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Laws of Media, Their Environments and Their Users: The Flip of the Artifact, Its Ground and Its Users

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Abstract: Marshall McLuhan's Laws of Media (LOM), which describe the evolution of artifacts in terms of enhancement, obsolescence, retrieval, and reversal (or flip) are extended to create Laws of Media Environments (LOME) and Laws of Media Users (LOMU). It is shown that the environment or ground in which the figures of the artifacts in the LOM operate and the users of those artifacts undergo, respectively, a similar evolution of enhancement, obsolescence, retrieval, and reversal paralleling McLuhan's original LOM.

Keywords: Laws of Media; artifact; media; technology; enhance; obsolesce; retrieve; flip; environment; user

1. Introduction

Towards the end of his career, Marshall McLuhan developed a technique for studying media and probing their effects, which he called Laws of Media [1,2]. He continued to work on this project for the rest of his career with his son Eric McLuhan, and at times with others, including one of the authors (RKL). After his father's death at the end of 1980, Eric collected the work that he and his father had researched and published it in *Laws of Media: The New Science* [3]. The subtitle: The New Science signals the intention of this project to place Marshall's work on a scientific basis. They wrote, "Sir Karl Popper's (right brain) statement that a scientific law is one so stated as to be capable of falsification made it both possible and necessary to formulate the laws of media [3] (p. 93)".

McLuhan's Laws of Media (LOM) describes how an artifact enhances some human function, obsolesces a former artifact that achieved that function, retrieves an artifact from the past, and when pushed far enough, flips into a new artifact that is a complementary form of the original artifact [1–3]. The LOM—also referred to as a tetrad—therefore represents a model for how artifacts or technology evolve as each artifact when pushed far enough flips into a new artifact that is its complementary form. The artifacts treated in the LOM create their own individual environment or ground in which they operate, and they involve the users of those artifacts. In this paper, we will extend McLuhan's LOM. We will examine how the evolving media treated in the LOM cause a parallel transformation of their environment or the ground in which they operate, as well as causing a parallel transformation of their users. We will therefore extend McLuhan's LOM to include their media environments and their media users. We formulate these two extensions of the LOM as the Laws of Media Environments (LOME) and the Laws of Media Users (LOMU).

The LOM represents a model for the evolution of artifacts. According to the LOM, every artifact when pushed far enough flips into a new, more advanced, artifact. As an evolutionary model, it explains the continuous emergence of new artifacts in the ongoing cycle of the four laws of enhancement, obsolescence, retrieval, and flip. Each cycle of these four laws (the tetrad) is linked to the previous one

and to the next cycle or tetrad, and hence has a spiral structure [4]. We will illustrate this linkage in Figure 1 for the communication media of speech, ideographic writing, alphabetic writing, the printing press, computers, the Internet, the Web, and social media.

2. McLuhan's LOM

McLuhan (1977) [2] formulated the four laws of media as four questions. He wrote:

> Exploration of the "Laws of the Media" opens up the matter of the grammar and syntax of each artifact. There seems to be only four features, and they are in analogical proportion to each other:
>
> (a) What does it enhance?
> (b) What does it obsolesce?
> (c) What does it retrieve that had been obsolesced earlier?
> (d) What does it flip into when pushed to the limits of its potential?

The four laws known as the tetrad or the LOM have been represented in many different forms over the years, in addition to the form formulated by McLuhan (1977) [2]. One can also formulate the LOM in terms of the following four statements instead of McLuhan's original four questions, giving the tetrad more of a representation of four laws rather than as four questions (see Table 1).

Table 1. Laws of Media (LOM) as statements.

1.	Every artifact, medium, or technology enhances some human function.v
2.	In doing so, it obsolesces some former medium or technology, which was used to achieve the function earlier.
3.	In achieving its function, the new medium or technology retrieves some older form from the past.
4.	When pushed far enough, the new medium or technology reverses or flips into a complementary form.

McLuhan's fourth law, the flip, is something that he might have picked up from the I Ching. McLuhan (1999) [5] (p. 71) mentions that it is "stated in the I Ching that when any form reaches the end of its potential, it reverses its characteristics".

