZKM should be handled more flexible, and personnel planning needs more continuity and carefulness. The planned implementation of a global budget for personnel that permits more flexibility is appreciated. It should be, however, taken into account that in particular the technical facilities of the Institute for Music and Acoustics have been underexploited in recent years due to insufficient staff allocation and a lack of staff continuity. Hence, it should be assured that there is enough personnel for running the high-level facilities at ZKM's studios. In future should be also taken care that the work load of ZKM staff is more balanced.

Concerning the organisational structure of ZKM, it is recommended to stronger integrate the newly established working groups into the work of ZKM's main Institutes and working priorities. Provided that loan contracts with the private collectors would expire, the same applies to MNK. At any rate, the communication and administration units of ZKM and MNK should be combined and a joint marketing strategy conceived. In order to enable a passage between the courtyards occupied by ZKM and MNK, the opening hours of the HfG need to be adapted, resulting in the necessity to also employ additional security personnel.

The currently available budget is judged to be not sufficient. However, existing financial resources could be used more effectively. The fix costs should not rise because more financial means are needed for flexible use. The reorganisation from cameralistic to commercial bookkeeping is well under way. The planned implementation of a cost-benefit calculation is highly appreciated.

Although the fundraising activities have been significantly increased since the new CEO took over the position in 1999, more fundraising is necessary to overcome financial shortage. It would be appropriate to establish fixed procedures for fundraising activities that should be top priorities for ZKM's management.

The founders of ZKM, the State Baden-Württemberg and Karlsruhe, have stated their intention to continue financing the ZKM for the next years at the same level. This commitment is highly appreciated, and both founders are asked to assure the long-term financial perspective of ZKM.

Technical equipment at ZKM, especially at the Institute for Music and Acoustics, is excellent. However, the current budget is not enough for effectively running these facilities; investments for upgrading are also necessary. Regarding future investments it should be carefully considered whether a certain expensive technology is strongly needed at ZKM or could alternatively be used at a co-operating research institute. In contrast, ZKM's internet infrastructure needs definitely to be improved to catch up international head starts.

B.IV. Exhibitions, conferences, and publications

The exhibitions produced and shown at ZKM are well recognised on a national and international scale. The international relevance is confirmed by the fact that institutions from all over the world take over ZKM's exhibitions like, e.g., the exhibition "Future Cinema" that will be seen at the KIASMA Museum for Contemporary Art, Helsinki, at the InterCommunication Center, Tokyo, and at the Australian Centre for the Moving Image, Melbourne.

In recent years, ZKM has also very successfully arranged important conferences, panel discussions and lecture series that assemble prominent national as well as international scientists and artists. These conferences frequently accompany major exhibitions at ZKM so that a comprehensive examination of the respective topics can be assured from interdisciplinary points of view. The invitations of ZKM staff members to national and international meetings are above-average, whereas staff members of MNK are rarely invited to external conferences.

ZKM's in-house publications being frequently produced along with main exhibitions and conferences at ZKM are highly appreciated. With regard to an international audience, the recently started collaboration with the renowned publisher MIT Press is of special benefit. To a great extent, these publications contribute to the international reputation of ZKM. In addition, staff members of ZKM publish in external collective publications and art journals that usually do not have a referee system. It is appreciated that the head of the working group on basic research also publishes in refereed scientific journals. The conception of an in-house journal series is reasonable and well underway. Finally, an impressive number of high-quality DVDs and CDs has been produced so far.

B.V. Co-operations, teaching at institutions of higher education, and promotion of young scientists/artists

In general, ZKM's various co-operations with national as well as international research institutes, universities, academies, museums and other cultural institutions are judged to be highly effective.

In the first place, there are productive co-operations with institutions located in Karlsruhe. The collaboration with the Research Center Karlsruhe (FZK) is described by both partners to be very fruitful. FZK makes use of artistic conceptions and developments at ZKM resulting in new ways of showing science to the public (e.g. virtual realisations). On the other hand, many ideas for co-operation projects come from the artists working at ZKM who very much benefit from the scientific expertise at FZK.

