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Reconceptualizing Cyberspace: “Real” Places in Digital Space

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Abstract: We explore the nature of cyberspace and shed light on the intellectual puzzles of space, place and cyberspace by briefly reviewing previous discussions of space and place and presenting a simple framework that clarifies the relationships among these three concepts. We argue that, epistemologically, space and place are independent concepts imbued with different connotations. However, space and place are intertwined both practically and experientially because they constitute mutually complementary roles and functions in social life. Based on this argument, we develop a four-dimensional framework for distinguishing between space and place and apply it in a reconceptualization of cyberspace. We reject the notion that cyberspace is simply a “space” and argue, instead, that cyberspace is a spatial metaphor applied to the familiar places of the digital environment that have become, for many, such an essential part of everyday life.

Keywords: Cyberspace, Space, Place

Introduction

CYBERSPACE IS ONE of the most significant products of information science and technology (IST) and a hallmark of the electronic era. The term *cyberspace* originated in the science fiction novel *Neuromancer* (Gibson, 1984). For many years, *cyberspace* carried an aura of implausibility, but the concept is now commonplace in the digital environment, dominating a wide range of disciplines from computer science and engineering to philosophy. Although the term is widely used, there is no accepted definition of what a *cyberspace* is, perhaps because there is an implicit assumption that everyone understands what the term means. As Strate (1999) has observed, “because cyberspace is everywhere, and through widening usage, threatens to become everything, the term has become increasingly more vague and drained of meaning” (p. 383). However, we should not ignore the complexities of cyberspace simply because of its ubiquity.

The confusion surrounding cyberspace may lie in the vagueness of our definitions of space and place: Philosophers, sociologists, psychologists, geographers, architects and even software designers have struggled to explain the notions of space and place, but there is, as yet, no consensus on the meaning of these two concepts. Dourish (2006) suggests that the idea of cyberspace may “transcend and overlay the ‘real’ spaces of the everyday world”, blurring our common understandings by reshaping how we experience traditional spaces and places as well as the spatiality of the virtual environment. Clolfi (2004) contends that cyberspace “can modify the spaces we inhabit, create new places and new forms of presence and make physical presence itself a way of interacting with the system” (p. 37), thereby highlighting

the crucial and complex issues that confound our perceptions of space, place and cyberspace as well as the epistemological confusions these overlapping concepts engender.

The notion of cyberspace is directly related to our experiences in the digital world and represents the practical impact of IST on human existence. Although the relationship between space and place is often thought of as an intellectual puzzle, the impact of these concepts on conceptions of cyberspace is not simply a literal trifle. It is important to reconsider definitions of these terms, refine their interrelationships, and more precisely demarcate their territories. Such an endeavor can lead to a more adequate theoretical framework that clarifies epistemological confusions surrounding *cyberspace*. Thus, the purpose of this article is to present a simple and clear framework for considering the relationships among space, place and cyberspace. We will briefly review previous discussions of space and place; and we will provide our own framework for considering these concepts. We will then examine how discussions of space and place have shaped current understandings of cyberspace and demonstrate how our framework for understanding space and place supports an important reconceptualization of cyberspace.

Space and Place: Intertwined but Independent

Philosophers, geographers, urban designers, HCI researchers and other scholars have contributed to discussions of space and place and have proposed various, sometimes conflicting, arguments regarding definitions of these concepts and their relationship. The different perspectives on space and place can be grouped in two very general categories: approaches that are horizontal in nature and those that are vertical or hierarchical.

Horizontal approaches emphasize the dichotomy between space and place in line with other, more traditional dichotomies: objectivity and subjectivity, body and mind, materiality and spirituality. Thus, researchers such as Erickson (1993), Harrison and Dourish (1996), and Maglio, Barrett and Farrell (2003) focus on the physical nature of space and the meaningful construct of place, suggesting that place is not simply a kind of space. Rather, there is a definite boundary between space and place: Space is a natural fact, and place is a cultural product. Following Aristotle, they regard space as the material dimension of physical things: Space is static and refers to geographic extension independent of human consciousness. For example, Harrison and Dourish (1996) suggest that “space is the structure of the world; it is the three-dimensional environment, in which objects and events occur, and in which they have relative position and direction” (p. 68). They view place as “a space which is *invested with understandings* of behavioral appropriateness, cultural expectations, and so forth.... Furthermore, ‘places’ are spaces that are valued” (p. 69; emphasis in original).

