

The Concept of Media Ecology from Birth till Date: A Discourse Analysis of Articles, Books and Seminal Monographs

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Abstract: This review is a synthesis and analysis of the evolution, core concepts and the future implications of media ecology on human thought and perception. It is an interdisciplinary subject that studies media as environments impacting societal frameworks, cultural practices and human perceptions. With Marshal McLuhan's "Medium is the message" and later developments by Walter J. Ong and Neil Postman in the middle of the 20th century. This article is an effort to pay tribute to theorists, researchers, and media specialists on the media ecology. 100 peer-reviewed articles, books and seminal monographs were reviewed and analyzed to construct the solid foundations of the New Media Ecology. The main objective of this article was to create a theoretical framework for the understanding of media ecology theory. The review is based on two main nodes: media as environment and media as species. The deductive approach has been implied to carry out this detailed descriptive analysis. It's the study of how different forms of communication affect human perception, cognition, emotion, and value, as well as how our participation in media helps or hurts our chances of survival. It's challenging to research media ecology since all habitats are essentially intangible and interrelated, making evaluation difficult. This article's content is based on the researches highlighting the need for explanations of new theories and metaphors in contemporary media ecology. Using these findings, we can now begin delving into the interpretation of future metaphors, relating them to society and its mediating wishes and expectations, as well as their origins. The gaps identified in the study is have longitudinal study on media environments and media literacy of the diverse ecological settings.

Keywords: Media Ecology, Theoretical Framework, Descriptive Analysis, Media Literacy

Introduction

Origin of Media Ecology

The word ecology has a Greek origin; the root words for ecology are Oikos and logia (Balasubramanian, A., 2021). Oikos means Family, and Logia means Science. This determines that ecology revolves around family, the science of human nature constructed through its structure and function (Lopreato, J., 2024). The main areas of interest in ecology are human home and environment and the interactions between those living in them (Schroeder, H. W., 2021). In the rudimentary concept of ecology, the included things are environment, habitat, limiting factors, population and ecosystems (Jain, S. V., 2021). And the intellectual concepts include the phenomenon like observation, experiment, induction and deduction (Mackenzie, Ball, Virdee 2007; Begon, Townsend, Harper 2006).

The main focus of media ecology is overlapping between media and environments concerning evolution (Scolari, 2023). Sometimes consider media as environments, and sometimes environments as media (Li, 2023). The media ecology theory comprises a multifarious interplay between technology, media, human, and settings (Milberry, 2012). This concept of media ecology is ancient, almost initiated 60 years back (Hobbs, 2024). Although the idea of media ecology is more than half a century old, people worldwide are still unaware of it (Lewis, 2021; Anderson, 2025; Zuckerman, 2023). The media (Nichols & LeBlanc, 2021; Cruz-Silva & López-Paredes, 2022). Media ecology is a combination of research on social communication, media, and technology of some researchers such as Harold Innis, Lewis Mumford,

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Elizabeth Eisenstein, Jacques Ellul, Walter Ong, Eric Alfred Havelock, Jack Goody, Marshall McLuhan and Neil Postman (Laskowska, M., & Marcyński, K., 2019). These researchers are considered as pioneers in the area of media ecology they have researched in this area as an intellectual framework of multidisciplinary perspectives (Cinque, T., 2024) (Paul, J., Ueno, et. al., 2024). This theory is located between communication, culture and technology (Levin, I., & Mamlok, D., 2021) (Rachmad, Y. E., 2022).

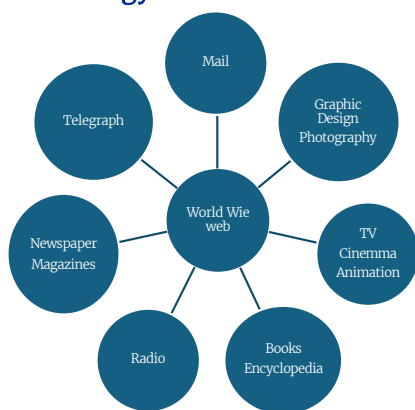
According to Corey Anton (2016) in his article 'On the Roots of Media Ecology: A Micro-History and Philosophical Clarification', the major works in the theory of media ecology are of three prominent researchers, these are; McLuhan, Ong and Postman (Zabell, E., 2022). These three researchers created the roots of the media ecology theory and later on it developed as a tree on the assumptions of Innis, Mumford, Havelock, Goody, Langer, Carpenter, Eisenstein and Ellul (Lum, C. M. K., 2014) (Scolari, C. A., 2012). These researchers acted as the nutrients in the soil of ecological floor.

