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3rd International Design Conference
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Jan 12th 2012
15:00

LECTURE INTERVIEW

DESIGN RESEARCH IS DESIGN PRACTICE: MAPPING DESIGN INTELLIGENCE

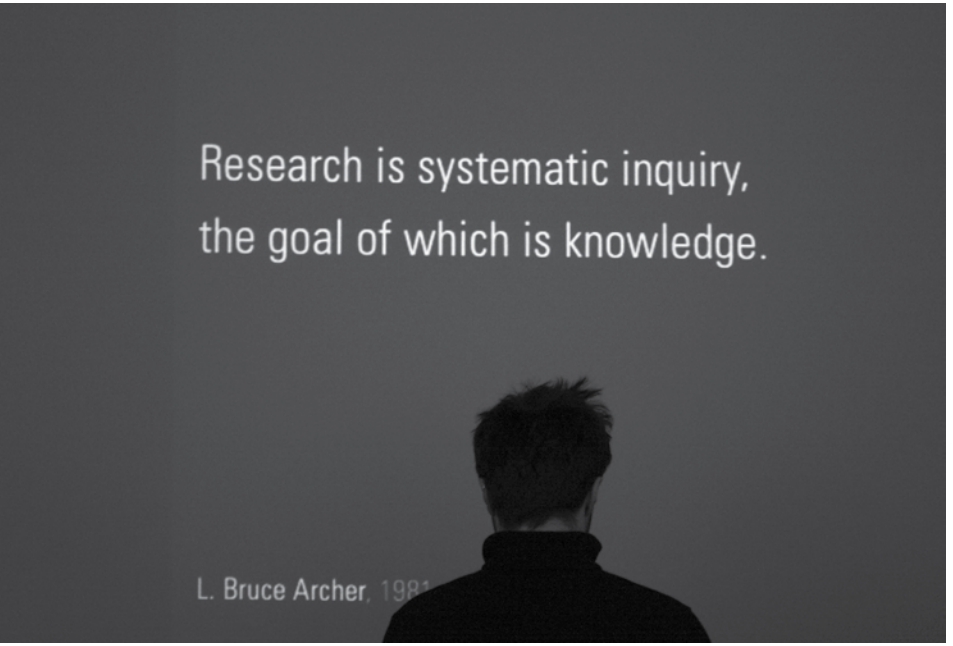
Jan Kubasiewicz (USA)

The title of this essay describes precisely its core concept: Design research is design practice, and vice versa. When designers design, they research. In other words, what designers do through various processes and activities is a method of inquiry and a way of knowing. As Bruce Archer describes in his 1995 article "The Nature of Research,"[1], "Research is systematic enquiry whose goal is communicable knowledge." Consequently, the core of design practice shares some of the goals of research. While exploring the topic, before anything else, I should clarify my viewpoints in order to keep the scope of the discussion within bounds and in focus.

When I use the term design, I mean design in the context of communication. My definition of *communication design*, however, is not restricted to the field known as graphic design. On the contrary, it encompasses the broader aspects of communication that occur across multiple disciplines. I refer here to various situations in which audiences interact with cultural artifacts, systems and environments that communicate something to the user. That communication happens by way of — but it is not limited to — products of graphic design, interfaces, industrial design objects and architectural locations. I will discuss communication as a frame of reference in more detail later on.

My viewpoints on all aspects of design discussed in this essay — from design praxis to design intelligence — are significantly influenced by my experience as a design educator representing

1 L. Bruce Archer, "The Nature of Research," CoDesign, January 1995, 6.



the specific teaching philosophy of a unique graduate program in communication design — the Dynamic Media Institute at Massachusetts College of Art and Design in Boston. There are many distinctive aspects of the DMI curriculum that are relevant to the topic of this essay and I will discuss some of them here.