For those who adhere to the horizontal approach, space is a natural fact: a collection of properties defining the essential reality of settings of action (Dourish, 2006). As Malpas (1999) observes, space “has come to be associated with a narrow concept of physical extension” (p. 27) and place is a cultural and social phenomenon that indicates “the human response to physical surroundings or locations” (p. 30). Humanistic geographers such as Yi-Fu Tuan emphasize the importance of the experiential dimension in shaping the perception of place. For Tuan (1977), a place is a time-based phenomenon created by human experience: It is the conjunction of the past, the present and the future. Lipovac (1997) argues that “The place is the present expression of past experiences and events and the expression of hopes for the future” (p. 6). According to the horizontal approach, then, place emerges, evolves and disap-

pears in the process of history. Gieryn (2000) suggests that place is the medium through which social life happens and its most significant characteristic is that it is invested with meaning and value. He contends that place is imbued with the moral judgments and deviant practices that saturate social life; and he concludes that “place matters for politics and identity, history and futures, inequality and community” (p. 482): The longer people have lived in a place, the more rooted they feel and the greater their sense of belonging to that place.

The vertical approach presupposes a hierarchical relationship between space and place: Place is subordinated to space, and any definition of place cannot exist without a prior definition of space. Although place is generally considered more meaningful than space, place is simply a “kind” of space. Malpas (1999) traces the basis for the vertical approach to Newton, who viewed place as a derivative of space: “Place is a part of space which a body takes up . . . [and] place is to be understood simply in terms of a particular region of physical space or a location within it” (Malpas, p. 28). Aarseth (2007) argues that “place is always a limitation of, or in, space. Place can never exist independently of its spatial origin. It must stand in a necessary and inevitable relation to space to be considered a space at all” (p. 2). Following these arguments, then, space is the foundation of place and is a container where all “things” are located, including the physical and spiritual, visible and invisible, tangible and intangible, objective and subjective. If we locate objective “things” here, it is a natural space; but, if we locate subjective “things” here, it is a place.

Both perspectives are problematic when we consider how new information technologies relate to and are embedded in today’s Internet Age. Maglio and Matlock (2003) argue that “people rely on experience in physical space to structure experience in virtual information spaces” (p. 385). However, if space is a natural fact, it is difficult to explain both the complex relations among new information technologies, physical space and society and the emergence and construction of cyberspace, which has been described as “the ‘convergence’ of computers with digital telecommunications and media technologies” (Graham, 1998, p. 165) and thus lacks the traditional material dimensions of space and time. If place is merely a subjective construct, it would be difficult to distinguish between “social space” (Lefebvre, 1991) and place: If space is a form of place or place is a form of space, then all spaces are both places and non-places, and all places are spaces. Do we really need two concepts if they are, in fact, one and the same?

This conundrum leads to consideration of the specificity and non-specificity of current approaches to space and place, which is necessary if we are to establish a solid theoretical foundation for the study of cyberspace. Non-specificity refers to the generality of space, while specificity refers to the particularity of place, highlighting the relationship between space and place in terms of orientation and locality. However, while intertwined, space and place are independent concepts, both literally and linguistically: Place is not a derivation of space—it is not simply a “specified” space—and space is not defined by place, even though, in terms of human experience, place is naturally prior to space. In other words, physical space is not the foundation of place, because space does not equal (or require) a physical environment; and place does not require physical space to be contained. Epistemologically, then, space and place are imbued with different literal connotations. They are, nonetheless, intertwined, both practically and experientially, because they constitute mutually complementary roles and functions in social life. It is the interaction of these two concepts in social life that structures human experiences of spatiality, location, identity, belongingness, and the sense of place.

Table 1: Four-Dimensional Perspective on Space and Place

	Space	Place
Shape	Spatial; neutral; objective.	Spatiotemporal; affective; intersubjective.
Structure	Undifferentiated; without boundary.	Distinct; bounded.
Context	Incomprehensible; a collection of possibilities; without behavioral constraints; conceptually unconstrained.	Known; recognized opportunities; with behavioral guidelines and expectations; conceptually constrained.
Experience	Uninhabited; potential mental framework for human experience; unfamiliar and unknown.	Inhabited; everyday classification/representation of human experience; familiar.

Table 1 summarizes a proposed framework for understanding space, place and their interrelationships. The different dimensions of space and place indicate different levels of engagement and immersion that affect spatial references. As indicated in Table 1, space and place are generally independent of each other in the dimensions of shape, structure and context. However, in the dimension of experience, they are intertwined.