Media ecology is like the theory of general systems and these are considered as meta discipline and complex and systematic thinking (Sternberg, J., 2002). The theory of media ecology deals with effects of technology on the societies and their philosophies. The patterns of societies and their cultures are understood in multiple aspects like rhetoric, grammar, semiotics, theory, systems, philosophy, communications, interactions, cybernetics, literature, art, and the technology itself (Scolari, C. A., 2012). The researcher of media ecology is multidimensional, a historian, an anthropologist, man of letters, a specialist of general semantics, and a theorist who scrutinizes the technological changes (Dobrin, S. (Ed.). (2011). (Boyden, M., Basirat, A., & Berglund, K., (2022).

The main objective is to create a theoretical framework for understanding media ecology. The concept of media ecology was presented in 1960 by Marshal McLuhan, Neil Postman, James Carey, and Walter Ong (Strate, 2004, 2008; Scolari, 2012; Lum, 2006). Media Ecologist's early interests in communication technologies are demonstrated in books 'The Bias of Communication' (1951) and 'Empire and Communications' (1950) by Harold Innis. It is nearly impossible to understand the concept of media ecology without its connection with time, just like media evolution.

The ecological concept stands with media in the dimension of inter-media in media ecology. The models of technological developments and evolution are used with ecology to make it more transparent (Ziman, 2000; Arthur, 2009; Frenken, 2006; Logan, 2007; Saviotti, 1996; Basalla, 1988). So, media evolution plays a vital role in media ecology in this context. The traces of ecology can be linked to the media history, from the inception of the printing press in the 15th century (Eisenstein, 1979) till the emergence of new media around the end of the twentieth century (Carey & Elton, 2010). When it was introduced as a new media (Gitelman & Pingree, 2003. P. xi), it was a critical concept in this technological development of media. The origination of writing till the World Wide Web represents the categorization of the communication technologies used by humans. The concept of media ecology has its roots around the origination of the idea of the World Wide Web.

Concept of Ecology



Emergence of the Web, (Scolari, 2008).

The concept of media ecology has been metaphorized as a medium like a petri dish which is a substance that allows a culture to grow. Similarly, media ecology is a technology that will enable a culture to thrive. More precisely, it gives a platform to the politics of culture, ways of thinking, habits of individuals, and

social organization. The world media has been used with ecology to give the concept that a symbolic balance in culture's character comes from human-media interaction (Postman, 2000, pp. 10–11).

A Media Ecology Review was published by Lance Strate (2004) in Communication Research Trends that gives a detailed insight on Media Ecology concept concerning a different school of thought. The study curtails the connotation from Marshal McLuhan, Harold A Innis and American Cultural Studies, The Toronto School, Walter Ong School, Orality-Literacy Studies, Media History, Neil Postman, The New York School, and Communication Studies, Lewis Mumford, Technics and Ecological History, Jacques Ellul and Technology Studies. Walter Ong demonstrated the intellectual traditions in media ecology, and Neil Postman presented social criticism in public intellectualism. With the substantial differences between them, they are considered twin pillars in media ecology.

Ecology is a new consciousness state and central to McLuhan's approach to studying media in Understanding Media (2003a): 'The medium is the message' that a new electronic atmosphere has been created. The main determinants of this unique atmosphere are the same as the traditional environment. Just like the 'content' of the TV is the Film, the 'content' of the new environment is the old environment. Neil Postman reinforces this idea to study media as in forms of environments (Postman, 1970, p.161).

The First book of McLuhan, 'The Mechanical Bride: Folklore of Industrial Man' (McDowell, 2021), is considered a content book because of his approach to future media even during 1951. The Mechanical Bride is a detailed analysis of the reflection of values, beliefs, and attitudes of the technological society (Kitnick, 2021). McLuhan has defined the technical man, woman, and children (McLeod Rogers, 2021). According to him, men, women, and children are ruled by technology from birth till death. Technological/industrial products replace All-natural processes. The delivery, growth process, education, and end are technology bound. McLuhan provided examples from Jacques Ellul's (1964) concept of 'la technique' (Forsberg, 2014) and Postman's (1992) concept of 'technopoly' (Krupiy, 2021). The culture is highly dependent upon technology, culture changes with the development of the new technology (Audretsch, Belitski, Korosteleva, 2021). The concept of media ecology revolves around the media being the central hub of communication and all walks of life are interrelated to it. The works of McLuhan (1962) took a significant influence from Harold A. Innis. Harold A Innis is the first scholar who gave named ecology as media. Together Harold Innis and Marshal McLuhan focused on the role that media and technology play in political, economic, social, and cultural setups. Then Merlin Donald (1991) added the concept of speech in pre-verbal eras.

