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Capitalizing Networked Learning: Connectivism, Multiliteracies and the Architectonics of Pedagogy

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Article abstract

As connectivism is increasingly accepted as a theory of learning for the digital age, scholars and practitioners in education often overlook the dilemma that this creates for its most ardent advocates. In the academic literature, we increasingly find scholarly works that present insouciant descriptions of connectivism. However, such practices often underplay or ignore critiques of connectivism, allowing many of our contentions about its epistemological character and pedagogical effectiveness to calcify. In fact, it is becoming increasingly difficult to rationalize why so many educators have endorsed connectivism as a new theory of learning when there continues to be a need for more empirical testing and greater philosophical substantiation. To illustrate this paradox, this paper examines Stephen Downes's consideration of connectivism and his connectivist model of literacy. Using the dialogic philosophy of Mikhail Bakhtin, it introduces an architectonic model of connectivism and multiliteracies as an alternative discourse and pedagogical paradigm. A key finding from this study suggests that the lack of attention to capitalist practices, power, and the intermediality of texts in networked learning help to conceal the ways in which connectivist practices rearticulate behaviorism.

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Capitalizing Networked Learning: Connectivism, Multiliteracies and the Architectonics of Pedagogy

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ABSTRACT

As connectivism is increasingly accepted as a theory of learning for the digital age, scholars and practitioners in education often overlook the dilemma that this creates for its most ardent advocates. In the academic literature, we increasingly find scholarly works that present insouciant descriptions of connectivism. However, such practices often underplay or ignore critiques of connectivism, allowing many of our contentions about its epistemological character and pedagogical effectiveness to calcify. In fact, it is becoming increasingly difficult to rationalize why so many educators have endorsed connectivism as a new theory of learning when there continues to be a need for more empirical testing and greater philosophical substantiation. To illustrate this paradox, this paper examines Stephen Downes's consideration of connectivism and his connectivist model of literacy. Using the dialogic philosophy of Mikhail Bakhtin, it introduces an architectonic model of connectivism and multiliteracies as an alternative discourse and pedagogical paradigm. A key finding from this study suggests that the lack of attention to capitalist practices, power, and the intermediality of texts in

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networked learning help to conceal the ways in which connectivist practices rearticulate behaviorism.

Introduction

In the growing academic literature on connectivism, most scholars and practitioners are accustomed to finding strong critiques of its conceptualization and actualization (Bates, 2019; Boyraz & Ocak, 2021; Corbett & Spinello, 2020; Downes, 2019; Voskoglou, 2022). Ironically, scholarly works often present insouciant descriptions of connectivism alongside elaborations of behaviorism, cognitivism, constructivism, and their correlates (Bernauer & Tomei, 2015; Dron & Anderson, 2022; Lamtara, 2023). However, suggesting that connectivism is co-equal with traditional theories of learning is concerning. As such, this theoretical revaluation is an attempt to highlight some of the epistemological challenges that connectivism faces as a networked theory of learning and explain why an alternative philosophical discourse and model may be needed to recalibrate and advance connectivism as an architectonic pedagogical paradigm for understanding networked learning in the digital age.

Despite the rhetoric of many connectivists, we find that most educators exhibit a rather tertiary awareness of the epistemological challenges that trouble the idea of *connectivism* as a theory of learning for the digital age. They tend to accept it as a way of learning with computers and the internet, even though many are not exactly sure what connectivism looks like as a theory or paradigm for teaching and learning (Beetham & Sharpe, 2020; Dron & Anderson, 2022; Langridge, 2023). Those unfamiliar with connectivism—and learning theory and educational philosophy in general—might assume that it is a fully developed and tested conceptualization that is viable in theory as well as practice (Bell, 2011; Clarà & Barberà, 2013; Colgan & Maxwell, 2020; Kop & Hill, 2008). However, Bates (2019, 2022) and Langridge (2023) would agree that many educators tend to forget that connectivism is still in its infancy. Moreover, we often overlook the distrust of educational systems and traditional theories of learning signified in the writings on connectivism's

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invention by George Siemens (2006, 2017) and Stephen Downes (2008, 2022). This contextualization matters because they are considered the progenitors of connectivism, advancing it as a "new" theory of learning for the digital age largely outside of academic peer-review and based on the associations and learning that occur through computers and the social and digital networks that they permit (Kop & Hill, 2008; Ryberg et al., 2012). For many, connectivism values pedagogy and technology as tools for fostering autonomy, diversity, interactivity, and exteriority as well as the improvement and transformation of learning through the integration and distribution of knowledge using various communities and networks that stretch beyond academia and its curricula and protocols (Bates, 2019; Lamtara, 2023; Reyna, 2023; Voskoglou, 2024).

