# Humanities Scholarship in a Vast Universe: Modelling Integrated Scholarly Opportunities Between Scales of Digital Information and Meaning

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## Introduction

Imagine a Google Earth-like opportunity to move between the "street view" of a close reading environment through aerial views of the inferences, influences, and dynamic constructions that emerge from the routes that grow up around a text, to satellite views of larger, constelled fields of contextual data. What kinds of scholarship and scholarly communication would such an environment enable? How would the inclusion of mapping and terraforming tools (that parallel the functions demonstrated in a game like Minecraft, or within Outerra's impressive planetary mapping demo and sandbox prototype) encourage further occupation and influence? The Modelling and Prototyping group at INKE (Implementing New Knowledge Environments) is working to engage with such possibility spaces in an effort to address these questions.

Inspired by scalable, dimensional, and dynamic virtual spaces as well as massively multiplayer online role-playing games (MMORPGs) that model the political and social densities of vast narrative universes (such as EVE Online) but still allow users to maintain personal perspectives, we are working on prototype knowledge environments that confront complexity, avoid reductive and abstracting processes (unlike the ways that traditional data visualizations represent big data sets), and integrate close reading with larger social processes of thematic connection, interpretation, and argumentation. Encouraging a shift from final statements to calls for provocation, response, dialogue, and extension within the field of a text and its contexts, these environments feature a

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process-over-product dynamic that supports curation, collaboration, branching narrative opportunities, and accumulations.

The NewRadial prototype is a web-based digital environment for humanities research and collaboration that encourages users to occupy, search, sort, and annotate database objects in a visual field. It has been designed to function as a workspace in which primary objects from existing databases can be browsed, gathered, correlated, and augmented by multiple users in a dynamic visual environment. In addition, NewRadial offers a space in which secondary scholarship exchange and debate can be centralized and mapped onto the primary data without deforming or destabilizing the original databases.
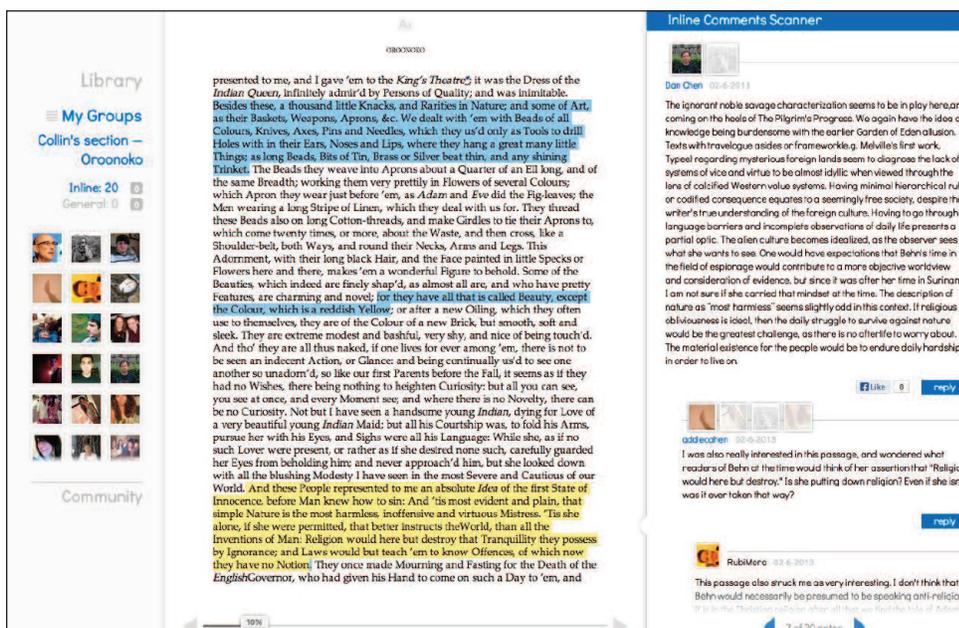
**Figure 1: The NewRadial prototype**
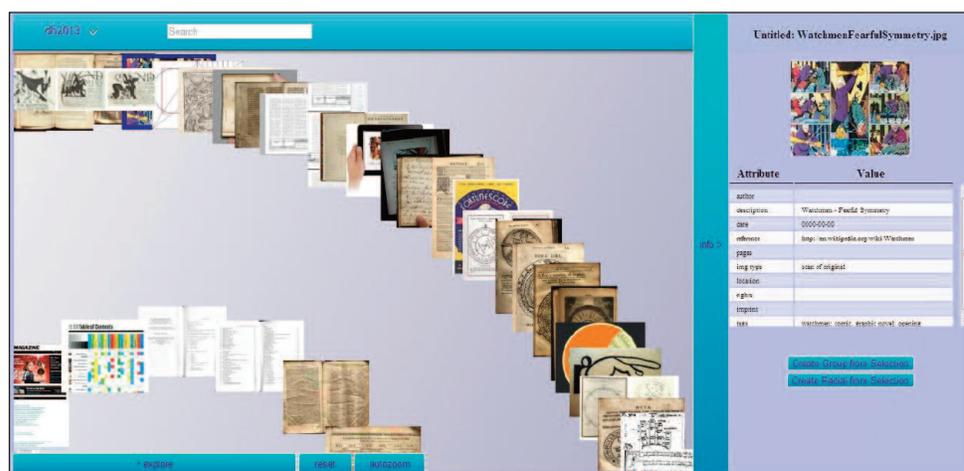


