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Against Search
Toward A New Computational Logic of Media Accessibility

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Let's start off with one of the most compelling questions of our time: what does it mean to be human in the digital age? Well, one overwhelming challenge facing us all is having digital access to more information, data, and knowledge than any previous generation of humankind. A burden perhaps – at least for some. But, for the majority of us, this is a blessing. The often-invoked libertarian information-wants-to-be-free paradigm does not only require free flow of data. All these bits and bytes in the digital domain have to be organized and found, which, needless to say, is the underlying rationale for the most successful web behemoth of all. Suffice it to say, screens are ubiquitous and giving computers (and their mobile clones) textual and haptic commands has become normality. Access to whatever we want literally lies at our fingertips; information is there somewhere waiting, with the only question being where to look. So, you search.

Ever since Google introduced its clean, white search box interface in the late 1990s – the Internet Archive crawled the site for the first time in mid-November 1998 – the blank frame has been waiting for input.[1] During the past decade, this peculiar type of white box has become the new search default, especially within the information retrieval sector par excellence at archives, libraries, and museums. "Search the Collections," is the standard phrase awaiting every online user, implying a more or less vague notion that one already knows what one is looking for. Users are, of course, experienced since surfing the web basically means searching it. Subsequently, the notion of "search" is key for the digital domain in general, and the web in particular. Attempting to understand Google, Steven Levy notes, is like trying to "grasp our technological destiny" (Levy 2011: 7). From a more scholarly perspective, "Search Studies" is on the brink of developing into an academic field; search is, after all, *the* primary human–computer interaction mode. Mining search patterns and optimizing the engine is what Google and other search companies do on a daily basis, and can increasingly be anticipated through online "search" events

in real life, such as the spread of flu. Search per se has in many ways somewhat paradoxically become the answer to questions asked.

The cultural logic of online search is, naturally, a vast topic – ranging from the omnipresent potential of Google analytics to the critique of the "Googlization of everything" and unfiltered initiatives such as Scroogle. Being coded and technical by nature, "search" remains highly complicated, with constantly upgraded algorithms exploiting the link structure of the web. Since studying tech infrastructures is a blind spot for media studies, the complexities are particularly striking from this perspective. Accessibility of a variety of media content in an age characterized by dynamics and volatility is, however, regulated by notions of search, and therefore it remains essential to analyze and grasp how and why "search" has become so important.

During the past decade, the notion of search has been challenged by new and alternative computational modes of accessibility, which is yet another argument in favor of taking "search" seriously (though, admittedly, few would argue otherwise). Tags, folksonomies, and social tagging are, for example, new transformative web-based practices and methods to annotate and categorize information and media content in an effort to collectively classify, tease out, and find data in other ways than simply through the mantra "search the collections." Online "browsing" is, of course, a widely used option, as well as simply "clicking." On YouTube – the quintessential new digital "archive" – one textual search is often enough, and then tags and linked videos lead the user into a streaming vortex of differentiated media. Context of content is often fleeting and arbitrary; odd juxtapositions are the norm rather than the exception, and material is regularly detached from its place of origin. Clicking rather than searching, thus, becomes an epistemic way of locating and perceiving media material, often in unintended ways. Usage resembles walking around in (weird) open library stacks, even if the much appraised digital "openness" on the net in general, and on Web 2.0 platforms in particular, always remains modulated on a protocological basis. A web browser is, after all, a translator of code and an interpreter of digital data that profoundly shapes user experiences. Then again, from a strict computer-science perspective, user-generated and participatory platforms such as YouTube are nothing but databases. Still, in any given cultural context, surfing onto a platform and watching a video at, say, YouTube obviously entails more than that. From a media studies perspective it is therefore debatable whether claims that we only "watch databases" (Lovink and Niederer 2008) – or claims that there is "no content, only data and other data" (Galloway and Thacker 2007) – have much relevance with regard to YouTube, or for that matter other cultural heritage and social media sites (for a discussion see Galloway and Thacker 2007; Lovink and Niederer 2008).