The understanding of what research is in the context of communication design requires a brief overview of terms. In "The Nature of Research", Archer brilliantly explains the conditions of his general definition of research, which he says must be "... systematic because it is pursued according to some plan."[2] Indeed, the word "plan" usually appears in the first line of a dictionary definition of "design." Research, Archer says, must be considered a "... goal-directed ... enquiry because it seeks to find answers to questions."[3] This description perfectly aligns with design defined as a "problem-solving" activity. However, the most essential element in Archer's definition of research — and in my opinion, the sine-qua-non condition of design practice as well — is the term "communicable knowledge." He describes communicable as "... the findings [that] must be intelligible ..." and understandable for an appropriate audience "... beyond providing mere information... "[4] of facts, skills and experiences. The knowledge and understanding gained by an individual as a result of communicable research is likewise the goal of communication design.

So far, the terminology and goals of research and design seem aligned. However we must be aware of a history of varying research environments as well as multiple classification systems based upon the intention of the research. The Science tradition in research has focused on the physical world, while the Humanities tradition has focused on humankind. Further potential for confusion exists in international design discussions since the Humanities and the Arts, regarded as distinct areas in most of the world, are almost synonymous in English speaking countries.

Certainly, there is a difference between creativity in the Sciences and the Arts in terms of the social structure of the fields. An experiment in science must be reproducible, the goal being an agreed upon "truth." In art, a more subjective value resides in the recognition of underlying personal uniqueness. An idea, artifact or experience may be regarded as having value because it involves a unique way of seeing the world. These two research traditions belong to a longer list of polarities: Science/Art, Art/Design, Theory/Practice, Practice/Research, Research/Scholarship... The relationship between research and practice is the issue at the core of this essay.

Research conducted by practitioners is known as "action research." It is a reflective process of problem solving that exists in design but also in medicine, business, teaching and other disciplines. Archer defines action research as "... systematic enquiry conducted through the medium of practical action, calculated to devise, or test new, or newly imported information, ideas, forms or procedures ..."[5] The practitioner, is deliberately "... taking action in and on the real world in order to devise or test or shed light upon something."[6] This is what distinguishes action research from other categories — it is a kind of intervention to collect observations, eventually leading to conclusions. Because action research is performed in the real world, the findings — in comparison to laboratory results — may be contaminated. Yet, acting in the real world offers the advantage of gaining knowledge that otherwise would not be accessible. Research performed through action may have multiple goals, too. In the case of design practice, it could be "for" the purpose of specific project, or it could be "about"

2 Ibid, 6.
3 Ibid, 6.
4 Ibid, 6.
5 Ibid, 6.
6 Ibid, 11.

design — about its methods, its history, or its relation to people and society in the broader context to the Humanities and Social Sciences.

Is all practice the same as research activity? Certainly not. Practice may only be considered research, if it fulfills the goals of research as defined previously. Was it systematic? Was knowledge its goal? Was it rigorous? If the answers are affirmative, we may describe it as the practice of research.

The relationship of research and scholarships seems very relevant to the discussion of design research as design practice. Ernest Boyer, an educator, proposed a new classification of four types of scholarship, which describe the various types of research in a unique and creative way: "...the scholarship of discovery; the scholarship of integration; the scholarship of application; and the scholarship of teaching."[7]

"The scholarship of discovery" refers to the traditional notion of research, the goal of which is the formation of "new knowledge." Indeed, design demands both "discovery" and "invention" of knowledge that does not yet exist.

"The scholarship of integration" refers to bringing in existing knowledge from certain areas into others. Design is a system that interfaces with other systems, and therefore is cross-disciplinary by its very nature. It requires information from many disciplines that must be reconciled with design practice.

"The scholarship of application" refers to applied research, the goal of which is to extend knowledge for use in specific applications. It describes the core of design practice, which is applying existing knowledge in an innovative way.

"The scholarship of teaching" refers to research associated with developing new pedagogies and evaluating educational outcomes. In response to the shifting paradigms of design-based professions, current design education has shown promising energy in developing innovative, research-driven curricula on all academic levels.