The NewRadial prototype (see Figure 1) encourages three types of work:

- A simple search, sorting, and manipulation of database objects in a visual field for the purposes of early scholarly inquiry and curiosity-based research.
- Initial, raw, and in-process commentary on connections and associations between database objects. Within the database's visual field, scholars can draw edges and groups between any number of data objects and add comments to such correlations, thus starting conversations, discussions, and debates. These discussions are hosted and archived by the NewRadial server and mapped directly onto the visual field.
- Larger projects in which a community is able to curate and sort specific selections from a number of larger, independent databases. NewRadial can be used to generate specific collections for users to browse, and it encourages the proliferation of conversations and secondary scholarship in and around such collections.

Fundamentally, the NewRadial team is working from a metaphorical foundation that draws from and extends Bob Stein's (2013) idea that the book is a place. The implications of this idea are broad. If books are places, then due to their manufactured condition, the process of creating them is akin to architecture. Books are thus designed to be occupied, to be inhabited by readers, but they also determine how readers can behave and what they can do. In this way, the printed book is akin to a bachelor

apartment or – perhaps more helpfully – a bathroom: a largely private, single-user space. Despite this private nature, asynchronously shared and mass reproduced book objects have still been able to generate communities that have awkwardly tried to overcome the social constraints presented by the book's materiality and distribution via reading groups and critical scholarly communication. In contrast, the social networks, multimedia opportunities, and inherent flexibility related to digitally iterated "bookspaces" can be harnessed to extend the affordances of their print-based counterparts and – in experiments such as SocialBook (Institute for the Future of the Book, 2004) – can host a true community of users simultaneously in the margins of a single, shared site. However, in SocialBook (see Figure 2), the book is still a place, a fixed arena that defines a limited circumference within which navigation and critical construction can take place.

**Figure 2: The shared margins of SocialBook**



In contrast, our NewRadial prototype attempts to incorporate all of the affordances imagined in this article's introduction; to scale up from the book-based perspective of SocialBook without losing sight of the importance of close reading; and to distinguish itself from the book-as-place metaphor by asserting itself as an environment. The purpose of this article is to recognize that NewRadial is not in competition with the places generated by SocialBook but should be developed to work with them – as well as other digital reading and writing architectures – to allow readers and scholars to broaden their perspectives. While SocialBook invites commentary within book places, NewRadial enables the collection and integration of such places, and the mapping of networked commentary between them, via the creation of constellating edges and groups. In other words, linking NewRadial with other tools such as SocialBook could allow for zooming in, out, and through to different "views" or scales (inclusively enabling and connecting different kinds of perceptions and work). In the same way that video games often include a number of pre-set camera angles (or perceptive positions) that a user can cycle through, a browsing, collecting, and annotation environment that aggregates a number of different tools in a scalable fashion would

support individual perceptual preferences. This environment would not, however, prevent users from exploring the possibilities enabled by moving through compatible scales of text and context.

