Knowledge Design v_1.0

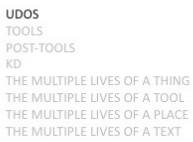
SL 1

Knowledge Design

Abstract

Knowledge Design [=KD] is an unidentified disciplinary object that has been seen by a few observers of the contemporary scholarly scene. The cohort of true believers in KD, once a small but dedicated group associated with the art/technology, counterculture/ cyberculture criss-crossings of the late 1960s, has recently grown thanks to the digital turn of the past few decades. True believers describe KD as the field of experimentation that arises when the well-oiled machinery of print culture finds itself jammed by a volatile intermedia mix with the consequence that the *form* that knowledge assumes can no longer be considered a given. Knowledge-making and knowledge-design become radically intertwined endeavors. Most cool-headed observers doubt the field's existence (or, if it does exist, would prefer that it become the business of Schools of Education).

UDOS SL 2



Knowledge Design

Before launching into my remarks, I need to begin with a confession: this talk may well be taking **undue** liberties with the notions of *emergence* and *disciplinarity* featured in the title of today's event.

The domain that I am designating as a "discipline" and for which I am claiming the attribute of "emergence" may or may not be a projection on my part: the product of an interstitial position between so-called "theory" and so-called "practice"; between the fields of cultural history and digital humanities, on the one side, and curatorial and design practice, on the other; between being a medievalist interested in pre-print culture, a modernist interested in the emergence of what Moholy-Nagy called typophotography, and a contemporary experimenter with print-plus models of scholarly communication.

Less a hallucination than a self-serving fiction, a possible object of desire and the fulfillment of a disciplinary wish, I am calling this domain *Knowledge Design* much like ADILKNO, the Foundation for the Advancement of Illegal Knowledge --the influential Dutch hactivist collective of the early 1990s-- spoke of "Unidentified Theoretical Objects," or UTOs.[i] In the parlance of ADILKNO, UTOs are speculative probes whose present or future existence is indefinite, but that serve to summon potential or plausible realities into existence. Once a UTO, or in our case a **UDO**, an unidentified **disciplinary** object, has been successfully described, it becomes self-evident, even inescapable. It invades all fields of inquiry. One stumbles across it everywhere.

Much as I'd like to create such a stumbling block, I will settle for much less: with persuading you that along certain edges of experimental arts and humanities practice a configuration is taking hold that merges knowledge production with knowledge presentation in ways that would have been unlikely under the regime of print. Much as in some domains of the natural sciences, the ways in question place **visualization** at the center of humanistic inquiry.

But they are in no way reducible to a "visual turn." Rather, the unstable emerging brew of KD practices includes interpretive work with vastly expanded data sets, the making of multilinear documentaries out of databases, conjugations of the digital and the physical, the desktop and the streets; and expanded definitions of knowledge that exercise not just sight, but **the entire human sensorium**.

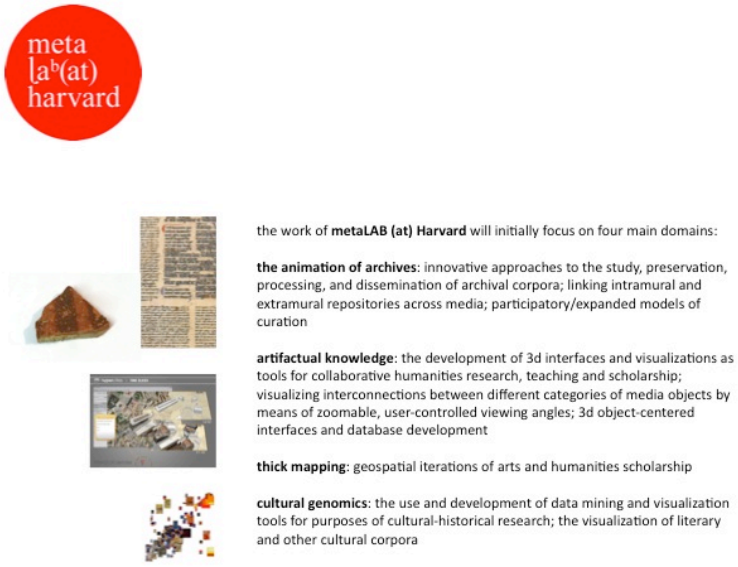
A bit of a grab bag, to be sure … so where exactly might one situate the field of Knowledge Design (KD) that I'm conjuring into existence? I think it would be located somewhere in the triangle between:

--**design** understood in the broad sense of "design thinking" (a domain that would extend from data visualization and interface design to information graphics to art, design and architecture)

--technology and media work (the development, use, and recombination of media, hardware/software, and communications tools), and

--**digitally inflected models of scholarly practice** --the areas closest to me and, accordingly, that I have most directly in mind --by sheer coincidence those featured in the mission statement of **metaLAB(at)Harvard**-- involve SL 3

kd



the animation of archives (innovative approaches to the study, preservation, processing, and dissemination of archival corpora and collections; imaginative answers to the question of what to do with the

96% of cultural corpora that are in storage or with the exponentially growing heaps of unprocessed materials; from the Fort Knox to the Acess = Preservation models)

artifactual knowledge (3d interfaces as tools for collaborative research, teaching and scholarship; archives "pinned" to maneuverable 3d digital objects; mining the seam between the physical and the digital)

thick mapping (layered, geospatially organized arts, humanities, and social science scholarship; the geospatial visualization of cultural corpora)

cultural genomics (data mining, mapping, and visualization as research and communications tools for purposes of cultural-historical and, particularly, literary-historical research)

According to the scenario I'm unfolding, Knowledge Design emerges within this disciplinary Bermuda triangle when the well-oiled machinery of print culture finds itself jammed by a volatile transmedia mix and by the sheer proliferation, heterogeneity, and complexity of both digital and physical cultural corpora.

