Designing Graphic Interpretation

As a scholarly act, interpretation has almost always been textual, based on close reading, and intimately bound to the graphic form of the work to which it attaches. None of this is exclusively true any longer. To imagine new intellectual forms of interpretation is also to design the spaces and supports that structure interpretative acts. If the armature of print, now much imitated in electronic environments, has organized argument to accord with its conceptual capacities, then what will the emerging features

of networked and digitally supported interpretation be like? How will they differ from those that have instructed our patterns of thought for millennia?

Innovative graphic armatures will extend our capacities to create associative arguments in digital space, creating the support for extensive interpretative activities among textual and visual artifacts. But interpretation may also take distinctly visual form. Think about a walk through a museum exhibition or a tour of a foreign city. The guide calls features of the cultural history into focus in ways that are not evident to an unfamiliar visitor. The next day in the city, or at the next exhibition, new graphical arrangements appear. The landscape changes its juxtapositions and elements, and requires a new explication. The museum rearranges walls, narratives, and frameworks of interpretation in new visual, spatial acts of interpretation. Reading graphical environments in analog or digital space and spatializing arguments through graphical means are two aspects of graphic interpretation. The first is a form of critical literacy, the second a compositional activity.

The dream of a full-fledged hypermedia that allows us to compose in a constellationary mode, with associations, links, and faceted views of an argument or narrative has been extended by the automatic protocols of analysis and processing that optimize computational capacities for synthesis and display. We integrate documents, files, data mining, visualization, mapping, and thickly linked references and citation trails on the fly. Scholars or creative writers may still have some retraining ahead to think differently about texts in electronic spaces, using their capacities to shape discourse, but as the conceptual habits shift, the technological support structures develop. Diagrammatic writing that integrates human and machine protocols of composition is emerging, and with it, the need to specify its critical properties.

How can we describe the way interpretative activity looks and acts in current electronic spaces and displays, and across a whole host of new conventions? Innovations in graphic conventions have arisen to support the scholarly activity of glossing, commentary, reference, and mediation, but also data mining, network analysis, topic modelling, and other interpretative protocols aided (or performed) by computational means. That said, only a handful of imaginative writing practices have managed to break free of the square frames and mechanical aesthetics imposed by conventions of print. One striking example is the customized designs of *Vectors* and its offshoot, *Scalar*, notable for their graphical novelty and imagination. Few of these innovations have become standard practice, at least not yet, but they point toward the possibilities of thinking graphically about interpretation and/as interface and/as argument. A wide range of media types will be mobilized for interpretation in ways that take up the mash-up, remix activity of popular culture as well as realizing the scholarly aspirations that shaped the pastiche environment of Aby Warburg's Mnemosyne project.

Artists and innovative writers played with visual and spatial writing within the avant-gardes of the twentieth cen-

Experiments using Knotted Line in design and composition.

tury, but few if any of those radical works changed the shape of critical or scholarly conventions put into place centuries earlier. In spite of the networked condition of textual production, the design of digital platforms for daily use has hardly begun to accommodate the imaginative possibilities of constellationary composition, graphic interpretation, and diagrammatic writing. We may use mind mapping or other schematic approaches to outline a plan, sketch an argument, organize information flows, or do other tasks that abstract process into graphic forms. We may read through our links and click trails, follow our associations of thought in tracking one thing after another through browsers and faceted searching. But very few acts of composition are diagrammatic, constellationary, or associative. Fewer are visual or spatial. The predominant modes of composition in digital displays have remained quite linear, even when they have combinatoric or modular underpinnings. We know interpretation can be spatialized using architectural, topographic, or exhibition metaphors for activity in scholarly realms, poetic practice, or other activities in digital environments.

The integration of flexible spaces of writing and extensible ways of organizing relations among units of argument along with the capacities for computational analysis and processing integrated into our imaginative and scholarly work demands that we think through the current potential as surely as our predecessors worked out the conventions of the codex through practices of reading and use. The conventions and capacities of screen display and format features, the computationally enabled processes of analysis, and the flexibility of configuring relations and boundaries at different scales allow us to write differently and familiarly using digital affordances. Do they make new forms of interpretation as well? The idea of integrating the computational capabilities

