Software Is the Message

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SOFTWARE IS THE MESSAGE

Lev Manovich

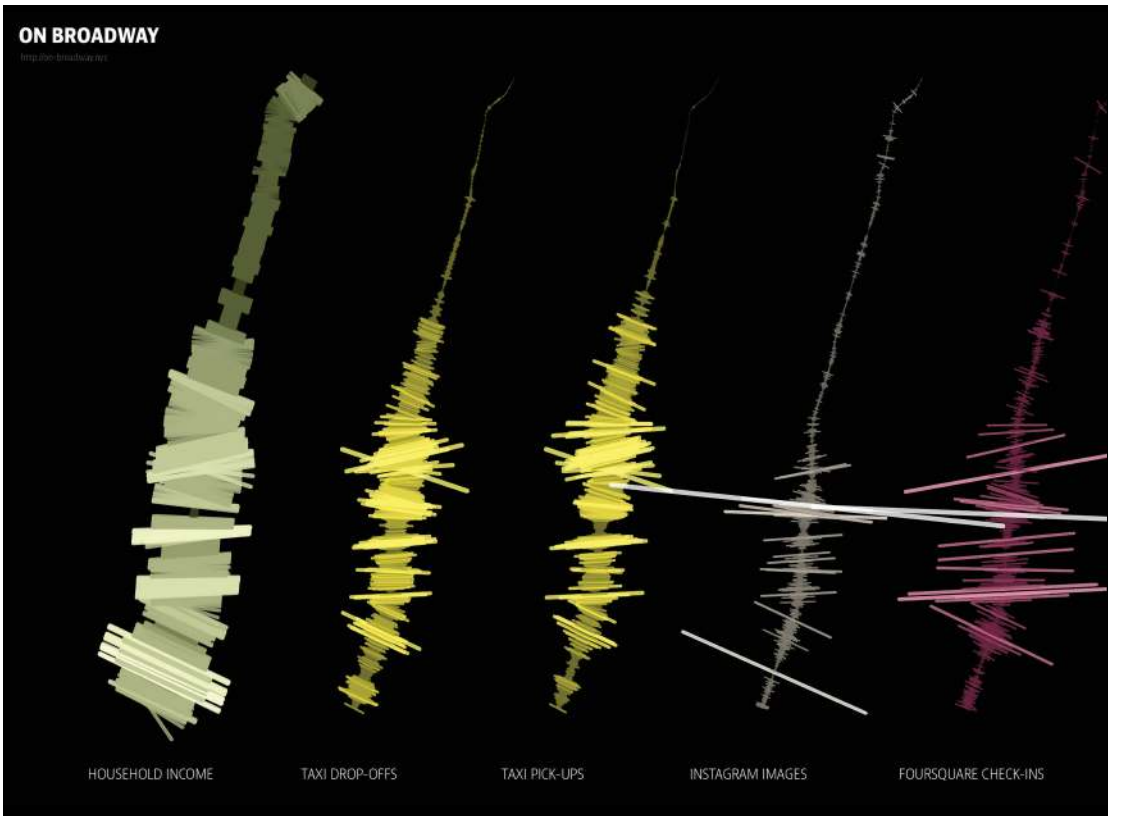
Did McLuhan "miss" computers? In his major work, *Understanding Media: The Extensions of Man* (1964) the word "computer" appears twenty-one times, and a few of those references are to "computer age." However, despite these references, his awareness of computers did not have a significant effect on his thinking. The book contains two dozen chapters, each one devoted to a particular medium—which forMcLuhan ranged from writing and roads to cars and television (the last chapter, "Automation," addresses the role of computers for industrial control, but not its other roles).

The reasons for this omission are not hard to understand. McLuhan's theories were focused on the media that were most widely employed by regular people during the course of human history. In 1964, the popular media for representation and communication did not yet include computers. Although by the end of the 1960s computer systems for design, drawing, animation and word processing were also developed (along with the first computer network that eventually became the Internet), these systems were only used by small communities of scientists and professionals. Only after the introduction of the PC in 1981, these inventions started to be disseminated to the masses.