Nevertheless, given the sheer size of contemporary online media collections (from the vast information repositories of data at WikiLeaks or The Pirate Bay to the billions of items of user-generated content on YouTube and Flickr, or for that matter the 20 million digitized heritage objects at the Library of Congress), simply having a look what's inside the digital "archive" is no longer possible. However, the contemporary "flood of information" is by no means new. On the contrary, libraries

and archives have during the past century repeatedly complained about there being too many books and documents. The major difference, today, is that in digitized form such material can be analyzed collectively as major cultural sets rather than on a singular basis only. Singularity works for analyzing the particular. But the general is arguably more interesting, and often of greater importance. Hence, massively linked data nowadays have the potential to reveal new human patterns that hitherto remained invisible. The notion of a particular "search," then, is not the answer to the more or less infinite digital archive.

New Modalities of Access

In this chapter – which borrows its title from a recent blog post by Lev Manovich (2011) – I will attempt to map out, explain and understand, and situate and critically examine new search modalities within a larger framework of information retrieval in general, and alternative forms of access to media archives in particular. In short, I will argue that new forms of different computational logics should increasingly be deployed in order to facilitate access to deep data as well as quantitative surface data in both web n.0 media collections and at more traditional digital archives and libraries currently being coded online. Archives and libraries are, however, conservative by nature; not even code changes that. Leaving aside the fact that memory institutions regularly use Web 2.0 services, at an institutional level archival material still needs to be *found* by way of a distinct, or even advanced, search (whatever that means). So, rather than taking advantage of the new properties of digital media – and in a sense "following the medium" – the notion of "search" is still embedded in traditional forms of archival access.

Open data, freely distributed application programming interfaces, and the increased sharing of networked data have, as is well known, led to new ways of distributing information (and knowledge). However, even though online access is surrounded by buzzwords such as "democracy," "free culture," and "networked society," accessibility is still regarded as a rudimentary and quite simplified question of search, not least within the cultural heritage sector. There are of course new ways of examining digital content through code and technological input rather than sheer human agency. New modes of content-based image retrieval or information visualization (for instance) are illustrative cases. An example of the former, related to Google's Similar Images, can be found at Europeana's ThoughtLab on heritage data, which presents an image search demo that scans 70 000 images from Europeana data providers and allows one to "perform image search based on a content-based retrieval technology using . . . visual descriptors to decide on the similarity of images" (Europeana ThoughtLab n.d.). IBM's Many Eyes, which incorporates data visualization tools, is an example of an information visualization system in which users can upload data and then produce graphic representations for others to view and comment on. Data visualization is, often, understood as the mapping of digital data onto a visual image, and so-called "info vis" of large-scale collections of non-numerical information – as files or lines of code in software systems or bibliographic

databases – has been a major contemporary trend during recent years. This is related to ways of scrutinizing "big social data" – that is, the ability to analyze data in scale within social networks, thus "enabling a range of intriguing and useful applications that can plug into social media networks and make use of the knowledge inside them," as *ZDNet* put it in May 2011 (Hinchcliffe 2011).

However, as Richard Rogers (2008, 2009) keeps reminding us, there remains an ontological distinction between the "natively digital" and the "digitized" – that is, between digital objects and content "born" in new media online, as opposed to, for example, scanned cultural heritage that has been migrated into the digital domain. The former, based on code, can be analyzed in myriad ways, whereas the latter often takes the form of a representational image file (to be searched for). In short, "digitized" material is not "digital." A new emerging computational logic of media accessibility, then – whether centered on haptic touch, information visualization, graphic similarities, or algorithmic search – needs to take this particular polarization of the "natively digital" and the "digitized" into account. Still, it goes without saying that various forms of "digital methods" ought to be used when approaching major social media collections or a heritage in bits online.[2]