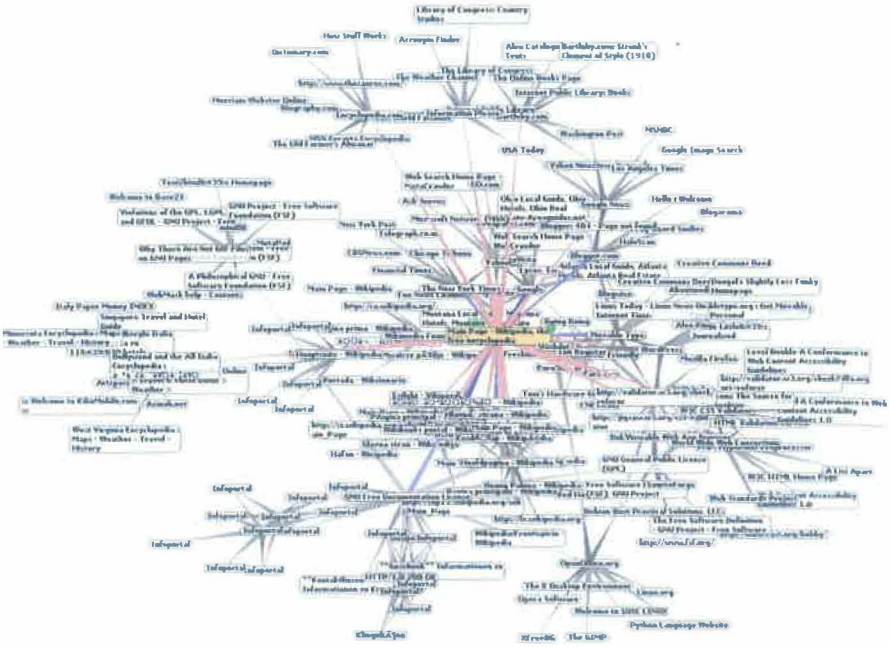
of social media, live feed, linked and hyperlinked references and resources, data mining, and so on, makes us see the relations among units and lines of argument in diagrammatic modes. When a topic map generates my understanding of a text and I cite a search query constructed through a set of different variables as a document, ephemeral though it is, then the time-scale of ephemerality factors ever more radically into the interpretative act. The search I perform with one string of characters today yields a different result tomorrow, and the first page of any search result will change constantly. The contingent character of any act of textual production increases exponentially with the expansion of data on which it draws for its composition and display. The conditional text has become the norm.

Word trees as text visualization.

Diagrammatic composition is increasingly put at the service of scholarship, argument, or imaginative projects, and the constellationary nature of branches and links, and shifting figures of form and/as content, is increasingly familiar,

even habitual. Where and when interpretative acts take place in the click trail and movement through and across different modalities of display is a pressing question when screen spaces, computational capacities, and constellationary argument and a diagrammatic approach to composition also include the synthesis of many voices, authors, and contributions with and without attribution. Our understanding of acts of interpretation shifts when data aggregation and natural language processing produce artifacts shaped by programming protocols. These are human artifacts, of course, and the algorithms are their own form of writing, but authorship as extraction, compression, reduction, and synthesis performed across works by multiple authors, centuries, and works, is a different "authorship" than that of the past. The fluid texts of Homer, the multiple authors of the Bible, the attribution issues raised by Shakespeare—these are dramatic historical examples of what is increasingly a common condition. The author whose identity was questioned and death proclaimed by post-structuralist critics in the twentieth century may become a rare anomaly. Collective authorship, the fluid migration of text circulating and changing through social media and the medium of the social network, is increasing as a phenomenon. New modes need not replace older ones in a media ecology, but the novelty by which we recognize innovation crosses quickly into familiar habit.

Topic maps, network diagrams, circular displays of text/trees, word clouds, mind maps, and other ways of distributing text in non-linear ways have come into our conceptual vocabulary. The flexibility and re-inscribability of screen space make use of accordion folding panels, drop-down menus with their stair-stepped inventory of increasingly detailed granularity, sliding panels, and other redistributions of screen real estate. Pop ups, displays that can be closed down



Network analysis of Wikipedia and the WWW.

to a single bar, menus that expand in the sidebar, or toolbars/navigation bars that appear/disappear and can be called back into play are all now part of organization or navigational features. Axes that open as the line on which an array is displayed along an orthogonal projection could be used in the same manner as the rod that organizes the cards in a card catalogue drawer. Tactile manipulation of text onscreen and the rewrite capacities of responsive media also shift conceptual practices so that we move through the illusion of virtual spaces whose dimensions are zones of argument. Elements can be laid out in illusory space, but we move through them as they reconfigure in response to our queries, our nodes of attention. What we do not attend to goes away, or persists, depending, as the extensible repository responds to our ac-

tivity and reconfigures in a just-in-time arrangement.

