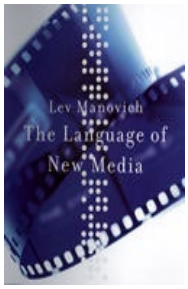
A Review of *The Language of New Media*

Lev Manovich
MIT Press, 2001
ISBN: 0-262-63255-1 352 pp. $19.95



Review by Bradley Dilger
University of Florida

Breaking from Speculation

Lev Manovich begins *The Language of New Media* with a personal recollection which moves from Moscow, in 1975, ten years forward to 1985, then to 1995. The chronological pattern is far too common to readers of new media theory. Thankfully, that's part of the point. Before embarking on speculations about 2005, 2015, and beyond, Manovich breaks off in mid-sentence. Quietly replacing one pattern with another, he turns to film history to shape his new media theory. He laments, "I wish that someone in 1895, 1897, or at least 1903, had realized the fundamental significance of the emergence of the new medium of cinema" (6). According to Manovich, no systematic accounts of the emergence of cinema were undertaken while it was in its infancy. The absence of a historical record has forced film theorists to laboriously construct a history from "a set of random and unevenly distributed historical samples" (6).

Today, as the rhetorics, forms, and institutions of new media develop, scholars *are* aware of the significance of the new forms. But as happened with the birth of cinema a century ago, the details aren't being recorded. For Manovich, the danger is that when 2005, 2015, and beyond actually arrive, new media theorists will find their discipline lacks historical texts. Using the recent past to project the shape of the near future, the pattern Manovich refuses, has displaced that essential work. What's left out, of course, is the present. "Most writings on new media are full of speculation about the future," he continues. "This book, in contrast, analyses (*sic*) new media as it has actually developed until the present moment, while pointing to directions for new media artists and designers that have yet to be explored" (10). Recording the present doesn't preclude some conjecture about the future, but instead shows the ways the future may be present around us, in emergent forms and practices.

The book's focus on the present, and its overall coherence and attention to detail, differentiates *The Language of New Media* from other books in the field. Manovich's work builds a concise group of principles for analyzing new media. Its most important argument is the careful development of a record of the present state of new media which focuses on the complex relationship between cinema and new media. Manovich also confronts the problem of terminology for new media, suggesting several revisions for widely used terms, and proposing additions to the lexicon. Finally, the book is clearly constructed with pedagogy in mind. Besides the careful treatment of terminology, the elegant structure of the text and Manovich's attitude toward his own work demonstrate careful attention to the book's rhetorical potential.

proto-digital "Analytical Engine," conceptualized six years earlier. In fact, rather than Babbage's Engine (perhaps better thought of as the first example of vaporware), Manovich notes the punch-card reading Jacquard loom, built around 1800, created sophisticated designs from card input, making it a "specialized graphics computer" (22). Thus the first programming produced images, not calculations. With this gesture, Manovich begins to build his case for developing his account of new media as a parallel history of images and the machines which produce them.

The bounds for new media are set by five "principles of new media" present in most new media objects, which "should be considered not as absolute laws but rather as general tendencies of a culture undergoing computerization" (27). Many of the characteristics reflect differences of industrial and post-industrial economies, such as the industrial division of manufacturing into discrete tasks for the assembly line (numerical representation), or post-industrial "just in time" inventory control (variability).

Defining New Media

The methodological work started in Manovich's introduction extends well into his first chapter. Manovich begins with a historical inventory, but the first form he mentions is Louis Daguerre's proto-photographic *daguerreotype,* introduced in 1839, not Charles Babbage's ***Manovich: "It is my hope that the theory of new media developed here can act not only as an aid to understanding the present, but as a grid for practical experimentation" (10).***

1. *Numerical representation:* new media are "composed of digital code" and thus can be "described using a mathematical function" and can undergo "algorithmic manipulation" (27). Conversion from analog to digital form requires sampling: building a regular pattern of quantified units in space and/or time.
2. *Modularity:* new media objects are object-oriented, composed of parts made up of smaller parts reminiscent of a "fractal structure" (30). The logic of computer programming and the makeup of new media objects reflect this modularity; both are often made from independent parts which retain a measure of autonomy even if embedded in another new media object.