The dimension of shape refers to the emergence and origin of space and place. On this dimension, space takes on objective connotations even though it may not be equivalent to the physical geographical environment. Space is an abstract cognitive model rather than the three-dimensional landscape of the world itself. In contrast, place has a definite spatiotemporal connotation that is very different from that of space. Here, Heidegger’s (1962) two modes of spatiality—equipmental spatiality and existential spatiality—can be applied: Space, which represents equipmental spatiality, conceptualizes the shape of the geographical world, not the geographical world itself, while place, which represents existential spatiality, provides a more affective and intersubjective framework of understanding that acquires meaning based on “configurations of social actions” (Dourish, 2003, p. 284). Place owns a temporal shape that space lacks. Place is fluid: dynamic and evolving, disappearing and reappearing over time. Space, in contrast, is static, always unchanging and abiding by natural laws unless the accepted model of the physical world should change. Obviously, place and space encapsulate very different linguistic connotations.

The dimension of structure refers to the specific formats of space and place. This dimension is also epistemological: As knowledge requires the creation of structure, a world without structure is incomprehensible. Thus Strate (1999) regards space as “the unnamed” and the “untamed” (p. 395), but this does not mean that space is “the chaotic” (Strate, 1999, p. 395). Rather, Strate suggests that it is more reasonable to associate space with the undifferentiated and the boundless. This is apparent when we think about “outer space” as a seemingly infinite and unbounded black void. In contrast, because “place is associated with the cultural and rhetorical, with order and familiarity” (Strate, 1999, p. 395), it is distinct and socially bounded: It is constrained by “patterns of social action and accountability” (Dourish, 2003, p. 284) and by “social connotations” or “code[s] of conduct” (Dieberger, 2003, p. 299), as indicated by the dimension of context.

The dimension of context refers to operationalizations of space and place and epitomizes the dichotomy of non-specificity/specificity in conceptions of space and place. In accordance

with Dourish's (2006) characterization of the contextual and social aspects of place, space is associated with unspecified existence, while particular contexts or functions shape different places. For example, a room furnished with a table and chairs can be interpreted as either a dining room or a conference room depending on the immediate context; without context, this room, however furnished, is simply a room—a space. Context constructs place and imposes expectations and guidelines for behavior: You would not ask for KFC food while you are in a McDonald's restaurant, even though the layouts and services of these two "places" are quite similar. Space can only be operationalized as a simple kind of context (i.e., physical layout), while a place can engender various contexts based on the "appropriate behavioral framing" (Dourish, 2003, p. 284) that is embedded in social connotations and codes of conduct. In this sense, space is closely related to Heidegger's (1962) *Being-in* (i.e., unspecified and unbounded existence), while place is more closely related to *Being-there* (i.e., bounded context with implied connections).

The dimension of experience refers to the interactive roles of space and place in human experience. Space and place are inevitable components of human experience but they generally play very different roles in human cognition. Place is fundamental in cognitive processing because human beings apprehend their existence "in place": They live socially, think intelligently, and act based on "a shared understanding of appropriate behavior" (Dieberger, 2003, p. 311). Without the recognition of place, they cannot explore unknown spaces: "Once abstracted, places are conceptualized as spaces, as relations between them, as activities and processes in space" (Batty, 1997, p. 340). Thus, space plays a functional role in everyday experience because "our conception of the world is fundamentally spatial; our own three-dimensional embodiments in the world are the most fundamental part of our everyday experience" (Dourish, 2003, p. 283). As an abstract cognitive model of the three-dimensional physical layout, space carries a certain degree of freedom that is independent of human interference and provides a potential mental framework for reflecting on the particularity of place not as a specific "place", but as a particular "kind" of place.

Only within this framework can place be epistemologically transformed from its original existential stage to a higher experiential plane. In the dimension of experience, "places" are often classified differently by different individuals or by different groups. This ability to split and lump (Zerubavel, 1991) allows the individual to invent, or reinvent, her identity to reflect a feeling of belongingness that emerges from an association with place. In this way, space and place are interactive and intertwined in the construction of human experience: The abstraction of places engenders the cognitive model of space, while space provides places with a mental framework that triggers human experience.

These four dimensions of space and place—shape, structure, context and experience—are neither mutually exclusive nor hierarchically or temporally ordered. Rather, they are logically supported and mutually complementary. As such, they provide a theoretical foundation for the following discussion of the nature of cyberspace.

Cyberspace: Space, Place, or Nothing?