The flexible dimensions of screen space promote macro- and micrographia. Screen surface has no limits to its horizontal or vertical dimensions; scalable relations, topological dimension, and writing in n-dimensional space (ability to open an infinite number of spaces that are graphically displayed but semantically driven) are all features of electronic space. Digital display supports the same functions as the printed page: presentation (what appears, the "telling" in narrative parlance), representation (what it alludes to and/or the "told" borrowing again from narrative theory); computational processing (data mining, etc.); navigation (wayfinding); orientation (position within frames); reference (links); and social exchange (networked communication). These digital features mimic the functions of a book page, but add the additional functionality of re-inscribability, computational processing and analysis, real-time refresh, and networked environments.

Specific challenges arise from changes in scale of the repositories and data to which networked environments provide access. Distant reading and views of large data make it difficult to follow threaded conversations at different degrees of granularity, so all displays have to be points of entry, interfaces into content. Multiple tables of contents can be drawn from a single set of texts, database records, and metadata entries. These can be juxtaposed to semantic web diagrams mapping textual connections based on proper names, place names, frequency distributions of word combinations, or other textual features.

The combination of abstract information visualizations, mediating viewers' relation to large corpora of texts, and the ability to use such visualizations as access points to digitized documents or files makes the relation of large scale and min-

ute granularity readily possible. The multiple views in online games offer some contributions for thinking about the ways we can navigate complex interactions among the multiple players or scholars. To display the faceted aspects of scholarship as a social and collaborative activity we will have to activate multiple dimensions of interpretation. An infinite number of interpretative lines can be extended as sightlines of inquiry, reference, contestation, debate across a discourse field (defined according to criteria determined in each instance). Navigation and argument will merge.

Interpretation in electronic space is, as we have pointed out elsewhere, n-dimensional.[251] At any point in a scholarly text an infinite number of interpretative lines can be extended as lines of inquiry, reference, contestation, debate. The implications for design are that we shift from the univocal to polyvocal text. We can borrow from the conventions of electronic games and offer multiple views simultaneously. Displays designed for navigation or reading or organized topic maps or semantic webs all complement each other without redundancy, as long as the relations among them are made explicit through shared clues such as common elements or reference frames.

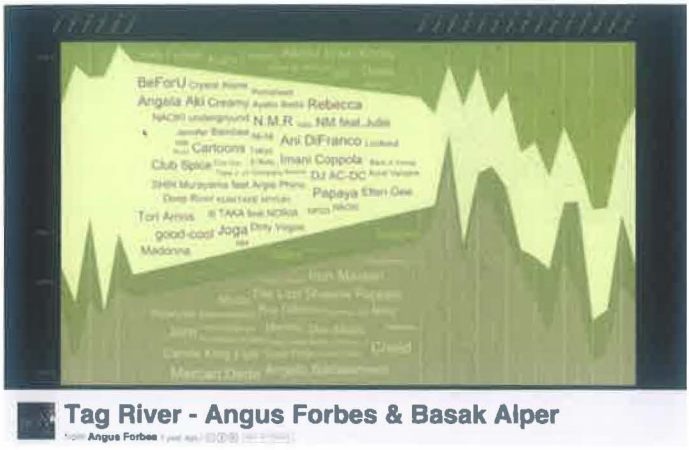
Dynamic tensions between upload and download shift interpretative activity.[252] The click trails are captured, data in their own right, even as the interface obscures other aspects of its activity: its stealth relationship to networks, to the "mother ship" that monitors everything to promote related objects and suck information back from the transactions of users into the mega-cloud of networked consumer culture. The convenience of portability, flexibility, increasingly able to contain marks of reading, search trails and tags, the whole "thought mesh" of our processing trumps any paranoia or concern about mere privacy or property, especially for a

younger generation living their lives in networked display of their personal lives. Their sense of self and other is without distinctions, they are made in the web of constant exchange, texts, tweets, messaging, talk, unbounded and nodal rather than autonomous and contained. So the information spaces they are comfortable inhabiting have the same quality, unbounded and rhizomatic.

