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The Spiral Structure of Marshall McLuhan's Thinking

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Abstract: We examine the spiral structure of the thinking and the work of Marshall McLuhan, which we believe will provide a new way of viewing McLuhan's work. In particular, we believe that the way he reversed figure and ground, reversed content and medium, reversed cause and effect, and the relationship he established between the content of a new medium and the older media it obsolesced all contain a spiral structure going back and forth in time. Finally, the time structure of his Laws of Media in which a new medium obsolesced an older medium, while retrieving an even older medium and then when pushed far enough flipped into a still newer medium has the feeling of a spiral. We will also examine the spiral structure of the thinking and work of those thinkers and artists that most influenced McLuhan such as Vico, Hegel, Marx, Freud, Joyce, TS Eliot, Wyndham Lewis and the Vorticism movement.

Keywords: spiral; McLuhan; reversal; figure/ground; Laws of Media; media; environment/anti-environment; cause; effect

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> In Australian Aboriginal and Maori literature, the circle and the spiral are the symbolic metaphors for a never-ending journey of discovery and rediscovery.
>
> —Eva Knudson (2004)

> Cognition is re-cognition.
>
> —McLuhan

> Time present and time past—Are both perhaps present in time future—And time future contained in time past—from Burnt Norton
>
> —T.S. Eliot

1. Introduction

We will make the bold assertion in this article that McLuhan's philosophy of media ecology has at its roots the spiral structure. We will further suggest that many of the artists, scholars and philosophers that had a significant influence on his thinking made use of spiral structures in their thinking as well.

The spiral structure is a ubiquitous form and universal that one finds in nature in physical structures like whirlpools here on Earth and galaxies throughout the universe and in biological life forms such as the DNA in the genetic makeup of all living things and in the patterns of biological forms like the florets of a sunflower, the petals of many flower, the shell of the Nautilus mollusk and the branches of trees. The spiral structure is also found in the following domains of human study and cultural expression: media, the evolution of technology, literature, history, philosophy, and art, all of which were the subjects of McLuhan's study and influenced his brand of scholarship. The spiral structure is constantly reversing direction in one plane and advancing or retreating in the

dimension orthogonal to that plane. The spiral involves both progression and regression as well as feedforward and feedback. In most cases the overall trend of the spiral structure is one of increase and growth and sometimes an increase in complexity. There are situations, however when the spiral structure can represent a decline. The dynamics of the spiral is that of a cycle in the spiral returns to its starting point but in the meantime there has been growth or decline. The word spiral derives from Middle French circa 1550 which in turn derives from Medieval Latin spiralis "winding around a fixed center, coiling" (mid-13c.), and then from Latin spira "a coil, fold, twist, spiral," and finally from Greek speira "winding, a coil, twist, wreath, anything wound or coiled," from the base sper- 'to turn, twist' (http://www.etymonline.com/index.php?term=spiral [1]).

We believe that a deeper understanding of McLuhan's life work and philosophy emerges by looking at the role of spiral structures in his understanding of media and culture. We are not suggesting that the spiral was foremost in his thinking but we believe that the archetypal structure of the spiral provides a frame in which a new view of McLuhan's work emerges and one that encompasses his reversals of figure and ground and that of cause and effect as well as the retrieval and flip in his Laws of Media (LOM). McLuhan always claimed that he had no theory but merely observed what people do and what were the effects of the tools, artifacts and technologies that mediated their interaction with the physical world, their social, political and economic world and their psychic and cultural world.

> I have no theories whatever about anything. I make observations by way of discovering contours, lines of force and pressures. I satirize at all times and my hyperboles are as nothing compared to the events to which they refer (Letter to William Kuhns 6 December 1971—Molinaro, McLuhan & Toye 1987 [2] p. 448).

What is also interesting about his letter to Kuhns is that McLuhan reinforces his claim that he does not start with a theory and that he admits explicitly that he makes use of satire.

The spiral structure of McLuhan's philosophical thought, we suggest, served as a stand-in for his lack of a formal theory. This hypothesis, in the spirit of McLuhan's work, is a probe and it may even be true or at least half true, which according to him was a lot of truth. He joked on a number of occasions: "There is a lot of truth in a half-truth (www.mediaeducationcentre.eu/eng/?page_id=442 [3])."

We will first examine the spiral structure of the thinking and work of those scholars, philosophers and artists that most influenced McLuhan. We will then examine the spiral structure of the thinking and work of Marshall McLuhan himself, which we believe will provide a new way of viewing McLuhan's work. In particular, we will review the way he reversed figure and ground, content and medium, and cause and effect; the relationship he established between the content of a new medium and the older media it obsolesced; and the way time is structured of his Laws of Media (McLuhan 1975, McLuhan 1977 and McLuhan, M & E 1988 [4–6]).