Since its inception in 2000, the unique curriculum of the Dynamic Media Institute has been organically evolving in response to the shifts in information technology and design practices. Focused on the future of dynamic media in communication design, the DMI program accepts professionals from different backgrounds — graphic designers and new media artists, engineers and computer scientists, architects and filmmakers, journalists and musicians. They all bring

7 Ernest L. Boyer. *Scholarship Reconsidered: Priorities of the Professoriate*, (New York: The Carnegie Foundation for the Advancement of Teaching, 1990), 16.

"The experience of dynamic nedia"

diverse viewpoints, different expertise, and a willingness to conduct a difficult dialog along the borderlines of multiple disciplines.

The students at DMI must also accept the concept of intentional communication as the modus operandi of their research, as well as the litmus test verifying their work. Representing the reflective approach toward the study and practice of dynamic media, student work is focused — as it is in the Humanities — on intellectual rigor in discovery and exploration of cultural artifacts. Those artifacts are human experiences mediated — or perhaps the better term would be "curated " — within the computational complexity of social communication. Students create and prototype an experience and observe their audience's interaction with the work and with each other. Through the methods of ethnographic research, they discover what their work is about — as well as what they are about — and consequently they build up meaning and confidence. "Through a rigorous practice of research, prototyping, and writing, the students pursue their unique thesis vision that culminates in a rich body of original work and a comprehensive written thesis dissertations."[8]

"Thesis topics, as varied as our students, range from interface design, interactive environments, learning applications, and data visualization to participatory narrative, sound and video installation,

8 8. http://dynamicmediainstitute.org/what-we-do

smart objects and robotics."[9] In fact, the DMI curriculum philosophy can be best described as being a "listening post." The participants bring their own researchable questions to the program, and as a result the focus of DMI work has expanded over time to correspond with the evolving current trends and best professional practices.

The territory of dynamic media design — and therefore the areas of research and practice at the DMI program — can be discussed within the following groups of concepts:

— Design for Information
  — communication
  — representation of information (modality)
  — mapping
— Design for Motion and Time
  — sequentiality
  — narrative
— Design for Interaction
  — interface
  — participation

Design for Information

The beginning of the Information Age was marked by the new understanding of "information" as defined by mathematicians solving problems of sending and receiving messages. Information was separated from the medium and eventually became a string of binary digits. Cybernetics — an interdisciplinary approach to the study of systems and structures of information born in mid 20th century — has forever changed the way we live and communicate. Today, dynamic media designers must see the world as an information structure that communicates continuously. Information embodies the essential notions of design practice and research as they relate closely to communication, knowledge, language, etc.

Communication is about understanding, and therefore learning. Learning, and subsequently knowledge, is a result of a communication process that can only be completed within an individual's mind. The designer can help but cannot complete this process for the learner.

Images are one means of **representing information**. Yet logic, not imagery, communicates the true intention. Visualization of information supports our intuition toward understanding by combining the rational and the emotional — the knowledge frozen in words and numbers, and the knowledge vested in sensory experiences. Visualization extends to discovery.

9 Ibid.

Multi-sensory experience as a model for dynamic media communication makes a clear argument for multiple **modalities of information**. Multiple modalities correspond to Howard Gardner's concept of *Multiple Intelligences*[10] — a disposition toward certain types of learning "that originates in human biology and human psychology."[11] In his book, Gardner identifies seven learning styles — linguistic, logical-mathematical, spatial (including visual thinking), musical, bodily-kinesthetic, interpersonal, and intrapersonal.

Can mapping be considered another form of intelligence? **Mapping** seems to be a dynamic media designer's natural way of thinking. It is a unique cognitive skill of finding connections among things, and making them visible to others who cannot see on their own. It requires the intellectual skill to research and theorize, and the manual dexterity to translate concepts into visualizations. Mapping is a process whereby knowledge may be created rather than revealed. It is a tool of the thought process.