The trilogy of Mass Effect games, created by Bioware and published by Electronic Arts, positions the player as the commander of a spacecraft and uses a unique holographic in-game interface to determine routes through the universe of the game. The player can explore the map on a variety of scales, from galaxy overviews to particular solar systems (see Figures 3, 4, and 5).

**Figure 3: The galaxy-scale navigation map from Mass Effect 3**
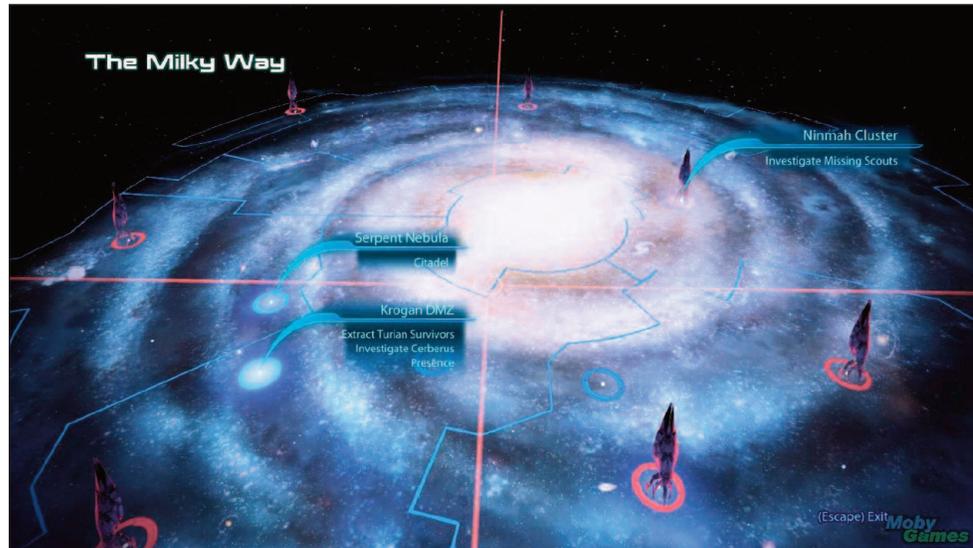


**Figure 4: A regional-scale map from Mass Effect 3**



Users of this type of scalable map retain an awareness of the whole while also navigating through the particulars of the represented environment. NewRadial's development team recently created an adapter to display data objects from the federation of humanities databases of the Advanced Research Consortium (ARC)

