DIGITALLY remastering worldviews: some tasks for a semantic web

Dr. Alan Prohm

Cultural Communications and Digital, Humboldt Forum Kultur GmbH, Germany,
a.prohm@humboldtforum.com

ABSTRACT: As an institution whose identity consists in connecting other institutions, collections, communities and discourses, the Humboldt Forum faces a special challenge in the definition and digital presentation of its contents. Cultural heritage that may already be undergoing digital remastering in its home institution will come into the Humboldt Forum and be further re-mediated, re-represented, brought into new contexts and combinations, and remastered for new digital tools with the hope of providing more interactive, interdisciplinary, comparative, and networked modes of access to it.

In this process, it is not only the object and its exhibition label that must be remastered and find a new form in the digital. It is also the background world of structuring relations and associations that needs remastering if it is to show up and take its place in digital reality. How can underlying cosmologies and ontologies come with their objects across the threshold of digitalization, and knowledge structures that contextualized the creation, use, or collection of objects show up in the data structures that now give them digital currency?

New Semantic Web, Linked Data and search aggregation technologies hold great promise for the encoding of cultural ontologies and association networks, and for the communication and exploration of "worldviews" by means of connected objects. As such, they promise to make vital, invisible dimensions of cultural heritage palpable to a public engaging digitally presented collections. In this presentation I will discuss some of the specific hopes and ambitions a project like the Humboldt Forum holds for these technologies, and for the interactive, interdisciplinary, comparative and networked exploration of world cultures.

1. AMBITIONS

They recommend starting talks with a joke. In approaching this topic one came to mind. It is a joke indirectly spread by the Staatliche Museen zu Berlin and the Stiftung Preußischer Kulturbesitz, that associates the project of the Humboldt Forum with a purportedly much older project, abandoned in the 19th Century, a special, inter-generational dream of the Brandenburg Enlightenment, traceable back over centuries and connecting everyone from Schlüter to Leibniz to Friedrich der Große and both Humboldts in the ambition of creating a:

WELTVERBESSERUNGSMASCHINE.

A machine assembled of objects (cultural heritage) ordered by science, subjected to higher reflection, and therewith fusing and energizing into an artifice powerful enough to educate, enlighten and improve those who move through it, and through them the world they constitute together.

~~WELTVERBESSERUNGSMASCHINE~~

I think this joke, as I call it - though really what I am talking about is an exhibition and book project from 2013 by Friedrich von Borries with Jens-Uwe Fischer - is funny. But it is also quite serious, a work of thoughtful critical art based on interesting research and

with a provocative point. It provokes some reflection on how institutions and cultural workers formulate, even to themselves, the value and intention of their projects. [http://www.berliner-weltverbesserungsmaschine.de]

The book version is called *Die Berliner Weltverbesserungsmaschine*, or *The Berlin World-Improving Machine*, and is in two volumes [Friedrich von Borries, Jens-Uwe Fischer, Merve Verlag, 2013]. One volume traces the legacy of the idea through the minds of various men [sic] who dreamed it, figures from Skytte (1614-1683) to Lepsius (1810-1884). The other volume describes a new exhibition, consisting of objects interconnected across collections and sites, structuring a virtual presentation, corresponding to a real tour through 15 Berlin museums, and a large sculptural construction in the front court of the Hamburger Bahnhof.

[http://www.smb.museum/museen-und-einrichtungen/hamburger-bahnhof/ausstellungen/detail/die-berliner-weltverbesserungsmaschine.html]

When Mr. MacGregor, our founding director, first joined us in Berlin, I gave him a copy of the book, both volumes, as a present at a little event we had, since it was clearly now going to be his job – the British have a good sense of humor, and he seemed to get it.

Funnily, a little while later, in a TV interview broadcast on March 16 2016, at the time of the official convocation of the Grundungs-intendanz, the reporter for 3Sat, Kulturzeit invoked the same vision, though in a somewhat narrower formulation. About half-way through the three-minute segment, the reporter asks, off-camera:

Wie kann es gelingen, aus dem Humboldt Forum mehr zu machen, als ein aufgehübschtes Völkerkundemuseum, eine Mehrzweckhalle in historischer Kulisse?

How can the Humboldt Forum become more than a prettied-up ethnographic museum, a warehouse behind an historical stage set?