The consequences of such a circumstance are multiple. The *form* that knowledge assumes can no longer be considered a given. The tools of humanistic inquiry become as much objects of research and experimentation in and of themselves, as do modes of dissemination. Statistical methods press against one edge of the qualitative human sciences; graphic and information design press up against another. Laboratories arise with a collaborative, team-based ethos, embracing a triangulation of arts practice, critique, and outreach, merging research, pedagogy, publication and practice. The once firm boundary line between libraries, museums, archives, and classrooms becomes increasingly porous as scholarship, deprived of its once secure print-based home, starts shuttling back and forth between the stacks and the streets.

Some of the features of this ferment are not entirely new nor entirely unfamiliar. But can a field called KD really be said to exist?

Well, as you all know, statistics never lie. And neither do Google nGrams.

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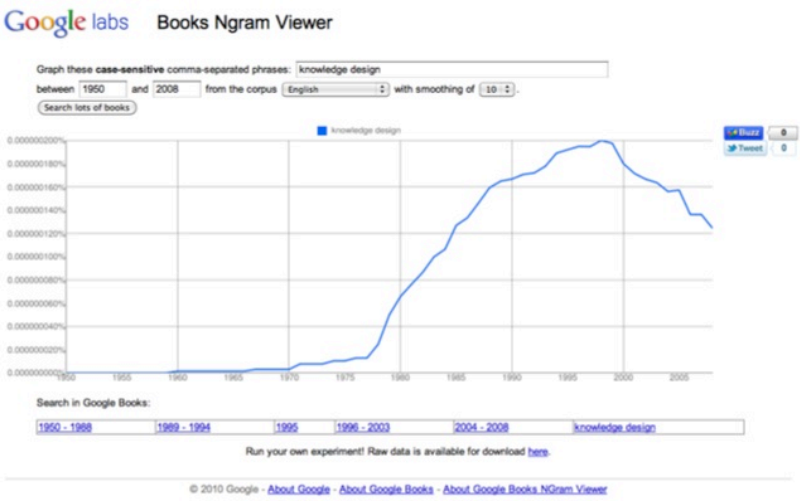


Not only does KD exist, but an nGram search SL 4 run on a sample of one million English books from 1800 to the present confirms that KD's ghost, first spotted and named only by a small population of true believers in 1970 has been extending its presence at a breakneck pace. (A slight dip from 2000 to 2008 is the result of a data set skewed by copyright restrictions on the Google Books corpus). Even if this "proof" has been generated by means of statistical sleight of hand, the nGram birthdate and chronology make sense. They suggest an upward trajectory launched during the art/technology, counterculture/cyberculture crisscrossings of the late 1960s that has expanded thanks to the digital turn of the past decades. And another nGram run confirms a correlation with the rise of the Digital Humanities. It shamelessly suggests that in 2006 their convergence was sealed with a kiss. CLICK

TOOLS SL 5

Knowledge Design

A hammer is a powerful tool. SL 6 As much because it is good with nails as because it transforms every human operator into a hammerer. Anthropologists remind us that there is nothing natural about hammering. Hammering is a specialized activity, requiring discipline, focus, and skill. And as it scripts an action, it models the world.

kd

Here is a no less powerful cognitive interface than a hammer: CLICK the one that has shaped the past several hundred years of knowledge production, training, and dissemination in the humanities. The interface in question is no less emphatic in the way that it both scripts the action of producing and transmitting knowledge, and models the world.

It is a machine built upon regularity, predictability, and standardization. A descending sequence of left-to-right evenly sequenced, framed, and aligned lines guide and pace movements of the reader's eyes. Spaces –whether margins, paragraph indents, intra-word blanks, the consistent kerning of letter forms— combined with no less consistent punctuation systems, emphatically mark and hierarchize the key units of meaning: the word, the sentence, the paragraph, the page. Capitalization provides an additional distinction at the level of single words, highlighting sentence openings and suggesting that greater semantic weight is to be attributed to proper names. Pages (and even paragraphs) are enumerated so that they can be accessed multidirectionally --by jumping forward or backward, up or down-- with running titles serving as navigational guides. Such multidirectionality is made available, however, within a regime in which linear right-to-left and forward paging are **the law**.

In this well-oiled machine, a primary text is placed front stage and center with all other textual forms subordinated, distanced or erased: annotations, glosses, graffiti, doodles, drawings, and illustrations. The visual logic of typography hums in the background as a subtle, imperceptible presence, like a second Nature.

The effect is a modeling of knowledge as something self-consistent and self-identical, universal and stable, that may be supported and sustained by the whole human sensorium and by the experience of things, but is primarily formed in the silent, imageless theater of the mind. CLICK [Nothing could be more remote from the often riotous and unreliable polychrome graphesis of a high medieval manuscript.]