Let us first consider the medium of money to illustrate how a LOM works. Money enhanced trade and commerce, obsolesced the barter system, retrieved the conspicuous consumption of hunting and gathering societies, and flipped into credit, a complementary form.

LOM apply with equal validity to all the artifacts of humankind, whether they are communication media, technological inventions, or scientific laws or principles. The term "obsolescence" used in the LOMs is consistent with McLuhan's notion that obsolescence does not mean the end of something but the beginning of something new. The obsolescence of the barter system by money does not mean that the use of cash forever ended the straight exchange of commodities. It does mean, however, that cash transactions became the dominant mode of commercial exchange. Similarly, the obsolescence of the horse and carriage did not end this mode of transportation forever; it is still used as a tourist attraction in large cities, as a mode of transport in many third-world centers, or among certain cultural groups such as the Amish. The automobile, however, has come to dominate traffic patterns. Print did not obsolesce handwritten documents, but handwritten documents are a small part of written documents. There are exceptions like the Jewish Torah, which must be handwritten if it is to be used for its oral reading in synagogues. Printed versions of the Torah exist that are used for study purposes or to follow the oral reading of the handwritten Torah. The codex book also obsolesced the scroll, and once again the Torah preserves this ancient medium.

Applying the Laws of Media to electric media results in the flip into information overload. Every new medium that arises is trying to cope with the information overload created by the media that

preceded it. McLuhan explained this effect in a radio interview in 1967 on the Canadian Broadcasting Company: "One of the effects of living with electric information is that we live habitually in a state of information overload. There's always more than you can cope with".

There is one caveat about the term laws in McLuhan's Laws of Media, and that is that LOMs are not strictly scientific laws. This is because a LOM does not make unique predictions as to what is retrieved from the past or what complementary form the technology or medium will flip into. The LOM is more of an exploratory tool or probe that provides insights into the effects of a new medium or technology and its possible evolution, and there is often more than one correct answer to the four questions posed by the LOM. The LOM is a generalization or law in that all media obey the same general pattern of enhancement, obsolescence, retrieval, and flip into a complementary form or forms.

The Laws of Media (LOM) make use of the figure/ground relationship in which the meaning of a figure only becomes apparent when it is examined in the context of the ground or environment in which it operates. The medium that enhances some human function and is the subject of the first law is the figure; the medium that is obsolesced in the second law and the medium that is retrieved in the third law are the ground; and the new medium into which the medium of the first law flips into in the fourth law is a new figure. So, the LOM tetrad has two figures and two grounds.

3. Laws of Media Environments (LOME)

Zeynep Merve Iseri, in a remark in Logan's McLuhan seminar course at the University of St. Michael's College, pointed out that the focus of the LOM is on artifacts. She also suggested that the environments in which each of the LOM artifacts operate also undergo a process of enhancement, obsolescence, retrieval, and reversal similar to the one of the artifacts of the tetrad. McLuhan formulated his tetrads in terms of human artifacts. The pronoun "it" in the two versions of the LOM above refers to an artifact that is the focus of the LOM. It will be useful for our discussion to label this artifact as Artifact 1. We will also call the obsolesced artifact: Artifact 2, the retrieved artifact: Artifact 3, and the artifact that Artifact 1 flips into: Artifact 4 (see Table 2).

Table 2. LOM expressed in terms of Artifacts 1–4.

•	The answer to question (a) "What does it enhance?" is some human function that the artifact that we will call Artifact 1 enhances.
•	The answer to question (b) "What does it obsolesce?" is an artifact that we will call Artifact 2.
•	The answer to question (c) "What does it retrieve?" is an artifact that we will call Artifact 3.
•	The answer to question (d) "What does it flip into when pushed to the limits of its potential?" is again an artifact that we will call this time Artifact 4.

The chronological order of the emergence of the artifacts in a cycle of the LOM is A_3 (the retrieved artifact); then A_2 (the obsolesced artifact); then A_1 (the artifact that is the subject of the LOM that enhances some human function and which is also the flipped artifact of the previous cycle or LOM); and then A_4 (which is the artifact A_1 flips into and is also the subject of the next LOM). The previous cycle, the current cycle, and the next cycle are part of an evolutionary chain which we will illustrate in Figure 1 for the communication media of speech, ideographic writing, alphabetic writing, the printing press, computers, the Internet, the Web, and social media.