From a "search" and media dynamics perspective, two current patterns are evident: on the one hand there are emerging new search patterns (especially in relation to the cultural heritage sector as well as models of algorithmic search); on the other, archives, libraries, and museums are currently working with new ways of (re)presenting their digitized collections, where rethinking design and archival interfaces is one way of altering and finding new modes (and nodes) of accessibility. In 2011, the British Library, for example, released an app for the iPad ("19th Century Historical Collection") that contains more than a thousand rare books with titles in fields such as travel writing, natural history, and philosophy. Users of the app have, of course, the ability to search the included books, but the individual items are predominantly viewed as high-resolution scans. Hence, one might argue that the iPad's touch screen per se functions as a kind of browse default to literally *handle* the included material. Perceiving these old books in digitized form, then, becomes not only a matter of "search" or reading but also (and more so) a means of haptic treatment and physical engagement – all smoothly executed with a gentle touch. According to a British Library press release, the app takes "advantage of the form and function of iPad, bringing a renewed sense of wonder to the discovery and enjoyment of antiquarian and historical books." As such, the app represents the latest landmark in the British Library's progress toward its "long-term vision of making more of its historic collections available to many more users through innovative technology" (British Library 2011). Another similar example of a sort of haptic archival immersion is the New York Public Library's "Biblion" app, centered around the official corporate records of the 1939–1940 New York World's Fair. The app contains some 700 documents, images, films, and audio material, and has been described as "one of the slickest media consumption experiences" that has yet been released for any tablet (Madrigal 2011). According to the New York Public Library, the app takes the user "literally into the Library's legendary stacks, opening up hidden parts of the collections and the myriad storylines they hold and preserve."[3]

Aspects of haptic immersion, then, make up one new fascinating computational logic of media accessibility within the heritage sector, mainly driven by new forms of tablet hardware and "the app revolution." Still, these apps also emphasize how technology always regulates access to the past, especially given that they are curated instances of selected entries into collections. It is essential to keep in mind when trying to map out new search modalities that underlying code regulates what can – and can't – be done. It should go without saying, but systems chosen for search and accessibility will always determine the output of information, as well as the research that can be performed. And again, needless to say, these are important epistemological issues. Searching the web is, as we know, critical to the ability to using the net, and whoever controls search engines has enormous influence. At present, Google shapes and regulates what "we read, who we listen to, and who gets heard. Whoever controls the search engines, perhaps, controls the Internet itself" (Grimmelmann 2009). Technology is not, and has never been, neutral. Nor can the way it arranges and systemizes knowledge. The suspicion that our writing tools are always working on "our thoughts" was, after all, voiced by Nietzsche as early as the 1880s. Hence, the massive efforts of arranging, cataloguing, and describing cultural heritage content made during the twentieth century in library systems, as Lev Manovich has stated, "made it difficult to browse a collection or navigate it in orders *not* supported by catalogs" (emphasis added). Walking from shelf to shelf one had to follow a classification system based on subjects, "with books organized by author names inside each category." Taken together, these distribution and classification "systems encouraged 20th century media researchers to decide before-hand what media items to see, hear, or read" (Manovich 2011). Today, however, the situation has changed and it is no longer impossible to imagine navigating – in one sense or another – through *all* collected material of a given topic, which, arguably, is an insight *in itself* that makes a difference.

More Data is Better Data

Under the heading "Humanities 2.0," *The New York Times* ran a series of articles during the winter of 2010–2011 on how digital tools are changing human scholarship. According to one of the pieces, members of a new generation of "digitally savvy humanists" no longer look for inspiration in the next "political or philosophical 'ism'" but rather want to explore how digital technology as an accelerating force is changing the overall understanding of the liberal arts. New methodologies, powerful technologies, and vast stores of digitized materials "that previous humanities scholars did not have" can potentially act as a revisionist model of what human research is all about (Cohen 2010).