Researchers in all disciplines apply dynamic mapping and simulation tools to observe and analyze the data in search of patterns and connections, often prior to defining a scientific hypothesis. This is what James Nicholas Grey termed "the fourth paradigm of science."[12] In processing and analyzing unprecedented amounts of data collected via sophisticated tools of observation, researchers are helped by designers — contemporary cartographers. Designers create systems of mapping and dynamic visualizations, which allow researchers to navigate large scale structures in search of patterns of information. This is potentially the most practical solution for managing complexity.

Design for Time and Motion

Motion is integral to design. The notion of time, intertwined with motion, is considered the organizing principle around which all other design elements must relate. It is about the process of forming rather than static form alone. The meaning of motion and concepts of **sequentiality** already explored within multiple disciplines of art and science have become part of the vocabulary of communication design. Since Charles and Ray Eames' "Powers of Ten"[13] the integration of motion and sequencing with information design has

10 Howard Gardner, *Multiple Intelligences*, New Horizons (New York: Basic Books, 2006).
11 Ibid., 6.
12 Hey, Tony; Tansley, Stewart; Tolle, Kristin, ed. *The Fourth Paradigm: Data-Intensive Scientific Discovery*, (Redmont, WA: Microsoft Research, 2009).
13 *Powers of Ten*, dir. Charles and Ray Eames, 9 min. 1977.