Three more complex general tendencies are built on these foundational principles:

3. *Automation:* numerical coding and modular structure allow much of the "creation, manipulation, and access" (32) of new media to occur without direct human interaction. Filters in graphics programs can color-correct a photograph automatically, or transform it into a work of art. Web pages are generated on the fly from databases, "using generic templates and scripts" (32). More sophisticated automation, "part of a larger project of artificial intelligence (AI)" (33), involves programmed objects which call the clear division of human and computer into question. Workstation and Web-based search engines and filtering tools are also beginning to automate access of data.
4. *Variability:* "A new media object is not something fixed once and for all, but something that can exist in different, potentially infinite versions" (36). Manovich lists seven examples of variability common in contemporary new

media, and also considers more foundational differences variability enables: for example, hypermedia elements and structure need not be "hardwired" as in old media. Variables replace constants, and data separated from algorithms (as in computer programming). But to some extent this variability is radically limited to selection from a group of pre-packaged forms: a concept Manovich will later expand as "selection."

5. *Transcoding:* the "reconceptualization" which occurs during computerization, the transformation of media into computer data. The mapping of concepts such as plot, sentence, family portrait, or summer blockbuster into the computer's text, packet, pixel, or other data structure, creates a composite "blend of human and computer meanings" (46). (In computer science, the term "transcoding" itself signifies movement of data between formats.)

The last of the five principles, *transcoding,* is "the most substantial consequence of the computerization of media" (45). Manovich suggests thinking of new media as "two distinct layers – the 'cultural layer' and the 'computer layer'" (46), though he proposes this distinction in a manner which does not imply disconnection between the two. "Transcoding" facilitates complex relationships between the systems of organization of culture and the means by which we affect those systems in computing. For example, conventions of computing interfaces influence the design of hypermedia. Students instructed to "build a database of information" may proceed differently than those told to "take notes and organize raw material." Programmers may design computer-based interfaces and shape media formats based on cultural objects, like the controls of media players, which emulate the VCR.

In other words, Manovich argues that computer and culture influence each other. Of course, this is not a groundbreaking assertion, but embedding that relationship into the theory of new media sets a tone for the text and distinguishes Manovich's work from others which portray the relationship deterministically. Sadly, the dominant common sense of computer design and use follows the deterministic pattern. As Robert Johnson notes in *User-Centered Technology*, computers are often thought of as "black boxes," and the human agents and cultural influences which shape the design of their interfaces and use patterns are invisible. Manovich's principle of "transcoding" illustrates the gravity of this misconception.

To further separate these five principles from other conceptual problems, the next section, "What New Media is Not," debunks six commonly accepted assumptions about new media. Once again, Manovich relies on comparisons between cinema and new media, as he systematically demonstrates that neither discrete representation, random access, or multimedia are the unique province of new media. They are properties present in cinema as well. Likewise, claims that new media are new because of "digitization" and "interactivity" fail under critical pressure. The periodic sampling often considered unique to digitization is at the heart of film, and considering any medium "interactive" is a mere tautology (50, 55). But this is not merely a terminological clarification, though it certainly serves that purpose, as demonstrated below; it is a reminder that "newness" in and of itself may not correspond to significance.

New Media and Cinema

Readers of *The Language of New Media* may be tempted to misrepresent or simplify the

relation of new media and cinema that Manovich carefully develops over the course of the work. Indeed, the cover art – a heavily manipulated photograph of film stock which literally wraps around the text – gives some credence to the notion that Manovich's argument is simply, "New media works like film." But this sort of judgment has obvious flaws.

Some reviewers have configured the sixth (and final) chapter as a "coda" or "envoi," and with good reason. The fifth chapter ends with a shift to the past tense, a ruminative final paragraph which begins, "In this book, I have chosen to emphasize [...]" (285). Manovich admittedly structures the text so that the sixth chapter is a reversal which reflects back upon the first five (12), a design to some extent represented in the form of this review. But he also notes that the chapter continues the trajectory of the book as a whole. And, most importantly, it's possible that Manovich downplays the nature of the reversal which does occur in "What is Cinema?" to achieve greater rhetorical effect.

For Manovich cinema provides a double influence: film theory is the "key conceptual lens" (9) with which he investigates new media. Film, especially the work of the Russian avant-garde, and Dziga Vertov in particular, is the primary source of explanatory examples. "Vertov's dataset," Manovich's collage-like prologue, is a series of stills from *Man with a Movie Camera* accompanied by quotes from the text. The stills reappear throughout the work, at section breaks, and in fact are the only visuals included in the text.