Given the conservative culture of scholarship in general, and humanities research in particular, the basic arguments in these articles were striking, not least since they articulated the increasing role that computerized technology plays in humanities research (whether it wants it or not). If the computer, as some say, is the cultural machine of our age, the same goes for research. The field of digital humanities is

rapidly picking up speed – often closely linked to the cultural heritage sector – and the discursive idea of the lone scholar, working in isolation with his or her own archiving solutions, will likely (at least in due time) fade away. As the report *Our Cultural Commonwealth* stated in 2006, humanistic researchers and users of

> massive aggregations of text, image, video, sound, and metadata will want tools that support and enable discovery, visualization, and analysis of patterns; tools that facilitate collaboration; an infrastructure for authorship that supports remixing, recontextualiza-tion, and commentary – in sum, tools that turn access into insight and interpretation. (Welshons 2006)

To be honest, we are not quite there yet. Still, there are many examples of a new media dynamics that involves upgraded modes of archival accessibility. One successful archival project, for example, is ''Transcribe Bentham – A Participatory Initiative,'' under the auspices of the Bentham Project at University College London, which aims to produce new editions of the scholarship of Jeremy Bentham (see www.ucl.ac.uk/transcribe-bentham). ''Transcribe Bentham'' is, in short, an open-source and participatory online environment launched to aid users in transcribing 10 000 folios of Bentham's handwritten documents, and as such it has been invoked and discussed at length within the digital humanities. Speaking at a conference during the summer of 2010, Melissa Terras, for example, stated that crowd-sourcing and the harnessing of online activity

> to aid in large scale projects that require human cognition . . . [are] becoming of interest to those in the library, museum and cultural heritage industry, as institutions seek ways to publically engage their online communities, as well as aid in creating useful and usable digital resources. (Terras 2010)

If haptic entries and touch-screen interfaces on tablets constitute a minor current archival trend, then a major trend is heritage accessibility on a massive scale via large cultural data sets, as the example of Bentham's 10 000 handwritten documents show. Google has naturally paved the way for this overall change of perspective and scope, and has now digitized more than 15 million books – many of which belong to the public domain. According to a recent post on the *Inside Google Books* blog, 150 000 stem ''from the 16th and 17th centuries, and another 450 000 from the 18th century'' (Bloomberg and Groetsch 2011). Leaving aside the fact that Google Books has run into copyright problems, their digitization efforts have shown that massive scanning projects, on an hitherto unthinkable scale, can very well be undertaken. In addition, as Robert Darnton has pointed out,

> it is too early to do a postmortem on Google's attempt to digitize and sell millions of books, despite [current legal problems]. Google Book Search may rise from the ashes, reincarnated in some new settlement with the authors and publishers who had taken Google to court for alleged infringement of their copyrights. (2011)

Data from the scanned books are, in fact, already being widely distributed. With Google's Ngram Viewer, for example, it is possible to visualize the rise and fall of particular keywords across these scanned millions of hundred-year-old books. The respective terms ''archive'' and ''database,'' for example, generated almost no interest before the late 1960s – then suddenly books started filling up with these very notions.

Mining textual archives and visualizing the results in various ways, is one contemporary strategy of moving beyond the white search box. ''Text,'' however, largely remains the organizational mode of accessibility, and besides still makes up the bulk of content in ''new'' digital archives. Then again, the long-awaited celestial jukebox of all known media can no longer be discarded as a fanciful thought. On the contrary, it is already a reality through file-sharing and legal peer-to-peer sites such as Spotify, which as of 2011 boasted access to approximately 15 million songs and where social recommendations through ''friends'' increasingly point to alternative access modes for media. Everything that *can* be digitized *will* be digitized, the catch phrase once went during the 1990s, and a pertinent question is what such a claim actually implies. What practical consequences will it lead to on an institutional level, for instance? It is apparent that a new cultural logic of media accessibility has begun to emerge as a result of the sheer size of digital collections that is quite different from traditional and analogue search modalities.