The new artifact (A_4) that emerges from the flip of A_1 acts as an anti-environment in the McLuhan sense, because it makes us aware of the ground or environment of artifact A_1, which we were not aware of before A_1 flipped into A_4.

The focus of the LOM is strictly concerned with four artifacts: the one that enhances some human function (Artifact 1), the one that is obsolesced (Artifact 2), the one that is retrieved (Artifact 3), and the one that emerges from the reversal (Artifact 4), which becomes Artifact 1 of the next LOM. Nothing is said about the environment or ground that these artifacts create, nor about the impact on the users of

these artifacts. The environments in which the artifacts operate are also transformed as the artifacts evolve from one LOM to another.

In addition to enhancing some human function, Artifact 1 creates a new environment, namely its ground. It also obsolesces the ground of Artifact 2 that was obsolesced, and retrieves the ground of Artifact 3 that was retrieved. Finally, when Artifact 1 is pushed to the limits of its potential, it flips into Artifact 4 and the ground of Artifact 1 flips into the ground of Artifact 4. Similarly, the ground of Artifact 2 is obsolesced, and the ground of Artifact 3 is retrieved. Thus, we can formulate four more laws of media environments, which we will call Laws of Media Environments (LOME) for the environments or grounds of the four artifacts of our original tetrad. They are as described in Table 3:

Table 3. The Laws of Media Environments (LOME).

• LOME 1. Every medium or technology (Artifact 1) creates a new environment or ground.
• LOME 2. In doing so, it obsolesces the environment or ground of the former medium that was obsolesced, Artifact 2.
• LOME 3. In addition to creating the ground of Artifact 1, it also retrieves some elements of the ground or environment of the retrieved Artifact 3.
• LOME 4. When pushed far enough, the new medium or technology reverses or flips into a complementary form, and its ground (the ground or environment of Artifact 1) also reverses or flips into the new ground or environment, that of Artifact 4.

According to LOME 4, when pushed far enough, not only the artifact flips or reverses into a complementary form, but the ground or the environment of the artifact also flips into a complementary ground or environment. The Laws of Media Environments take into account the changes to the environment that the artifacts create. However, neither the LOM nor the LOME tells us about the users of the artifacts.

4. Laws of Media Users (LOMU)

If we look at the big frame of LOM and our LOME, there is—in addition to the artifacts of the LOM and the environments of the LOM—a third component in our theory, namely the users of the artifacts. The evolution of the artifacts and their environments also entails the evolution of the users of the artifacts. The artifacts, their grounds, and their users are intimately connected, and their interaction with each other is a never-ending process. First, a medium needs a user working in an environment to be created. The medium and the user together share the same environment, which they shape by their transformations. Then, together they create new environments. Users continue to create new media that suit the new environment, and in return the user is transformed to conform to the new medium.

In Understanding Media, McLuhan explained this interactive change between the user and the media with the following words:

> To behold, use, or perceive any extension of ourselves in technological forms is necessarily to embrace it. By continuously embracing technologies, we relate ourselves to them as servo-mechanisms. [6] (p. 46)

We will therefore formulate four more laws to include the users of the artifacts of the LOM, which we will call the Laws of Media User (LOMU). We shall take into account the environment's effect on the user as well as McLuhan's idea of the user as the servo-mechanism of an artifact or medium (see Table 4).

Table 4. Laws of Media Users (LOMU).

• LOMU 1. Users of the new medium (Artifact 1) become their servomechanisms.
• LOMU 2. They are no longer the servomechanisms of the obsolesced Artifact 2.
• LOMU 3. In addition to being the servomechanisms of Artifact 1, the users retrieve some patterns of usage of Artifact 3.
• LOMU 4. When pushed far enough, the new medium or technology reverses or flips into a complementary form, and its users flip from the servomechanisms of Artifact 1 into the servomechanisms of Artifact 4.

5. The Structure of the Three Sets of Media Laws: The LOM, LOME, and LOMU

The three sets of laws LOM (in Table 5 we will denote LOM as LOMA for convenience, where A stands for artifact), LOME, and LOMU follow a similar pattern of development, transition, reminiscence, and emergence, respectively for Laws 1–4 as shown in Table 5.