Unfortunately, this focus minimizes the effects of print literacy on new media. Manovich notes some areas where the influence of print is apparent. "Cultural interfaces rely on our familiarity with the 'page interface,'" he notes. "Given that the history of a page stretches back for thousands of years, I think it is unlikely that it will disappear so quickly" (74, 75-76). Manovich calls on the work of Roland Barthes when tracing the genealogy of the screen from Renaissance painting through print to cinema (104), and again when arguing that the history of the logic of selection predates the development of new media (125). But the influence of the forms of print culture is overshadowed by the power and influence of cinema.

In some ways, this focus is simply a function of remaining true to the established method of a record of the present, and recognizing the "general trend in modern society toward presenting more and more information in the form of time-based audiovisual moving image sequences, rather than as text" (78). There are many specific representations of this trend. Writing of the work of virtual reality programmer and theorist Jaron Lanier, Manovich argues that the repression of linguistic forms in new media is a continuation of "the fantasy of objectifying and augmenting consciousness [...] the desire to see in technology a return to the primitive happy age of pre-language, pre-misunderstanding" (59). Shifting to the emergence and influence of new technologies at the turn of the twentieth century, Manovich argues that cinema "impressed itself [more] strongly on public memory" than forms of electronic communication which emerged at approximately the same time, because "the ability to communicate over a physical distance in real time did not seem by itself to inspire fundamentally new aesthetic principles the way film or tape recording did" (162). The traditional style of photography and cinematography with its "linear perspective, depth of field effect [...] particular tonal and color range, and motion blur" (179) towered over visual culture, shaping emergent computing technology, yet was seldom foregrounded as a *certain kind* of realism (191-92).

But though dominance of new media by cinematic forms is a representation of the current status of the relation between technology and culture, Manovich shows this need not

be the case. The avant-garde, in particular, have always resisted conventional models. Vertov's dataset derived its lasting strength from that conscious differentiation. Notably, continuation of the tradition of questioning established forms occurs when new media designers cope with the technical limitations of computing. For instance, the first versions of the Mac OS were monochromatic, because display technologies simply couldn't represent color very effectively (63). In its infancy, QuickTime worked best with very small frame sizes. These limitations forced an interesting historical convergence: Because of these particular hardware limitations, the designers of CD-ROMs had to invent a different kind of cinematic language in which a range of strategies, such as discrete motion, loops, and superimposition – previously used in nineteenth-century moving-image presentation, twentieth-century animation, and the avant-garde tradition of graphic cinema – were applied to photographic or synthetic images. This language synthesized cinematic illusionism and the aesthetic of graphic collage, with its characteristic heterogeneity and discontinuity. The photographic and the graphic, divorced when cinema and animation went their separate ways, met again on the computer screen. (311)

Of course, not even ten years after the development of the QuickTime standard, the technological constraints have loosened, and full-motion, full-color moving pictures can now be displayed, and even created, on many consumer-level computers. According to Manovich, on the one hand, this represents a tremendous opportunity for designers: the new languages developed as a result of technological constraint could be augmented with others developed as a result of technological capability. But on the other hand, new media could simply become another vehicle for the form which has dominated moving pictures in the twentieth century: the expression of traditional film language, "the exact duplication of cinematic realism" (314).

For Manovich, the trajectory portrayed as a natural development in both cinema and computing by the computer and entertainment industries – this "progression toward increasingly accurate verisimilitude" (314) – closes out the possibilities enabled by new media technology. The avant-garde artists Len Lye, Norman McLaren, and Stan Brackage, who painted on film stock, anticipate a better theoretical framework: a history of the image which acknowledges the common genealogy of painting, pro-cinematic forms like the magic-lantern show, cinema, and digital imaging. In this conceptualization, cinema is just one of many moving image technologies, and its dominant practices (Hollywood-style photorealism) are just one way to organize sequences of moving images. While we live in a historical moment, and a culture, where cinema's dominance over all other forms sometimes appears natural and inevitable, Manovich reminds us of the consequences of forgetting it is not.

The Lexicon of New Media

Any work dealing with new media must confront problems in terminology. Besides the difficulty of jargon (specific connotations or meanings particular to disciplines) describing emergent technologies and changing cultural systems with established language can preserve the ontology of the old in the new. As Anne Wysocki and Johndan Johnson-Eilola note in "Blinded by the Letter," barbarisms such as "visual rhetoric" or "computer literacy" carry the meanings of particular epistemologies into contexts where their existence is questionable.