Of course, browsing a library catalog has its particular media history. Ever since institutional heritage catalogs were transferred to digital formats during the 1970s and 1980s, similar search concepts and notions to those used today have been employed. These catalogs, once browsed manually by hand (often with the researcher leaning over giant stacks of index cards) in computerized form gave way to a new logic of access. Through input of textual commands on a computer screen, (re)searchers started to locate metadata – that is, information on and about the searched material, whether a book, an image, or a film – through highly subjective textual input. Today, with cultural heritage increasingly being digitized, transformed into, and represented as data, a similar mode of logic structures access, yet at the same time the potential is also there to navigate in completely new ways.

If user-generated content online has experimented with new classification systems during the past decade, institutionalized digitized heritage is still, basically accessible and found through ways of ''searching'' in online galleries. ''See 30,000 items from our collection,'' as the British Library puts it (www.bl.uk). ''Ideas and inspiration can be found within the more than 15 million items on Europeana,'' according to the major heritage portal Europeana.eu. Hence, searching a database of cultural items literally means executing a discrete set of commands: decide what to search for, browse the obtained metadata, and – if the object in question has been digitized – get access to an imagistic representation that can hopefully be downloaded for research or reuse. Europeana, for instance, boasts that it enables people to ''explore the digital resources of Europe's museums, libraries, archives and audio-visual collections.

It promotes discovery and networking opportunities in a multilingual space where users can engage, share in and be inspired by the rich diversity of Europe's cultural and scientific heritage" (Europeana, n.d. a)

Then again, describing the above is merely stating the obvious. The bigger picture is how you actually search (or browse) 15 million cultural items – whether in a classical or Web n.0 fashion. Where do you start, and according to what principle do you try to make sense of *all* material potentially at your disposal? From a researcher's perspective, trying to relate to some scientific method, the task is (simply put) totally impossible. One just can't cope with so many items. No human user can do that – only a computer (or a network of them). There is no way of making analytical sense of 15 million cultural items. New digital dynamics of interlinkage, participatory tagging, and algorithmic search rather point toward the need for new mode(l)s of approach to such vast collections.

As a consequence, digital humanities scholars and researchers working with major cultural data sets have began to pose questions as to whether new digital archives, understood in a broad sense as massive collections of data, can be analyzed and searched *at all* in traditional ways. If humanities scholars previously worked by personally extracting data from archives, gleaning bits and pieces often found haphazardly, the millions of items in, for example, Europeana seem to call for (or at least imply) a new practice (as well as theory) of humanities research, involving the very machines that transformed heritage into data in the first place. "Digital archives can house so much data that it becomes impossible for scholars to evaluate the archive manually, and organizing such data becomes a paramount challenge," as a group of humanities–computer science researchers have stated (Simeone et al., 2011).

Accessing digital archives through algorithmic search has, for example, recently developed into a distinct way of moving beyond the search box. Broadly speaking, a search algorithm is an algorithm – that is, a set of procedures and instructions – for finding an item with specified properties within a collection, stored either individually as records in a database or as elements within a search space. The ability to share image data or major cultural data sets at full resolution, however, is crucial for all computational scientists and digital humanities scholars. But, with the right properties, algorithmic software can be applied and used in numerous graphical analyses as well as in advanced shape segmentation of digitized heritage. Interestingly, the same software can also be applied to different forms of material, be they illuminations in old paintings or geographical patterns in historical maps. With detailed replicas of objects to be analyzed, shape segmentation algorithms in one particular project (focusing on the study of historical maps) has been applied to the study of medieval manuscripts in another (Simeone et al., 2011).

The research initiative Digging into Data Challenge represents one way to tackle these issues. The idea behind the challenge, which hitherto has funded almost a hundred international research teams, is to address how "big data" has changed the research landscape for the humanities and social sciences. "Now that we have massive databases of materials used by scholars in the humanities and social

sciences – ranging from digitized books, newspapers, and music to transactional data like web searches, sensor data or cell phone records," what forms of computationally based research methods can be applied? Since the world is becoming increasingly digital, what new techniques will actually be needed to "search, analyze, and understand these everyday materials." The projects undertaken within the Digging into Data Challenge have, as a consequence, devoted themselves to various forms of "big data" analyses, often grounded in a digitized cultural heritage. One project has, for example, mined data with "Criminal Intent" and developed tools and models for comparing, visualizing, and analyzing the history of crime using the Old Bailey Online and its extensive court records of almost 200 000 individual trials from 1674 to 1913. Another, "Digging into the Enlightenment," focuses on more than 50 000 digitized eighteenth-century letters and analyzes "the degree to which the effects of the Enlightenment can be observed in the letters of people of various occupations" (www.diggingintodata.org).[4]