Ecological thinking is based upon connections and relationships. The biological age determines the ecological age. The environmental red to the connection between the two environments as microcosm and macrocosm are; the connection between the human as medium and universe as the medium. Postman gave attention to the humanism of media ecology, and Ong was concerned about the personalism of media ecology. Media ecology is a product of human relations, a network of intellectual relationships.

Timeline of Media Ecology

Media ecology is commonly taken as the "study of media as environments." Originally, the concept of media ecology was presented in 1960 by Neil Postman. Marshal McLuhan further investigated it in 1964. McLuhan thought that media should not be observed on its own, but it should be understood concerning its power and effect upon reshaping the culture, tradition, and social life (Cooper, T., 2022). Media should be understood ecologically, and technology determines the symbolic environment (Navarro, J. L., & Tudge, J. R. (2023). Due to this, the message takes second place, and the medium itself becomes the message.



McLuhan divided human history into four stages and the current era is the fifth stage, and the coming phase would be the Post Digital Era.

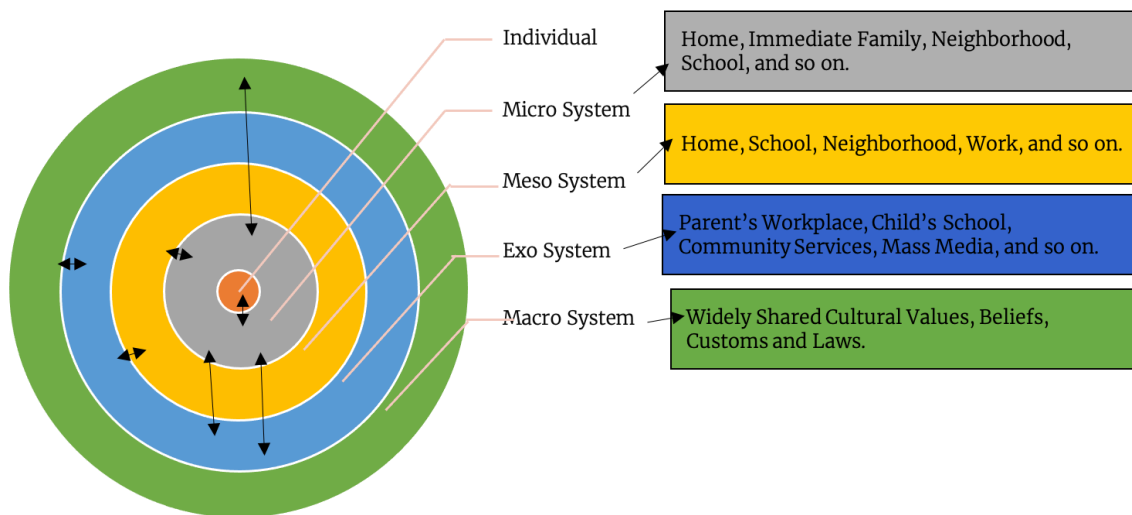
1. The Tribal Age (An Acoustic Community)
2. The Age of Literacy (A Visual Point of View)
3. The Print Age (Prototype of Industrial Revolution)
4. The Electronic Media (The Rise of Global Village)
5. The Digital Age (The Era of Technology)
6. Post Digital Era (The New Media Ecology)

Media Ecology

The media ecology can be understood in two different styles: media as environment and media as species (scolari, 2012). When media is taken as environments, the reference is towards how the technological media affects the users, and the media as species refers to the ecosystems. It focuses on the interrelations of media and society (Hodkinson, P., 2024) (Lindgren, S., 2021). Media ecology has been understood with the concept of ecosystems, where the economy plays a vital role (Miroshnichenko, A. (2024) (Li, Z., Huang, Z., & Su, Y., 2023). It further elaborates how different parts or aspects of society are affected by internet penetration in societal ecosystems. And how the public, private, leisure, work are connected via digital mechanisms. These ecosystems are divided into Micro, Meso, Exo, and macro systems in society (Bronfenbrenner, 1979, 2005). Home, classroom, playground, etc., are the immediate settings carrying essential structure and processes of human nature and development are considered microsystems. When certain microsystems interact with one another, that creates a mesosystem. When there is an interaction between the groups or institutes which are not directly related to us or help in our personal development, it becomes exosystems. The last stage is macrosystems; it comes when a specific culture or certain subcultural beliefs or ideologies are adopted by people living in a society. It is further elaborated in the diagram below.