Mr. MacGregor and then Dr. Hermann Parzinger are seen and heard offering answers to this question before the reporter breaks in, again off-camera, to add, as if in summary:

*Das Humboldt Forum als große **WELTERKLÄRUNGSMACHINE**.*

Figure 1: Humboldt Forum Directors in the Humboldt Box. 3sat Kulturzeit 16.03.2016, http://www.3sat.de/mediathek/?mode=play&obj=57769, the quote is at 01:20-01:55

~~WELTERKLÄRUNGSMACHINE~~

Neither Herr MacGregor, nor anyone so deeply concerned with the project's mission, I believe, would say the Humboldt Forum is there to explain the world. Explanations are too one-sided. That's what a museum in the old sense does. His answer was more judicious than the reporter's summary, and points to a different ambition. He says:

Das ist die große Herausforderung: wie man, in diesem Forum, den Besucher klar macht, dass die Welt, dass alle Kulturen der Welt, zusammen verbunden und verflochten sind.

That is the great challenge: how, in this Forum, to make it clear to the visitor, that all the world's cultures are interconnected and interwoven.

For the design of a digital offering, a more realistic, yet perhaps even more tremendously

ambitious goal becomes apparent: the creation of a **WELTVERBINDUNGSMASCHINE,** a machine for showing how it's all connected.

2. REALISATIONS

In the interview portions of this report, the founding directors, together with Paul Spies, newly hired to direct the Berlin Exhibition, are pictured standing before a physical model of the SMB Exhibitions destined for the Humboldt Forum and in front of a small media table, designed by the Media team of the SMB Staff Unit (Stabsstelle) for the Humboldt Forum, to accompany a display for the final Humboldt-Box exhibition produced under the directorship of the SMB/SPK. [Graphic design and programming by ResD] The table gives handy access to high-res images and to object-texts by the curator in a simple, accurate and elegant (we think), digital mediation of the showcase.

Figure 2: Screen from digital presentation, "Ein chinesisches Kostbarkeiten-Kabinett, Humboldt-Box, 2016

The display format mirrors directly the presentation of the curator Dr. Ching-Ling Wang, then of the Museum of Asian Art, and gives the visitor digital access to the showcase and its contents in a one-to-one remastering. The effort here was simply to support a direct viewing of the exhibition on site, and offer an added value through the digitization. The media table thus represents a remastering of the exhibition itself as a content structuring, not just the object, but also its spatial organization in a display, containing its own levels of meaning to communicate. What gets remastered here are 1) the visual form of the object, rendered in high-resolution images that can be zoomed and panned, 2) its knowledge form, as a block of "basic information" in

alphanumeric form, including a) the museum's catalogue information (in this case the Museum für asiatische Kunst's basic catalogue information from the platform SMBdigital) and b) an object description by the curator, 3) the visual/spatial form of the presentation showcase, in the form of a large digital rendering of the showcase, which can be flipped to view from the reverse, and 4) a basic knowledge form of the curator's presentation, explaining the idea behind each side of the display.

Naturally, when the founding directors are challenged on their vision for the Humboldt Forum, we feel challenged, because the purpose of the digital offering is to support and extend the house's physical offering, to carry its messages and to help fulfill its promises. Does this application improve the world? Does it explain it? It does connect you to it, or to a piece of it. It introduces a visitor to Chinese ceramics pretty well, to their aesthetic qualities, their importance for an intellectual culture, and the fine craft of their fabrication. It gives us a clear picture, basic facts and a verbal commentary. This is the level of a basic remastering, and corresponds to a digitization of the museum's own presentations. As such it can be said to fulfill by digital means the basic function of the analog, Humboldtian museum, that of connecting the visitor to the objects and phenomena they encounter there.

Object Remastered

What is remastered here is:

Object (visual form)	Into	High-res image / zoom+pan functions
Object (knowledge form)	Into	Alphanumeric "basic info" a)catalogue info, b) object text
Exhibition display (visual form)	Into	High-res interactive display / tap to view objects + tap to flip between vitrine sides
Exhibition display (knowledge form)	Into	Simple texts for the objects and vitrines

What more is possible?

