Scale in the Media Theory of Marshall McLuhan

An Application to Electronic Money and the Internet

David Bobbitt

Facebook’s global scale, combined with the quantity of personal information its users entrust to it, suggests a movement toward a form of universal connectivity that is truly new in human society. The social philosopher and media theorist Marshall McLuhan is a favorite at the company. He coined the term “the global village.”

- David Kirkpatrick, *The Facebook Effect*

Introduction: Scale in the Global Village

One of the most important dimensions of scale in media is the process any medium or technology goes through as it scales up from small to large. For example, when only a handful of people in a society own a telephone, the telephone is a medium of little consequence. But when almost everyone owns a phone and uses it daily, the value and effect of the phone is enormous. That is the “network effect”—the value of a network increases exponentially as more people use it. Likewise, when only a few people in a society of millions own an automobile, the car is a novelty with little overall impact. But when millions own and regularly drive cars, the industry and

infrastructure to support automobiles scales up correspondingly and the car comes to have a profound impact on personal habits, cultural patterns, and social arrangements.

Marshall McLuhan was one of the first media theorists to recognize the importance and consequence of scale in a medium or technology. He wrote in *Understanding Media* that the "personal and social consequences of any medium—that is, any extension of ourselves—result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology." McLuhan makes a similar point about scale when he writes: “For the ‘message’ of a medium or technology is the change of scale or pace or pattern that it introduces into human affairs.” McLuhan’s theory of scale can be seen in his idea of the “global village,” which suggests that electronic media collapse the world into a village where we are aware of what is going on all over the world, all the time. Our electronic technology has the paradoxical effect of both increasing and decreasing scale at the same time; in other words, electronic media result in an “implosion or interfusion of space and function,” which in turn results in an “instantaneous reassembling” of scattered bits into an “organic whole.” Thus, large scales of experience (i.e., worldwide events such as revolutions, wars, or terrorist attacks) are collapsed into a small space for consumption via a connected technology such as a television, a computer, or a cell phone. Here is a 30-second clip of McLuhan talking about the global village: [McLuhan on the Global Village](https://www.youtube.com/watch?v=Q6O6aQ8QZMw)

In this essay I explore McLuhan’s concept of scale using his notion of the distinction between visual and acoustic space and his four laws of media. I then examine two cases of the scaling up process of particular mediums: electronic money and the Internet. I conclude by arguing that the scaling up process of technology creation and growth is an inherent part of the evolutionary and human order, but one that will, in the ultimate scale of time, give way to the entropic direction of the universe.

**Visual versus Acoustic Space**

McLuhan’s idea of acoustic space is central to his understanding of the transformation now taking place as the world moves from linear, print-based technologies and methods based on notions of visual space, to electronic and digital technologies based on notions of acoustic space.
Acoustic space is dynamic; it has no fixed boundaries. It is space created by the method or process itself. In contrast, visual space is static and container-like, with a fixed center and margin. Acoustic space allows a scaling up of experiences and processes far beyond the boundaries allowed by methods, media, and systems limited to the confines of linear, visual space. In his *Playboy* interview McLuhan explains the distinction between visual space and acoustic space as follows: acoustic space “... has no center and no margin, unlike strictly linear space, which is an extension and intensification of the eye. Acoustic space is organic and integral, perceived through the simultaneous interplay of all the senses; whereas ‘rational’ or pictorial space is uniform, sequential and continuous and creates a closed world ...”. Table 1 below helps explain the difference between visual space and acoustic space:

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<thead>
<tr>
<th><strong>Visual Space</strong></th>
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<tr>
<td>tonal</td>
<td>atonal</td>
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<td>container</td>
<td>network</td>
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For McLuhan, visual space is associated with spatial relations and patterns we experience with mechanical, pre-electronic technologies, whereas acoustic space represents the nonlinear, simultaneous, synchronous experience of using electronic networked technology.

**The Four Laws of Media**

In his attempt later in his career to develop universal laws that describe the processes through which any medium, method, or system moves as it
scales up in quantity, power, and effect, McLuhan developed his four laws of media, which ask the following questions:
1. What human trait or experience does the medium enhance?
2. What pre-existing technology, method, system, or medium is obsolesced?
3. What technology or system does the new medium retrieve?
4. When pushed to its extreme, what will the medium reverse into?6

Figure 1 below describes McLuhan's laws of media:

![McLuhan's Laws of Media](postkiwi.com)

For example, the automobile extends and enhances our physical mobility. It made the horse and carriage obsolete as a form of transportation. To make a medium obsolete does not necessarily mean to eliminate it, but to change its function, role, or importance in society; thus, horses are now used for recreation or sport. Automobiles retrieve privacy and personal mobility, but they reverse into traffic congestion, pollution, and urban sprawl.