2. Sources of McLuhan's Spiral Thinking

McLuhan's intellectual roots can be found in a number of other scholars, philosophers, literary figures and artists who embraced a spiral structure in their thinking and artistic productions including Giambattista Vico, Johann Fitche, Georg Hegel, Karl Marx, James Joyce, TS Eliot, Edgar Alan Poe, members of the Vorticism movement including Wyndham Lewis and Ezra Pound, Sigmund Freud, and I.A. Richards—McLuhan's professor in Cambridge where he did his PhD studies.

But what exactly do we mean by the spiral structure of a philosopher's thoughts or an artist's artistic output? The spiral structure of physical objects and biological phenomena is rather easy to identify. The spiral form of physical objects and biological structures represent a going back and forth in one dimension or one plane yet advancing in another dimension. The application of the spiral form to thought processes, scholarship, and the structure of artistic and literary productions is metaphorical but yet very descriptive. The use of this metaphor provides two insights. It ties together the work of Marshall McLuhan with those that influenced his thinking and it provides another lens with which to

view his scholarly output and his unique understanding of media and their effects. The spiral is a key that opens a door to a new perspective of McLuhan's work and his philosophy of media ecology.

The spiral structure of purely physical and biological phenomena is primarily played out in physical space, whereas the spiral structures of philosophy, culture, human thought, scholarship and artistic expression involve the time dimension. The movement back and forth in these domains entails the transitions from the present back to the past or forward into the future and vice-versa from the past and the future to the present. The spiral structure unites the past, the present, and the future. According to McLuhan, "We live in post-history in the sense that all pasts that ever were are now present to our consciousness and that all the futures that will be are here now." He also suggested that, "the future of the future is the present." Let us now examine the past with which McLuhan was familiar by exploring his acquaintance with the spiral structures of the philosophers, scholars and artists who directly influenced his spiral thought patterns.

3. Marshall McLuhan's Intellectual Roots

The foremost influence on McLuhan's interest with spiral structure was Giambattista Vico and James Joyce. It was probably Joyce that introduced the literary critic McLuhan to Vico's spiral notion of *corso* and *ricorso*. Giambattista Vico (1668–1744), an Italian grammarian, historian, political philosopher, jurist and author of The New Science (Scienza Nuova) developed a cyclic philosophy of history based on a period of advancement followed by a regression back to a more primitive stage, which Vico described as *corso* and *ricorso*. McLuhan pays homage to Vico and acknowledges his influence by titling the project that summed up his life's work: *Laws of Media: The New Science* (McLuhan, M & E 1988 [6]).

The influence of Vico on McLuhan and the spiral form of McLuhan's scholarship has been described by Sean Cubit (2005) [7] who wrote:

> In the work of the best-known among media historians, Marshall McLuhan (1911–1980), the narrative of evolution has an interestingly spiral dimension, returning in heightened form to its oral origin in the figure of the electronic "global village"... A noted Joyce scholar, McLuhan may have derived the spiral form of history from Joyce's source, Giambattista Vico (1688–1744). Be that as it may, he shares with other teleological media historians a mystical belief in eternal return or in millenarian thought that responds to a heartfelt longing for historical symmetry. McLuhan's spiral might be seen as syncretic, even atavistic.

Giambattista Vico's philosophy of history involved the notion of a *ricorso* or return. According to Vico a society evolves to a high point in its development, its *corso*, and then regresses back to or returns to a more primitive time in its history, which he refers to as a *ricorso*. After the *ricorso* the society once again embarks on a new *corso* and progresses to a more advanced level of development to once again experience a *ricorso* or return. The spiral structure of history of *corso* followed by *ricorso* followed by another cycle of *corso* and *ricorso* and so on and so forth is characteristic of Vico philosophy of history. For Vico history has a spiral structure of recurring cycles of development and collapse. The cycle consists of three ages. The first and most primitive is the age of gods. The second age is the age of heroes, in which there is constant conflict between the rulers and the governed. The third age is the age of the people in which democracy emerges but which eventually collapses because of corruption and returns to the age of gods once again.