In some respects, one could argue that Siemens (2006, 2017) introduced the technological warrants and defining principles that inform connectivism. Downes (2008, 2022) extended its discourse, epistemological underpinnings, and wider implications for teaching and learning in the digital age. However, leading authorities in online learning and distance education such as Bates (2022) have expressed a sense of dissatisfaction with Downes's (2022) discourse and contributions to connectivism as a new theory of learning in education (also see Clarà & Barberà, 2013). According to Bates, Downes dismissed the traditional theories of learning and underplayed the social and economic forces that often condition pedagogy, leading Bates to suggest that Downes's brand of connectivism may be far removed from teaching and learning as it is appreciated by most scholars and practitioners in traditional academic institutions. With that said, there also appears to be a rather unorthodox consideration of language and literacy in Downes's (2022) presentation of connectivism that Bates (2022) seems to have underappreciated. More specifically, Downes's *connectivist model of literacy* is at odds with the dialogic view of connectivism and digital networks posited by writers such as Landow (2003, 2006), Ravenscroft (2011), Gunkel (2018), and Dennis (2019, 2022). Their contributions draw attention to the ways in which a dialogic understanding of language, texts, and power is inseparable from the digital networks or *hypertextuality* on which so much of connectivism is substantiated and

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actualized for online educators. For these scholars and others, a dialogic world view enriches and advances connectivism as a *pedagogical paradigm* suited for the digital age. However, it appears that Downes's (2022) connectivist model of literacy undervalues significant features associated with a dialogic view of literacy, particularly as it relates to power (discussed below). This minification invites novice educators as well as seasoned advocates for connectivism to think rather narrowly when it comes to understanding connectivism's relationship to a dialogic philosophical discourse that explicates the role of language, texts, and power in digital spaces (Colgan & Maxwell, 2020; Dennis, 2019; Goldie, 2016; Mattar, 2018; Voskoglou, 2024). In fact, the pedagogical cost of advancing Downes's paradigm may be higher than ever with the increasing digitalization and corporatization of learning and the ingress of language and learning models such as ChatGPT as text-making tools and surveillance instruments (Beetham et al., 2022; Crow & Dabars, 2020; Reyna, 2023; G. Smith et al., 2013; Williamson et al., 2020).

For example, internet corporations such as Google, Microsoft, Facebook/Meta, and Amazon use digital technology, artificial intelligence, and their supporting surveillance capacities to textualize, operationalize, and monetize the dialogism in digital connectivity in ways that have created asymmetries in knowledge, learning, and power (van Dijck, 2013; Varoufakis, 2023; Williamson et al., 2020). In her study of the mechanisms through which advancements in digitalization have made surveillance a valued feature in contemporary capitalism, Zuboff (2019) reported that this new corporate orientation and economic trajectory "strips away the illusion that the networked form has some kind of indigenous moral content, that being 'connected' is somehow intrinsically pro-social, innately inclusive, or naturally tending toward the democratization of knowledge" (p. 9). One of the results of this transformation is that our social interactions and digital connections are being converted into forms of texts that serve the practices and commercial ends of others, particularly internet corporations. For instance, Zuboff claimed that corporate power and practices instrumentalize our data and digital texts, then redeploy them to command our behavior and increase their profits (also see Komljenovic, 2021). The instrumentalization of power through such practices

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works "its will through the automated medium of an increasingly ubiquitous computational architecture of 'smart' networked devices, things, and spaces" (Zuboff, 2019, p. 8). In the name of connectivity, internet corporations have operationalized behaviorism for the digital sphere. The term *behaviorism* is often associated with a philosophy of learning that suggests that humans can be conditioned to effectuate certain patterns of behavior while disavowing others (Medler, 1998; Noddings, 2016).

Unfortunately, the embrace and championing of connectivism as a new learning theory despite its challenges and deficits may have blinded us to the fact that internet corporations have used their power to co-opt the general ethos of connectivism and operationalize it as a form of behaviorism for their own ends (Cope & Kalantzis, 2009; Komljenovic, 2021; van Dijck, 2013; Zuboff, 2019). In this context, digital connections reproduce the kinds of asymmetries of power and inequality that many connectivists might oppose yet appear ill-equipped to frame or combat as higher education increasingly appropriates the values and practices of internet corporations in the name of efficiency, improved learning outcomes, and institutional solvency (Beetham et al., 2022; Crow & Dabars, 2020; Varoufakis, 2023; Williamson et al., 2020). With this context in mind, the question that this paper attempts to address is, what can an architectonic appreciation of connectivity teach us about the relationship between power, literacy, and pedagogy and the prospects for an alternative philosophical discourse and paradigm to advance connectivism?

Purpose Statement

To examine the question above, I will calibrate the term *architectonics* and use it as a discursive framework to illuminate the exercise of power and intertextuality in dialogic relations, particularly the social and digital networks that sustain connectivism. In general, architectonics is used to describe systems of relations, especially the discursive relations that interconnect texts (Bakhtin, 1990; Dennis, 2020; Watson, 1993). Fairclough (2013) argued that the term *discourse* is typically

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used to characterize written and spoken texts as well as visual imagery and sound. As action upon other actions in a field of possibilities and contraints, the concept of *power* is not only exercised through texts, but it often reproduces the social, political, and economic status quo (Fairclough, 2013; Foucault, 1980). Historically, words and language have been the technologies and tools that help us to construct, shape, and orient our society, its institutions, and their various ideological discourses. As a result, LeVine and Scollon (2004) claimed that discourse analysis is a way to explain social and technological change. Generally, the focus of discourse analysis as a method for examining power is its ability to help us to identify and explicate *discursive formations*. This term describes the statements or claims that we make on a particular topic but also the governing criteria, regulatory logic, and world views that motivate discourse and translate power. The findings procured from a discursive analysis can create the kind of philosophical and pedagogical insights that scholars and practitioners can appreciate in education and other fields of study (Fairclough, 2013; Foucault, 1984).