As a result, *software* has emerged as the main new media form of our time (I write "software" rather than "digital computers" because the latter are used to do everything in our society, and often their use does not involve software visible to the ordinary users—like the systems inside a car). Outside of certain cultural areas such as crafts and fine art, software has replaced a diverse array of physical, mechanical, and electronic technologies used before the twenty-first century to create, store, distribute and access cultural artifacts, and communicate with other people. When you write an article in Word, you are using software. When you are composing a blog post in Blogger or WordPress, you are using software. When you tweet, post messages on Facebook, search through billions of videos on YouTube, or read texts on Scribd, you are using software (specifically, the category referred to as "web applications" or "webware"— software which is accessed via web browsers and which resides on servers).

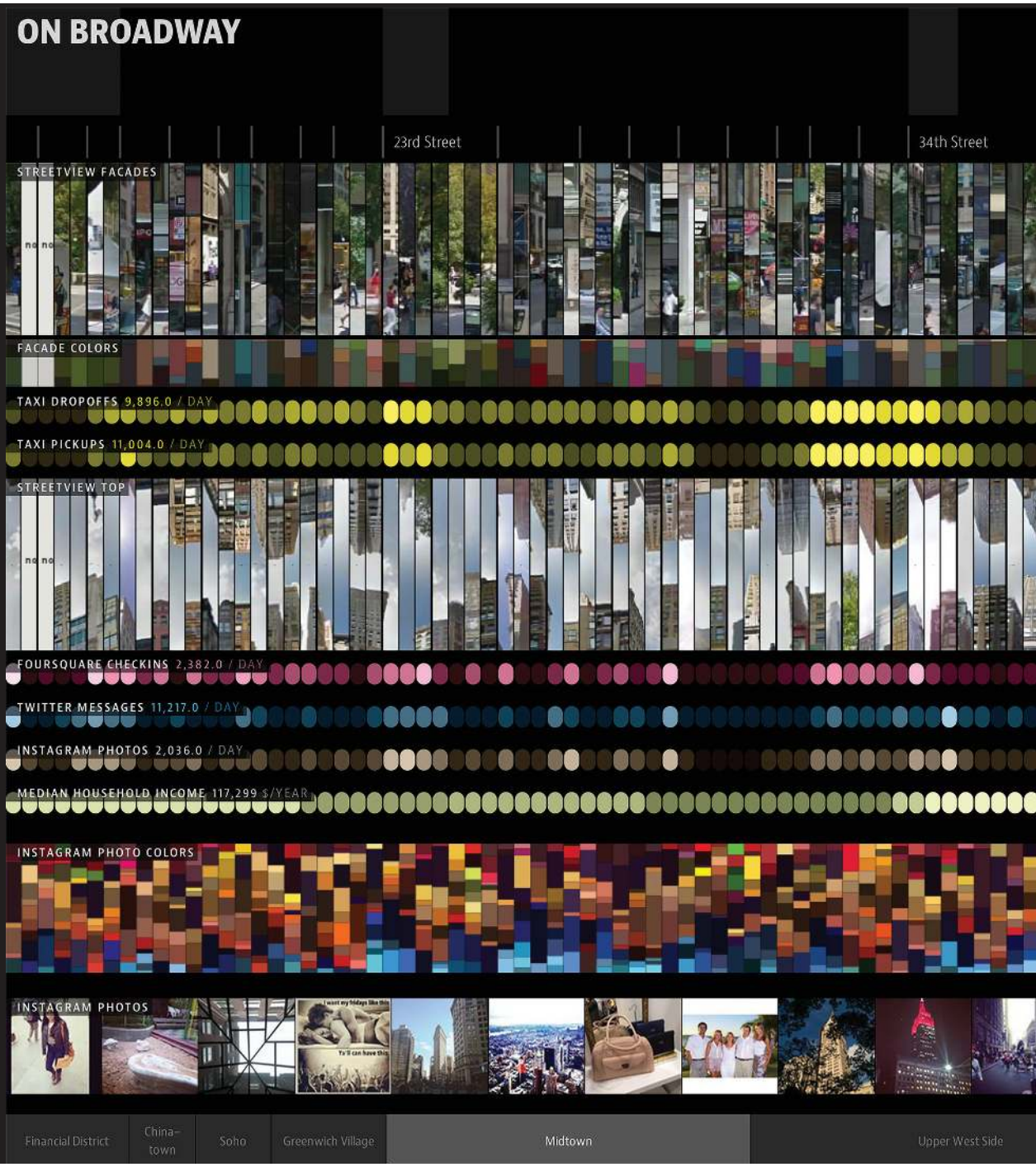
McLuhan's theories covered the key "new media" of his time—television, newspapers and magazines with color photos, advertising, and cinema. Just as these mediums, software medium took decades to develop and mature to the point where it dominates our cultural landscape. How does the use of professional media authoring applications influence contemporary visual imagination? How does the software offered by social media services such as Instagram shape the images people capture and share? How do particular algorithms used by Facebook to decide what updates from our friends show up in our News Feed shape how we understand the world? More generally, what does it mean to live in a "software society"?