Currently, ZKM and FZK are together realising a huge movable sculpture of a human hand that will be installed in front of ZKM. Being jointly developed by artists and scientists, the installation is based on technological innovations that are expected to also be utilised for future developments of hand prostheses. This is a good example of social benefit effects that can be achieved by co-operations of artists and scientists.

The various co-operations between ZKM and FZK are very much appreciated as an aimed strategy of looking for scientific advice to realise artistic ideas. This kind of co-operation with research institutes, bringing artists into close working relationships with scientists, should be intensified. In general, ZKM should better look for external partners to get sound scientific advice than institutionalise fixed scientific research units at ZKM.

The statutes of ZKM lay down a close co-operation with HfG regarding personnel, resources, and facilities. Indeed, the students of HfG very much benefit from the close vicinity to ZKM. For instance, up to 90 % of the users of ZKM's Media Library, being exclusively financed from ZKM's budget, are HfG-students. ZKM also provides its technical equipment and expertise to students of HfG, whereas students help to build up exhibitions, and work as tour guides at ZKM and MNK. However, the teaching activities of ZKM's managerial staff could be intensified. There are also regular co-operations with the State Music Academy Karlsruhe resulting in well recognised concerts and workshops. ZKM provides facilities to students of the Academy and helps realising works that would not be possible at the Academy because of lacking human and technical resources. These activities should be intensified. Also, in order to further improve ZKM's co-operations with the art academies of Karlsruhe, it is recommended to establish joint professorships particularly with the HfG and the State Music Academy. First of all, this requires a limited number of tenure positions at ZKM.

The co-operations with selected Institutes of the University of Karlsruhe are varied, reaching from joint projects (e.g. software developments) to lecture series and jointly organised conferences. Up to now, these collaborations mostly result from individual

contacts and could be put on a more reliable base through co-operation contracts. Also, since university students are very much interested in gaining practical experiences besides their studies, there should be more opportunities to complete internships in ZKM's laboratories. The well equipped ZKM studios also provide a stimulating atmosphere for media oriented academic projects. In the past, some Master's theses were completed within the context of ZKM's projects. This link to academia should be intensified through, e.g., initiating co-operative MA and PhD programmes.

In general, young people get an excellent practice oriented further education at ZKM and have very good prospects for their future career.

The international co-operations of selected ZKM departments are impressive. In the past, especially the Institute for Music and Acoustics, the Institute for Visual Media, and the exhibition department were very successful in acquiring international partners. These activities should be further extended into, e.g., an intensified acquisition of EU projects and co-operation agreements with international institutions and business companies.

The co-operation activities of MNK have to be improved. Even between ZKM and MNK, there are hardly any collaborations. However, a stronger integration of MNK into the ZKM context is expected to result in corresponding synergy effects.

B.VI. Summarised assessment

Within the short time of its existence, ZKM has developed into a major center for research and technology based art and music production. The two main departments of ZKM, the Institute for Visual Media and the Institute for Music and Acoustics, have done excellent work and can compete on a world-wide scale. In order to ensure the high quality of these departments and the ZKM as a whole, special attention has to be paid to future staff recruitment and personnel planning for longer periods.

The ZKM collections of contemporary music, media art, paintings and installation works are not only unique in Germany but also of international relevance. Comprehensive exhibitions, conferences, and publications on issues related to art, technology, and society also ensure the high international reputation of ZKM.

In order to further on demonstrate and strengthen the national and international relevance of ZKM, the function of MNK within the ZKM context needs definitely to be rethought with regard to the original concept of bringing together media art and traditional arts.

ZKM's profile should be strengthened by a clear focussing of its work. Generally, it is recommended to concentrate on issues related to the broad field of art and art production. Research and developmental work should always be related to artist's work. Hence, the missions of the three newly founded Institutes need to be defined more clearly towards a stronger integration into ZKM's working priorities.