Figure

Media Ecology Theory



Digital Media Ecology

When digital communication channels are used in media, this refers to digital media ecology. Multiple media channels bring closer interactions and technology integration in society, and the socio-technological gap is bridged. In the digital settings, when someone is sharing content online, the primary considerations in their mind are the audiences and the material content to be shared online. When the expectations of the content and audience in the participant's mind are not satisfied with the platform, multiple other platforms are selected.

New Media Ecology



New media ecology refers to the concept of creating a greener environment. People should adopt various ways to make a media development that is eco-friendly. Media development should simultaneously be run by industrial and social development. This unifies the media studies with the technology and media usages. There should be a great deal of importance to the concept of ecological crises, and nature should be given the utmost importance in the study of media education. Digitalization in every aspect of life is creating a wildlife-friendly environment and pollution-free. Automation in industries where there is mega use of paper will lead to a carbonless ecosystem, like the digitalization of newspapers. To bridge the media practice and the green cultural citizenship, the human, non-human, and biotic communities create the media ecosystems by interacting and intersecting with each other. Contradictory to the old concept of media ecology the new concept is that we are the part and product of it. In the old concept it was about creating a world of technology rather than being a part of it. The new concept revolves around the phenomenon that we are the product or the part of technological advancement or the ecology. Either its good or bad, the concept of new media ecology will answer a lot of problems that have occurred because of media technology.

Methodology

The article is based upon the review of 100 peer-reviewed articles, books and seminal monographs were reviewed and analyzed to construct the solid foundations of the New Media Ecology. These were ranging from the history of media ecology to date, and even the future of media ecology has been discussed. The articles have been reviewed and analyzed to understand the concept of media ecology and its future implications in media and mass communication, especially digital medium especially metaverse. The review is based on two main nodes: media as environment and media as species. The deductive approach has been implied to carry out this detailed descriptive analysis. The article is an effort to pay tribute to theorists, researchers, and media specialists on the concept of media ecology.

Analysis

Media ecology theory is considered a socio-cultural and critical theory of mass media. It is based on a heuristic approach to knowledge, and it works differently in a different environment. The concept of media ecology is not a new one. It is traced back to the tribal ages of 1960. And got momentum between the 1960s to 1980s because, in this era, electronic media increased and spread in commonplaces and filled life with bunches of information. According to Paul Levinson (Levinson, P., 2001), the tradition of media ecology became useful in true meaning after the emergence of the internet. The Internet creates its specific media environment parallel to the physical environment, symbolically filled with abstract experiences (Postman, N., 1982). As we can see, the internet makes the world a global world. We did not need any specific settings to use the internet, as we can use it anywhere through laptops, mobiles, tabs, and such devices. It affects

businesses and the whole community, its culture, traditions, values, and almost all aspects of life. So, to understand the idea of media ecology, we can see it in the light of culture, society, and media. The ecology concept looks at society as a whole and in parts. In short, the ecological analysis is a complete analysis of the community where its function, interactions, and components are considered.

According to the theory, society evolves as technology evolves. Since from the tribal age till the post-digital era, the community has been affected by media development and technology. Media is a significant factor in this theory, and it is infused in every stratum of society. Media is creating opinions and providing new experiences to the public. Media is serving as a platform for world unity and universalism. Media is formulating our feelings and views of the world and people and plays a vital role in creating this world as a global village. Media ecology theory explained that technology had penetrated every aspect of society, and society cannot survive without technology. While researching media ecology, the researcher should create an ecological framework as the media ecology phenomenon works differently in different environments.