What you just heard is, of course, a simplification.

Though far more slyly than its high medieval predecessor, CLICK print lives and is performed in a wide array of manners and institutional settings, some of which mobilize its visual attributes, its invitations to vocalize and gesture, its tactility, and even the possibilities for multilinear forms of argument. Moreover, the extraordinary achievements of print culture, not to mention industrial phototypographical print culture, are such as to render the forms of knowledge that both have bred, inescapable features of the contemporary world of knowledge.

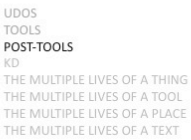
So, as I view it, KD is as much concerned with forging new **print-plus** models as it is with **post-print** counterparts, as much about the new roles carved out **for** print under digital conditions as it is about what comes **after** or **without** print. The material history of literature demonstrates over and over again the decisive role played by **recombination** in media revolutions. Such events are defined less by ruptures than by realignments and new hybridities.

Take as evidence to this effect the way in which all new communication systems rely upon those that precede them to establish the authority of an utterance. Machine-produced documents thus require hand-written signatures; written codes of law require

oral oaths; laws constitute systems of meaning founded upon archaism, using a linguistically "dead" but highly stable medium. And this ensures a high degree of simultaneity: prior systems never vanish, but rather assume a new set of specialized meanings and functions.

Accordingly, among its founding challenges, I would have KD model new specialized meanings and functions for print in a world defined by digital originals.

POST-TOOLS SL 7

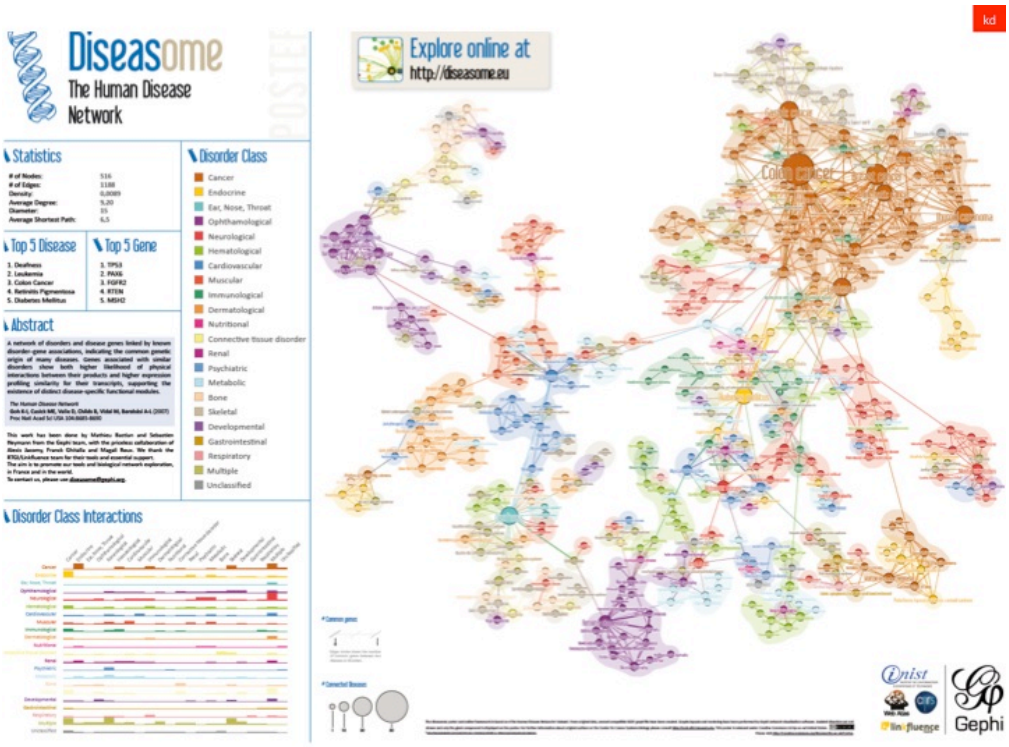


First we looked at a hammer from the late industrial era.

Then we looked at a paper page, printed circa 1979, hammering home the English translation of a 4th century Latin confession that formerly lived on the unruly pages of a parchment codex.

Then a ghostly page from a French 13th century Book of Isaiah interrupted print's triumphal march.

Now let's consider a more recent instrument: the published version of a large-scale collaborative research project, funded by the CNRS and the Institut de l'Information Scientifique et Technique in the mid-2000s—the **Diseasome**.



What you are beholding is a scientific "publication." Or is it a tool? Or is it a work of data visualization? Or has it been gussied up as an artwork? If a tool, is it an instrument reserved for experts and, if a work of info graphics or artwork, does it address non-expert viewers rather than members of the research community?

The answer is that the Diseasome is and does all this and more. It is a multimodal artifact, a visible thought experiment informed by state-of-the-art science, a better definition of knowledge design than any that I have been able to offer up to this point.

My slide shows only **one** of three iterations of the outcome of a long-term, large-scale research project: the poster that was developed by the Gephi Group as a 2d **printed translation** of the web-based interactive "original" for purposes of communication with specialist and non-specialist communities alike. "Creating posters," the project team writes, "can enhance collaborative work. It facilitates discussion and sharing of ideas about the data."