At ZKM, internal and external quality control need to be improved. In order to achieve the first, ZKM's Advisory Board has to be strengthened by means of a different composition of the Board. For achieving the latter, a more stringent project management is necessary.

The joint commitment of the State Baden-Württemberg and the town of Karlsruhe to assure the financial viability of ZKM for the next years is highly appreciated. However, the currently available budget is not sufficient, though existing financial resources could be used more effectively. Also, fund-raising activities should definitely be intensified to overcome financial shortage. At any rate, the founders of ZKM are asked to guarantee the long-term financial perspective of ZKM.

The quality of ZKM's exhibitions and in-house publications is highly appreciated. Staff members of ZKM also publish in external collective publications, art journals, and sometimes in refereed scientific journals. ZKM has very successfully arranged important national and international conferences, panel discussions and lecture series. The invitations of ZKM staff members to national and international meetings are

above-average, whereas staff members of MNK are rarely invited to external conferences.

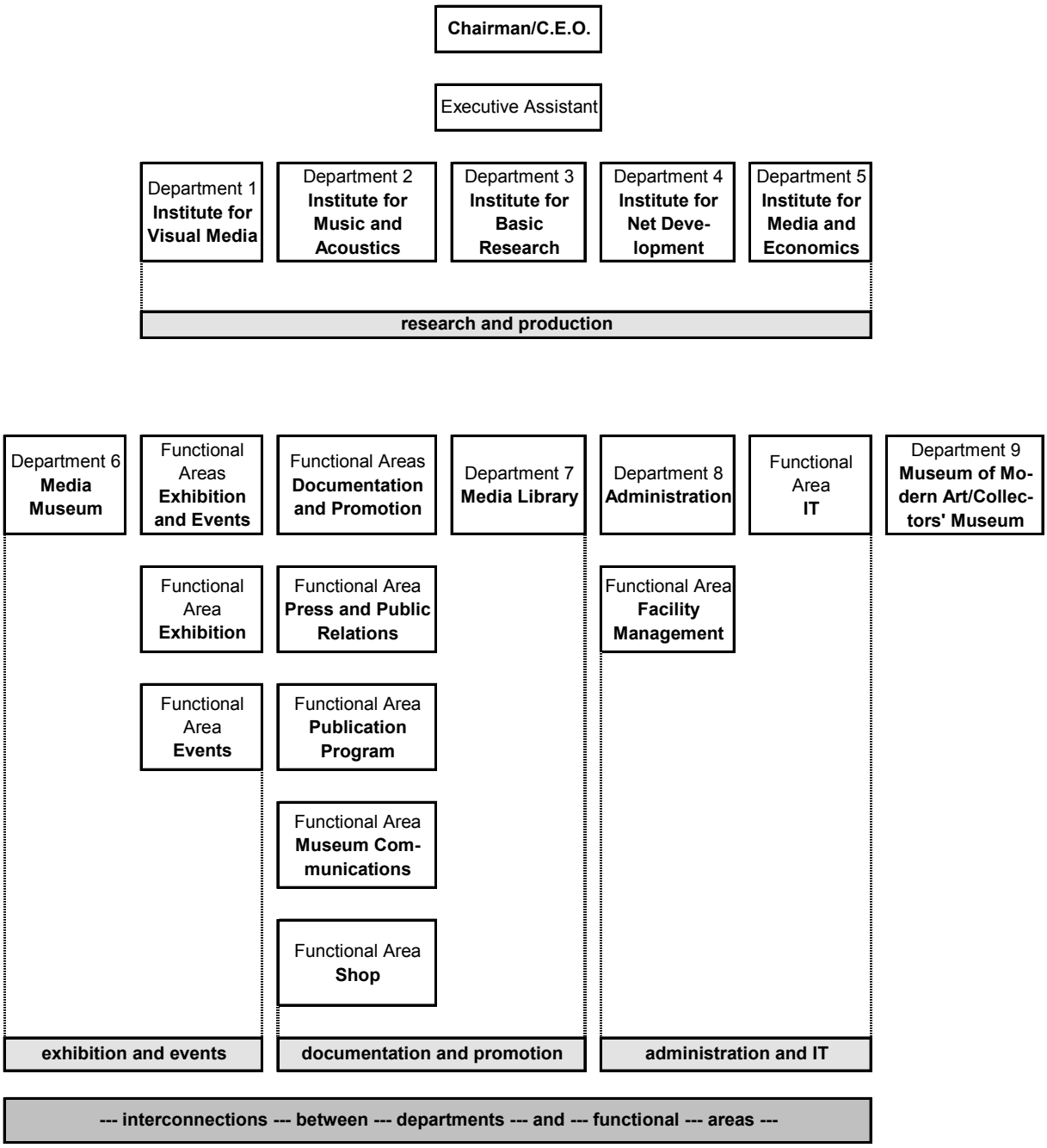
ZKM's various co-operations with national as well as international research institutes, universities, academies, museums and other cultural institutions are highly effective. It should better look for external partners to get sound scientific advice than institutionalise fixed scientific research units at ZKM. In general, co-operation activities should be further expanded with regard to European and international institutions as well as business companies. Also, a targeted transfer of special technologies developed at ZKM into society and industry should be initiated.