If we think there is more of a cultural heritage there to remaster digitally than just an object's visual appearance and a few facts, one direction to work in is **resolution**, to add detail, more pixels, or more facts. This resolution can be added in any modality, enhancing the information experienced via each sensory mode, or any mode of cognition or reception. 3D printing to reconstitute the object's weight and texture, audio to communicate its materiality through sound, additional detail views or zoom capability on an object presentation, are all examples of the first. Even further around on the sensory/motor spectrum, we can think of gestural and kinaesthetic interfaces or installations to communicate patterns of movement and interaction associated with an object, a practice or a pattern of thought. Thinking immersively, we can even dream of a comprehensive project drawing remastered content for all these sensory channels together, for a full-bandwidth, immersive, material, interactive digital reconstitution of the object. VR is the form in which this dream of immersive interactive representation is working itself out today, and through it vital dimensions of an object's phenomenality can be given a path to remastering, and to restoration in a digital re-presentation of the related cultural heritage.

The project of remastering for higher resolution can also be understood in terms of fidelity, enhancing the information to qualify the recording or representation as "true" or "faithful" to a version considered true. The question of making information on an object's provenance (Provenienzforschung) show up in its basic object description, for example, is a question of remastering with the goal of achieving a particular standard of "fidelity" in the transmission (Vermittlung) of the cultural heritage, including information considered essential to its truth, and thus falsifying if left out of the recording.

Because, why are we talking about remastering in the first place? What does remastering mean, in relation to objects or phenomena of cultural heritage? At the most abstract, remastering is about counteracting a loss or deterioration in information quality of a recording or reproduction. It means going back to the original, for example with the benefit of a new technology, and creating a more reliable basis for further copies or transmission. In regard to cultural heritage, it means going back "toward" the original, since the original may no longer exist, or exist only as an indeterminate, disputed phenomenon, and producing a representation or remediation more "faithful" and complete than previous ones. And since all objects, as content of cultural study in a Western museum tradition, testify to a primordial removal from some original world, the task of remastering becomes the path of a reintegration, the effort to restore to the recording lost dimensions of the world around the object, and connecting the object with us.

3. RELATIONS

Another direction, therefore, of seeking "more" through a digital remastering is to restore lost relations – the associations, correspondences and interdependencies that co-constitute any object and are lost when the object is removed from its world. While this information can be remastered into an object description or presentation format as additional resolution, added detail, volume or intensity in the phenomenal account that specifies these relationships, only a very limited portion of the object or phenomenon's relatedness can be accounted for in this way. Relations are systematic, and not punctual; they can be understood and expressed only in a playing out of their systematic implications. To communicate relations in a way faithful to their importance and complexity, punctual properties and qualities need to be linked, generating the threads that allow us to associate, measure and compare.

For the first Humboldt-Box exhibition under the Humboldt Forum Kultur GmbH, EXTREME! Natur und Kultur am Humboldtstrom, which opened in the Fall of 2016, we were able to realize a second iteration of the digital vitrine solution, and with one "simple" step to achieve a next level of digital remastering for a selection of the exhibition's contents.

Figure 3: Screen from digital presentation, "Forschungssammlungen in Berlin", 2016/17.

Here we made two more media tables, working with the agency Studio Nand. The presentation of objects followed the same logic, this time with some enhancements to the resolution, in the sense of richer media. In addition to the basic zoomable and pannable object images, the application supported additional views and additional media types, including sound files for illustrating music instruments in one of the two display cases. But the biggest difference was in what we were able to do with the objects' basic catalogue information, as a step towards remastering the network of an object's associations and relatedness. This invisible and indefinable web, by which an object or phenomenon is embedded in its world and in ours, is what we can hope in some degree to restore in a new, digitally supported rendering.

The systematic archiving and catalogue designations applied in collections practice give us the means of cross-linking all the catalogued objects according to defined categories. They allow us to do this already by analogue means. In a digital mediation, in particular with simplified code protocols for linking data "semantically", (Open Linked Data, RDF, JSON-LD, OWLS, etc.) they allow us to do it "automatically". The same alphanumeric sequence I have always seen and read, usually at the head of an object text: *Ethnie/Material/Fundort/Sammler/Epoche/Museum*, I can now touch and navigate systematically. Verbal detail becomes a graphic interface for following the associations these systematically structured details reveal, when connected. Datapoints definable for individual objects, linked together become threads or strings carrying the information of an interrelatedness, which says something

more about the object and the world than can be said even with the most immersive, highest-resolution object presentation.