design for **interaction**

— interaction > **participation**

— participatory narrative

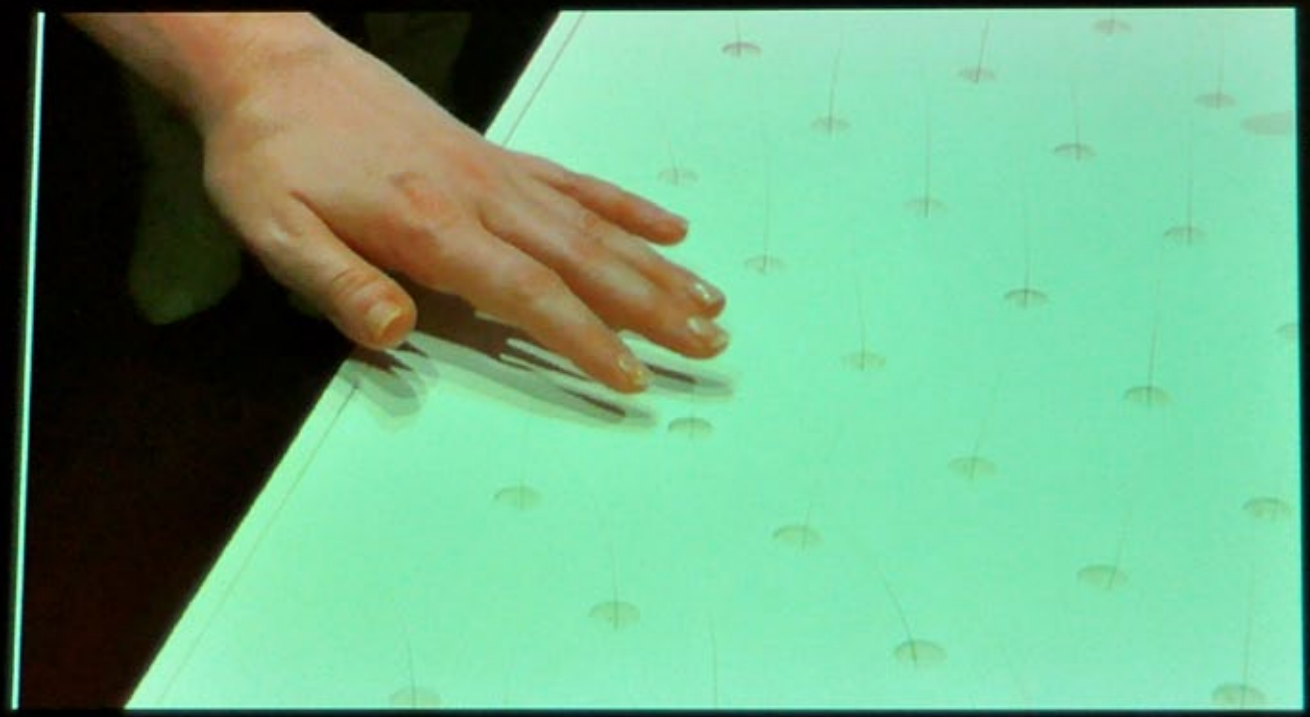
— **participatory visualization**

dynamic media

— information
communication
representation

— time + motion
sequentiality
narrative

— **interaction**
interface
participation



Alison Kotin *Whisker Organ* MFA 2011

demonstrated a tremendous potential for contributing, through sequential visualizations, to various disciplines of science, economy, and education.

Humankind's ability to create narratives has always been a powerful communication model. As the mind perceives visual, sonic, and kinetic information over a period of time, it continuously organizes discrete units or messages into a story, however abstract that story might be. A narrative, as defined by Aristotle, must have a beginning, middle, and end. Though, as Godard demonstrated, they need not necessarily be told in that order. In its hundred-year history, the language of cinema has evolved into a complex, universally understood system of communication, capable of translating a multi-sensory human experience into a kinetic sequence of audio-visual events, where motion serves to integrate all other channels of communication. Today, the cinematic vocabulary inspires metaphors of user interface as well. Indeed, interface can be considered a tool for narrative. Or, to paraphrase Marshall McLuhan, "the interface is the message."[14]

Design for Interaction

Bill Verplank, one of the pioneers of dynamic media, asks three fundamental questions of **interface** design while drawing his brilliant diagram in "Designing Interactions."[15] The first is: "How Do You Do?" a question that relates to the possibility of an action the interface affords the user — "... you can grab a handle ... or push the button." The second is: "How Do You Feel?" a question that relates to feedback the interface gives to the user — "... feelings come from ... the sensory qualities of media." And the third is: "How Do You Know?" a question that relates to learning and understanding the interface — "... [the] map shows the user an overview ... the path shows them what to do."[16] Verplank's questions focus on three fundamental areas of concern to dynamic media designers creating user experiences — regardless of the environment in which the interaction occurs. "Doing" means acting. "Feeling" means reacting to feedback. "Knowing" means learning and understanding the system.

The user interface is the front-end of an interaction. The back-end of any dynamic system of information — invisible to the user — is a database. Information architecture addresses the issues of structure and the organization of information from the user's point of view. By running hypothetical user scenarios, the goal of the information architect is to design appropriate information flows within systems that are often very complex, with multiple "touchpoints" and modes of interaction and **participation**.

Information architecture is part of the practice of research in almost all work developed at DMI. However, it should not be considered a separate discipline. Information architecture represents an approach to design practice and research that allows the designers to see the information flow in any design product. It can be applied to traditional communication design as well as to other design disciplines, since information flow defines not only digital interfaces, but also analog interfaces of objects, as well as services and environments.

At the Dynamic Media Institute, we see the world as an information structure that communicates continuously and persistently. Any human experience involves dynamic information flow, and therefore a communication process, and learning. Indeed, communication and learning, which are as inseparable from human experience as from time and motion, are considered the central focus of our curriculum.

Through the reflective practice of design — which includes components of research, prototyping and writing — the work becomes systematic, intellectually rigorous, and produces communicable knowledge. Design practice becomes design research. And that is worth doing — the ultimate goal of any researchable question.

14 Aaron Koblin, "TED Lecture: Artfully Visualizing Our Humanity," 2011, http://www.ted.com/talks/lang/en/aaron_koblin.html

15 Bill Moggridge, *Designing Interactions*, (Cambridge, MA: MIT Press, 2007).

16 Ibid., 127.

Jan Kubasiewicz

Jan Kubasiewicz is Professor of Massachusetts College of Art and Design in Boston and Head of Dynamic Media Institute—the graduate program in communication design wherein students from diverse backgrounds pursue a unique thesis, through a rigorous practice of research, prototyping, and writing [dynamicmediainstitute.org]. He has served as visiting lecturer and critic at numerous universities in the USA, Australia, China, Japan, Korea, Italy and Poland. He has organized exhibitions, workshops, seminars and conferences on the topic of communication, design and media.