In order to further improve ZKM's co-operation with the art academies of Karlsruhe, joint professorships particularly with the HfG and the State Music Academy should be established. This requires a limited number of tenure positions at ZKM. The establishment of tenure positions would also facilitate the search for new managerial staff on an international level.

Appendix 1a

Organisational Chart
of the Center for Art and Media

Date: November 2002

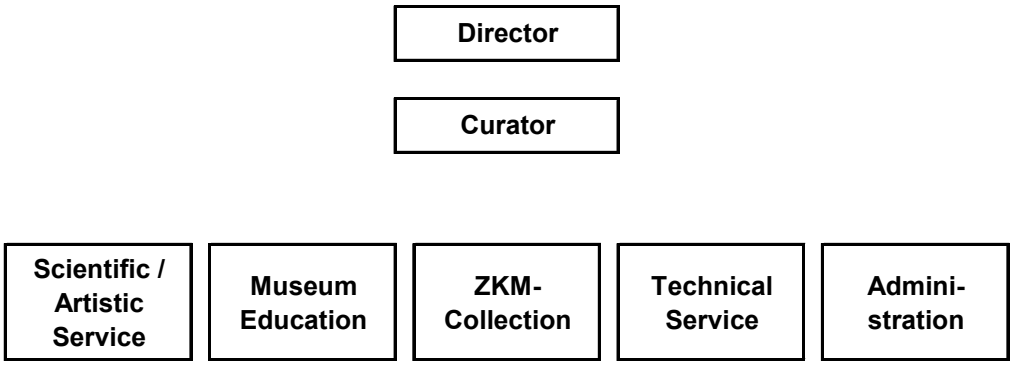


Source: ZKM

Appendix 1b

Organisational Chart
Museum of Modern Art

Date: June 2002



Source: MNK

Appendix 2a

Staff appointment scheme
of the Center for Art and Media
(without posts financed by third parties)

Date: November 2002

Job title	**Salary grade**	**number of posts (nominal)**
Posts for scientific staff	AT	3
	A 15	1
	I a	4
	II/Ib	11
Subtotal		19,0
Posts for non-scientific staff	A 16	1
	A 15	1
	A 13	1
	A 11	2
	I a	4
	I b	1
	II / Ib	2
	II	1
	III / II	1
	IV a / III	3
	IV a	2
	IV b	2
	V b / IV b	3
	V b Zul.	4
	V c / V b	4
	V c	2
	VII / VI b	7
	4 / 4 a	1
	5 / 6	2
	6 / 7	1
Subtotal		45
Total		64

Source: ZKM

Appendix 2b

Staff appointment scheme
of the Museum of Modern Art
(without posts financed by third parties)