To illustrate this point, I will explore the character of architectonics in dialogic philosophy and use it as a conceptual framework to evaluate Downes's (2022) connectivist model of literacy as a discursive formation that underplays the ways in which power is exercised through the interdiscursivity found in language, texts, and networks. After assessing Downes's model, I present an architectonic model of connectivism to demonstrate what multiliteracy looks like as an expression of the *intermediality* that is enabled by digitalization and conditioned by power. This alternative model not only challenges our current understanding of connectivism, but it also encourages us to reconceptualize and advance connectivism as an architectonic pedagogical paradigm for the digital age.

Architectonics as Dialogic Philosophy

As an interdisciplinary concept with deep roots in the Western philosophical tradition, the term *architectonics* is characterized and appropriated in different ways by thinkers across several disciplines and fields (Atkins, 2014; Dennis, 2020,

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2022; Duddy, 2018; Manchester, 2003; Ypi, 2021). In the field of architecture, the term typically describes the science of building and the qualities associated with the architectural design of structures, spaces, and forms. In the fields of philosophy and education, the concept has a more complex and multidimensional character and lineage. For example, architectonics is typically associated with Immanuel Kant (1979, 2007) and his philosophical influence on many of our ideas about associative thinking, constructivism, and the organization and purpose of knowledge and education (Dennis, 2019; Duddy, 2018; Hawkins, 1994; Medler, 1998; Noddings, 2016). The term's character is particularly significant in Kant's meditations and views on academic reform and those of the German pedagogue Philip Melanchthon. Melanchthon valued architectonics as a rhetorical tool for developing appropriate systems and subjects for teaching and learning (Gross, 2000; Manchester, 2003). However, in his assessment of architectonics in higher education, Derrida (2004) noted that Kant defined architectonics as the *art of systems* that convert vulgar knowledge into science, thus defining the regulatory function of reason that is key to organizing and operationalizing human cognition as well as the relations among the academic disciplines and the faculty (see Kant, 1979, 2007).

According to Holquist (1990), Kantian thought is an essential starting point in understanding the dialogic essence that the Russian philosopher Mikhail Bakhtin locates at the center of social interactions and communication. It is Kant (2007) who insisted that the inner workings of our minds connect, shape, and organize our experiences and knowledge of reality. In other words, how we experience the world and formulate knowledge and meaning are dependent on the associative and synthesizing power of the categories in the mind and how they condition how we see and act. As a result, our judgments or thinking bridge the gap between our minds and the world. Unlike Kant, Bakhtin (1990) valued the interaction or mediation between mind and world as a dialogic space. For him, words operate as a system of signs linked in a network of relations sustained by *dialogue* or the interaction of utterances or words in communication. Bakhtin (1981) claimed, "The word in language is half someone else's." We make it our own when we adapt it to

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meet our "semantic" and "expressive" aims and warrants in particular social contexts (p. 293). In this sense, *dialogism*—the term students of Bakhtinian thought use to signify his dialogic theory and world view—rearticulates Kantian architectonics (Holquist, 1990).

In Bakhtinian dialogism, meaning is relative. It is not only a name for the simultaneity of differences found in dialogic relations, but it also characterizes the multiplicity inherent in all human perception. Holquist (1990) claimed, "Dialogism is a form of architectonics, the general science of ordering parts into a whole" (p. 29). In other words, it is a science of relations in which words and dialogue permeate its character and actualization. According to Holquist, dialogism is essentially a theory of knowledge as well as an architectonic of perceptions, which explains why—as a conceptual framework—it provides explanatory value in many different fields of study. Bakhtin (1986) imagined the interdiscursivity in texts as the primary given in thought as well as the academic disciplines. He insisted, "Where there is no text, there is no object of study, and no object of thought either" (1986, p. 103). Bakhtin (1990) also argued that our dialogues, observations, and perceptions are all acts of authoring, creating connections that assume the form of a text (also see Barthes, 1989; Foucault, 1984). In her attempt to synthesize Bakhtinian and Saussurean theories of language, Kristeva (1986) coined the term *intertextuality* to explicate the dialogic connections between words and texts. As sign systems, words and texts derive their meaning and constitution from other words and texts. To describe their dialogic and integrative nature in the process of meaning-making, Kristeva noted, "each word (text) is an intersection of word (text) where at least one other word (text) can be read" (1986, p. 37). Though Bakhtin's and Kristeva's innovation is not without issues and detractors, Allen (2022) reported, "Intertextuality seems such a useful term because it foregrounds notions of relationality, interconnectedness and interdependence in modern cultural life" (p. 5). He also agreed that it appears that *hypertextuality* unarguably fulfills Kristeva's vision of the interconnectedness of texts or intertextuality, along with an emphasis on dialogism that she inherited from Bakhtin.