James Joyce structures *Finnegan's Wake* using Vico's three ages into his narrative. As McLuhan observed, "The whole of *Finnegan's Wake* is a *ricorso*, a scrubbing purgation of private and corporate experience in the 'dreaming back'." Joyce adds a fourth age to the cycle in the Wake, the age of chaos, which comes immediately after the democratic age of humans and just before the *ricorso*. Another parallel of Vico in Joyce is that both make use of etymology and rhetoric, and the significance they attach to myth. These parallels are also characteristic of McLuhan's scholarship.

McLuhan came to Vico through his analysis of James Joyce and in particular Finnegan's Wake as this excerpt from *From Cliché to Archetype*.

> Vico, in his *Scienza Nuova*, which Joyce found so useful, stresses that all ancient fables and tales are really records of moments of technical breakthrough to which the ancients assigned the status and name of a god, but Vico also insisted that the effects of such breakthroughs are recorded in new "wrunes" (line 36), writing into patterns of human speech and sensibility. Vico, like Joyce, insists that new technology is not added to culture, but it "ruins" whole societies, tossing them onto the middenhide or heap, whence they are forever being retrieved and refurbished by succeeding generations (McLuhan and Watson 2011) [8] (p. 102).

The influence of Vico directly on McLuhan has been described by Pietropaolo (1995) [9]:

> McLuhan and Vico share deep roots in the humanist tradition, from which they derive the delimitation of their chief objects of research, and both adhere without fail to a comparative approach aimed at the discovery of shared form in seemingly unrelated or distant phenomena. Thus they identify large patterns of civilization and boldly illuminate them by overstepping the conceptual boundaries of individual disciplines and propounding instead all-inclusive science of men and communities. What is more, Vico was himself part of the tradition on which McLuhan relied in fashioning his own philosophical orientation and was therefore one of his theoretical sources. The paradigmatic presence of Vico is at times so conspicuous in McLuhan that a full exploration of his Vichianism, including that part of it, which McLuhan did not make explicit, would be a monograph requiring no justification whatsoever.

Another influence on McLuhan with a Vichian-like notion of *ricorso* was Lewis Mumford, a critic of architecture, industrialization and urban centres who believed the modern city did not serve the needs of its inhabitants. He advocated a return or *ricorso* to the ideal of medieval city.

Like Vico, McLuhan believed that history could be used as a laboratory to understand the nature of human society. He was influenced by another historian, an economic one in the person of Harold Innis. In the Introduction to the second edition of the *Empire and Communication* McLuhan (1972) [10] wrote:

> [Innis] had discovered a means of using historical situations as a lab in which to test the character of technology in the shaping of cultures. Innis taught us how to use the bias of culture and communication as an instrument of research. By directing attention to the bias or distorting power of the dominant imagery and technology of any culture, he showed us how to understand cultures (McLuhan 1972) [10] (p. xi).

McLuhan felt that an understanding of history was essential for understanding the future and the impact of new technologies. He often used the metaphor of the rearview mirror; a device by which we are able to determine what is about to overtake us from our past. Furthermore, according to McLuhan, history is not to be regarded as a series of events but rather as a dynamic process with a discernible pattern, which repeats itself from culture to culture and from technology to technology.

A number of authors have suggested that McLuhan employed a dialectical approach to understanding historical processes. Grosswiler (1996) [11] in an article entitled The Dialectical Methods of Marshall McLuhan, Marxism, and Critical Theory argued that, "McLuhan employed a form of dialectical theory containing basic elements of dialectics developed by Hegel, Marx, and, later, his contemporaries at the Frankfurt School." In fact the dialectic method of thesis, antithesis and synthesis dates back to the work Johann Fitche. The influence of Fitche's triad of thesis, antithesis and synthesis can be felt in McLuhan's (McLuhan 1975, McLuhan 1977 and McLuhan, M & E 1988 [4–6]) Laws of Media in which an artifact enhance some human function, obsolesces a former way of doing it, retrieve something from the past and pushed far enough flips into its opposite or complementary form.

The enhancement element parallels thesis, obsolescence parallels antithesis and synthesis incorporates both retrieval and the flip.

In addition to the influence of philosophers and historians we must also look at some of the literary and artistic influences on McLuhan's spiral thinking as well. One of the key ideas of McLuhan is the notion that with electric information we live in all times at once. It is an idea that he found in the poetry of T. S. Eliot, particularly in the Burnt Norton quartet of The Four Quartets, which begins with these lines:

> Time present and time past.
>
> Are both perhaps present in time future.
>
> And time future contained in time past.
>
> If all time is eternally present.
>
> All time is unredeemable.
>
> What might have been is an abstraction.
>
> Remaining a perpetual possibility.
>
> Only in a world of speculation.
>
> What might have been and what has been.
>
> Point to one end, which is always present.
>
> Footfalls echo in the memory.
>
> Down the passage which we did not take.
>
> Towards the door we never opened.
>
> Into the rose-garden.