A **second** more substantial translation into a paper addressed to the scientific community was published in the 2007 *Proceedings of the National Academy of Science* by the study's authors, Goh, Cusick, Valle, Childs, Vidal, and Barabási. This was the iteration that established the Diseasome's place in the library of medical sciences according to the traditions of modern medical research (though I should note that this "publication" was itself anticipated by the **pre**release of conference abstracts and

posters that themselves garnered at least as many scientific citations as the subsequent article).

Which brings me to what you are now looking at, as we go live. Here is the so-called **original** that anchors all the other iterations: the diseasome website which tenders "an invitation to think about the benefits of networks exploration but above all tries to outline future designs of scientific information systems."

Even in this www version, the diseasome is not just a product, but also a work-in-progress to be fine-tuned and completed over time via the integration of additional data sets. The website assumes the form of a dynamic visualization that makes use of the Human Disease Network dataset for purposes of mapping the entire universe of disorders and disease-gene correlations that afflict humankind. It organizes this universe into networked relations such that family trees assume an importance at least comparable to that of single clusters and classifications. This is significant not only because it helps ordinary mortals to understand the "logic" of disease, but also because a fine-grained understanding of the common genetic origin of many diseases creates the preconditions for innovative approaches to address them.

Only a small number of disease groups achieve the necessary scale in terms of the numbers of affected patients or their topographical distribution (i.e. in rich countries) to create a market around which to build either pharmaceutical products or medical research careers. Big disease groups like cancers, cardiac, eye and ear diseases are the exceptions. The bulk of smaller-scale groups are cast outside this narrow band into the no-man's land of orphaned or neglected diseases where they mostly pass unobserved.

So the diseasome is at once a provisional network chart, a tool for research, a didactic support, and a demonstration of the power of scientific information systems. It is also a work of persuasive intent. It sets out both to promote new therapeutic solutions and public awareness by putting the **entire** universe of diseases quite literally **on the map**.

KD SL 9

UDOS
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I am not, of course, suggesting that, in embracing KD, the humanities ought to simply mimic the natural or the social sciences, tossing aside the sorts of qualitative, critical or interpretative traditions that have shaped their history in the name of quantitative models of research and analysis. Though I have an active interest in such an of the disciplinary contours of the humanities, I remain committed, all the same, to those features of humanistic inquiry that involve critique and historical contextualization, the willingness to grapple with imaginary, non-observable, and non-repeatable phenomena, and with the irreducibly ambiguous; ... all the more so, if the resulting scholarship spins a seductive yarn or SL 10 puts into play the very beauty about which it preaches (much like these five pieces of scientific eye candy).

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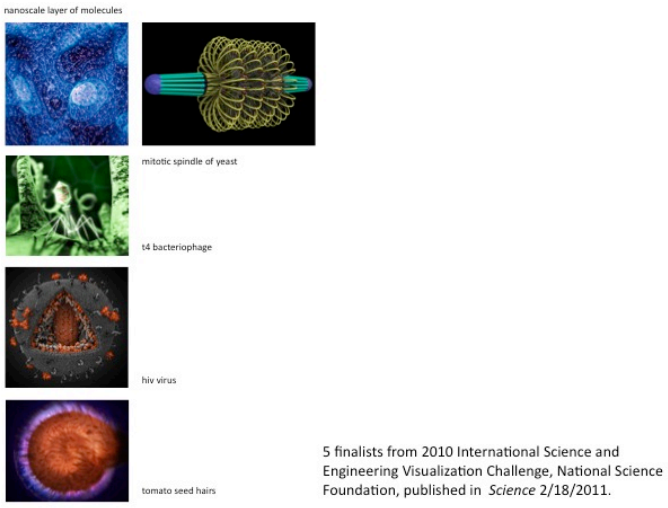

5 finalists from 2010 International Science and Engineering Visualization Challenge, National Science Foundation, published in *Science* 2/18/2011.

On the contrary, my contention is two-fold:

> --that KD offers the conditions for innovative, print-plus and post-print practices that fulfill the multimodal, iterative promise of science projects but in arts- and humanities-specific terms; SL 11
>
> --and that such forms of practice can expand the compass, impact and reach of humanistic inquiry in ways that forge new audiences for and democratize access to high-quality scholarship.

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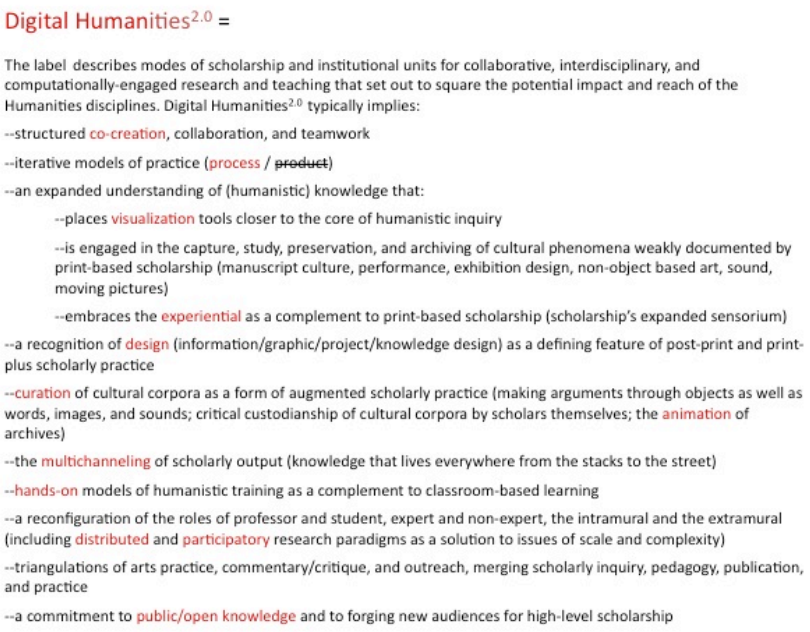