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This might explain why scholars such as Landow (2003, 2006) have argued that hypertextuality is the digitalization of intertextuality. Digitalization is a form of writing and textualization that is produced through computers and computerized devices such as smart phones (Stiegler, 2016). Informed by the early contributions to hypertext theory and network thinking by Vannevar Bush and Ted Nelson, Landow (2006) used the term to signal a new thought-form, mode of non-sequential writing, and digital literacy. Hypertextuality is constituted by the networked character of texts powered by electronic links in the digital processes that substantiate and drive our personal computers and other electronic devices that are integrated by the internet and its supporting infrastructure. It connects all forms of text, data, and hypermedia, including verbal and nonverbal information. Landow argued, "Hypertextuality, which is a fundamentally intertextual system, has the capacity to emphasize intertextuality in a way that page-bound text in books cannot" (2006, p. 55). He went on to note that once a text is ensconced within a network of hypertexts, it can no longer exist alone as a single entity.

More significantly, Foucault (1980, 1984) pointed out that texts cannot exist outside networks of power. For him, we must identify and examine the ways in which conflict and power are always embedded in the production of discourse, textuality, and the maintenance of the status quo in society. In this context, several thinkers have suggested that intertextuality and hypertextuality are contemporary expressions of an idea of language and texts that is deeply rooted in the dialogism and interconnectivity associated with architectonic thought and practices (see Dennis, 2019, 2022; Landow, 2006; Watson, 1993). In an early assessment of the history of hypertextuality, C. Smith (1991) reported, "Hypertext relies on new technology to enable an old activity. The activity is making connections among texts and among thoughts. Now melded with evolving computer capabilities, new functions of connecting are being implemented in systems grouped under the term hypertext" (p. 233). In her prescience, C. Smith's assessment appears to frustrate the idea that connectivism is a new theory of learning, a view that Downes (2022) has attempted to support and advance with the help of a connectivist model of literacy that undervalues the role of power in its dynamic.

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The Connectivist Model of Literacy

Connectivism is often described as a learning theory for the digital age in which computer networks serve as a paradigm that explains the learning that occurs between nodes or sources of information shared among individuals, communities, and social collectives as well as computers and computer systems (Bernauer & Tomei, 2015; Siemens, 2017). However, Downes (2022) imagined connectivism as more than a response to digitalization. For him, it allows us to use features and insights from digitalization to address the paucity in traditional theories of learning and education in general. Downes claimed, "The digital age has revealed the artificiality of traditional theories of instruction" (2022, p. 59). As an alternative consideration, connectivism is advanced as a non-instructivist, non-cognitivist, and non-representational theory of learning. More specifically, he emphasized connectivism as a theory of learning that occurs in the formation of connections in a network. As such, learning consists of our being able to construct and traverse these networks, negotiating the knowledge that is created and distributed across them. Downes (2022) reported, "When a person learns, or when something learns, a connection is physically created between two nodes or two entities in a network" (p. 59). A change in the constitution and properties of one entity precipitates the transformation of another. Therefore, in this process of reformulation, connections vary. Downes valued connections as *events* that can expand or subtract and strengthen or weaken between the nodes in a network.

Unlike Siemens (2017), Downes (2022) distinguished networks in two key ways. There are *neural* networks and *social* networks. Neural networks describe the various forms of personal learning that occur in networks. However, social learning occurs in social networks. Downes claimed that neural and social networks describe the forms of learning that explain how we grow our knowledge based on how our perceptions and experiences are shaped and developed by the patterns in connectivity. In other words, knowledge is acquired through the process of pattern recognition and perception. The organization of connections in a network is how *knowledge* is characterized in connectivism. According to Downes (2022), "To know

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something is to be organized in a certain way, to learn is to acquire patterns, to learn is to have experienced something frequently enough to form a characteristic response to that thing" (p. 72). Therefore, connectivism is substantiated by the learning that takes place in neural networks and social networks. While they are considered separate networks, Downes claimed that pattern recognition and perception are the ways in which these networks interact. More significantly, he noted that neural networks and social networks interface through *emergence* and the process of communication or conversation. In fact, conversation or dialogue appears to play an important role in bridging the gap between Downes's views of networks and the differences in the neural networks found among people. For example, he claimed that, although there are similarities between our neural networks, there are also differences because every person's internal state is unique. The type of connections that might inspire one person to communicate something could lead someone else to communicate something completely different. As a result, dialogue between entities permits and enables the connections that form the networks through which learning is produced and knowledge is transmitted (p. 69).

This context sets the stage for Downes's (2022) connectivist model of literacy. He agreed that there are many types of literacy. However, Downes's consideration appears unorthodox when compared with other appreciations of the term. In one instance, Pangrazio and Selwyn (2023) noted that literacy reflects skills, but it also describes our ability to actualize knowledge through the dynamics of reading and writing and interpretation and action. In their study on the role of critical digital literacies in society, the authors recognized that advancements in digital technology allow learning and literacy to flourish across space, time, and organizational boundaries. Pangrazio and Selwyn (2023) used the term *literacy* to refer to one's capacity to learn and comprehend information as well as the social norms that condition it. For them, reading and writing are the key ways in which we signify literacy as well as learning. More importantly, Halliday's (1978, 2001) *socio-semiotic* view of reading and writing is also a valuable perspective because of the emphasis that he placed on literacy as an expression of intertextuality. This feature characterizes all human interactions and the social hierarchies and systems of

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power that condition and structure them. The intertextuality inherent in literacy also allows us to write with many voices, see with kaleidoscopic eyes, and operate in a variety of situations and contexts. For Halliday (1978, 2001), texts permit the kinds of complex interrelations and social exchanges that we associate with the function of language in the dynamics of power as well as education.