Another spiral image that influenced McLuhan came from the short story of Edgar Alan Poe entitled, A Descent into the Maelström. McLuhan (1951) [12] uses the image of Poe's maelström to describe in his preface to *The Mechanical Bride: Folklore of Industrial Man* the way the modern recipients of advertising can protect themselves from its insidious effects.

> Poe's sailor saved himself by studying the action of the whirlpool and by cooperating with it. The present book likewise makes few attempts to attack the very considerable currents and pressures set up around us today by the mechanical agencies of the press, radio, movies, and advertising. It does attempt to set the reader at the centre of the revolving picture created by these affairs where he may observe the action that is in progress and in which everybody is involved. From the analysis of that action, it is hoped, many individual strategies may suggest themselves.

McLuhan made use of the maelstrom image throughout his career. Here is an excerpt from *Man and Media*, the last taped talk he gave in 1979 shortly before the stroke that ended his career.

> Our natural responses to media and to technology are irrelevant . . . we cannot trust our instincts or our natural physical responses to new things. They will destroy us. How are we to bypass or offset merely physical response to new technology and new environments created by new technologies?
>
> This problem has not been raised by anybody, even though we have to live with it every day. Edgar Allan Poe's story "The Descent into the Maelstrom" had tremendous influence on nineteenth-century poets and symbolists such as Baudelaire, Flaubert, and others. In this story, Poe imagines the situation in which a sailor, who has gone out on a fishing expedition, finds himself caught in a huge maelstrom or whirlpool. He sees that his boat will be sucked

> down into this thing. He begins to study the action of the maelstrom and observes that some things disappear and some things reappear. By studying those things that reappear and attaching himself to one of them, he saves himself. Pattern recognition in the midst of a huge, overwhelming, destructive force is the way out of the maelstrom. The huge vortices of energy created by our media present us with similar possibilities of evasion of the consequences of destruction. By studying the pattern of the effects of this huge vortex of energy in which we are involved, it may be possible to program a strategy of evasion and survival.

Another influence of the spiral structure on McLuhan was his association with Wyndham Lewis and Ezra Pound, two members of the Vorticism movement.

> Vorticism might be described as visual energy . . . It involves creating layers within works, linking time and space, and basically sending the viewer or reader on a journey into a vortex. The best way to describe the "vortex" in Vorticism is by using the analogy of bifurcation points. When one places a pot of water and applies heat, the visible vortex is the point at which hot and cold clash to create change. When one pulls the plug from a bath tub, the point at which the surface tension breaks results in a vortex. It's the moment of change. Just like water in a draining tub, eventually the change runs its course and ends, which Vorticism did (https://peaceandwarpoetics.wikispaces.com/vorticism [13]).

McLuhan used the notion of vortices to describe media as "living vortices of power creating hidden environments (and effects) that act abrasively and destructively on older forms of culture (McLuhan 1972) [10] (p. v)."

McLuhan makes use of the metaphor of vortex to formulate his notion of the spiral structure of the reversal of cause and effect:

> The study of effects has lately driven me to the study of causality, where I have been forced to observe that most of the effects of any innovation occur before the actual innovation itself. In a word, a vortex of effects tends, in time, to become the innovation. It is because human affairs have been pushed into pure process by electronic technology that effects can precede causes. (Letter to Muriel Bradbrook 5 November 1971 National Archives of Canada McLuhan Collection [14]).

McLuhan also connects vortices and spirals: "The hidden borders in men's minds are the great vortices of energy and power that can erupt and spiral anywhere. (McLuhan 1972) [10]".

4. Understanding McLuhan in Terms of Spiral Structures

We will suggest in the remainder of this paper that a deeper understanding of Marshall McLuhan contribution to media studies and his Laws of Media (LOM) emerges by considering the spiral structure of McLuhan's thinking and specifically his LOM. This connection of the LOM and spirality was hinted at by Paul Levinson (2001) [15] in his book *Digital McLuhan*,

> What radio obsolesces—visuality—television retrieves. And in so doing, television—what radio has flipped into—obsolesces the purely acoustic radio. There is a circularity of sorts here, which led me to term this ongoing movement of media "tetradic wheels of evolution." But actually . . . there is a real movement forward in this process—it is not just a circle—and so it might better be termed a spiral.