Table 5. The structure of LOM A, E, and U.

• LOM (A, E, U) 1: Development (Creation of a new artifact, environment, or user)
• LOM (A, E, U) 2: Transition (Obsolescence of an old artifact, environment, or user)
• LOM (A, E, U) 3: Reminiscence (Retrieval of an even older artifact, environment, or user)
• LOM (A, E, U) 4: Emergence (Creation of the next flipped artifact, environment, or user)

6. The Spiral Structure of the Linked LOM for the Communication Media of Figure 1

We consider in Figure 1 below a set of linked LOM that represents the evolutionary chain or transition from speech, to ideographic writing, to alphabetic writing, to the printing press, to computers, to the Internet, to the Web, and to social media. The individual LOM are linked together in a spiral-like structure. The flip of a prior medium results in the emergence of the next medium in the chain. The structure is spiral-like in that each medium eventually flips into a new medium—its complementary form in the future—and although the enhancement phase of the medium, the obsolescence of the older medium, and the retrieval of the still older medium all occur at the same time in the present, the medium that is obsolesced emerged in the past, and the medium that is retrieved emerged in an even more distant past [4]. The timeline for the emergence of the four artifacts in the LOM is as follows: the retrieved artifact (Artifact 3) is the oldest, then comes the obsolesced artifact (Artifact 2), then comes the artifact that enhances some function (Artifact 1), and finally there comes the flipped artifact (Artifact 4).

Let us illustrate this idea by considering the LOM for the alphabet (Artifact 1), which emerged in approximately 1500 BCE, enhancing codification, obsolescing ideographic writing (Artifact 2) that emerged in 3000 BCE, and retrieving orality (Artifact 3) that emerged in 50–100,000 BCE in that the letters of the alphabet code the phonemes of speech. The alphabet then flips into movable type print (Artifact 4) starting in 1450 CE. The enhancement, obsolescence, and the retrieval all happen at the outset of the arrival of the alphabet or shortly thereafter, but the flip into print takes 3000 years. The transitions then accelerate, as the flip from print to computers takes 500 years, the flip to the Internet takes 24 years, the flip to the Web takes 21 years, and the flip to social media takes 5 years.

ARTIFACT/ MEDIA Date Emerged	Speech 50,000 to 100,000 BC	Pictographic Writing 3000 BC	Alphabet 1500 BC	Print BLOCK 600 BC MOVABLE 1450	Computers 1945	Internet 1969	WWW 1990	Social Media 1995
Enhancement	Human Interaction	Memory and Codification	Codification	Dissemination of alphabetic communication	Production of Information	Dissemination of information	Internet with graphical displays	Social Networking
Obsolescence	Mimesis	Speech/ Oral communication	Pictographic Writing	Hand written—Manuscript	Hard Copy Information	Stand alone computers	Text only messaging on Internet	E-mail
Retrieval	Co-operation	History, Experience, Heroic deeds	Speech/ Oral communication	Greek Culture through Renaissance	Alphabet	Community	Billboards, televisions and movies	Insularity of a small village
Flip	**Pictographic Writing**	**Alphabet**	**Print**	**Computing**	**Internet**	**World Wide Web**	**Social Media**	**Cyber bullying and gossip mongering**

Figure 1. LOM for eight communication media.

7. LOMU and LOME Explained

7.1. LOMU (See Table 6)

Table 6. The users of the eight media in Figure 1.

For each cycle, we list the medium and indicate the type of users of that medium:
• Cycle 1 (SPEECH): Orator, poet, storyteller, every day conversation
• Cycle 2 (PICTOGRAPHIC WRITING): Government scribes
• Cycle 3 (ALPHABET): Religious texts, philosophical texts, histories
• Cycle 4 (PRINT): Individual authors, Renaissance scholars
• Cycle 5 (COMPUTING): Computer literate users (Computer as the extension of memory)
• Cycle 6 (INTERNET): Scientists and military
• Cycle 7 (WORLD WIDE WEB) Global village citizens (Crowd sourcing and sharing)
• Cycle 8 (SOCIAL MEDIA) Social cliques