However, Downes (2022) introduced a competing view of literacy in his connectivist theory of learning. He claimed that what "we think of as 'literacy' isn't about language, it isn't about rules and grammars, it's about patterns. It's about recognizing common patterns and phenomena" (p. 82). We can recognize or perceive these elements because our neural networks are structured in a particular way. For him, they enable the practical application of connectivism as a theory of learning and a model of literacy. Downes (2022) acknowledged that there are several ways to characterize the kinds of pattern recognition that constitute knowledge, expertise, and skill in a particular domain, science, or discipline. To substantiate his model of literacy, he identified six types of patterns or basic concepts that define the social interactions that he associated with the development of literacy and expertise in a particular science or discipline. The concepts that help us to identify patterns in Downes's connectivist model of literacy are identified as *syntax*, *semantics*, *pragmatics*, *cognition*, *change*, and *assessment*. Along these lines, any discipline can be represented as a type or form of literacy. However, it is not enough for one to recall facts about a particular area of study. For Downes (2022), connectivist literacy means that one is literate or fluent in a discipline and able to engage in meaningful social interactions with other experts or those who can recognize, judge, and legitimate one's skills and qualifications. He asked readers to view his presentation of connectivism and literacy as a set of propositions that warrant more refinement through further empirical as well as theoretical study.

However, Bates (2022) doubted whether Downes's (2022) brand of connectivism could serve as the starting point that we need to move in this direction. It is not difficult to understand why Bates arrived at this assessment, considering that

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Downes's study contains several views that many scholars might find contentious or incomplete (see Bell, 2011; Dennis, 2019; Ryberg et al., 2012). Downes's (2022) views on language and literacy exemplify this point. For instance, readers are left unsure how his model of literacy would fit into his view of the relationship between neural networks and social networks, particularly since communication and conversation appear to bridge the gap between the two. Explaining this role might be further complicated by the fact that he suggested that we suspend many of our beliefs about the nature of language in his appreciation of literacy as a form of pattern recognition. However, pattern recognition becomes more difficult to achieve in the complex systems associated with the paralogic, intertextuality, and multidimensionality inherent in digital networks (Landow, 2003).

Hayles (1991) and other students of network theory would agree that within unpredictable and heterogeneous systems influenced by digitalization it is very possible to find patterns and deep structures of order encoded within them. On the other hand, the indeterminacy associated with these complex relations often resists formalization. As soon as any pattern or order is discovered, constituted, and communicated using language, it is compromised by the appearances and epistemological possibilities that new ones inspire. Hayles (1991) reported, "As soon as discovery is communicated through language, it is also constituted by language" (p. 5). She also noted that language is an active instrument with its own pathways, resistances, and subversions. However, Downes's (2022) study undervalues these characteristics and the role that power plays in shaping them and the dynamic interrelations that condition and form discourse and networks (also see Siemens, 2006). Foucault (1980) claimed, "Power is employed and exercised through a net-like organisation. And not only do individuals circulate between its threads; they are always in the position of simultaneously undergoing and exercising this power" (p. 98). Therefore, power must be recognized as a factor in networks because that is how it circulates. For Foucault (1980), power exists only when it is enacted and integrated into a network or field of other actions and possibilities. In this sense, power and knowledge are interwoven. The exercise of power creates knowledge and vice versa. More significantly, Foucault argued that

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language and discourse make the circulation of power and knowledge possible. However, he also reported, "There can be no possible exercise of power without a certain economy of discourses of truth which operates through and on the basis of this association" (Foucault, 1980, p. 93).

These discourses establish the terrain on which knowledge is built, legitimated, and reproduced. Therefore, whatever pattern a learner and *their* community might discover in a particular network, those relations and their actualization are always permeated and policed by those with the authority or means to control and certify knowledge, particularly in the academic disciplines. Unlike Downes (2022), Foucault (1995) imagined the implications of disciplinarity beyond literacy. As a concept, the term *discipline* has a dual character in Foucauldian thought. Discipline describes the ways in which we organize, distinguish, and legitimate a body of knowledge. It is also the term Foucault used to signify a regulatory force that (re)orients one's views of reality, shapes texts, and controls one's behavior. For thinkers such as Foucault (1995), the regulatory forces—particularly in behaviorist practices—are features rather than anomalies in our systems of education. To become educated always requires us to submit to the will of pedagogues and pedagogic norms (Usher & Edwards, 1994). As such, education is both carceral and liberating as well as repressive and performative. As a discursive practice, it is also a social activity immersed in varying layers and levels of signification. In this sense, education reflects the intertextual workings and signification of texts. Usher and Edwards (1994) argued, "Education, like all cultural activities, is immersed in and formed by significations." In fact, education opens us to "the play of difference in meaning" and the ways that diverse agents seek to "en-close" and "fore-close" this play (pp. 138-139). Moreover, Fetzer (2001, 2004) has suggested that conceptualizing education and cognition as semiotic systems trouble the tenets associated with connectivist thinking. Based on these assessments, we can gain a different view and understanding of connectivism and literacy when we imagine the signification and intermediality in discourse, texts, and networks through the lens of power, particularly as it operates in education. With this in mind, I will provide an alternative characterization of connectivism and literacy, revealing

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what they might entail when they are reimagined using the architectonic philosophical framework discussed above.