Consideration of the spiral structure of McLuhan's thinking does more than just describe the LOM. It also throws light on the mystery of the McLuhan's success on two levels. Firstly, he did not work from a theoretical base yet he seems to have predicted or foreshadowed almost all of the technological developments of the digital age in this our Global Village. Something else allowed him to peer into the future, which we claim was the spiral structure of his thought patterns.

A second mystery requiring an explanation is his many self-contradictory remarks. We believe and hope to demonstrate that these remarks, which appear to be contradictory, actually represent the back and forth sides of the spiral structure of his thought processes in which by juxtaposing seemingly contradictory positions new insights emerge. We are not suggesting that the spiral was foremost in McLuhan's thinking but rather that his propensity to consider the reversals of 1. Cause and effect; 2. Figure and ground; 3. Cliché and archetype and 4. His use of the flip or reversal in his fourth law in his Laws of Media (LOM) reveals a pattern in his thought processes that resembles the universal archetypal structure of the spiral.

5. McLuhan Use of the Spiral Image in His Writings

We begin this probe by first collecting the many uses McLuhan made of the spiral image or structure in his writings. We have already cited his use of the image of the spiral form of Poe's maelström in the Preface to *The Mechanical Bride* and the flip of the fourth law of the LOM. We next consider an essay he wrote about the poem Four Quartets by T.S. Eliot, one of the poets who had a major influence on him. McLuhan's (1968) [16] title of the essay "Rhetorical Spirals in Four Quartets" tells it all. In the essay McLuhan analyzes the four poems in terms of the five canons of rhetoric: invention, arrangement, style, memory and delivery. He then goes on to examine the Quartets in terms of the four levels of Biblical exegesis, i.e., the literal, moral, allegorical, and eschatological meanings of scripture. He also linked the Four Quartets to the spiral of the seasons suggesting Burnt Norton, East Coker, Dry Salvages and Little Gidding were associated respectively with autumn, summer, spring and winter.

In *The Global Village: Transformations in World Life and Media in the 21st Century* McLuhan and Powers make explicit use of the spiral structure to describe the effects of the LOM or tetrad.

> The tetrad as a right-hemisphere visualization, helps us to see both figure and ground at a time when the latent effects of the mechanical age tend to obscure the ground subliminally. Its chief is that it raises the hidden ground to visibility enabling the analyst to perceive the double action of the visual (left hemisphere) and the acoustic (right hemisphere) in the life of the artifact or the idea. As such, the tetrad performs the function of myth in that it compresses past, present, and future into one through the power of simultaneity. The tetrad illumines the borderline between acoustic and visual space as an arena of spiraling repetition and replay, both of input and feedback, interlace and interface in the area of imploded circle of rebirth and metamorphosis.

We shall return to a more in-depth discussion of the tetrad or LOM, which demonstrates par excellent, the spiral structure of McLuhan's thought processes. But for now we return to his explicit use of the notion of a spiral. In *Understanding Media* McLuhan (1964) [17] (p. 26) links the spiral structure of oral culture thought patterns with the similar concentric spiral pattern of the electric age as exemplified by Frank Lloyd Wright design of the Guggenheim Art Gallery:

> The Hebrew and Eastern mode of thought tackles problem and resolution, at the outset of a discussion, in a way typical of oral societies in general. The entire message is then traced and retraced, again and again, on the rounds of a concentric spiral with seeming redundancy. One can stop anywhere after the first few sentences and have the full message, if one is prepared to "dig" it. This kind of plan seems to have inspired Frank Lloyd Wright in designing the Guggenheim Art Gallery on a spiral, concentric basis. It is a redundant form inevitable to the electric age, in which the concentric pattern is imposed by the instant quality, and overlay in depth, of electric speed. But the concentric with its endless intersection of planes is necessary for insight. In fact, it is the technique of insight, and as such is necessary for media study, since no medium has its meaning or existence alone, but only in constant interplay with other media.

The next foray into McLuhan's explicit use of the notion of the spiral comes from his collaboration with the visual artist and filmmaker Sorel Etrog, who created an experimental film entitled *Spiral*. McLuhan and Etrog collaborated in the book *Excerpts from the Film Spiral by Sorel Etrog* with text and notes by Marshall McLuhan where McLuhan described the film in the following way: In the film, *Spiral*, the ubiquitous and moving centre intensifies awareness of the fragility and transience of existence . . . In *Spiral* duration is measured or fragmented. Chronological time yields to time as spaced-out moments of intensity . . . Everywhere in Spiral there is visually portrayed the labyrinth of the creative process." The project arose as a result of a screening of the film in one of McLuhan's classes after which McLuhan suggested that they create a book using stills from the film to which McLuhan would add appropriate text using lines of poetry from Eliot, Joyce and Yeats.