How media affects all strata of life to understand it, we need to understand the working of media. As McLuhan (1967) also said, it is impossible to understand cultural and social changes without proper understanding and knowledge about the working of media (McLuhan, 1967, p. 8). Rather than focusing on the younger teen, the content between their interaction to digital play, and the technology alone, we must understand "the working of media" by understanding the media ecology framework. According to media ecology, media acts as an extension for the human senses in each era, and the leading cause of the social changes is communication technology (Hakanen, E.A., 2007). This communication environment is developed by the level of our adaptation for the new digital age "inclusively or total" (McLuhan, 1964, p. 57), which means human beings are bound to follow the new system and its norms. It's on the person how he follows these norms, but he can't escape from this (Meyrowitz, 1985).

In the media ecology paradigm, media is perceived as a structure in which culture and society evolve. It is an environment where individuals live their lives and act accordingly, and through which reality can be perceived. Social, cultural, and societal associations are shaped through people's communication. Due to this media technology in every era, means of communication significantly sculpts ways of thinking, customs, values, traditions, culture, and social relationships; we can say the human existence (Hayles, K., 1999; Innis, H.A., 2008; Ong, W.J., 2012). In short, it is not the media or any technology that shaped up the culture but the nature of communication that takes place through certain media. McLuhan (1964) coined the famous phrase "the medium is the message". This phrase is often debated, and it means that the source through which the message is transferred is as vital as the message itself.

Media ecology is termed a meta discipline as it transcends into an inquiry area (Nystrom, 1973; Urry, 2007). It also has inclusive methodologies for creating critical exploration and emerging technologies (Hildebrand, 2018). Media ecology determines the human-created technologies as systematic powers that shape human thinking, feelings, and action (Cali, 2007; Innis, 1999; McLuhan, 1964; Mumford, 1970, 1998; Strate, 2017). Media Ecology theory can analyze meta-spaces like metaverse to see their impact on human minds. It can be critically reviewed using the media ecology theory the way metaverse is affected human life and how human energy involves the metaverse. The approach encourages placing the metaverse plan at a larger socio-cultural scenario. The core agenda of media ecology theory is to put forward those unseen, unheard, and invisible aspects of the environments in a visible, clear, and presentable manner. The idea of media ecology is that culture, media, and society are interwoven into a single unit. While talking concerning the metaverse, they are not only interwoven affected by them. As metaverse creates new environments, people learn to live as digital beings. These new media and metaverse ecologies will become a new standard, and humans control their creation. Once these meta environments are created, humans are held by them too.

Digital technology itself does not possess dangers, but these digital tools are more advanced with human interaction than previously used ones. So, media ecology can also be explained as the study of extension that human beings can afford and the pressures human beings experience. This approach to media ecology tries to realize the interactive paradigm of technologically mediated interaction. They try to

analyze the affordability and the constraint indicated at each level of the communication system. Culkin explains it as "firstly we shape our tools and later on the tools shapes us" (1967, p. 70). The world will be smaller day by day with more and more digital communication tools. We can share and gather information about those we never met and can't connect with outside the digital realm. It also helps to develop awareness about those who are otherwise marginalized. But now, due to media ecology, they are associated with us, and they are involved in our lives as we are in theirs (McLuhan, 1964).

Conclusion

The term ecology means studying the environment, its content, structure, and impact on individuals. The setting is a complex system that affects the thinking, feeling, and behaving patterns. Media ecology theory is considered a socio-cultural and critical theory of mass media. It is based on a heuristic approach to knowledge and it works differently in different environments. In short, the ecological analysis is a complete analysis of the society where its function, interactions, and components consideration. Media is a critical significant theory, and it is in us in every stratum of society. Media recreates the opinions and provides experiences to the public. Media is serving as a platform for world unity and universalism. Media ecology theory explained that technology is being penetrated in every aspect of life, and society cannot survive without technology. Rather than focusing on the younger teen, the content between their interaction to digital play, and the technology alone, we must understand "the working of media" by understanding the media ecology framework. Digital technology itself does not possess dangers, but these digital tools are more advanced with human interaction than previously used ones. It is the digital realm, we can share and gather information about those we never met, and we can't connect with them outside of the digital realm. Media Ecology theory can analyze meta spaces like metaverse to see their impact on human minds. It can be critically reviewed using the media ecology theory the way metaverse is affected human life and how human energy affects the metaverse. The theory encourages placing the metaverse plan at a larger socio-cultural scenario. The core agenda of media ecology theory is to put forward those unseen, unheard, and invisible aspects of the environments in a visible, clear, and presentable manner.

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