The Architectonic Model of Multiliteracies

According to Varoufakis (2023), advancements in computerization and digitalization have altered the dynamics of capitalism. He attributed this social and technological transformation, in part, to the privatization of the internet by large technology corporations and the manner in which Western governments have responded to major crises over the last two decades. However, Boltanski and Chiapello (2005) anticipated these changes and even described the impact that they would have on our ideas about governance and networks. More specifically, they argued that the connectivity and networking capacities that digital technology creates has reoriented capitalism and highlighted the ways in which networks can be used to make public management a more efficient entity for governing the rising levels of diversity and complexity associated with living in a digital age. As a result, disciplinary areas such as management and pedagogy are being brought closer together through digitalization, requiring us to reconsider the levels of learning and productivity that occur in formal and informal settings (see Bernstein, 2000; Cope & Kalantzis, 2009, 2015). As the development of corporations such as Google have accelerated in the last decade, our thinking about the relationship between management and pedagogy and the utility of social connectivity and networks in a digital economy are of growing interest to students of network theory. For example, August (2022) turned to the ideas and writings of scholars such as Foucault (1980, 1995) to argue that power must be recognized as a key factor in the complex practices and connections that reproduce the conditions and factors in networks, whether they manifest in education or the workplace. These elements operate without a controlling center, establishing patterns that are often difficult to predict without technology. As such, connectivity is increasingly derived from "a continuous pressure—both from peers and from technologies—to expand through competition and gain power through strategic alliances" (van Dijck, 2013, p. 21).

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To illustrate how multiliteracy and connectivist practices complement each other in networks permeated by discourse and power, I will explain how texts operate as an expression of *intermediality* and what this looks like in practice as an architectonic pedagogical paradigm for the digital age. First, I examine how the intertextuality of texts serves as a metaphor and model for understanding connectivity and networks. This claim is substantiated by the hypertextuality and hypermedia spawned by digitalization and the internet, highlighting the relevance and role of texts in advancing reading and writing as multidimensional expressions of literacy and pedagogy. I also reveal how power permeates these processes and illuminates the intermediality that constitutes and conditions pedagogical relations.

Texts and Networks

To understand intermediality and the intertextual and hypertextual relations that it models, we must first recognize computers and their correlating devices and infrastructure as architectonic instruments or *text-making* tools (Bolter, 2001; G. Smith et al., 2013). The electronic reading and writing that computerization and digitalization facilitate are considered exercises in semiology or the study of signs. In semiotic processes, meaning is generated in the movement of one sign and signifying moment to another in the act of referencing and interpreting. This system is fundamental to the notion of intertextuality that scholars associate with reading and writing in the Kristevan sense of the term discussed above. In modeling how one text intersects and transforms another, Kristeva (1986) sought to explain how reading and writing resist full communication and interpretation as a consequence of the incessant reformulation of texts and meaning. According to Bolter (2001), computers encourage us to create and manipulate signs and the textual relations that shape the interpretation and representation of meaning in verbal as well as nonverbal forms of texts. With the help of the internet and digital coding, the computer and other multimodal devices transform our experiences and information into texts. In other words, digital technology produces forms of inscription, ascription, and storytelling that underwrite the semiotic relations and

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text-making features in computerized devices. This methodology reproduces details procured or extracted from our social interactions and transforms them into varying modes and models of texts that can be curated, assessed, classified, and circulated (G. Smith et al., 2013).

The text-making function of computers is nearly impossible without the electronic links or networks formed by hypertextuality and powered by the internet. Hypertextuality depends on the capacity of computer networks to feature multiple aspects of a text as a novel element in an expanding system of signs and information (Bolter, 2001). As a fundamentally interconnected and integrative system, hypertextuality emphasizes and operationalizes the qualities and capacities of intertextuality in the digital sphere (Landow, 2006). More specifically, Nelson (1987) coined the term to refer to the non-linear and non-sequential writing or texts connected by links that provide multiple pathways or trails to other texts (also see Bush, 1945; C. Smith, 1991). In clearer terms, hypertexts describe a network of interconnected texts and an electronic system of reading and writing. Bolter (2001) also reported that hypertexts consist of knowledge and their connections, whether they are expressed in words, sounds, graphics, or videos. The multivarious connections and pathways in hypertexts aid the construction of knowledge and meaning on computer screens and smart devices in ways that are difficult to replicate through speech. This might explain why Bolter (2001) argued, "A text as a network may have no univocal sense. It can remain a multiplicity without the imposition of a principle of domination." (p. 36).

However, Landow's (2006) assessment frustrates this claim. He reported, "Writers on hypertext almost always continue to associate it with individual freedom and empowerment" (p. 2006, p. 335). For him, advancements in technology always raise questions about institutional changes, power, and social costs. Landow (2006) argued, "Technology always empowers someone. It empowers those who possess it, those who make use of it, and those who have access to it" (p. 335). However, power produces negative as well as positive effects. For better or worse, it is through the conflicts and struggles associated with the exercise of power that

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things get done and become what they are (Watson, 1993). Foucault (1980) insisted power is prohibitive as well as productive. It is a force that produces things, forms knowledge, and orchestrates discourse and texts. In other words, Foucault (1995) imagined power as a constructive network that permeates the entire social body.