Manovich deals with this problem skillfully, demonstrating his cognizance of the difficulty Wysocki and Johnson-Eilola speak of. Though he does introduce several neologisms, their development and use is always secondary to the analysis itself. Thankfully, Manovich is never heavy-handed, introducing his terms with little more fanfare than "what I will call," not the usual clever headlines or repeated italics.

The historical analysis supporting the neologisms also lends credibility. In the case of "image-instrument," Manovich identifies several kinds of "image-instrument," from the use of perspective in cartography to the icon, imagemap and other characteristics of modern computer interfaces. He argues the notion of an image as an instrument of control and power is present in the work of Bruno Latour (167-68). This demonstration of cultural relevance and existing theoretical investigation underscores the need for development of the new term.

Literary theory has long suffered from use of its language in an imprecise manner – "deconstruction" used in rhetorical situations such as football commentary or legislative wrangling – and computing has always been the locus of the careful deployment of jargon as an instrument of power which separates novice from expert. As one might expect, it's not hard to find slippery language in new media theory. Manovich recommends that we resign unqualified use of "digital" and "interactive" to the dustbin. The terms are simply too broad (55). In most cases "digital" refers to one of numerical representation, or a common representational code (52). Either of those are preferable. Even a simple classification scheme, like the notion of "open" or "closed" interactivity, can help rehabilitate the slippery terminology (56).

The systems of classification Manovich introduces propose more nuanced meanings but don't include any radically new terms, though most folks outside of computer science probably haven't heard of "transcoding." The appeal and applicability of these schema are due at least in part to Manovich's careful lexical work. Somewhat paradoxically, the choice of common terms ("form," "interface," "illusion," and "operation") for the four elements of the broadest of Manovich's taxonomies minimizes carryover from other disciplines or established definitions. The ambiguity which could be introduced by the use of a fairly broad term is reduced by reference to theoretical structures as well as examples. For instance, in the case of "illusion," Manovich references the story of Zeuxis and Parrhasius, explaining illusion as the "ability of the viewer to interact with a representation" (177). Relevant theoretical work is cited as well (in this case, Stephen Bann's *The True Vine*). And as he promises in his introduction, Manovich develops his argument in linear fashion, so possible problems with "illusion" are prevented by referencing earlier discussions such as "Representation versus Simulation" (111-15).

In most cases a strength, Manovich's interdisciplinary focus may cause a few terminological problems. Though terms such as "database" are introduced with good explanation (218), others seem awkward. Abbreviating "human-computer interface" as "HCI" varies from established practice of using "HCI" for "human-computer interaction:" a disciplinary field, not a computer technology. More importantly, in many places Manovich uses language such as "general purpose HCI" when referring to the elements which make up a graphical user interface, or when referring to a specific implementation of a graphical user interface (69, 90). The collection of widgets and other elements common to Microsoft Windows, MacOS, and X-Windows toolkits like KDE, GNOME and Motif is better abbreviated WIMP, for "windows, icons, menus, and pointer."

There are also some technical problems in a few of Manovich's usually accurate and

consistent uses of existing terminology. The discussion of lossy compression, above, is one case. At times the differences between raster (pixel-based) and vector (mathematically based) computer images is not clear (4, 289). His use of "open source" (333) is questionable. But overall the combination of careful usage, theoretical context, and illustrative examples minimizes terminological difficulty.

Pedagogical and Rhetorical Applications

Unsurprisingly, *The Language of New Media* has huge classroom potential. Indeed, Manovich writes, "Just as a literary theory textbook might feature chapters on narrative and voice, and a textbook of film studies might discuss cinematography and editing, this book calls for the definition and refinement of the new categories specific to new media theory" (11). Clearly, many aspects of his work were shaped with that goal in mind.

Problems which discourage classroom use of many other new media works are not present. The naive utopianism Mark Tribe identifies as "California ideology" (x) in his introduction to the text is nowhere to be found (though it still colors certain publications). The book avoids other common pitfalls, like a tendency to reapply existing theories instead of breaking new ground (a flaw of J. David Bolter and Richard Grusin's *Remediation*, which at times echoes McLuhan heavily), or a deterministic focus on correlation between technology and theory rather than analytical development (a recurring difficulty in *Gramophone, Film, Typewriter*, by Friedrich Kittler), or the assumption that complicated ideas require complicated, even inflated, language and digressive footnotes.