In 2002, I was in Cologne, Germany, and I went into the best arts & humanities bookstore in the city. Its new media section contained hundreds of titles. However, not a single book was devoted to the key driver of the "computer age": software. I started going through the indexes of book after book: none of them included the word "software" either. How was that possible? Today, thanks to the efforts of my colleagues in the new academic field of "software studies," the situation is gradually improving. However, when I looked at indexes of works of key contemporary media theorists published during the last year, I still did not find entries for "software." Software as a theoretical category is still invisible to most academics, artists, and cultural professionals interested in IT and in its cultural and social effects.



Software is the interface to our imagination and the world—a universal language through which the world speaks, and a universal engine on which the world runs. Another term that we can use in thinking about software is that of a dimension (think of the three dimensions that we use to define space). We can say that at the end of the twentieth century humans have added a fundamentally new dimension to everything that counts as "culture" — that of software.

Why is this conceptualization useful? Because "cultural software" is not simply a new object—no matter how large and important—that has been dropped into the space which we call "culture." And while we can certainly study "the culture of software"—programming practices, values and ideologies of programmers and software companies, the operations of Silicon Valley or Bangalore, etc.—if we stop there, we will miss the real significance of software. Like the alphabet, mathematics, the printing press, the combustion engine, electricity, and integrated circuits, software re-adjusts and re-shapes everything it is applied to—or at least, it has such a potential. Just as adding a new dimension adds a new coordinate to every point in space, "adding" software to culture changes the identity of everything that a culture is made of. In this respect, software is a perfect example of what McLuhan meant when he wrote that the "message of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs" (McLuhan 1964, 8).


ON BROADWAY
23rd Street
34th Street
STREETVIEW FACADES
FACADE COLORS
TAXI DROPOFFS 9,896.0 / DAY
TAXI PICKUPS 11,004.0 / DAY
STREETVIEW TOP
FOURSQUARE CHECKINS 2,382.0 / DAY
TWITTER MESSAGES 11,217.0 / DAY
INSTAGRAM PHOTOS 2,036.0 / DAY
MEDIAN HOUSEHOLD INCOME 117,299 $/YEAR
INSTAGRAM PHOTO COLORS
INSTAGRAM PHOTOS
Financial District
China-town
Soho
Greenwich Village
Midtown
Upper West Side

However, the development and current hegemony of software does not simply illustrate the points McLuhan made fifty years ago. It also challenges these ideas. Here is how.

In the first few decades, writing new software was the domain of professionals. Nonetheless, already in the 1960s Ted Nelson and Alan Kay proposed that computers could become a new kind of cultural medium. In their paradigm, the designers would create programming tools, and the users would invent new media using these tools. Accordingly, Alan Kay and Adele Goldberg called computers the first *metamedium* whose content is "a wide range of already-existing and not-yet-invented media" (Kay and Goldberg 1977, 403).

This paradigm had far-reaching consequences for how software medium functions today. Once computers and programming were democratized enough, some of the most creative people of our time started to focus on creating these new structures and techniques rather than using the existing ones to make "content." During the 2000s, extending the computer metamedium by writing new software, plugins, programming libraries and other tools became a new cutting-edge type of cultural activity.