According to Foucault's logic, the operation of power extends to hypertexts. They represent a new tool for social control that is exercised through the production and regulation of content and texts in digital spaces (Lemke, 2003). For instance, hypertextuality heightens the incessant dialogism and parasitism that give life to new texts and meanings (Derrida, 2004). As old texts reformulate, they must operate between freedom and constraint in order to allow future texts to develop out of those that exist in the current moment and in the past. As a result of the constant movement of meaning in the incessant (re)production of content and texts through various forms of digitalized hypermedia, they create a fabric of signs and signification that always generates a surplus of material and meaning (Marx, 2007; Zuboff, 2019). This surplus often shows up in the metadata that is largely hidden and controlled by internet corporations and their algorithms and agents. According to Stiegler (2016), digital technology and the forms of digital texts that it produces are largely organized and controlled by the Big Four technology companies—Google, Facebook/Meta, Apple, and Amazon. He reported, "The digital industry is an economy of data, and it functions by tracking and then capturing the activity of web users, employing extraordinarily complex tracking systems" (p. 160). In fact, these corporations are strategically positioned to manipulate, operationalize, and monetize data from the surplus content and texts generated by the hypertextuality that sustains the social connections and interactions that permeate internet platforms, including those designed for teaching and learning. As such, it is difficult to refrain from contributing to the production of surplus texts because they automatically feed on our experiences "as we engage in the normal and necessary routines of social participation" (Zuboff, 2019, p. 185). Therefore, the surplus texts that emerge as a consequence of the perpetual flow and interconnectedness of texts and digital media begin to resemble a capitalist economy in which a few exercise power and control over the behavior and the

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production of texts by individuals as well as entire populations (Frow, 1990; Marx, 2007; Zuboff, 2019). In this context, hypertextuality emerges as a guiding architectonic thought-form for modeling how power intermediates texts and permeates the connectivity in networks for learning (Dennis, 2019; Landow, 2003).

As a concept, the term *network* is often employed to characterize a range of phenomena and practices. In education, it is typically used to describe how various resources, content, and communications are integrated to foster connections between the learned and learners and learners and their peers (Ryberg et al., 2012). In this context, learning is not only social, but it is also constructivist or *architectonic* in the sense that we come to know through dialogue, struggle, and the reformulation of texts in their analog and digital modes (Dennis, 2019, 2022). Language and communication are essential to the function and sustainability of networks and their cultures. The texts that we communicate and share in a network are always integrated and connected to knowledge or content that will impact the future thoughts and actions of others. The sociology of networks derives from the interactivity generated by the various ways in which we communicate and connect heterogeneous materials in a particular system of relations. In a network, we are constantly adapting and recombining texts to produce relevant knowledge to achieve our aims and address various contingencies in our life and learning situations. This reformulation explains why Barthes (1989) valued texts as a metaphor for networks. Texts are performative in that they are always growing out of other texts, overlapping through intertextuality and encounters with hierarchies and disciplinary boundaries. When a text signifies its heterogeneity and incessant intertextuality, Barthes (1989) claimed that it also *intermediates* (p. 59).

Intermediality and Multiliteracy Pedagogy

While several terms have been used to explain the signification and supplementation that extend the life of texts, the one best positioned to illuminate this process, particularly as it relates to literacy and pedagogy, is *intermediality*. The concept describes the network of modes and means that constitute intertextuality

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and hypertextuality as they are inspired and enabled by the diversity and multidimensionality of digital hypermedia. As an umbrella term, intermediality is often used to explain the dialogic qualities that interconnect poststructural considerations of intertextuality and hypertextuality and how they remediate printed texts (Bolter, 2001; Landow, 2006). Though the concept continues to evolve, Allen (2022) noted that intermediality is an attempt to explain how advancements in technology and telecommunications mediate the world of book-based media and their contemporary digital adaptations and expressions. The character of intermediality also accounts for the ways in which the dynamism associated with the heterogeneous elements and interactive features enmeshed in digital technology also mediate and (re)produce various forms and modes of content, texts, and hypermedia. In other words, it signifies the *infinite betweenness* of reality and representation and theory and practice (Allen, 2022; Cope & Kalantzis, 2015; Dennis, 2022).

In his study, Allen (2022) also highlighted how intermediality illuminates the multivarious ways in which students and teachers are able to interact using digital communication. In his assessment, he explained how intermedial instruction helps one to bridge the gap between one's analytical and social skills. Allen also described how some scholars see multimedia technologies increasingly being integrated into the vast tapestry of contemporary life. His point supports what Beetham and Sharpe (2020) have called the *dialogue* between teaching and learning. They might agree that educators are often excited about using advanced technology to bridge the gap between these two areas. However, critics sometimes accuse teachers of championing and employing these tools whether they are pedagogically effective or not (Beetham & Sharpe, 2020). Therefore, teachers must be in position to correlate, contextualize, and adapt their philosophies, tools, and practices in order to be effective in multimedia environments (Allen, 2022; Beetham & Sharpe, 2020). One of the ways in which educators have responded is by embracing a multimodal and architectonic view of literacy and pedagogy or what has been described as *multiliteracy* (Cope & Kalantzis, 2009, 2015; Watson, 1993).