A similar research initiative is "Cultural Analytics," proposed and undertaken by Lev Manovich at the University of California, San Diego. The project examines the use of digital image analysis and visualization for exploring massive visual data sets, and can be seen as a developing methodology within the digital humanities. "How do we analyze millions of digitized visual artifacts from the past?" the project's Facebook page asks. "How do we explore billions of digital photos and videos (both user-generated content and professional media)? How do we research interactive media processes and experiences (evolution of web design, playing a video game)?" To address such challenges, Cultural Analytics has developed methods, techniques, and software and applied these to progressively larger data sets. These techniques can be and have been used within various humanistic disciplines such as game studies and media studies, as well as in museum exhibitions.[5]

For Cultural Analytics – a term naturally linked to Google's similar offers – the notion of search, however, remains as puzzling as ever. In the aforementioned blog post, Manovich claimed that humanities and media studies researchers today have access to unprecedented amounts of media – "more than they can possibly study, let alone simply watch or even search." Nevertheless, the basic method that "worked fine when the number of media objects were [sic] small – see all images or video, notice patterns, and interpret them – no longer works." New research models and upgraded ways of seeing are needed since, according to Manovich, standard interfaces for massive digital media collections – such as lists, galleries, grids, or slides – do not allow one to see the "contents of a whole collection." Such interfaces regularly display only a few items at a time, which is an analogue access method that fails to allow a subtler and more sophisticated digital understanding of "the 'shape' of the overall collection" nor bring to the fore interesting patterns that might emerge (Manovich 2011).

If we take a critical stance, projects supported by the Digging into Data Challenge or undertaken within Cultural Analytics could be perceived as somewhat naïve in their technological optimism. Contemporary critiques of "info vis," for example, often ridicule a similar simple-minded tech positivism where the notion of "more

data is better data" only leads to the paradoxical production of even more (visual) data. Quantitative methods do, after all, have their inherent problems, and even computers do not replace the need (sometimes) for human interpretation. Yet, what Cultural Analytics in particular has proposed is, actually, much more inclusive cultural histories and analyses of digitized heritage that ideally could take into account "all available cultural objects created in [a] particular cultural area and time period." A completely digitized history of *all* moving images would, for example, look radically different from today's canonical film history of artistic masterpieces and commercial blockbusters. Hence, the digitization of massive numbers of cultural artifacts and the progress in computational tools that can process huge amounts of data do in fact make possible a radically new approach to the humanities, not to mention a promise to move beyond simple "search." Mining data, in this respect, also means that humanist scholars no longer have to choose between "data size and data depth." Rather, they can potentially study "exact trajectories formed by billions of cultural expressions and conversations in space and time, zooming into particular cultural texts and zooming out to see larger patterns" (Manovich 2009).

Conclusion: The Politics of Data

"Think Culture," runs the subtitle on the heritage portal Europeana. Europeana is in many ways a pan-European political project with the overall purpose of boosting "Europeanness." The portal is, however, promising, even though a giant blank search page still awaits every visitor. "Search the collections" isn't explicitly stated, but inherently users are supposed to follow a standard logic. Then again, "Europeana always connects you to the original source of the material so you can be sure of its authenticity" (Europeana, n.d. a). After all, what is presented is "European heritage," not Web n.0 user-generated content.