**Figure 5: A solar system-scale map from Mass Effect 3**
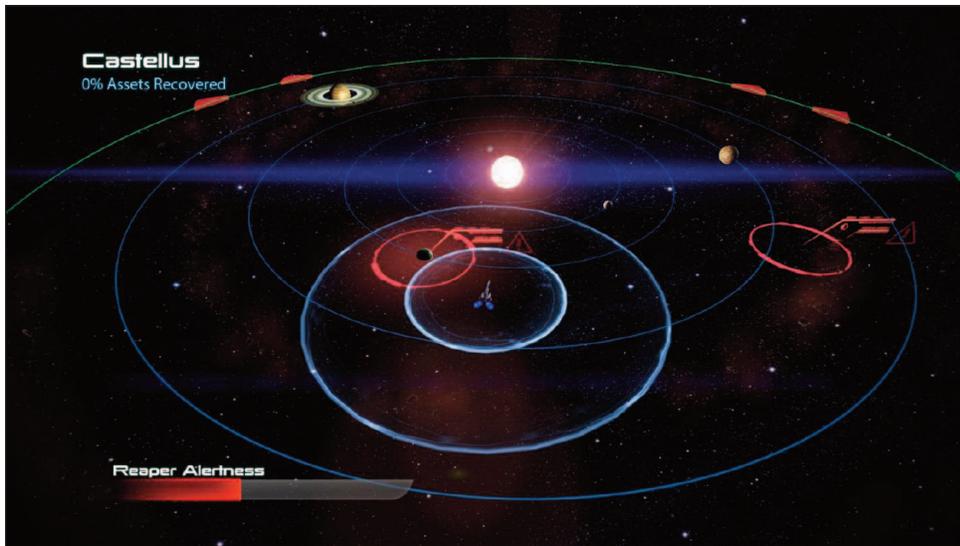


(2011) in NewRadial, and modelled the display results after the above type of scalable map. Instead of replacing the entire view with a new scaled perspective, though, we chose to map the contents of unpacked nodes onto the same space as the original nodes, producing an environment that hosts multiple scales of information simultaneously. This allows users to insert connective commentary and to construct groups that bridge multiple scales of data representation (see Figures 6, 7, and 8).

**Figure 6: The "galaxy view" of search results for "Lancelot" from the ARC metadata adapter.**



Although we envision NewRadial as one link within a chain of related tools that could encourage users to fluidly move between scales of information, we are already examining this zooming and "drilling" potential within the prototype itself to illustrate the benefits of bridging close reading environments with big data visualizations. Because our INKE prototype imports database content via JavaScript adapters that can

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**Figure 7: The "region view" of search results for "Lancelot" from the ARC metadata adapter, showing databases federated under the MESA region that contain results.**



**Figure 8: The "solar system view" of search results for "Lancelot" from the ARC metadata adapter, showing objects from databases federated under the MESA region.**



use metadata to pre-render the data into categorical nodes or clusters, NewRadial's nodes can thus represent larger data categories. These categories can be exploded to display all of the individual pages or objects (child nodes) within that category, or collapsed back into their parent nodes. This layering process allows users to explore individual data objects and larger categories simultaneously in the same visual space. Crucially, edges or groups (sites for critical commentary) that are generated by the user can connect and contain nodes from different layers. This enables the creation of edge connections and commentary between scales in a single visual environment.

NewRadial is a way to start thinking of humanities scholarship at a universal scale. Instead of creating a beautiful, useless visualization, however, we are attempting to model a dynamic navigation interface as a means through which to explore the surface detail of data objects, as well as their relations within systems of communication and idea inheritance. But simply navigating through this universe is not enough. Scholars are not just travellers; they are engineers, creators, and curators. For many of us, William Blake's (1821) phrase from *Jerusalem*, "I must Create a System. or be enslav'd by another Mans," rings true. Scholars systematically aggregate, remix, and classify data in an effort to discover and establish rhetorical patterns of illumination and understanding. Another quotation from Blake (1807), "To see the world in a grain of sand," attests to the importance of close reading. However, critical inquiry also attempts simultaneously to see the world *as* a grain of sand. These relative scales are not mutually exclusive, but demand constant and fluid movement between such perspectives, as when the narrator of "The Fly" by Blake (1789, 1794) says, "Am not I A fly like thee?/ Or art not thou A man like me?" As critical scholars, we are constantly risking absurdity by collaging the complexities of the "me, here, and now" with the complexities of "everyone, everywhere, and always." Thus any pre-rendered systematization can be easily affected by the impact of scholarship within a knowledge environment. Our work leaves traces that we are ultimately responsible for. NewRadial offers these kinds of course-plotting opportunities to its users via edge, group, and collection creation functions, and in doing so extends this creative and critical flexibility to the traditional products of scholarship.

Unlike Mass Effect's navigation interface, NewRadial offers predefined configurations for its data displays that can be overridden and permanently marked by user modification. Rather than a guide to the galaxy, then, NewRadial functions as a dataverse manipulation kit. While the NewRadial interface and adapters realize orbits and gravities between metadata categories and data objects, these relationships can be complicated through user contribution in the same way that critical scholarship can challenge or strengthen assumptions and existing interpretations.