As computers and digital computation become more pervasive, "traditional bounds posed by the constraints of space and time are fast being changed, in scale and scope, qualitatively as well as quantitatively" (Batty, 1997, p. 337). This process of change has generated the new dimension of space and place that we now call "cyberspace". Cyberspace has been char-

acterized as a form of “virtual reality” that both “afford[s] social interaction and embod[ies] cultural values” (Kalay & Marx, 2001, p. 770). But cyberspace has also been conceptualized as an unspecified, unruly and boundless space, a huge black void, or a simple “container” for holding “data, services, information of many kinds, as well as for talking, browsing, and for all types of communication that traditionally have taken place face-to-face” (Batty, 1997, p. 339).

One way to understand cyberspace is to view it as a spatial metaphor. Linguistically, the term “cyberspace” is the compound of “cybernetics” and “space”, indicating an interdisciplinary, multi-dimensional and multi-leveled “space.” In 1984, William Gibson, the author of *Neuromancer*, originally described cyberspace as “A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts. A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity” (p. 67). In 1991, Benedikt characterized cyberspace as a “parallel universe” (p. 15); in 1993, Batty described it as a “new kind of space, invisible to our direct senses, a space which might become more important than physical space itself [and which is] layered on top of, within and between the fabric of traditional geographical space” (pp. 615–616); and, in 1998, Graham suggested that cyberspace should be considered “a fragmented, divided and contested multiplicity of heterogeneous infrastructures and actor-networks” (p. 178). Although these researchers focused on the two primary dimensions of cyberspace—the physical and the technological infrastructures represented by “spatial and technological metaphors” (Graham, 1998, p. 167)—they also implicated a third, more abstract dimension: that of spiritual, social and cultural awareness—of social practice and the human experience—which cannot be explained through the use of spatial metaphors.

Other researchers have actually endeavored to incorporate both material and spiritual dimensions when defining cyberspace. Batty (1997) proposes a new geography—a “virtual geography”—to study “place as ethereal space and its process inside computers, and the ways in which this space inside computers is changing material place outside computers” (p. 340). He describes the environment created by computers both as “place as ethereal space” and as the “space inside computers” and defines the concepts of *cspace* (i.e., the space within computers), *cyberspace* (i.e., the use of computers to communicate), and *cyberplace* (i.e., the infrastructure of the digital world). However, Batty treats place as the foundation of space by defining *cyberplace* as the infrastructure of the digital world and *cyberspace* as the functional application of computers in communication. Obviously, if Batty’s conceptual relationships between space/place and cyberspace/cyberplace are to hold, the conclusion must be that space is necessarily functional.

For Strate (1999), cyberspace is characterized by a multiplicity of meanings and is best understood as a plurality. He identifies three levels of cyberspace: 1) Ontology, which includes “paraspaces” (or nonspaces) and “spacetime”; 2) Building blocks, which includes physical space, conceptual space and perceptual space; and 3) Synthesis, which includes aesthetic space, cybermedia space, and interactive and relational space. Nonetheless, Strate echoes Batty when he argues that cyberplace “represents the idea of the virtual community, specifically computer networks and nodes, bulletin boards, web pages, MUDs, chat rooms, and commercial services, virtual environments, etc.” (p. 395). But, while Batty sees cyberspace as a product of cyberplaces, Strate is ambivalent: He argues that “Cyberplaces are the figures to cyberspace’s ground” (p. 395), but then appears to contradict himself when he claims that

cyberspace “is made up of specific cyberplaces” (p. 395). However ambiguous the relationship Strate posits between cyberspace and cyberplace, he concludes that, when cyberspace becomes predictable, familiar and associated with order and expectation, it becomes a cyberplace.

Aarseth (2007) discusses “spatial representation” in computer games—a specific form of cyberspace—and its relation to “real space”. He argues that:

By being generated, cyber places are “*regions in space*” and cannot exist as parallels of real, three-dimensional space. . . . “Cyberspace” and other such phenomena (e.g. computer games) are constituted of signs and are therefore already too dependent on our bodily experience in and of real space to be “hallucinated” as space. Moreover, the fact that they are not real space but rather objects and places is the only reason we can perceive them at all. (Aarseth, 2007, pp. 44–45; emphasis in original)

Aarseth posits that “spatial representation in computer games [is] a reductive operation leading to a representation of space that is not in itself spatial, but symbolic and rule-based” (p. 45), concluding that “computer games are allegories of space [that] pretend to portray space in ever more realistic ways but rely on their deviation from reality in order to make the illusion playable” (p. 47). His arguments are in some ways contradictory: On the one hand, he considers cyberspace a symbolic allegory of space and thus not “real space”; on the other hand, he claims that cyberspace has rules that depend on human experience, as places do, while simultaneously arguing that, although cyberspace is not a “place”, it is constituted by places.