6. The Implicit Use of Spiral Structures in the Thought Processes and Scholarship of Marshall McLuhan

In the last section we reviewed McLuhan's explicit use of the spiral in his writings. We now turn to the spiral structure of his thought patterns and his approach to his studies of media and their effects. Like the spiral form that proceeds in one direction and eventually reverses direction moving back and forth yet at the same time advancing in another dimension McLuhan's thought patterns involve flips, reversals and contradictions yet somehow new insights emerge from this process. McLuhan is constantly probing by trying out ideas even ideas that seem to contradict each other, but even here defying logic, new insights emerge. Here is a set of his contradictory one-liners in which he takes his own ideas and probes with a grain of salt.

I may be wrong, but I'm never in doubt.

I don't necessarily agree with everything I say.

I've always been careful never to predict anything that had not already happened.

I don't pretend to understand my stuff. After all, my writing is very difficult.

You don't like those ideas? I got others.

Do you think my fallacy is all wrong?

Next we present a group of one-liners in which he re-works a number of clichés providing new insights with his reversal of what is considered to be the figure and what is considered to be the ground. For instance, in the first example we present McLuhan reverses: 'necessity is the mother of invention,' which entails the idea that it is only after something is invented that it becomes a necessity.

Invention is the mother of necessities.

The story of modern America begins with the discovery of the white man by the Indians.

[A shift from the ground of the European settlers to that of the indigenous people of America.]

Only puny secrets need protection. Big discoveries are protected by public incredulity.

I wouldn't have seen it if I hadn't believed it.

Mysticism is just tomorrow's science dreamed today.

Paradox, which played such a key role in McLuhan's work, is another form of a flip or the back and forth structure of the spiral.

Paradox is the technique for seizing the conflicting aspects of any problem.

Paradox coalesces or telescopes various facets of a complex process in a single instant.

In addition to these paradoxical and contradictory one-liners there are plenty of examples where McLuhan argues for what seems like contradictory positions in different places in his writings. He flips from one position to another spiraling back and forth all the while advancing and generating insights.

7. McLuhan on Artists

He held the artist in high esteem when he wrote:

> *I think of art, at its most significant, as a DEW line, a Distant Early Warning system that can always be relied on to tell the old culture what is beginning to happen to it.*

The artist is the man in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time. He is the man of integral awareness.

> *The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception.*

McLuhan totally embraced and often quoted Wyndham Lewis's one-liner, "the artist is always engaged in writing a detailed history of the future because he is the only person aware of the nature of the present."

Like the structure of the spiral that goes back and forth but at the same time advances, McLuhan see the two sides of the contribution of the artist. The spiral structure appears in the feedforward and feedback of cybernetics and human culture. For McLuhan the artist provides the feedforward, by "writing a detailed history of the future" as Wyndham Lewis suggested. The inventors and engineers provide the feedback through the subliminal, counterintuitive effects of the technology they create.

8. Media as Extension of Man Yet Man as Their Servomechanisms

Another juxtaposition is the contrast of McLuhan's notion that technologies or media are extensions of man but yet he saw its users as extensions of their technology as they become the servomechanisms of their own extensions. He expressed this idea as follows, "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 (McLuhan 1964 [17] p. 46)." At first, technology serves as an extension of humankind serving our immediate needs but unbeknownst to us our tools slowly transform our environment and we become their servants or servomechanisms. Consider how the automobile has transformed our landscape especially in North America to suit the need of the automobile rather than the pedestrian.

9. The Figure and Ground Spiral

McLuhan's reversal of figure and ground is another spiral flip, which he expressed in the following excerpts from his writings,

> My writings baffle most people simply because I begin with ground and they begin with figure. I begin with *effects* and work round to the *causes*, whereas the conventional pattern is to start with a somewhat arbitrary selection of 'causes' and then try to match these with some of the effects. It is this haphazard matching process that leads to fragmentary superficiality. As for myself, I do not have a point of view, but simply work with the total situation as obvious *figures* against hidden *ground*. (Molinaro, McLuhan C, and Toye 1987) [2] (p. 478).

> The figure is what appears and the ground is always subliminal. Changes occur in the ground before they occur in the figure. We can project both figure and ground as images of the future using the ground as subplot of subliminal patterns and pressures and effects which actually come before the more or less final figures to which we normally direct our interest (http://imfpu.blogspot.com/2008/12/magritte.html [18] and also available in the McLuhan file at the Canadian National Archive in Ottawa).