McLuhan’s theory of scale can be used to examine any number of media. Although he does not specifically use McLuhan’s ideas, Tim Wu does an excellent job of chronicling the scaling up process that various media
industries—such as telephone, film, radio, television, and the Internet—have gone through in America as they have moved from being small, start-up industries characterized by disbursed, independent players, to becoming large, national industries dominated by a few giant companies. Now, using McLuhan’s concepts of visual versus acoustic space and his four laws of media, I will analyze two contemporary media: electronic money and the Internet.

Electronic Money

In McLuhan’s theory, a medium is defined as any extension of ourselves, so money is a social medium that allows us to store and exchange our work and skills. Throughout human history we have evolved from barter systems of trade, to the use of metals such as gold and silver, to paper currency, to credit cards, to the electronic exchange of information, as forms of money. As we move up the scale of increasingly abstract forms of financial media, we greatly enhance the ease and speed of monetary exchange and facilitate greater degrees of specialization in occupations. In addition, increasingly abstract forms of money increase the tendency to create more complex forms of financial instruments and derivatives, such as futures contracts, options, collateralized debt obligations, mortgage-backed securities, and credit default swaps. Excessive use of these types of financial media played a role in the financial crisis of 2008-09.

As money moves toward its electronic and symbolic forms, this greater scale of abstraction is not a mere quantitative difference, but amounts to a qualitative difference as it also changes the meaning and effect of money. For example, the globalization of our economies is facilitated by the speed and ease with which international monetary exchanges can take place. Furthermore, as money becomes more abstract it moves from being a medium that exists in visual space to one that exists in acoustic space. Money becomes less a physical, tangible, limited object such as gold or silver, and more a non-physical, intangible, elastic concept that is non-linear and easier to create. We saw above that for McLuhan linear space is “uniform, sequential and continuous and creates a closed world,” whereas acoustic space “has no center and no margin” and “is organic and integral.” This distinction parallels that between “hard” forms of money—such as barter, gold, and silver—and “soft” forms of money—such as credit cards and electronic transfers, with paper currencies providing the transition
between the two. Thus today, as we move further away from physical, “hard” money, what we call “money” is a fiction that exists in symbolic form, electronically stored as account balances at financial institutions. “Money” can thus be created electronically by a nation’s central bank, leading to a greater tendency toward excess money and debt creation. This frequently leads to financial crises, and often to inflation. This is the pattern that brought about the U.S. (and worldwide) financial crisis that began in 2008, and the resultant recession, which the Federal Reserve has been trying to offset by creating even more money in an effort to reflate the financial system.\textsuperscript{10}

Now let us look at electronic money in terms of McLuhan’s four laws of media introduced earlier in this essay.

1. \textit{What human trait or experience does the medium enhance?} Electronic money transfer eases and enhances the scale of financial interaction. This is an extremely important function that has allowed the large degree of specialization in our society and made possible our increasingly complex and technologically-dependent social and economic system. Complex governmental, financial, commercial, and technological enterprises simply could not function in a monetary system that relied on the physical exchange of a monetary medium such as gold to enable all financial transactions.

2. \textit{What pre-existing technology, method, system or medium is obsolesced?} Electronic money makes obsolete coin and paper money, which previously obsolesced gold and silver, which previously obsolesced barter. Thus, gold, silver, and rare coins become “collectibles,” valuable for their rarity or hoarded out of fear of an excess of fiat money leading to hyperinflation or financial crisis.

3. \textit{What technology or system does the new medium retrieve?} Electronic money retrieves old tribal relationship patterns of interaction, but on a global, electronic scale as we move toward the global village where efficient international financial interactions facilitate globalization and ease of exchange across previously resilient national borders. Today huge sums of money flow electronically across national borders in seconds as traders and investors act in international bond, currency, commodity, stock, and
futures markets. National financial systems and economies become interlinked with one another to a previously unprecedented degree. Thus, fear of a Greek government debt default roils European financial markets, which roils American financial markets, which roils the financial markets of China and other developing nations, because all our economies are linked.

4. *When pushed to its extreme, what will the medium reverse into?* Electronic money reverses into patterns of excess money creation (often leading to inflation), complex financial media (derivatives, options, futures, etc.), and excess spending and debt. This phase of the process has not fully played out, but the rising levels of consumer and government debt in recent decades, and the current financial crisis resulting from such debt, could prove to be an illustration of this law.