Kalay and Marx (2001) are particularly focused on the role of place in cyberspace. They explore the possibility of organizing cyberspace into spatial settings that resemble physical places in that they afford social interaction and embody cultural values. Having suggested that “cyberspace cannot be ‘specialized’ by simply appropriating physically-based spatial metaphors” (p. 774), they identify four kinds of “shells” for developing place-like environments in cyberspace: hyper-reality cyberspaces, abstracted reality cyberspaces, hybrid cyberspaces, and virtual spaces. They draw a very definite line between space and place: Because it is the concept of place, not space, that connects an architecture to its context and makes it responsive to human needs, objects and spaces are merely the building blocks of places—necessary, but not sufficient components. To qualify as a place, a space must be defined and ordered in a meaningful way that is not part of the space itself. Thus “place” is an added quality, acquired through the adaptation and appropriation of a space by its inhabitants through their actions and conceptions (Kalay & Marx, 2001, p. 770). Logically, then, space must be prior to place because it is the foundation (or ground) for place; but, functionally, place is prior to space because it acts on a higher plane in terms of human experience. Thus, according to Kalay and Marx (2001), we can only make “place-like” cyberplaces in cyberspace, because “real” places are closely associated with “real world” behaviors: Physical space generates physical places, which guide “real world” behaviors, but cyberspace can only generate “place-like” cyberplaces that guide socially and culturally appropriate cyber behaviors, but never “real world” behaviors.

The artificial creation of two such mutually exclusive worlds is both ambiguous and redundant. Based on his sociological focus on social networks and communities, Wellman (2001) disputes the line of reasoning put forward by Kalay and Marx, arguing that “the cyberspace-physical space comparison is a false dichotomy. Many ties operate in both cyber-

space and physical space, using whatever means of communication is convenient and appropriate at the moment” (p. 248). Wellman points out that individuals transform cyberspace to cyberplace as they “imbue their activity online with meaning, belonging and identity” (p. 229). Like Strate, Wellman considers place a “physical neighborhood” (p. 237) of communities, strongly associating place with identity, familiarity and a sense of belonging. He concludes that there is no need to distinguish between physical space, cyberspace and cyberplace because “[p]hysical space and cyberspace interpenetrate as people actively surf their networks online and offline” (p. 248); because “[c]yberspace has become cyberplace” (p. 247); and because the Web has shifted human interaction away from “place-based inter-household ties to individually person-to-person interactions and specialized role-to-role interactions” (p. 231). For Wellman, the Web has destroyed any distinctions among physical space, physical place, cyberspace and cyberplace, making each of these concepts useless. The only meaningful concept left is that of “personalized networking.”

Cyberspace: A Spatial Metaphor for Place

Based on this examination of the definitions of cyberspace, it is apparent that traditional concepts of space and place are inadequate for explaining cyberspace because of the absence of embodiment in the digital environment. According to Waterworth, Lund and Modjeska (2003), “we are embodied beings, [and] meaning ultimately resides in bodily experiences” (p. 125). They argue that humans “have evolved to act in the physical world, and how we are able to understand abstract information is derived from that capacity. ... We experience the physical world as a three-dimensional space, with gravity holding our bodies, other people and things onto horizontal surfaces” (p. 125).

Because the absence of embodiment precludes the possibility of a sensory intermediary as well as the capacity to abstract spaces from places, the cognitive model of space can be obfuscating, causing Web users to feel “lost” when surfing online. Waterworth et al. (2003) contend that, “since we all share the same evolutionary history and hence, bodily structures and potential for experiences, we share the same primitives for understanding information. This is what makes social interaction—and social navigation of information spaces—possible” (p. 125). Thus, the absence of embodiment precludes a shared carrier both for social action and responsibility and for appropriate behavioral framing. Without such an embodied experience of cyberspace, immersion in the digital environment may be accompanied by a “sense of place-like” rather than a “sense of place” and thus confuse our efforts to interpret cyberspace.