Figure 4: Screen from digital presentation, "Forschungssammlungen in Berlin", 2016/17

What before the remastering were predicates of the object ("found in Chimbote", "collected by Gretzer", "made of clay"), could afterward become new independent layers of substantive content, showing us Chimbote, Gretzer, and the materiality of clay wind instruments. These new layers of information restore vital old layers of meaning to the mediation, contextualizing, reflecting on and enriching each of the objects associated by the category, while supplying a ground for understanding them together: along the category of time as a story, along the category of space as geography, along the category of collection year as a history of ethnographic collection activity.

The exhibition was the first consciously conceived as a Humboldt Forum exhibition. The full complexity of the HF as a project came to bear in designing the exhibition and the digital mediation of its contents, including the interdisciplinarity of the contents (ethnographic, but also scientific instruments, natural specimens and human remains), the multi-perspectivity from which it is to be communicated, the inter-institutionality of the collaborating curators, and the internationality/ interculturality of the represented and collaborating origin communities, create a broad and complex field of information that needs to be taken into account in a digital mediation.

The relations remastered in this case are those recorded and researched by the museums that hold the objects. They are predetermined and express a basic classification scheme applied by scholars. Each data point is the result of scholarly work, and new data points require scholarly approval to be added. The value of this information for "faithful" remediation of objects and cultural phenomena lies in the care of its production and maintenance, and this is expressed in lexica and ontologies requiring strict editing and maintenance. Digital remediations of this content therefore carry an important editorial burden, and corresponding time and cost factors for the production and maintenance of digital products.

Not every important dimension of an object's relatedness to other objects, to the world and to us, however, requires this kind of effort and expense. The same technologies of linked data make the encoding and expression of other very important relationalities possible with much less effort, requiring no research and limited moderation. The function enabled on social media platforms to "like" an item, for instance, ties it instantly and precisely in a web of relatedness uniting other items and other people who liked them. We know from our daily use of social media, that something else is possible. Linking is a cognitive function basic to our processing of information and experiences, and we have reached a moment when we expect this functionality in a digital mediation.

4. WHOLES

The task of remastering cultural heritage in the Humboldt Forum involves finding ways to show the wholes to which parts testify, regaining, in a re-recording of the objects, more of the world that went missing when they were removed from it. Including more presence and participation of the people it came about among. This is why the ability to remaster the relationality of objects of cultural heritage matters. The ambition to know the world drives a desire to gather pieces of it. The practice of displaying the pieces must strive for new ways of showing, and connecting you to, the whole.

Nur eine einzige innere und wesentliche Eigenheit als solche zu erforschen, ist schon schwierig; wieviel mehr aber alle in ihrer Verbindung zu einem Ganzen zu kennen. ... Nur von sehr wenigen Menschengattungen ist es also möglich auch nur den Versuch zu wagen, ein vollständiges Bild ihrer innern und wesentlichen Eigenthümlichkeit zu geben. ... Dennoch kann sich eine philosophische Anthropologie nicht mit etwas Geringerem begnügen.

Just to study one single, inner and substantial thing [Eigenheit] is hard enough; how much more so, therefore, to know all of them in their relation to a whole. ... It is therefore only possible even to attempt to give a comprehensive picture of but a very few human species [Gattungen]. ... And yet, a philosophical anthropology can content itself with nothing less.

[Wilhelm von Humboldt, „Plan einer vergleichenden Anthropologie" (1797), *Sämtliche Werke, Band 1* Hg. Wolfgang Stahl, Mundus Verlag, 1999, S.168.]

Wilhelm von Humboldt's project of a comparative anthropology, complement and parallel of his brother's comparative approach in geological, botanical or meteorological study, demands this scoping of the whole. In his afterword to the 1972 Reclam edition: *Wilhelm von Humboldt: Schriften zur Sprache*, Michael Böller says that what the dioscurian brothers had in common was that they were both „universal morphologists", and "pioneers of the comparative method."

Encoding the catalogue data of objects in a relational database can restore to the digital remastering of an object important information on various wholes, expressed as categories, to which the object belongs. And while we view the historical preoccupation with determining the „character" of nations and persons with great critical distance, the fascination with overview, generalization and comparison remains, and the ability to see out from an object to the world it speaks for, remains a dream of digital remediations. Chimbote as a place, the Moche as a culture, Gretzer as a

collector, clay pipe fabrication as a ritual handicraft emerge as dimensions of the world surrounding and integrating each of the objects these categories link. If the link can come to life.