For example, GitHub, a popular platform for sharing and developing open source tools, houses hundreds of thousands of software projects. Making new software tools is central for the fields of digital humanities and software art. And certainly, the key "media companies" of our time such as Google, Facebook, or Instagram do not create content. Instead, they constantly refine and expand their software tools, which are used by hundreds of millions of people to make content and to communicate.

Thus, it is time to update *Understanding Media*. It is no longer the medium that is the message today. Instead, "the software is the message." And continuously expanding *what* humans can express and *how* they can communicate is now our "content."

Note: Some parts of this text come from Lev Manovich's book *Software Takes Command* (2013). All images from the interactive installation *On Broadway*, courtesy of Daniel Goddemeyer, Moritz Stefaner, Dominikus Baur, and Lev Manovich.
http://on-broadway.nyc

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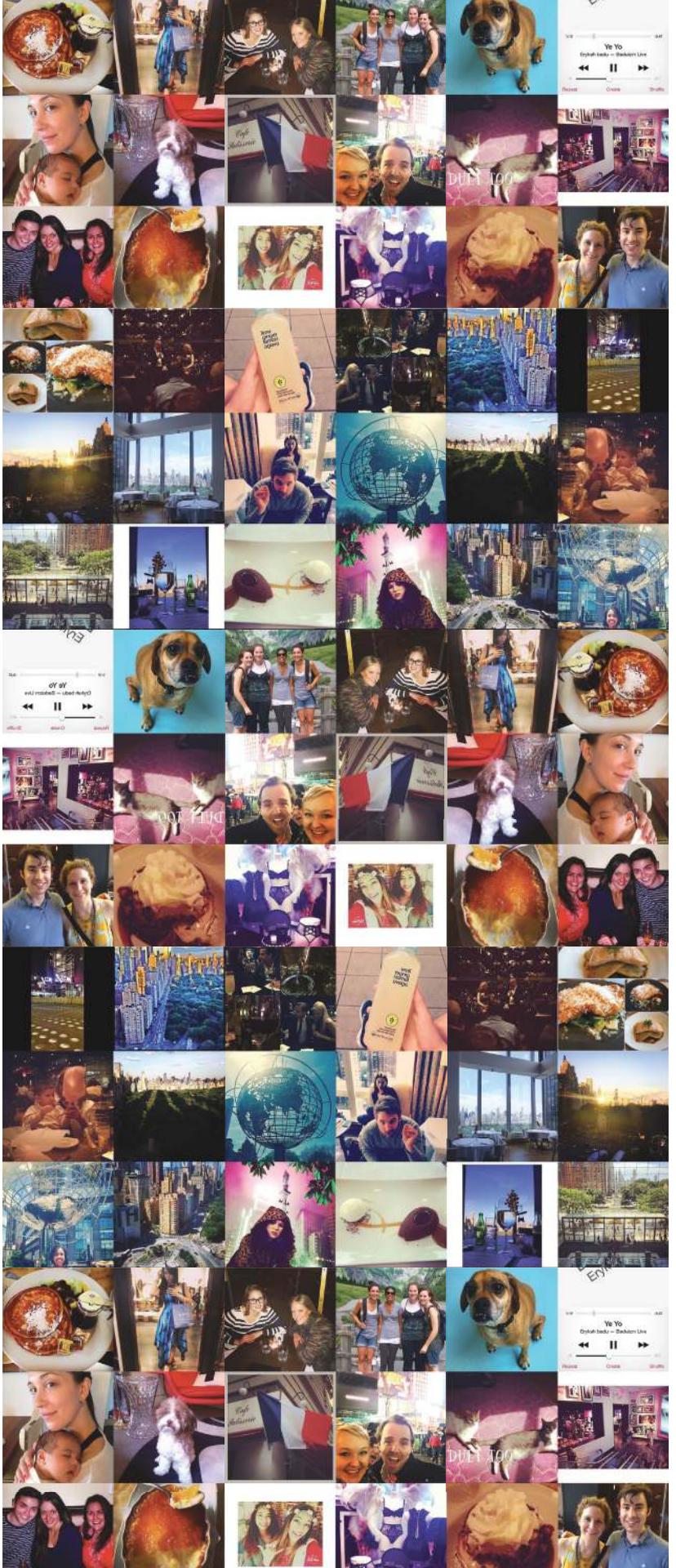
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