How can we create fragmented and correlated points of view that connect one mode of analysis and display to another in a way that makes their connections legible? Frequent citations point to a domain of knowledge, shape it, expose the internecine workings of its conversations and exchanges. The social life of texts includes the imaginative potential of feedback loops prompting and remarking on production and composition. Familiar conventions work through acts of generative and performative engagement.

We are learning to read and think and write along rays, arrays, subdivisions, and patterns of thought. How can the flexible morphology of screen display enable framing, enframing, embedment, entanglement, hierarchy, listing, and other schematic strategies of composition? These involve the production of multi-linear discourse as well as non-linear modes (even though the alphanumeric sequence will persist, visual, audio, tactile, and simulacral modes will increase).

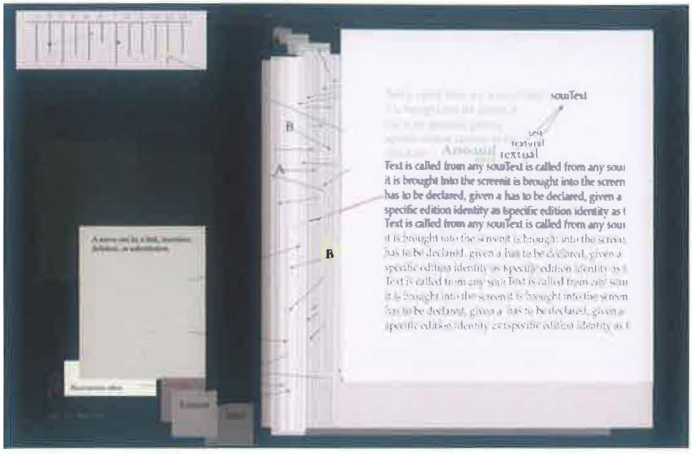
Embedding and entangling texts is not only easy in manuscript form, it is almost irresistible. In handwritten drafts of contemporary texts such practices continue to be the norm. Wandering lines, insertions, deletions of branched options, thoughts that begin and end, are dropped, aborted, abandoned, their unfinished lines broken partway through their expression—these are the ways our associations work in composition. Art historians laid out their slide lectures on the light table in complex arrays of argument and then had



to compress the associative structure into side by side pairs to meet the constraints of the slide projectors. Again, Warburg's *Mnemosyne* project beckons toward the future, not just for image-based interpretations. At every point, a text suggests directions that cannot be followed in a strict linear pattern, and we prune and weed constantly because convention has required us to do so. The physical future of forms and formats, new devices and platforms, means of access, use, combination, and sequence, will merge multi-modal cross-platform and trans-device production into a discursive field. The social futures of activities and effects, concepts and practices, exist in an unbounded and often unframed and non-delimitable tissue of associated links and trails. The symbolic future of communication and community, of making public and creating shared points of reference and understanding, will create collective memory in the lived experience of the noösphere. [See Window 8, the "book" of the future]

Angus Forbes, Tag River.

Humanists work with fragmentary evidence when researching cultural materials. They produce interpretations, not repeatable results. We have to find graphical conventions



to show uncertainty and ambiguity in digital models, not just because these are conditions of knowledge production in our disciplines, but because the very model of knowledge itself that gets embodied in the process has values whose cultural authority matters very much. Multiple imaging modes that create palimpsestic or parallax views of objects make it more difficult to imagine reading as an act of recovering truth, and render the interpretative act itself more visible. The task of modeling diversity, of exposing the differences among ontologies as ideologies, has a dramatic role to play in dislodging the centrism of Western epistemologies, in particular those grounded in the administrative sensibility with its perverse attachment to control through standardization and normalization. The differential algebra of the humanistic world always has a factor of experience in it, a recognition that knowing is situated in lived lives, human beings, whose individual experience is always in process, always interpretative. Will we think differently because of the ways interpretation takes shape across networked contingencies? Or are these material conditions producing us as new subjects of a dis-

I.nterpret sketch.

tributed imagination? Are we merely part of an emerging constellation of potentialities for realization of aspects of knowledge design and interpretative acts that are closer to our once-sensible reading of natural and cultural landscapes? Perhaps we are reawakening habits of associative and spatialized knowledge we once read and through which we knew ourselves. We may yet awaken the cognitive potential of our interpretative condition of being, as constructs that express themselves in forms, contingently, only to be remade again, across the distributed condition of knowing.

Dr. Who episodes.