In addition to adapting large specific data sets for display and manipulation within its environment via adapters, NewRadial also makes use of meta-adapters. These allow a user to combine any of the adapted data sets within the same visual environment, even if the metadata of these sets have not been standardized. This is akin to adding additional galaxies to the Mass Effect maps above (see Figures 3, 4, and 5). Adapters for Europeana (2009) and the Digital Public Library of America (DPLA) (2013) have been added to the in-development version of NewRadial (2012), offering users the potential to map search results through and comparatively collect data objects from ARC, Europeana, and the DPLA simultaneously. Now that these kinds of mapping functions have been enabled, how will humanist inquiry fill the resulting maps with journeys and traces?

Enabling an opportunity for scholarly responses across flexible scales of perspective encourages users to etch new routes of narrative meaning and to participate in critical conversations within a map of aggregated cultural data objects (see Figure 9). NewRadial is thus more properly conceived of as an environment, a conditionally determined setting that hosts users and data resources at a scale where users encounter and impact those resources via comparative commentary rather than close reading

**Figure 9: Expanding and collapsing nodes to simultaneously display multiple, scaled perspectives**
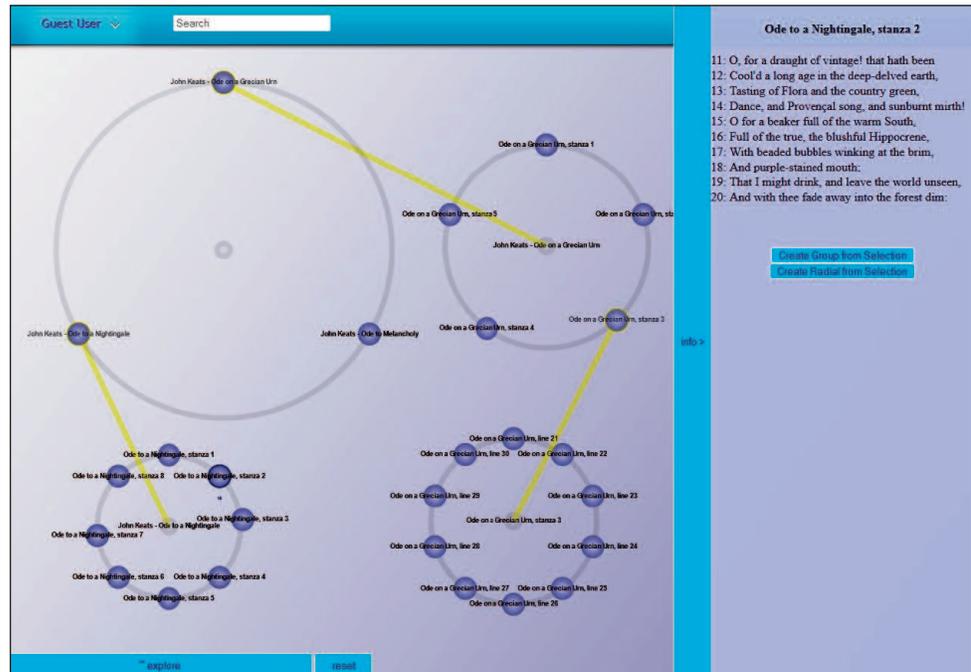


practices. In the NewRadial environment, scholarly engagement becomes a dynamic record of use and dialogue that builds up within a malleable and scalable space of primary textual data. This is distinct yet not completely divergent from the static, siloed, and monologic declarations of independence asserted by traditional print-based monographs and the responses they provoke. The NewRadial environment can still play host to large-scale scholarly projects that emulate monographic efforts. However, its dynamic social constitution challenges the inherently insular authoritativeness and finality of the traditional monograph, while preserving the potential for comparative analysis and argumentative progress on a number of different scales.