Digital Humanities$^{2.0}$ =

The label describes modes of scholarship and institutional units for collaborative, interdisciplinary, and computationally-engaged research and teaching that set out to square the potential impact and reach of the Humanities disciplines. Digital Humanities$^{2.0}$ typically implies:

--structured co-creation, collaboration, and teamwork

--iterative models of practice (process / ~~product~~)

--an expanded understanding of (humanistic) knowledge that:

- --places visualization tools closer to the core of humanistic inquiry
- --is engaged in the capture, study, preservation, and archiving of cultural phenomena weakly documented by print-based scholarship (manuscript culture, performance, exhibition design, non-object based art, sound, moving pictures)
- --embraces the experiential as a complement to print-based scholarship (scholarship's expanded sensorium)

--a recognition of design (information/graphic/project/knowledge design) as a defining feature of post-print and print-plus scholarly practice

--curation of cultural corpora as a form of augmented scholarly practice (making arguments through objects as well as words, images, and sounds; critical custodianship of cultural corpora by scholars themselves; the animation of archives)

--the multichanneling of scholarly output (knowledge that lives everywhere from the stacks to the street)

--hands-on models of humanistic training as a complement to classroom-based learning

--a reconfiguration of the roles of professor and student, expert and non-expert, the intramural and the extramural (including distributed and participatory research paradigms as a solution to issues of scale and complexity)

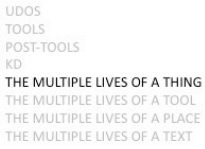
--triangulations of arts practice, commentary/critique, and outreach, merging scholarly inquiry, pedagogy, publication, and practice

--a commitment to public/open knowledge and to forging new audiences for high-level scholarship

Now, what I'd like to do in the remaining portion of my time is to move from theoretical conjuring to individual tricks.

Like the Diseasome, the case studies I will discuss briefly cover a gamut of possible positions within a still unstable UDO. These include the development of toolkits that have embedded within them new genres of publication, visualizations that are themselves research tools as well as data-derived artworks, hypotheses for the intersection between physical originals and digital supports or digital originals and physical supports, and new genres of multimedia scholarship. Like the Diseasome, some blur the boundary line between the concept of reference value and interpretive practice. Others write an expanded script for the experiential and sensate character of what counts as humanistic knowledge.

I will be looking at four domains of arts- and humanities-based KD practice under the titles of: SL 12



THE MULTIPLE LIVES OF A THING
THE MULTIPLE LIVES OF A TOOL
THE MULTIPLE LIVES OF A PLACE, and
THE MULTIPLE LIVES OF TEXTUAL ARTIFACTS

The projects that illustrate these domains run the gamut from the completed to the fully underway to the plausible but still mostly hypothetical.

They address such questions as:

--how might one carry out interpretive work with a collection of 13 thousand magic lantern slides of the American landscape divided between two physical locations?

--how can a multi-sited archival repository be pinned to a physical object?

--how can media artifacts and physical things be spatially conjugated?

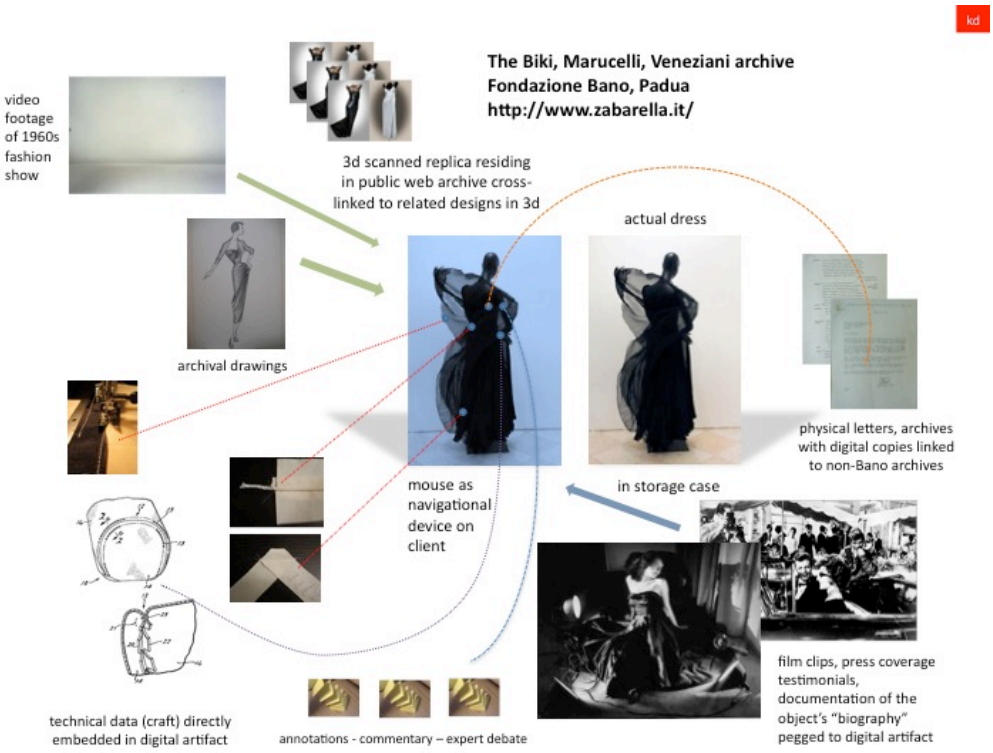
--what can a history museum without historical objects teach about history?