To make object information interactive and intelligent through Linked Data protocols holds this potential, the potential of bringing the interrelatedness of objects, expressed in data and metadata, as a semantically navigable interface for exploring cultural content.
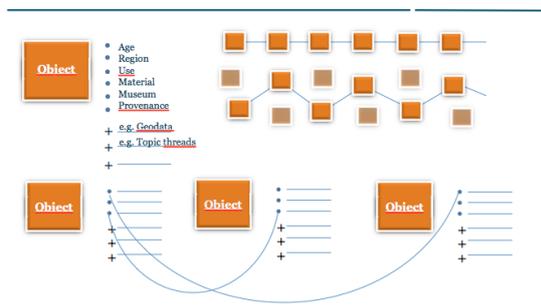

Figure 5: Connection logic for basic object info

To realize this potential for a complex, dynamic and publicly funded institution like the Humboldt Forum, the cumbersomeness, brittleness, expense and risk of traditional relational database work needs to give way to a promised new era of easy, flexible data linking and maintenance. And this is where the full promise of the semantic web project comes into focus. To be able to link the objects of large collections, not only via laborious tables, but semantically, that means by meanings already contained in verbal formulations, concepts systematically linked via the words and phrases we use to think them. And flexibly, according to a categorization that can grow as the knowledge base grows.

RDF, or Resource Description Framework, purports to offer just this flexibility. It is described as "a standard model for data interchange on the Web", having „features that facilitate data merging even if the underlying schemas differ, and it specifically supports the evolution of schemas over time without requiring all the data consumers to be changed" [https://www.w3.org/RDF/]. One of

the technology's inventors and first visionaries, Jim Hendler, puts it similarly:

The first (main benefit) is that RDF enables you to share data in a flexible schema so you can store additional types of information that you might have been unaware of when you originally designed the schema. The second is that it helps you to create Web-like relationships between data, which is not easily done in a typical relational database.

[Jim Hendler, "Web 3.0, Linked Data, and the Semantic Web: What's this all about?

https://www.youtube.com/watch?v=Q7tyi1kp3 3w&t=7s - published **06.09.2016**]

The benefits of such technologies for digital presentation of and engagement with cultural heritage collections are becoming widely apparent, and desired. And yet, despite the familiarity with the conventions and possibilities of social media platforms, and the desire to get traction in social media channels, there is not the same level of awareness among museums as to what can be done to benefit from a semantic web.

The prospect of solving these questions for yourself as a cultural institution is daunting and financially risky. Increasingly partners and specialty houses are out there, who will do it for you if you can pay, or if you're lucky, as a sponsoring. But here too, the gap between what you can imagine in fantasy and what you can imagine really realizing is daunting, and discouraging. This gap, and the prevailing unfamiliarity with this field may soon be closing up, however, as the technology evolves and the industry and products develop. What once needed to be expensively thought up and built will likely soon come ready-made in a new generation of digital data products and services.

For an institution dedicated to showing how the world's cultures are interconnected and interwoven, the possibilities of such data networking technologies is tremendous. What would Wilhelm say about the rise of chatbots

and language-driven interfaces sourcing their recommendations and tour commentary info from 20,000 online object-texts; and what would Alexander, trying to organize his notes in today's digital environment, say about an out-of-the-box databasing software, like this product from the global interactive agency, Razorfish: It's called Cosmos, or the AR-Version, Cosmos™ Amplify.

…
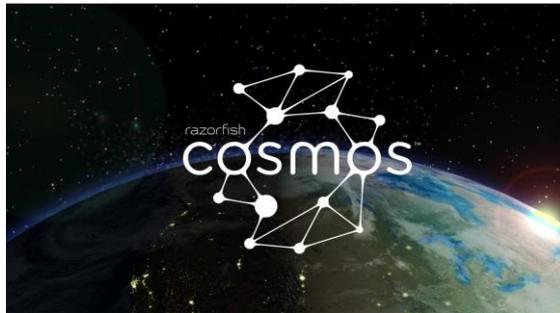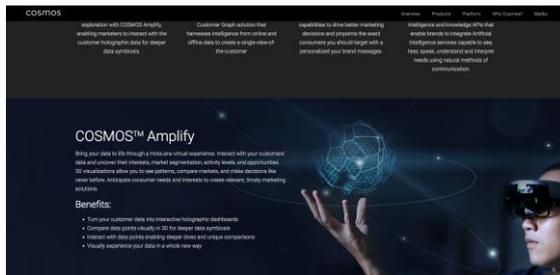

Figure 6: Promotional web presentation, Razorfish Cosmos & Cosmos™Amplify, 2017

As the Humboldt Forum considers whether and how it can meaningfully invest in a semantic networking of its data, industry products and solutions are emerging that are ready to do it for us.