I have a colleague who was recently teaching an undergraduate course on the history of genocide and was struggling with methods to represent the extent of the mass murder that has gone on in the world in a way that was meaningful to his students. On the one hand, identifying particular people and families and exploring the specific, individual codes and practices they engaged in prior to being thoughtlessly effaced is one way of identifying with the victims of genocide on a sympathetic, and even empathetic, level. This is akin to close reading practices. This method adopts a microcosmic perspective that allows one to perceive relatable details about a particular participant. On the other hand, there is something to be said for large statistical representations of data (such as the number of people killed in a genocidal event). The numerical quantities related to large-scale genocides are staggering, and although representing these quantities statistically is a reductive process, it can also precipitate quite an intense reaction, as one can be made to understand the extent and scope of an event and the scale of its impact. At what point, though, do we lose a humanist sensibility when working with big data? What scale is the optimal viewpoint through which we can do humanities-related work on large data sets? At what scale do the data objects lose their specificity,

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their humanistic characteristics? What is the ideal scale, the maximum distance from a close encounter with a cultural text or object that one can occupy before particulars become meaningless for humanist work? How do we take advantage of computing technology to pluralize perspective, confront complexity, avoid reductiveness, and preserve meaning as we interpret subsets of big data collections? Our natural tendency is to generalize, to categorize individuals into archetypes, and to reduce the high-resolution detail of millions of people into manageable statistical chunks and models. This is the only way we know how to make meaning out of mystery: reduce the complexity of the microcosm and macrocosm into an empty middle, and put them both over a common denominator of dehumanized mathematics and logical systems.
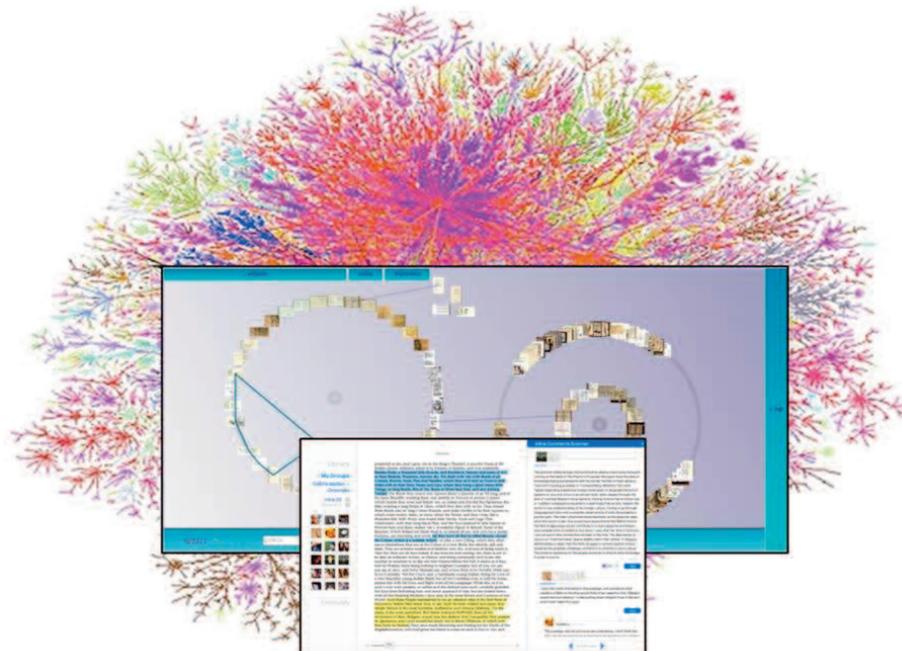
Suturing the "specific form of knowledge" (p. 1) enabled by Franco Moretti's (2007) distant reading models to the microcosmic immersion of close reading practices via NewRadial's combinatory functions allows free movement between scales. It neither denies the pleasures of close reading nor the exhilaration of looking over large and often fluid maps of cultural data, but instead preserves and pluralizes these perspectives through the elimination of their segregation and theoretical opposition. In fact, embracing the compatibility of these scales through specific prototypes (and increasing the complexity of our perceptions at the same time) might just lead to the recognition of similitude between perspectives. Looking for large-scale statistical patterns in vast databases and database federations is similar to tracing networks of relation amidst the social plenitude of well-populated novels and to uncovering the inferential subtleties of linguistic relativity in poetic analysis. Curiously, Moretti's methods of abstraction are not all that different from the interpretative reduction that results from close readings. In a sense, all of these activities are forms of abstraction, but they are also ways of tracing particular circuits, particular journeys through complicated networks. Correlating such circuits through scaled perspectives will counteract reduction by confronting the meaningful complexity at the heart of humanist networks of communication and meaning.