--how can forms of cultural practice that are weakly captured by paper-based forms of documentation become objects of scholarly inquiry?

--how might databases intersect the genre of the multimedia documentary and vice versa?

As the subtitles suggest, what each of these domains of experimentation emphasizes is, rather than linearity, **multiplicity**: the multiple lives of places, objects, texts, and tools; which also implies a multiplication of concepts of learning, research, publication and dissemination.

What I'd like to suggest is that the defining design challenge that KD confronts is precisely that of designing **multiplicity**, both designing multiplicity itself and designing **for** multiplicity. SL 13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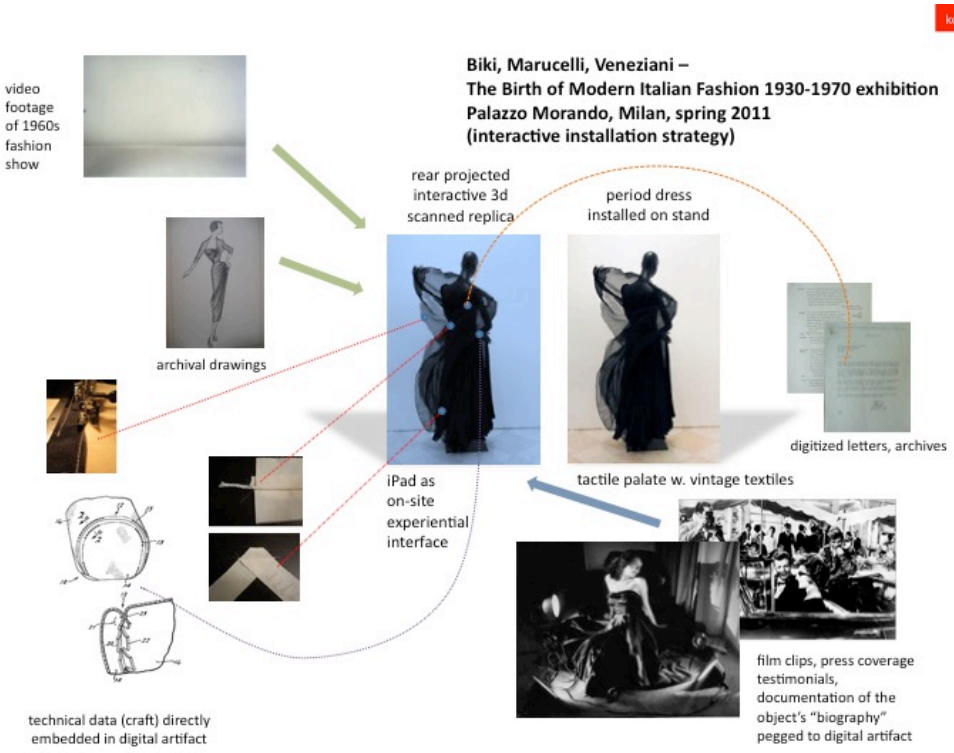
The Biki, Marucelli, Veneziani archive
Fondazione Bano, Padua
http://www.zabarella.it/
video footage of 1960s fashion show
3d scanned replica residing in public web archive cross-linked to related designs in 3d
actual dress
archival drawings
physical letters, archives with digital copies linked to non-Bano archives
mouse as navigational device on client
in storage case
film clips, press coverage testimonials, documentation of the object's "biography" pegged to digital artifact
technical data (craft) directly embedded in digital artifact
annotations - commentary – expert debate


kd
Biki, Marucelli, Veneziani –
The Birth of Modern Italian Fashion 1930-1970 exhibition
Palazzo Morando, Milan, spring 2011
(interactive installation strategy)
video footage of 1960s fashion show
rear projected interactive 3d scanned replica
period dress installed on stand
archival drawings
digitized letters, archives
iPad as on-site experiential interface
tactile palate w. vintage textiles
film clips, press coverage testimonials, documentation of the object's "biography" pegged to digital artifact
technical data (craft) directly embedded in digital artifact

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Zeega is an open-source HTML5 platform
for collaboratively producing, curating and publishing
immersive multimedia projects on web, tablet and mobile devices.

Zeega enables individuals and organizations
to create nonlinear digital narratives that seamlessly combine
photos, videos, text, audio and maps from public APIs.

Zeega is an experiment in fostering a new medium for an age of open information,
providing user-friendly tools to access, visualize and re-interpret media repositories
such as libraries, archives and major social websites (e.g. Flickr, YouTube, Twitter, NPR, etc.).

For more info, contact info[at]zeega.org.