The structure of Manovich's work shows the development and execution of a methodology which could serve as a model for student new media theorists. As already mentioned, the introduction and first chapter of the work set the bounds for "new media" as well as developing critical categories used throughout the text. Manovich develops each portion of his work syncretically and deliberately. Once established, a rhetorical pattern is maintained; the text doesn't bog down in signposting or backtracking. This not only increases the accessibility of the text, but suggests a useful, and perhaps underused, approach to systems where culture, technology, and individuals form complexes such as Manovich's "cultural interfaces." The text offers not only a system for working with new media, but a method valuable in and of itself.

While undoubtedly reliant on theoretical work developed by a wide range of film theorists, as well as more "mainstream" literary theory such as Tzvetan Todorov and Jacques Derrida, *The Language of New Media* doesn't bog down or become overly deliberative (a tendency a colleague once characterized as "sad theory"). Manovich picks his battles, but maintains a richness of analysis. In one case, the complex relationships with representation cutting across all aspects of the work don't result in a theoretical digression of the history of representation and perception. On the other hand, Manovich carefully demonstrates the relevance of considering representation in each of the four middle chapters of the work (15-17).

For rhetoricians, Manovich's conscious positioning of his text as a generative work, similar to the original conceptualization of classical rhetorical texts, is very exciting. "It is my hope that the theory of new media developed here can act not only as an aid to understanding the present, but also as a grid for practical experimentation" (10). This notion of "experimentation" is a conscious invocation of the tradition of the avant-garde, especially Russian artists like Vertov. Manovich conceptualizes "experimentation" as "systematic,

laboratory-like research" (15) which makes a conscious break from conventional forms. His frequent return to the avant-garde, especially Vertov, as a source for examples of techniques which were revolutionary when introduced, and now reappear in new media today, demonstrates the veracity of this assumption.

Generous allowances for addition and extension of the theoretical base developed here reinforce Manovich's call for experimentation. With almost every set of principles introduced, he reminds us his argument is only one of many possible languages of new media (7), or "in no way exhaust[ive]" (68), "one possible genealogy" (103), or "examples of other interesting questions" (178) generated by the historical context of the analysis. Indeed, Manovich's Web site already contains an extensive revision of the list of "effects of computerization on cinema proper" (287) – demonstrating that his own work is just another "practical experiment."

Writers and editors of composition handbooks who have included sections on writing for new media (such as Andrea Lunsford's *The Everyday Writer*) should be encouraged by the publication of Manovich's work. The critical categories Manovich introduces, as well as concepts such as "transcoding," and "compositing," should be considered in these handbooks' treatment of new media (or writers should develop similar categories which show the same level of attention to detail). As the novelty of "new media" declines, students need to be encouraged to participate in the production of new media as well as in critical analysis of the new media objects becoming part of everyday life. Manovich's book offers excellent ways to analyze new media objects, and deploying his frameworks generatively should be a snap, given his allowances for doing so.

Manovich's book also argues convincingly that the "experimental" work of the avant-garde should be taken quite seriously. While in some ways the artists Manovich's examples are drawn from defy established conventions solely for the sake of doing so, in many ways their work demonstrates new ways to persuade, or to organize information, far more memorably than five paragraphs which compare-and-contrast. Gregory Ulmer's pedagogical work also relies heavily on the avant-garde; his *Text Book* offers several examples of using "experimental" work pedagogically (Ulmer, too, has recognized the connection between the cut and paste methods of avant-garde artists and computers' status as "cut and paste machines"). The methods of these artists should not be considered "too wild" for composition classrooms, but studied and taught alongside more venerable forms.

A New Stage in Media Theory?

Near the end of his first chapter, Manovich calls for a "new stage in media theory," an interdisciplinary "software studies" (48) merging computer science with the work of writers like Harold Innis and Marshall McLuhan. *The Language of New Media* helps the media studies community toward this lofty goal in at least two ways. First, it is a strong critique, in some cases explicitly but more often only by example, which demonstrates undeniable problems with many existing, influential theories of new media. Ignoring the challenge it presents to those works would be foolish. Secondly, and most promisingly, it is a wonderful textbook which offers an accessible, sound theory of new media, and a model of critical method. New media scholars and students must recognize the generative potential of the text, and accept Lev Manovich's generous offer to participate in documenting and shaping the new "meta-medium of the digital computer" (6).