> In all patterns, when the ground changes, the figure too is altered by the new interface (McLuhan, M., S. McLuhan & Staines 2003) [19] (p. 180).

A new medium or technology creates a new ground in which all the existing technologies operate and hence they are changed also.

> "A new medium is never an addition to an old one, nor does it leave the old one in peace. It never ceases to oppress the older media until it finds new shapes and positions for them (McLuhan, E. and Zingrone 1995) [20] (p. 278)."

10. The Environment and Anti-Environment Spiral

The reversal of figure and ground that we have just reviewed in the last section requires becoming aware of the ground, which is subliminal and hence is not always easy to identify. McLuhan suggests that in order to become aware of the ground or the environment one requires an anti-environment that only an artist or a scientist is capable of creating. In this process the environment that serves as the ground of the figure of an artifact or a service flips into a figure operating in the ground of the anti-environment.

> Any new technology, any extension or amplification of human faculties given material embodiment, tends to create a new environment ... It is in the interplay between the old and new environments that there is generated an innumerable series of problems and confusions ... It is useful to view all the arts and sciences as acting in the role of anti-environments that enable us to perceive the environment (McLuhan, E. and Zingrone 1995) [20] (p. 341).

In other words, it is the artist and/or the scientists by creating an anti-environment that allows us to perceive the new environment that is created by a new medium, which may be an artifact or a service. The anti-environment allows us to become aware of the environment that supports the new medium and not just the figure of that new medium as McLuhan (1970) [21] (p. 192) explains in Culture is Our Business:

> Since in any situation 10 percent of the events cause 90 percent, we ignore the 10 percent and are stunned by the 90 percent. Without an anti-environment, all environments are invisible. The role of the artist is to create anti-environments as a means of perception and adjustment. Hamlet's sleuth technique for coping with the hidden environment around him was that of the artist: "As I perchance hereafter shall think meet to put an antic disposition on"... (Act I, scene v).

One of McLuhan's favorite ways to describe our blindness to our environments was to point out that fish are unaware of the water they swim in. "One thing about which fish know exactly nothing is water, since they have no anti-environment which would enable them to perceive the element they live in (McLuhan, Fiore and Agel 1968) [22] (p. 175)."

The spiral structure is that of the content of a medium to the medium itself to the environment that the medium creates to the anti-environment that the artist or scientist creates that brings the subliminal environment/ground of the medium into our consciousness. McLuhan never used the image of a spiral to describe this process but we believe it is the appropriate structure to describe the twists and turns from content to medium to environment to anti-environment that the artist or scientist uses to bring the subliminal ground of the medium into view.

11. Cause and Effect Spiral

"Instead of asking which came first, the chicken or the egg, it suddenly seemed that a chicken was an egg's idea for getting more eggs" (McLuhan 1964) [17] (p. 12).

McLuhan (1964) [17] (p. 62) saw the creative process of both the inventor and the artist as working backwards from the effect they wanted to create to the cause that would lead to the desired effect.

> A. N. Whitehead, on the other hand, explained how the great discovery of the nineteenth century was the discovery of the technique of discovery. Namely, the technique of starting with the thing to be discovered and working back, step by step, as on an assembly line, to the point at which it is necessary to start in order to reach the desired object. In the arts this meant starting with the effect and then inventing a poem, painting, or building that would have just that effect and no other.

McLuhan explained how effects precede causes by showing how the effect of the telegraph was the cause of the telephone and the effect of the telegraph and the telephone was the cause of the phonograph.

> This revolutionary logic inherent in the electric age was made fairly clear in the early electric forms of telegraph and telephone that inspired the "talking machine." (McLuhan 1964) [17] (p. 279).

In the McLuhan approach, a medium or technology is studied by examining its effects not only on its immediate users but also on society as a whole. One of the ways of understanding the effects of a technology is to consider the changes that would take place if that technology suddenly disappeared. With McLuhan, the notion of a one-to-one correspondence between cause and effect gives way to a "total-field-theory" approach where one and the same cause may have a wide diversity of predictable and characteristic effects (McLuhan 1972 [10] p. ix). Rather than "matching one cause against another effect [Innis] went on making sense of the process released by the new structures of communication [10] (p. x)." Linear sequential cause and effect brought into doubt by Hume's skepticism and discounted as a principle of causality by quantum mechanics, is replaced by an interplay of causes and effects. McLuhan's work in this respect foreshadows complexity theory and emergence. The reversal of cause and effect is the technique of the artist who begins with the effect he or she wants to create in his or her audience and invents a work of art that achieves that end. The reversal of cause and effect is one of the consequences of electronically configured information patterns and the need for the cybernetic feedback and feedforward of information. The speedup of information flow requires planners to have complete knowledge of all possible ultimate effects, and hence the need for the reversal of cause and effect.