Three Zeega iterations:

mock up of a multimedia critical edition of McLuhan/Fiore/Agel, *The Medium is the Massage* (1967)

extraMuros: enabling the viewing, annotation, and curation of Harvard-owned collections across media while crosslinking them with non-Harvard digital repositories via open APIs

a database documentary by Joana Pimenta on the Boston suburb of Revere Beach (from the fall 2010 Media Archeologies of Place seminar @ Harvard-VES)

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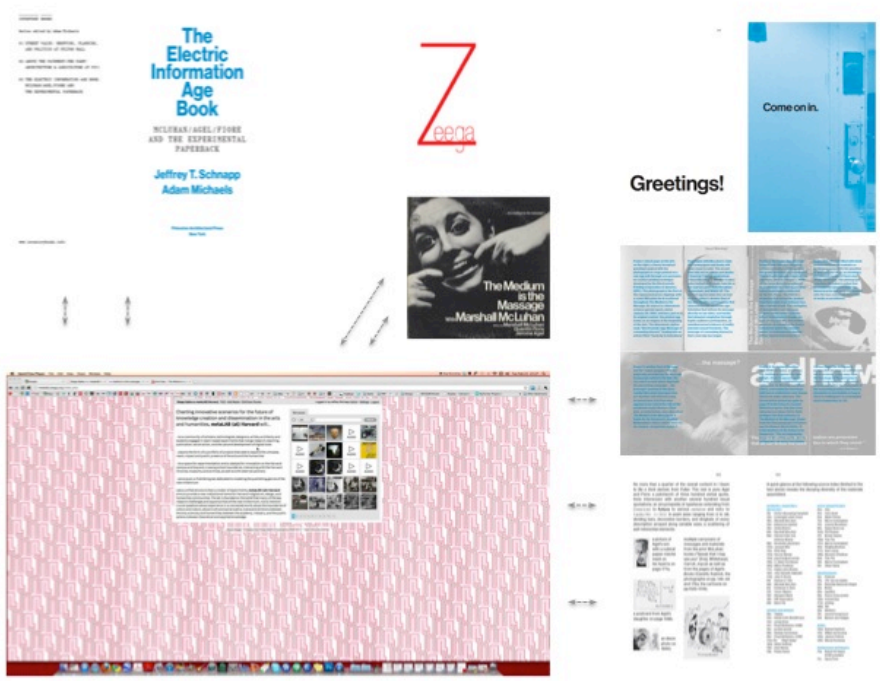

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The Trento Tunnels (core themes)

--animating the archive through a meshing of the physical and the virtual

--history from the bottom up: the (living) archive of memoirs of ordinary citizens (WWI, 20th cent.)

--reinventing the history museum (as lab, as work in progress, as experiential space, as museum with and without objects)

--respecting the physical integrity of the site (transformation as preservation and vice versa)

--healing a wound in the urban fabric of the city

--mining the metaphor of the tunnel: as *galleria* or gallery, as N-to-S corridor, as march through time, as excavation of the region's geological viscera, as dreamspace and immersive cave

--genre bending and blending (the archive as place of play and participation, virtual world supports for physical space, the 320 meter children's book for adults; the museum of everyday life)

kd

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AUTONOMY to ZAMBANA: 2010-present:

kd

Speed Limits (the core concept)

--linking together three physical exhibitions that are discontinuous in time and space via a browser-based virtual world (Sirikata):

La Vitesse et ses limites, Canadian Centre for Architecture, Montreal, Canada (May-Oct. 2009)

Jais Nielsen, Bornholms Kunstmuseum, Bornholms, Denmark (Sept. 2009 -Jan. 2010)

Speed Limits, The Wolfsonian-FIU, Miami Beach, USA (Sept. 2010-Feb. 2011)

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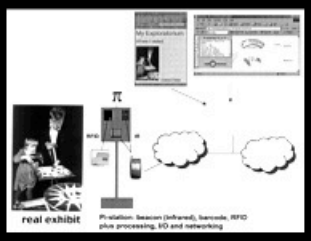
Speed Limits

--re-embedding these natively digital components back into the physical space as the shows travel



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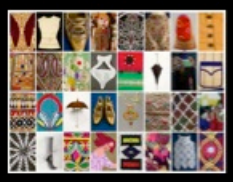
Speed Limits

--building a natively digital set of environments around them that serve as infinitely extensible supports for the complex of exhibitions. These include:

--commissioned digital "galleries" curated by scholars and artists, as well as generated as the output of international design competitions

--libraries, archives, and learning environments built in Sirikata but that leverage 2D www assets

--classrooms, meeting rooms, and performance spaces which can be used as a live platform but also for the preservation and documentation of what takes place within them



On the Origin of Species: The Preservation of Favoured Traces

Ben Fry

We often think of scientific ideas, such as Darwin's theory of evolution, as fixed notions that are accepted as finished. In fact, Darwin's *On the Origin of Species* evolved over the course of several editions he wrote, edited, and updated during his lifetime. The first English edition was approximately 150,000 words and the sixth is a much larger 190,000 words. In the changes are refinements and shifts in ideas — whether increasing the weight of a statement, adding details, or even a change in the idea itself.