Measurement of the money supply is complex because definitions of money vary, but basically the Federal Reserve divides money supply into two components: M1 and M2. M1 consists of currency in the hands of the public, plus traveler’s checks, and deposits against which checks can be written. M2 includes M1, plus savings accounts and other time deposits, and money in retail money market funds. Figure 2 below graphs the change in currency, M1, and M2 in the United States from 1960 to 2010.
We can see from the above graph that the U.S. money supply as measured by M2 (represented by the red line) has scaled up at a rapid rate since 1971 when the U.S. dollar was completely delinked from any convertibility into gold, and had grown to around nine trillion dollars by 2010. During that same period the increase in the currency component of the money supply has been much smaller, reaching only about one trillion dollars by 2011.

The Internet

The Internet extends the scale and democratization of the production and distribution of media content to a degree that far exceeds that of previous media. Rather than being limited to the confines of linear, visual space—as are books, magazines, newspapers, film reels, tapes, CDs, DVDs, etc.—the Internet allows storage and distribution of media content through “cyberspace,” an acoustic, non-linear space without a fixed center. While
the tangible form of the Internet does, of course, exist in physical, linear space—that is as servers, routers, switches, wires, cables, etc.—our experience of it is in electronic, digital screen space—that is as acoustic space. The tremendous compression of data, and the simple transmission thereof that the Internet allows, greatly reduces the physical limitations placed upon it as compared to linear mediums such as books, newspapers, or magazines.

Thus, McLuhan’s concept of acoustic space helps us see an important distinction between electronic media in general—and the Internet in particular—and previous forms of media that were limited to physical, linear space. Electronic, acoustic media create the global village where physical space is collapsed and we are connected immediately and emotionally to what goes on around the world. Our central nervous system is extended electronically and globally. In our emotional connectivity to others we are no longer limited to the confines of physical presence.

By analyzing the Internet through the lens of McLuhan’s four laws of media, we can also see the effects and consequences of the Internet as it scales up.

1. What human trait or experience does the medium enhance?
The Internet enhances the scale and democratization of the production and distribution of media content, increases the amount of information available to people, and extends social connectivity across a greater distance. The growth of the Internet since the mid-1990s has been astounding. The number of Internet users in the world has increased from 16 million (less than 1% of the world population) in 1995 to over 2.1 billion (over 30% of the world population) in 2011. The Internet is a kind of super-medium because it subsumes all previous media, providing a world-wide distribution and presentation platform for texts, images, graphics, sound, and video. Yochai Benkler in *The Wealth of Networks* has described how the Internet has vastly increased the scale of production and distribution of information while decreasing its costs.

2. What pre-existing technology, method, system or medium is obsolesced?
The Internet is making obsolete older media forms such as print journalism and the monopolies of the traditional television, film and music industries. That is not to say that these media businesses themselves will cease to
exist, but their monopolies on content, their old business models, and their old ways of distributing their content are all being disrupted and obsolesced by the Internet.

One example is how the Internet has disrupted the traditional business model of the music industry. As physical music sales have decreased, digital music sales, which are less profitable for the music industry, have increased. Also, there has been an overall decrease in total music sales as a result of illegal music downloading, peer-to-peer music file sharing, and independent bands and artists bypassing the music industry altogether by giving away or selling their music online directly to consumers. We can see this effect in Figure 3 below. Global sales of physical music formats peaked in the late 1990s at over $27 billion. By 2010 global sales of physical music had decreased to $10.4 billion, while digital sales had grown from zero a decade ago to $4.6 billion in 2010.

![Figure 3: Global Music Sales by Physical versus Digital Sales. Source: theatlanticwire.com](image)

Thus, while digital music sales are increasing, the increase is not nearly enough to make up for the precipitous loss in physical music sales experienced by the music industry.
3. What technology or system does the new medium retrieve?