McLuhan deployed the reversal of cause and effect in his own analysis of understanding media and technology. He always started with the actual effects of media that he studied and not the mechanics of the technology that created them. He studied both the unintended and intended effects. The intended effects tend to be the services of the medium. The unintended effects are most often its disservices but as we have seen with the telegraph that is not always the case. One of the unintended effects of the telegraph was the telephone. And an unintended effect of the telegraph and the telephone was the phonograph.

12. Service/Disservice

Another reversal of McLuhan is that of the service and disservice of a medium. Most analyses of media in the pre-McLuhan era focus on their service ignoring any disservices. Not McLuhan, he considered both as the excerpts from these two letters to colleagues indicate:

> All I am saying is that any product or innovation creates both service and disservice environments which reshape human attitudes. These service and disservice environments are always invisible until new environments have superseded them (To Jonathan Miller on 22 April 1970—Molinaro, McLuhan & Toye 1987) [2] (p. 404).

> If you study symbolism you will discover that it is a technique of rip-off by which figures are deliberately deprived of their ground. You do not seem to have grasped that the message as it relates to the medium, is never the content, but the corporate effects of the medium as an environment of service and disservice (Letter to William Kuhns 6 December 1971—Molinaro, McLuhan & Toye 1987) [2] (p. 448).

One can look at McLuhan's identification of the service and disservice of media as another example of his making use of figure/ground where the service, which was the intention of the medium, is the figure and the unintended disservice is part of the ground or environment that the medium creates. Once again McLuhan begins with the ground (the medium) and not the figure (the content) and focuses on the disservices of the medium unlike other communications scholars that pre-date McLuhan who almost always focused on the service of a medium ignoring its disservices. In the second excerpt he stresses the importance of the ground in understanding a figure and that the message of the medium is the ground it creates and not the content it delivers. Once again we have the reversal of the spiral structure. The service represents the progress of the medium and the disservice the regress. It has the same structure as Vico's *corso* and *ricorso*.

13. Two More McLuhan Figure/Ground Reversals

McLuhan's reversal of figure/ground resulted in two other spiral structures with two of his most famous one-liners. For example, in his notion that 'the medium is the message' it is the message that is the figure and the medium that is the ground. McLuhan spirals back to the medium that transmits the content as the more important message of a medium. The same figure/ground reversal is true of the expression 'the user is the content' where the content is the figure and the user is the ground. Each reader or viewer brings his or her own experience to a medium and transforms the content according to his or her own need.

14. The Spiral Structure of the Tetrad or Laws of Media

We will also encounter figure/ground thinking when we encounter McLuhan's (McLuhan 1975, McLuhan 1977 and McLuhan, M & E 1988 [4–6]) Laws of Media (LOM) also known as the tetrad. The LOM is sometimes formulated in terms of four questions and sometimes as four statements. We present both, first as four questions and then as four statements.

Four questions:

(a) What does a medium enhance?
(b) What does a medium obsolesce?
(c) What does a medium retrieve that had been obsolesced earlier?
(d) What does a medium flip into when pushed to the limits of its potential?

Four statements:

1. Every medium or technology enhances some human function;
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.

The enhancement as figure is to the obsolescence as ground as the retrieval as figure is to the ground of reversal.

The LOM represent 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. This linkage is illustrated for the evolution of communication media showing the transition from speech to pictographic writing; to the alphabet; to print; to computing; to the Internet; to the World Wide Web; to social media (Iseri and Logan 2015 [23]).

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**

15. Conclusions

We believe that the Laws of Media most vividly illustrate the spiral structure of McLuhan's thought processes that allowed him to pioneer the emergence of the new interdisciplinary, multidisciplinary field of study of media ecology, a form of systems theory in which causality operates simultaneously top down and bottom up. The LOM represent the culmination of McLuhan's lifelong project to understand media and their impact on all aspects of human life. The spiral structure of the LOM mirrors the spiral structure of the internal workings of McLuhan's thought processes and is an important part of his legacy.

> Spiral thought patterns **enhance** seeing both the liminal and the subliminal.
>
> They **obsolesce** reductionist thinking.
>
> They **retrieve** general systems theory, cybernetics and emergent dynamics.
>
> And pushed far enough they will **flip** into the ultimate control of human's artifacts to serve human needs and the liberation of humankind's subservience to their technology as their servomechanisms.

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