Date: November 2002

Job title	**Salary grade**	**number of posts (nominal)**
Posts for scientific staff	AT	1
	Ia BAT	1
	II BAT	3
Subtotal [1)]		5
Posts for non-scientific staff	III BAT	2
	IVa/III BAT	1
	IVa BAT	2
	Vb/IVb BAT	2
	Vc BAT	1
	VI/Vc BAT	0,5
	VII/VIb BAT	0,5
	VIII BAT	1,5
	LG 4/4a BMT-G	1
Subtotal		11,5
Total		16,5

1) plus two trainees (financed from annexe funds)

Source: MNK

Appendix 3

Allocation of posts for scientific staff
to the institutes/departments
of the Center for Art and Media
and the Museum of Modern Art

Date: November 2002

Institute/Department	Regular posts			Posts financed by third parties			Posts for PhD students			Posts for scientific staff (total)		
	total	of which fixed-term contracts	of which not occu-pied	total	of which fixed-term contracts	of which not occu-pied	total	of which fixed-term contracts	of which not occu-pied	total	of which fixed-term contracts	of which not occu-pied
Head Office	1,0	1,0	-	-	-	-	-	-	-	**1,0**	**1,0**	**-**
Institute for Visual Media	5,0	2,0	-	1,0	1,0	-	-	-	-	**6,0**	**3,0**	**-**
Institute for Music and Acoustics	5,0	2,0	3,0	-	-	-	-	-	-	**5,0**	**2,0**	**3,0**
Institute for Basic Research	1,0	1,0	-	2,0	2,0	-	-	-	-	**3,0**	**3,0**	**-**
Institute for Net Development	1,0	1,0	-	1,0	1,0	-	-	-	-	**2,0**	**2,0**	**-**
Institute for Media and Economics	-	-	-	2,0	2,0	-	-	-	-	**2,0**	**2,0**	**-**
Media Museum	2,0	2,0	-	1,0	1,0	-	-	-	-	**3,0**	**3,0**	**-**
Exhibitions Department	1,0	1,0	-	1,0	1,0	-	-	-	-	**2,0**	**2,0**	**-**
Publications	1,0	1,0	-	-	-	-	-	-	-	**1,0**	**1,0**	**-**
Museums Communications Department	1,0	-	-	-	-	-	-	-	-	**1,0**	**-**	**-**
Media Library Department	1,0	-	1,0	1,0	1,0	-	-	-	-	**2,0**	**1,0**	**1,0**
Subtotal [1)]	**19,0**	**11,0**	**4,0**	**9,0**	**9,0**	**-**	**-**	**-**	**-**	**28,0**	**20,0**	**4,0**
Museum for Modern Art [2)]	5,0	4,0	-	-	-	-	-	-	-	**5,0**	**4,0**	**-**
Total	**24,0**	**15,0**	**4,0**	**9,0**	**9,0**	**-**	**-**	**-**	**-**	**33,0**	**24,0**	**4,0**

1) plus nine trainees (eight financed from annexe funds, one from third-party funds). - 2) plus two trainees (financed from annexe funds).

Source: ZKM, MNK

Appendix 4

By the Center for Art and Media
acquired third-party funds
in the years 2000-2002

Date: November 2002

Institute/Department	Source	Third-party funds in Thousand Euros (rounded)			Total
		2000	2001	2002	
Institute for Visual Media	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	-	51	1.070	1.121
	EU	152	44	15	211
	Companies	139	15	10	165
	Foundations	24	1.027	716	1.767
	Other	243	261	-	504
Subtotal		558	1.398	1.811	3.767
Institute for Music and Acoustics	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	10	-	-	10
	EU	-	-	-	-
	Companies	7	-	-	7
	Foundations	9	2	6	17
	Other	20	15	15	50
Subtotal		46	17	21	84
Institute for Basic Research	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	-	-	97	97
	EU	-	-	-	-
	Companies	-	-	-	-
	Foundations	-	-	-	-
	Other	-	-	-	-
Subtotal		-	-	97	97
Institute for Net Development	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	-	-	596	596
	EU	-	-	-	0
	Companies	155	83	-	237
	Foundations	-	-	-	-
	Other	13	44	31	88
Subtotal		168	127	627	921
Institute for Media and Economics (founded in May 2001)	DFG	-	-	-	-
	Federal Government	-	25	75	100
	State Governments	-	204	281	485
	EU	-	-	-	-
	Companies	-	-	2	2
	Foundations	-	-	-	-
	Other	-	-	-	-
Subtotal		-	229	358	587