NewRadial is being offered as both a bridge between close reading and big data perspectives and as a tool for not only tracing humanist paths through these perspectives, but for aggregating such contributions into its socially networked environment. NewRadial combines and extends the potential usefulness of Moretti's graphs, maps, and trees but also refuses to subscribe to the idea that humanities data can or should remain independent of interpretation. Roads more and less travelled will emerge from the occupation of this data when the visualized nodes are not just surveyed by users, but connected, curated, and *used* in productive ways. Cultural data objects remain important on all levels, and instruments like NewRadial (one of the interfaces and prototypes that can expose us to this data) encourage a reflection on mediation in the ways that Friedrich Kittler and Moretti, as interpreted by Galloway (2013), suggest. In other words, the INKE NewRadial prototype offers practical ways to bridge close reading and distant reading practices by establishing an environment built on the foundations of both literary theory and media theory. But NewRadial does not just encourage interpretative opportunities. It could be more properly described as a critical-conversational environment that connectively encourages depth and breadth perceptions between texts and contexts.

The humanities are facing a digital turn that is forcing us to reconsider our scholarly communication traditions as we establish future potential. Narrative is a traditional and efficient habit of reductive pattern seeking, a mode of perception that is now almost reflexive in the presence of complexity; it is how we cope. Shared narratives (either common patterns or the collection of many voices) counteract this reductive action through the constitution of complex response communities. Thus, while narratives can be reductive in the sense that they can help to filter out omniscient noise, they have also essentially functioned as a primary tool of scholarly communities and communications and led to shared networks of understanding. However, scholarly communities are constituted not by narrative, but by environments, by complex systems of interaction and exchange between writers, texts, contexts, and readers. Narrative is a way of mapping specific journeys through such environments, generating perspectival utterances and establishing patterns of interpretative understanding. When do these collected threads become complex tangles that resist human perception? How can this be prevented? When does the data density become unsuited for our pattern-making abilities and become nonsense?

Tim Hitchcock's (2013) keynote speech, "Big Data for Dead People," demonstrates an excitement for expanding our circumference of enquiry beyond canonical limitations, for embracing a higher-resolution, multimedia, and multisensory experience, one that generates meaningful narrative understanding and close reading by expanding interpretative perspectives via a number of databases and tools. These tools are collectively used to generate a richer context of understanding around a particular historical subject, and Hitchcock's talk finds a complex and rewarding pattern in these materials. He demonstrates that we can resist the generalizing aspects of big data processing tools by maintaining humanist empathy through digital scales – not only focusing on particular, individual responses, but tracing this understanding through

**Figure 10: NewRadial – bridging big data and close reading environments**

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scales that allow for a breadth of empathetic coverage. NewRadial (see Figure 10) is an argument along these same lines: it calls attention to the need to explore humanities data across plural scales of engagement in order to extend current scholarly and critical narrative practices. It bridges the granularity of close reading and the reduction of big data statistical processing by offering a technologically enabled middle ground. Here, critical scholarship can operate between microcosmic and macrocosmic fields of meaningful complexity and interrelation via computer-enhanced narrative, dialogue, and pattern making. NewRadial generates relational environments and environmental networks that support narrative complexity.

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