The second edition, for instance, adds a notable "by the Creator" to the closing paragraph, giving greater attribution to a higher power. In another example, the phrase "survival of the fittest" — usually considered central to the theory and often attributed to Darwin — instead came from British philosopher Herbert Spencer, and didn't appear until the fifth edition of the text. Using the six editions as a guide, we can see the unfolding and clarification of Darwin's ideas as he sought to further develop his theory during his lifetime.

This project is made possible by the hard work of Dr. John van Wyhe, et al. who run **The Complete Work of Charles Darwin Online**. The text for each edition was sourced from their careful transcription of Darwin's books, and Dr. van Wyhe generously granted permission to use the text. This piece is a simpler version of a larger effort that looks at the changes between editions, and is intended as the first in a series looking at how the book evolved over time. Built with **Processing**. More about the project can be found **here**.

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A DEMONSTRATION OF THE HIGHBROW
TEXTUAL ANNOTATION BROWSER
ON LA DIVINA COMMEDIA DI DANTE ALIGHIERI
INFERNO
PURGATORIO
PARADISO
Jacopo Alighieri
Graziolo Bambaglioli
Jacopo della Lana
Anonymous Lombardus
Guido da Pisa
Selected Text
Annotations
Click a verse or chapter to selected it.
Show 10 entries
Search:
Location
Source
Comment
No data available in table
Showing 0 to 0 of 0 entries
Bounds: Independent
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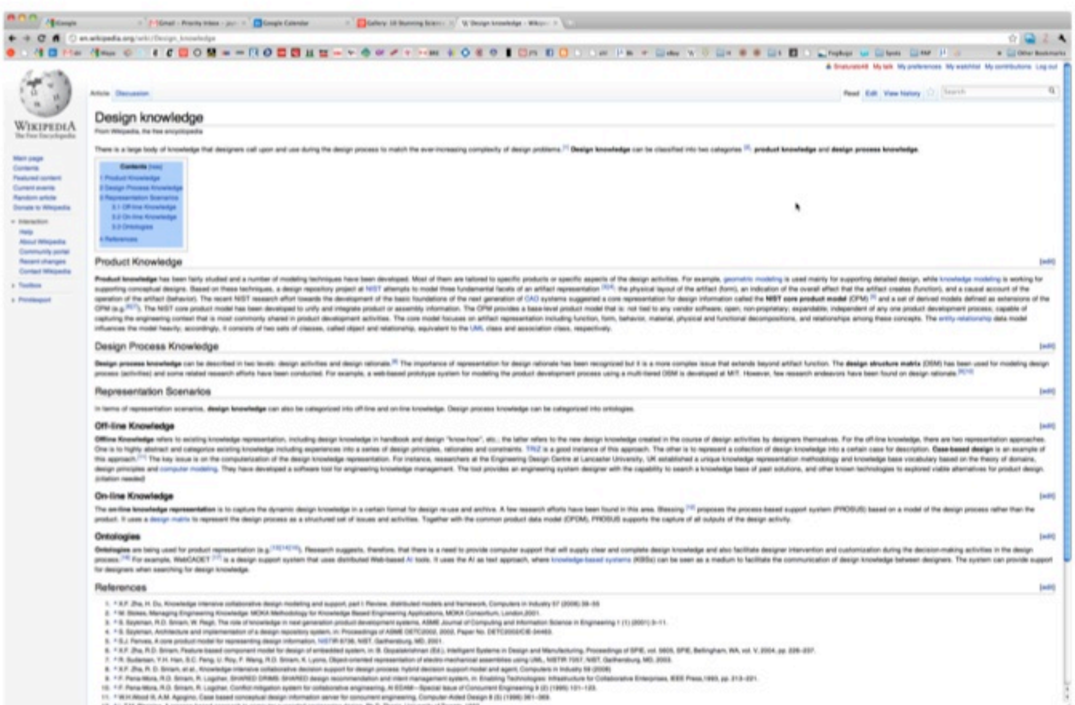
Search Text

dk kd


Design knowledge
Product Knowledge
Design Process Knowledge
Representation Scenarios
Off-line Knowledge
On-line Knowledge
Ontologies
References

[i] In “The Data Dandy and Sovereign Media: An Introduction to the Media Theory of ADILKNO,” founder Geert Lovink writes: “In *The Media Archive,* which ADILKNO published in Dutch in 1992 and in an expanded German edition in 1993, a series of potential media and potential media figures are collected under the denominator of "Unidentified Theoretical Objects," or UTOs. These compact texts are purely speculative. ADILKNO does not practice media archaeology, hermeneutics, media criticism or cultural studies. The genre of ADILKNO, the media text, describes no reality or ideas outside the text. Its material is the media itself -- not the equipment or programs, but their possibilities. In the electro-sphere there exists a multiplicity of potential media and media figures. Their present or future existence is indefinite, though it can definitely be tested. The insight the media text yields about them is irresponsibly rash. The media text speculates with chance, danger, dream and nightmare. It challenges potential media to become real; in the first place, in the media text itself. It provokes language into taking on these forms. Potential media exist only as options, but once they are described you run across them everywhere. This also holds for the data dandy. Although ADILKNO members emphatically deny being data dandies, or propagating any similar decadent, outmoded, postmodern consumerism, many people claim to have data dandies in their circles of friends, and this notion is difficult to counter.” http://www.leonardo.info/isast/articles/datadandy.html

--how best to mine the seam between physical and digital objects?