5. CONCLUSION

The hope of an institution like the Humboldt Forum, in confronting these possibilities, is not the pygmalian-like striving to restore via semantic tags or category links every thread of meaning that ties an object into its or our world. Nor can we even begin to touch even a fraction of the objects relevant for giving us a picture of the world they speak of. But the impossibility of ever grasping or defining the whole of anything, let alone of digitally remastering it, must not be mistaken for an

unfeasibility of the project we are looking at, the project of remastering much more than just objects in our much more than just a museum. Wilhelm von Humboldt is very clear about the impossibility of knowing everything about anything, let alone everything about everything, and yet for him this is no reason not to always, also, think the whole. Michael Böhler makes the point in his afterword to Humboldt's *Schriften zur Sprache*: „What he is emphasizing here is first of all the insistence on totality". "Dabei betont er vor allem die Bedingung der „Totalität":

Ohne sie ist die Mannigfaltigkeit nur verwirrend.... Auch alles Bekannte ist, und bleibt ewig nur Bruchstück. Jene Bedingung der Totalität aber wird erfüllt, wenn die Behandlung systematisch ist, das Verwandte zu verbinden, das sich Fremde zu trennen strebt, und wenn der Geist ununterbrochen tätig ist, nach den Datis der Erfahrung immer den ganzen möglichen Raum zu überschlagen, die unausgefüllt bleibenden Fächer anzudeuten, das Vorhandene nie als zufällig abgerissenes Bruchstück, sondern als integrierenden Teil des Ganzen zu betrachten […] kurz wenn einmal durch die wahre Richtung des Studiums die Bahnen vom Einzelnen zum Ganzen, und vondiesem zurück wirklich geöffnet sind, so gehet die Anzahl der möglichen und nützlichen Verknüpfungen wahrhaft ins Unermeßliche"

[Schriften zur Sprache, 235; W.v.H. (Nr. 18; IV,250f)]

Without it the multiplicity is just confusing.... In addition, everything we know is, and will eternally remain, just a fragment. The insistence on totality, however, is fulfilled if the treatment is systematic, in binding the related, in striving to separate the distinct, and if the mind persists without interruption in always, after every datum of experience, covering the entire possible expanse of intervening space, to point out the boxes that remain to fill in, to never see what lies before one as a fragment torn off at random, but rather as an integrating part of the whole […] in short, when once the path from the particular to the whole and back again has been opened up following on a proper direction of study, the number of possible and useful connections truly becomes countless.

To fulfill the mission of the Humboldt Forum, both as regards its Humboldtian intellectual heritage, and as concerns its actual institutional construction and the constellation of disciplines and perspectives arrayed around its contents, including the ambition, as the SMB/SPK has put it, to become an "epicenter of shared heritage", digital presentation of exhibitions and their contents would need to focus on these wider dimensions of what can and should be remastered in a digital product, fruit not only of the digitization of cultural heritage, but also of its digitalization. This connects the ambitions of this project with the highest ambitions of other projects, seeking a big picture on the human situation in the world. Our model in this cannot be merely a perfection of the detail, a preciser science of the individual, as in Molecular Biology, Nuclear Physics, or the Human Genome Project. Rather the challenge is to sharpen a perception of the general, the shared, the overarching, the dynamic, intertwining and interlinking. In this, our model is closer to the Human Connectome Project, pushing the localized sciences of mind to reveal more than points in a map or matrix, instead showing us finally the pathways and linkage structures that animate isolated impulses into thoughts, feelings and reflected actions. Connecting the objects of partners in the Humboldt Forum, rather than just enriching or intensifying their punctual presentation, the Humboldt Forum raises the project from a remastering and presentation of collections to a remastering and presentation of connections, in short, a **Weltverbindungsmaschine**, call it a Digital Cosmos, or the Cultural Connectome.

5. ACKNOWLEDGMENT