WORK
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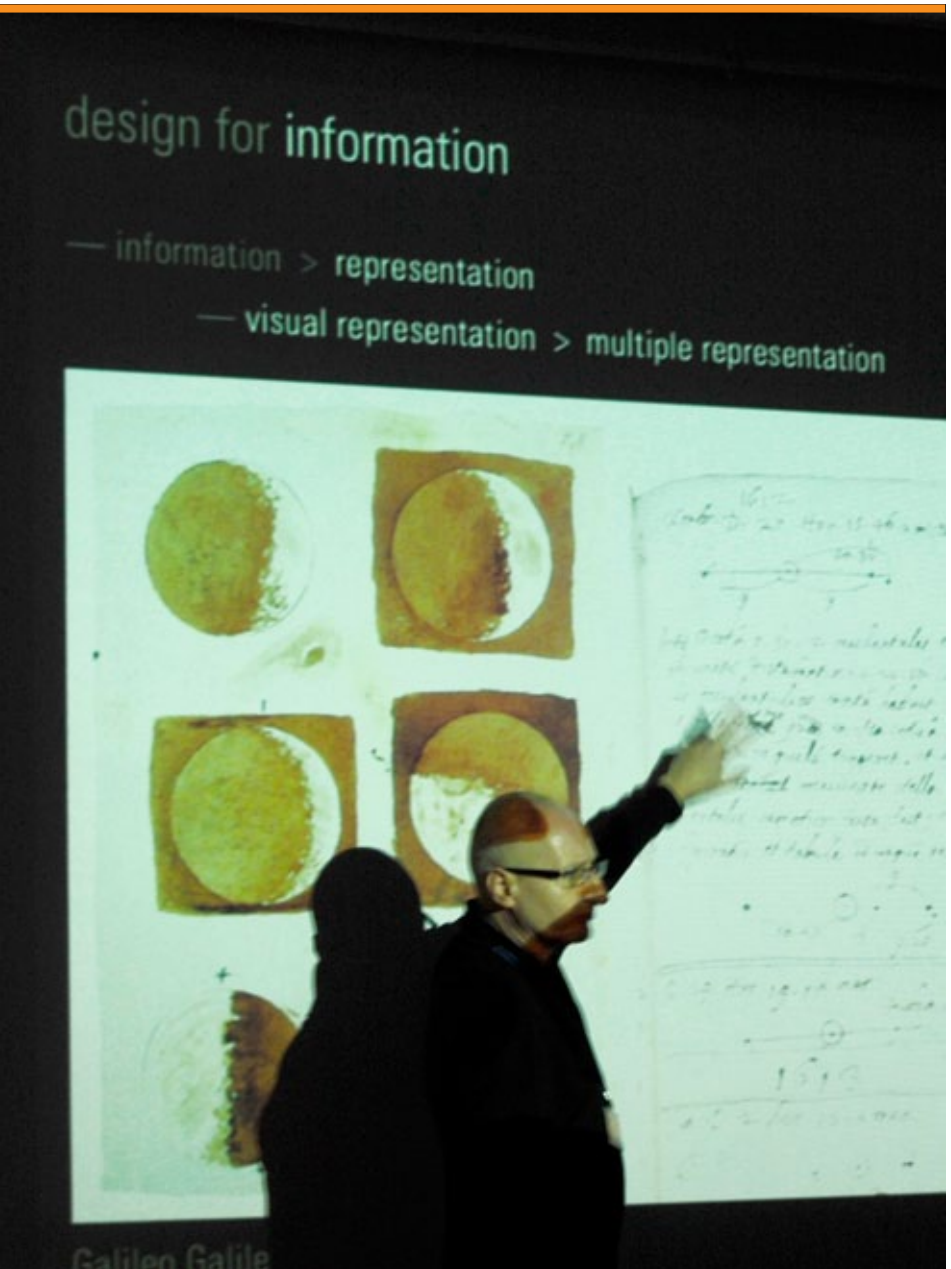
Jan 9th–11th 2012