    At the same time, the notion of simple search has been called into question, and even been critically examined, as the guiding principle for access to cultural heritage material in general. Digital technology ought, of course, to be used to improve accessibility to Europe's cultural and scientific heritage in the future. Consequently, Europeana has launched a ThoughtLab where users can explore new initiatives, "participate and have your say, by viewing the demonstration models and sending feedback." Interestingly, one of the models (or projects) presented has the headline "New Ways of Searching and/or Browsing." A number of projects are listed, for example "A Semantic Search Engine for Europeana," which links data together for improved search, and "Europeana 4D," an interface that enables comparative visualization of multiple queries and supports data annotated with so-called time span data (see Europeana, n.d. b). The latter is also related to the project Europeana Connect, which aims to deliver core components (interfaces for mobile devices, rights licenses, user behaviors, and so on) essential for the development and enhancement of the portal.

If this chapter has tried to discuss the emergence of new search modalities, the experiments undertaken within Europeana ThoughtLab constitute but one example of how alternative forms of accessibility and novel interface design are trying to move beyond the white search box. Information visualization is, as has been stated, a growing field, and new forms of sophisticated data management are another. If Google Image Swirl organizes image search results based on visual and semantic similarities – by way of analyzing pixel values and presenting them in an "intuitive exploratory interface" – the Google Public Data Explorer makes large datasets easy to explore, visualize, and communicate. As charts and maps animate over time, changes are "easy to understand," as Google claims online. Simplicity is, then, key. "You don't have to be a data expert to navigate between different views, make your own comparisons, and share your findings" (www.google.com/publicdata/home).

Google has, of course, spearheaded such new forms of information retrieval, and tried to go beyond traditional text and hyperlink analysis to unlock information stored in, for example, image pixels. The same goes for the heritage sector – and the cooperation between various national libraries across Europe and Google is an illustrative case in point. Problems with funding digitization activities are, naturally, one reason for such partnerships, but more important for memory institutions is the transfer of know-how. "If our search algorithms can understand the content of images and organize search results accordingly, we can provide users with a more engaging and useful image-search experience" (Jing and Rowley 2009). In fact, "big data" approaches are currently being applied to a wide variety of "search problems" – all in an effort, perhaps, to move not against search but definitively toward a more dynamic mode of accessibility to media material and other forms of digital content. From books to maps to the structure of the web itself, "the world's information" is one "amazing dataset," as some Googlers recently stated in relation to the Google Books Ngram Viewer (Aiden and Michel 2011).

As Richard Wright reminds us, however, politics is always involved in any representation of data. More data might be better data, yet there are also implicit structures "in digital data, even when, and especially when, that expression takes us far from the realm of computer code." Then again, the greatest material distance between "human senses and computer code, when compared to the simplest material connections between them, delineates the imaginative possibilities of data visualization," as Wright puts it. According to him, this is an area where we currently can "explore the most extreme perspectives that software can create of itself" – its ability to put "cognitive and affective modes of perception into creative tension with data structures and with each other" (Wright 2008: 82). Such affective modes of perception are often as simple as they are convincing, and are regularly backed by one commercial interest or another. Then again, being human in the digital age constantly means deploying new perceptual functions and modalities, whether affective or not, in order to cope with the "information overload" paradigm. As this chapter has shown, one current trend (or strategy) is moving beyond mere "search," all in an effort to find (and with the expectation of finding) new interesting patterns that digital technology can offer.

Notes

1. For a snapshot of Google's earliest-retained search interface using Wayback Machine, see http://web.archive.org/web/19981111184551/http://google.com. For an intriguing as well as graphically mesmerizing presentation of the history of Google's search interface that makes use of all the available Google front pages in the Internet Archive, see Rogers (2008) and https://movies.digitalmethods.net/google.html.
2. For a general introduction to and discussion of "digital methods," see Rogers (2009) as well as the Digital Methods Initiative website: www.digitalmethods.net/Digitalmethods/WebHome.
3. For more information about the "Biblion" app, see http://exhibitions.nypl.org/biblion/worldsfair.
4. The Digging into Data Challenge website also contains information on a number of projects that have received grants.
5. For a description and introduction to Cultural Analytics, see Manovich (2009).

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