7.2. LOME

When an existing artifact flips into another new artifact, the user of the new medium adopts new skills to conform to the demands of the new artifact. In addition to this, a new environment emerges. Figure 1 and Table 6 document the flips of the communication media and the parallel flips of their users. Now we will explain how both the artifact and its users affect the environment that they create and in which they operate:

1. When oral communication flipped into written communication, an environment of record keeping of commercial transactions and government edicts and laws emerged.
2. When pictographic writing flipped into alphabetic writing, an environment of abstract thinking emerged in terms of analytical Greek philosophy and Hebraic ethical monotheism.
3. When alphabetic writing flipped into movable type printing press, an environment of increased scholarship and science emerged, resulting in the Renaissance, the scientific revolution, and new genres of literature.
4. When print flipped into computing, an environment of automation and the increased organization and flow of information emerged.
5. When computing flipped into the Internet, an environment of global networking emerged.
6. When the Internet flipped into the World Wide Web, an environment of disintermediation and do-it-yourself culture emerged.
7. When the World Wide Web flipped into social media, an environment of social networking among cliques emerged.

When pushed far enough, the old artifact or medium flips into a new one with a parallel flip of the practices of its users and a parallel flip of the environment in which the artifacts and its users operated. In other words, there is a cascade of flips of the artifact (in the LOM), their users (in the LOMU), and the environment in which the artifacts and users operate (in the LOME). In Figure 1, we documented the evolution of communication media and the cascades of flips associated with their evolution.

As communication media evolved, the community of users increased, and hence the environment in which these media operated increased as well. Oral communication allowed for communication only among those in earshot. Written communication allowed for communication at a distance. The printing press facilitated the creation of multiple copies of a written communication, greatly expanding the reach of that written communication. Computing, the Internet, and the Web each in its turn increased the number of individuals that could be reached by written communication. The Web also expanded

the different kinds of audio-visual media that could be transmitted in addition to text. As demonstrated in Figure 1, as one moves from left to right, every new medium is a more advanced form compared to the previous medium, and it improves the communication among people and expands their reach. As the circle of users widens, so too does the environment in which each of these media operate.

The LOM cycle of enhancement, obsolescence, retrieval, and flip of a given artifact represents a continuous cyclical structure which connects the given artifact to the artifact that flipped into it and the artifact into which it will flip, representing a spiral structure. Figure 1 demonstrates this structure, in which every artifact is connected to its past and its future. Figure 1 also reveals how the flip from one artifact to another has occurred over a shorter and shorter time frame. Another insight that emerges from the table is that the reach of each new medium increases. Even though the reach of media becomes global with the emergence of the Internet, both the Web and social media increased the reach of the Internet because they involved greater numbers of participants. The smart phone (not listed in the Table)—a device that houses the Web and social media—increased the use of these two media because smart phone users are in constant contact with the Internet. The idea of the Global Village, which McLuhan introduced before the arrival of the Internet became an unassailable fact with the actual arrival of the Internet. Now, with smart phones, their users can carry the Global Village around in their pockets or their pocketbooks.

Each step along the way in the evolution of communication detailed in Figure 1 represents an Internet-like linking of media users; i.e., a lower case 'i' internet in the sense that it connects human agents and allows them to share information and communicate with each other as does today's Internet. The myths of the oral tradition according to Havelock (1963) [7] served as a "tribal encyclopedia". The Hammurabic code of written laws was the "internet" of its days, and extending this metaphor, the stone stele upon which the code was written was the "Web" of its days, as were the hieroglyphic writings on the monuments of Ancient Egypt. The printing press was the "Internet" of its day, which allowed the written communication of Copernicus, Galileo, Brahe, Kepler, and Newton, and contributed to the realization of the scientific revolution. The written record provided by the printing press also allowed the accurate storage of scientific data, which contributed to the scientific revolution. Soon after the arrival of computing, ways were found to locally network users connected to the same server, creating a local internet housed on that server.

8. Conclusions

We have shown that McLuhan's Laws of Media (which trace the evolution of media) can be extended to include similar sets of laws for the environments that these media create and in which they operate, as well as for the effects of these media on their users and the users' effects in turn on the media. One of the effects of the media on the users is that they find new ways to carry out the same function, and thereby create new media. It is by taking into account the laws of media environments and the laws of media users that we understand the dynamics of media evolution as described in Figure 1.

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