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Multiliteracy pedagogy is rooted in an epistemology of pluralism. It does not require people to erase or abandon their different experiences and subjectivities in the teaching and learning process. According to Cope and Kalantzis (2009), the scholars associated with The New London Group indicated that advancements in digital technology have necessitated a change in our understanding of the role of literacy in our pedagogical efforts. In fact, they supported the use of the term *multiliteracies* to signify the various ways in which digitalization transfigures our modes and means for meaning-making and influencing our behaviors and practices. Multiliteracy pedagogy broadens our understanding of discourse and texts to account for the increasing diversity and plurality associated with hypertextuality, multimedia technology, and multimodal pedagogies that are enabled by the internet and the digital and social networks it enables. In other words, the multimodalities supported by digital technology interface written modes of meaning with those generated by oral, visual, audial, gestural, tactile, and spatial patterns of meaning. Furthermore, multiliteracies manifest different kinds of pedagogy and inspire dialogic modes of meaning in dynamic representational resources and texts that are constantly being constructed and reconstructed by the hypertextuality that substantiates digital media (Cope & Kalantzis, 2009, 2015; Sharpe & Beetham, 2010).

The New London Group can help us to imagine what multiliteracy looks like as an architectonic pedagogical paradigm based on the dialogism and interconnectivity represented by three interrelated concepts: *design*, *designing*, and *redesigned*. In this model, texts operate as a form of pedagogic discourse (Beetham & Sharpe, 2020; Bernstein, 2000; Cope & Kalantzis, 2009). Texts permit power to bring pedagogical discourse into a network of relations for the transmission of knowledge and acquisition of learning. As the art and science of teaching and its various theories and methods, multiliteracy pedagogy models architectonic relations that account for the discursive practices and processes in which we acquire and develop new forms of knowledge and conduct in the act of networked learning, particularly in digital spaces (Bernstein, 2000; Landow, 2006). According to The New London Group, these forms are artifacts of *design*. The concept of design includes the

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various grammars associated with all discursive activities and all dialogic systems and the diverse ways in which they can be ordered to produce meaning and influence action. Designing describes how meaning is structured and shaped to transform resources of meaning in the processes of (re)presentation and (re)contextualization (also see Bernstein, 2000; Halliday, 1978). Reading, writing, speaking, and listening are all essential and transformative activities in designing and expressing meaning. Redesign recognizes the fact that design involves intermediality and recontextualizing, where the features of texts are selected and adapted to mediate and relate other discourses and skills. It also recognizes the fact that the exercise of power is always inherent in the transformation of the old to create new knowledge, capabilities, and networks for learners as well as educators (Bernstein, 2000; Cope & Kalantzis, 2009; Fairclough, 2013). Therefore, it becomes increasingly difficult to ignore the significance of power in the network logic on which connectivism has been established.

Conclusion

To stress this point, this study signifies the role of power in networks in ways that many investigations of connectivism do not. In turn, it also values and advances a pedagogy of multiliteracies based on architectonic concepts and the interconnectivity of learning resources that digital technology enables. These concepts are significant for innovation and learning in the workplace and education. Like managers, teachers are increasingly viewed as designers of learning. However, AI-inspired learning language models like ChatGPT are also beginning to play influential roles in what the design of learning looks like and how students use technology to shape their own learning experiences and build connections. This might explain why more scholars have supported the call for pedagogical research to be reimagined as a constructivist or *architectonic science* that studies how different philosophies, methods, and practices motivate and advance teaching and learning contextualized for the digital age (see Atkins, 2014; Dennis, 2019; 2022; Edwards-Groves, 2018). To encourage the study of pedagogy as an architectonic science, we can begin by considering a discourse and pedagogical

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paradigm based on the dialogic philosophy and architectonic principles discussed in this study. They teach us that the intertextuality or intermediality inherent in analog and digital texts can function as a metaphor and model for discussing the networking capacities at the heart of connectivism and multiliteracy pedagogy.

In fact, their networking function is not only heterogeneous and interactive, but it is also permeated and conditioned by power. This has been evidenced by the ways in which internet corporations such as Google have co-opted connectivist practices and revitalized aspects of behaviorism that progenitors of connectivism such as Downes (2022) might disavow (van Dijck, 2013). However, the digital reorientation of capitalism and the appropriation of connectivist practices by internet corporations suggest that Downes's view of connectivism and literacy may be ill positioned to help us address this phenomenon and the ways it fosters inequality. This point also suggests that aspects of connectivism and behaviorism may have more in common than many advocates for connectivism presuppose. Unfortunately, too many of us have embraced the rhetoric of connectivism without considering or addressing its challenges and economic implications. As such, connectivism may not be the novel theory of learning that many have imagined it to be, particularly when one considers the fact that the capitalist practices and imperatives of internet corporations signal behaviorism. Hopefully, the alternative discourse and paradigm introduced above will inspire more investigations and conversations on how we might recalibrate and discuss connectivism in the future.

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