continuation appendix 4

Institute/Department	Source	Third-party funds in Thousand Euros (rounded)			Total
		2000	2001	2002	
Media Museum	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	369	-	-	369
	EU	-	-	-	-
	Companies	685	-	122	807
	Foundations	-	-	-	-
	Other	10	-	-	10
Subtotal		1.064	-	122	1.186
Exhibitions	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	-	-	-	-
	EU	-	-	20	20
	Companies	-	-	-	-
	Foundations	-	-	-	-
	Other	-	-	15	-
Subtotal		-	-	35	35
Media Library	DFG	-	-	-	-
	Federal Government	-	26	63	89
	State Governments	-	-	-	-
	EU	-	-	-	-
	Companies	25	25	25	75
	Foundations	-	-	-	-
	Other	48	2	2	52
Subtotal		73	53	90	216
Museums Communications	DFG	-	-	-	-
	Federal Government	20	-	-	20
	State Governments	-	-	-	-
	EU	-	-	-	-
	Companies	-	-	-	-
	Foundations	-	-	-	-
	Other	-	-	-	-
Subtotal		20	-	-	20
ZKM other	DFG	-	-	-	-
	Federal Government	-	-	-	-
	State Governments	-	-	-	-
	EU	-	-	-	-
	Companies	-	150	142	292
	Foundations	-	-	-	-
	Other	-	-	-	-
Subtotal		-	150	142	292
ZKM total	DFG	-	-	-	-
	Federal Government	20	51	138	209
	State Governments	379	255	2.044	2.678
	EU	152	44	35	231
	Companies	1.011	273	302	1.585
	Foundations	33	1.029	722	1.784
	Other	333	322	63	718
Total		1.928	1.973	3.304	7.205

Source: ZKM

Appendix 5a

Directory of documents handed in by the
Center for Art and Media (ZKM)

- Answers to the questionnaire
- Organisational chart
- Statutes of the Foundation ZKM
- Description of current scientific/artistic activities of the ZKM institutes/organisational units
- Budget 2002
- Staff appointment scheme; distribution of posts for scientific staff; lists of staff members by function/by name
- List of third-party funds 2000-2002
- Publication list incl. quantitative overview 2000-2002
- List of theses completed at ZKM
- Lists of visiting scientists and stays abroad
- Lists of seminars, major events, exhibitions, awards, jury participation
- List of members of Board of Trustees members
- Minutes of the meetings of the Board of Trustees on 3 December 2001, 15 January 2001, 4 December 2000
- List of co-operation projects or agreements
- Allocation of responsibilities between the ZKM and MNK
- Historical development of the ZKM
- Bruno Latour/Peter Weibel (eds.): *Iconoclash. Beyond the Image Wars in Science, Religion, and Art.* Karlsruhe, Cambridge (Mass.), London, 2002
- Olafur Eliasson: *Surroundings surrounded*/Peter Weibel (ed.): *Essays on Space and Science.* Karlsruhe, Cambridge (Mass.), London, 2001
- ZKM mediagramm (programme January/February 2003)

Appendix 5b

Directory of documents handed in by the
Museum of Modern Art (MNK)

- Answers to the questionnaire
- Organisational chart
- Partial budget for the MNK 2002
- Staff appointment scheme; distribution of posts for scientific staff; list of employees by position; list of researchers and freelancers in the museum education by name
- Publication list incl. quantitative overview
- List of exhibitions; press releases
- List of lectures, discussions, events
- Lists of theses supervision and seminars
- Museum teaching program 2002
- Workshops and courses 2000-2002
- Minutes of MNK collectors' meeting on 22 July 2002