00–00 Jan Kubasiewicz (USA)
Rigorous Practice of Research
for teachers and doctoral students

00–00 Agata Szydłowska (PL)
Writing on design for designers
for students

00–00 Karolina Konieczna (PL)
3d Techniques
open for general audience

Jan 9th–11th 2012



RIGOROUS PRACTICE OF RESEARCH

Jan Kubasiewicz (USA), assistant: Agata Dworaczek (PL)

This 3-day workshop will focus on methodology and pedagogy of thesis development as practiced at the Dynamic Media Institute — the master's program in communication design at Massachusetts College of Art and Design in Boston. Massart MFA thesis in design is a proposition advancing a new point of view, that is maintained by argument resulting from a rigorous practice of research, prototyping, and writing. Based on the same principles, but in a microscale, this workshop will provide an introduction to a broad range of relevant subjects.

Workshop participants will learn:

— to recognize multiple goals of research.
— to formulate a proper researchable question.
— to consider "prototype culture" as an approach to design.
— to understand "reflective practice" and the role of writing in design process.
— to document and to present a case study.

The workshop will include brief lectures, demonstrations, studio projects, and ongoing class critiques and discussions. Details of the projects will be given on the first day of the workshop. The workshop is open to students, professionals and educators in the field of communication design, graphic design or dynamic media design. Those interested in the workshop are encouraged to explore student work developed at the Dynamic Media Institute, especially its 2010 publication "The Experience of Dynamic Media," available as PDF for free download at the institute's website: dynamicmediainstitute.org.

Download "The Experience of Dynamic Media"

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AUDIENCE
NEED
INTENTION
INSPIRATION
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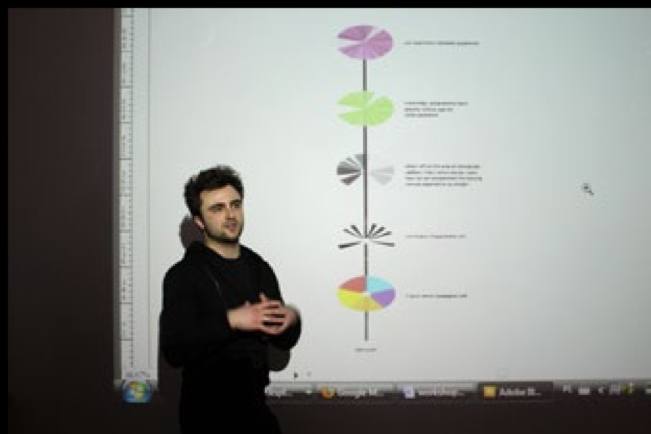
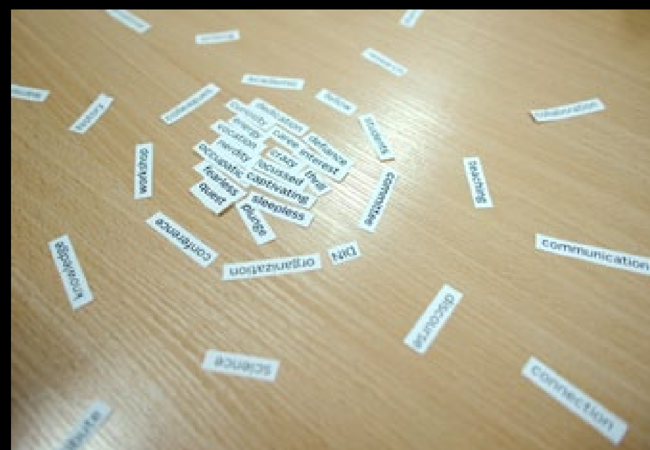
A
ARTIST
DESIGNER
EFFECT
(WORK,
PROJECT)
TOOLS

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