The Internet retrieves the tribal storyteller/shaman, but now on a global and more democratic scale as we all can become storytellers, filmmakers, and journalists through our own websites, blogs, tweets, videos, social media, etc. We have seen in the recent political revolutions in the Arab world, for example, how ordinary people and participants can connect, organize, and tell their stories through digital media content posted on the web. 14

4. When pushed to its extreme, what will the medium reverse into?

The Internet reverses into ... well, we shall see. We are still early in the Internet era, but so far, the Internet has caused a decrease in personal privacy as the rise of powerful companies such as Facebook and Google, on which we have become increasingly reliant, gather more and more personal information about us. 15 We have also become more dependent on the Internet itself for our connections to others and our knowledge about the world. Moreover, it could be, as Nicholas Carr argues, that frequent use of the Internet reduces our attention span and rewires our brains. 16

Conclusion: Entropy in the Scale of Universal Time

We have seen that by combining Marshall McLuhan’s concept of the global village, his distinction between linear and acoustic space, and his four laws of the media, we are able to develop a theory of scale in McLuhan’s media theory that allows us to analyze how the scaling up process of a medium is more than a quantitative change; it amounts to a qualitative change in processes and functions that alters our social and individual relationships to the medium and to one another, and furthermore alters that medium’s relationship to other media. Electronic money and the Internet have been analyzed as examples of this process. These examples elucidate McLuhan’s theory by showing how electronic money and the Internet have moved us from configurations of visual space to patterns of acoustic space, have globalized our financial and media systems, have profoundly changed our societies, and are progressing through the cycle of the four laws of media.

Scaling up technology is an inherent part of the natural process of evolution. 17 The four laws of media show the process that a technology or
medium goes through over its life span; it extends or expands some function or pattern, makes obsolete some other pattern, retrieves some older practices or functions in a new form, but eventually goes too far and brings about a reversal of the function it was meant to perform. This process is a microcosm of the macrocosmic process whereby matter and energy move from order to entropy over time. Our technologies are information systems for capturing and using energy. But, as organisms and systems scale up in complexity they become less efficient in their use of energy and thus more entropic. The technological imperative is thus a temporary, albeit very important attempt by humans to create order and structure in our world. Technology gives us a temporary means of control over nature, although eventually on the larger scale of universal time, the natural entropic process will overwhelm our efforts.

Notes

8 For McLuhan’s discussion of money, see chapter 14 of *Understanding Media*. 
A good explanation of this process can be found in Ronald J. Deibert, *Parchment, Printing, and Hypermedia: Communication in World Order Transformation* (New York: Columbia University Press, 1997), 138-157.

J. Anthony Boeckh, *The Great Reflation: How Investors Can Profit from the New World of Money* (Hoboken, NJ: Wiley, 2010) presents an evaluation of the role of money creation and debt in the financial crisis and explains the reflationary methods the federal government is using to combat the crisis. Carmen M. Reinhart and Kenneth S. Rogoff, *This Time is Different: Eight Centuries of Financial Folly* (Princeton: Princeton University Press, 2009) demonstrates how the process of excess money and debt creation leading to financial crises, and frequently inflation, has been a recurring pattern in many nations over the years.


John Pollock, “Streetbook: How Egyptian and Tunisian Youth Hacked the Arab Spring,” *Technology Review* 114, no. 2 (September/October 2011), 70-82. This article documents how youth in Tunisia and Egypt used the Internet to organize their political protests and spread the message about the atrocities of the authoritarian regimes they opposed. Also see Henry Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York: New York University Press, 2006) for a discussion of the battle raging between old and new media and the democratizing effects of the latter.

David Kirkpatrick, *The Facebook Effect: The Inside Story of the Company That is Connecting the World* (New York: Simon & Schuster, 2010) provides an account of the rise of Facebook as the dominant social media company in America, and in many other nations. Facebook was launched in 2004 by Mark Zuckerberg from his dorm room at Harvard University. Today, Facebook has 750 million users worldwide according to Jon Bruner, “What’s a ‘Like’ Worth?” *Forbes,* August 8, 2011, 28-30.

to dominate online web searching. Google was started in 1996 by two Stanford University graduate students as a research project in computer science. It was incorporated in 1998 and by mid-2011 Google was processing over 10 billion web search queries per month in the U.S. and had about 65% of the U.S. online search market. Data on search engine rankings accessed July 28, 2011 from ComScore at http://www.comscore.com. Simson L. Garfinkel, “A Cloud over Ownership,” Technology Review 114, no. 2 (September/October 2011), 108-09, discusses how cloud computing provides convenience by separating ownership of media content from physical possession, but also raises questions of privacy.

18 Sean Carroll, From Eternity to Here: The Quest for the Ultimate Theory of Time (New York: Dutton, 2010) discusses entropy and its role in the evolution of the universe and the direction of time. Also, I want to thank Charles Benesh, Associate Professor of Physics at Wesleyan College, for discussing these ideas with me.
19 Kevin Kelly, What Technology Wants, 57-69.

David Bobbitt is Associate Professor of Communication at Wesleyan College in Macon, Georgia where he teaches courses in media/film theory and criticism.