The physical world is spatial, but the world of the digital environment is a “spatial cueing world” (Waterworth et al., 2003, p. 130). In principle, then, the “space” in “cyberspace” is a metaphor that depends upon the individual’s three-dimensional model of the physical world. According to Waterworth et al., cyberspace is a “space” because the spatial metaphor allows us to “project our spatial experiences ... to abstract, non-spatial domains of experience” (2003, p. 139).

According to the four-dimensional framework of space and place presented above, cyberspace is necessarily spatial. However, as Waterworth et al. (2003) indicate, cyberspace can only provide cues regarding its spatial structure, not an actual model, because we can only see very small slices of cyberspace at any point in time. Furthermore, cyberspace is not an undifferentiated whole but consists of an amalgamation of distinct and bounded place-like

units (i.e., web sites and web pages). While cyberspace may appear incomprehensible, limitless and unconstrained to the novice navigating its realms, to the experienced surfer it is governed by behavioral guidelines and expectations. In this way, cyberspace is simultaneously bounded both by the web's structure of connections and by the way the individual accesses a particular web site or web page. Thus, for the initiated, cyberspace is not an uninhabited or undifferentiated space without boundaries but a collection of possibilities and opportunities (Massey, 2005). It is a familiar and recognizable "neighborhood" imbued with personal identities, social interactions and a sense of belonging. In this sense, cyberspace emphasizes its similarity to and consistency with the physical world. For the initiated, then, cyberspace is a place, not a space.

As a place, cyberspace exhibits spatiotemporal features: Relationships between its place-like units can vary across different time periods, and interactions can evolve over time. The emergence, evolution and continued functioning of cyberspace require a place that both constitutes and facilitates its spatiotemporal shape. An individual can design, revise and change a website at will; using a single url, she can have different "websites" that reflect her interests as they change over time. In this way, cyberspace is fluid and dynamic. More importantly, cyberspace is not a black void but a distinct and bounded place, much like a giant shopping mall. As Maglio et al. (2003) observe, "[u]sers are considered to be in the same place when they are currently viewing the same web page, or pages on the same web site, or pages hosted in the same domain" (p. 252). The boundaries imposed by either the structure of or physical access to the web—the technical infrastructure of computers, wires, fibers, wifi and protocols—distinguish different place-like units in the digital environment just as walls and doorways distinguish different place-like units in the shopping mall.

Cyberspace is imbued with both recognized opportunities and underlying behavioral guidelines. In such an environment, Web users have expectations for each place-like unit: They go to the CNN web site for the latest news, to Amazon.com to purchase the latest book, and to Facebook for social networking. They can predict what they will encounter in each place-like unit, and they know what to do and how to behave. Moreover, Web users inhabit cyberspace through "embodied" and "semantic" navigation (Dourish, 2003, p. 276), which allows them "to explore virtual worlds of information using cognitive processes similar to those with which they explore the real world" (Waterworth et al., 2003, p. 148). Maglio and Matlock (2003) argue that cyberspace supports the awareness of and interaction with others, providing individuals with the ability to form social groups: "[A] place does not necessarily map to a location in web space, but might be automatically constructed based on the interests and activities of web users" (p. 402). In this way, cyberspace both provides and supports interactive experiences.

The conclusion is obvious: Cyberspace is not a "space" but a "place". The "space" in cyberspace is no more than a metaphor for a "place" constituted of "place-like" units.

Conclusion

In order to explore the nature of cyberspace and shed light on the intellectual puzzles of space, place and cyberspace, we have presented a simple framework that clarifies the relationships among these three concepts.

Epistemologically, space and place are independent concepts imbued with different connotations. However, they are intertwined both practically and experientially because they

constitute mutually complementary roles and functions in social life. Based on this argument, we have developed a four-dimensional perspective on space and place: The dimensions of shape, structure and context demonstrate that space and place are necessarily independent of each other. However, the dimension of experience reveals that space and place are inextricably intertwined in human existence.

When applied in the examination of cyberspace, this framework of spatial dimensions establishes that cyberspace exhibits existential spatiotemporal features rather than an equipmental spatiality. Rather than being undifferentiated and boundless, cyberspace is distinct and bounded. It is not simply a random and unconstrained collection of possibilities but is imbued with recognizable opportunities and supported by behavioral guidelines. Rather than an empty void or unfamiliar extension, cyberspace is at once inhabited and inhabitable, supporting many of the everyday activities of human experience. Thus, we reject the contention that cyberspace is simply a “space” and conclude that cyberspace is simply a spatial metaphor for the familiar places of the digital environment that have become, for many, such an essential part of everyday life.

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