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## Reviving Knowledges through Play and Resistance: The Case of Navajo Conceptions of Space

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## Reviving Knowledges through Play and Resistance: The Case of Navajo Conceptions of Space

### Abstract

The authors explore a possible cause of epistemicidal predispositions of the dominant Eurocentric curricula. They posit that one way to determine a plausible contributing factor of this increasing devastation is to consider epistemicide through the lens of intellectual development. To do this, the authors examine parallel patterns of behavior in the domains of developmental and cognitive psychology. The authors then discuss an alternative framework to the Western conception of space within formal K-12 education by presenting the Navajo conception of space and play. Throughout the paper, the authors argue that all students—and especially those living in poverty in commercially constructed, large urban areas—deserve, and need, an educational framework that expands rather than constricts their schema of space and facilitates their agency to renew and regenerate their environment.

### Keywords

curriculum epistemicide, cognition, human development, spatial thinking, play, resistance, space and environment

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Children's opportunities for emotional support, friendships, integration within community, freedom in the environment, imaginative play, exploration, and creative self-development should be understood not only as needs but also as rights. The young, who are among the most vulnerable, the most dependent, the most in need of space and support for growth, and the most excluded from decision-making processes, can only make the best of what they have. To be genuinely helpful, any discussions of curricula for children and youth should begin with holistic inquiry into the curricula of the everyday lives they already experience and critical interpretations of the places of these lives. (Ellis, 2004, p. 39)

Children construct their growth and identity within their cultural and physical worlds (Piaget, 1974). Opportunities for them to openly and safely explore both natural and constructed environments are crucial to their development of cognition and cognitive schema (Ness & Farenga, 2016). However, and increasingly, a by-product of neoliberalism is the restriction of the physical movement of people (Finnegan, 2003), reinforced by the growing privatization of public spaces (Garrett, 2015) and the regulation of people's views of this process (Sawyer & Benozzo, 2019).

This narrowing of children's spatial awareness potentially happens not only in seemingly vibrant but highly regulated urban areas, but also in schools and everyday classrooms. As Baszile (2017) reminds us, schools are both the channel and artifact of normative discourses, including neoliberalism and its emphasis on profit, measurable outcomes, and social control and efficiency. To begin to challenge the pernicious intertwined relationship between children's regulated conceptions and uses of space in city and school, it is helpful to examine the underlying mechanisms by which children begin to construct their identities and cognition in relation to space. Before we examine epistemicidal tendencies and ways to revive knowledges, we begin with a discussion of the biological concept of adaption.

Adaptation is a biological tendency in which all organisms adjust and acclimate (i.e., adapt) to their environments. For humans, adaptation involves both physical and psychological functioning. While the ways in which adaptation occurs within all organisms differ from species to species, from individual to individual within species, and within different physical and psychological stages of a single individual, the general tendency to adapt in one way or another is invariant and therefore a biological factor of all organisms (Piaget, 1974). It is through the processes of adaptation that psychological constructs and intellectual development unfold.

But biological adaptation presents a paradox: On the one hand, during the process of adaptation, favorable situations can allow for great latitude leading

toward successful outcomes and opportunity for enrichment; on the other, hostile environments can contribute to extensive adversity and suffering that, in turn, lead to both physical and psychological decline. Poverty, and overall marginalization due to oppressive and exploitive hierarchies, such as white supremacy, cis-normative hetero-normative patriarchy, ableism, imperialism, colonialism, systemic racism, sexism, xenophobia, and homophobia are prime examples of adaptation under unfavorable conditions. In this regard, adaptation does not always lead to good things during the course of development, especially if one's socio-spatial environments are bleak. So the sentiments of "We'll adapt..." or "We'll adjust to the new normal" have been, unfortunately, the norm for the large majority of the population, not the exception. The 2015 movie *Room* illustrates how adaptation, a key feature of Piagetian constructivism, can lead to deleterious situations and unhealthy living conditions.

Joy, a 24-year old mother, and Jack, her five-year-old son are forced by Jack's biological father to live in a 10 foot by 10 foot shed that contains bare necessities for survival: a toilet, bathtub, small kitchen, a bed, and a television. Before leaving the shed, Jack is led to believe that his living environment is reality and the real world, which is often portrayed on television, is the only outlet for Jack, who believes that the outdoors is make-believe. When Jack is eventually rescued, he only speaks to his mother, and struggles with life in the everyday world. He insists on returning to the shed, because that is what he has been accustomed to for the last five years.

The movie *Room* provides a scenario that alludes to the notion of Piagetian constructivism, whereby the individual accommodates new traumas and adapts to substandard ways of life. After all, we construct newly acquired knowledge on past cognitive experiences. But these experiences are relative and depend on situational considerations. We need not see the movie *Room* to witness a child's adaptation of socio-spatial environments that lack the necessities for healthy cognitive, social, cultural, physical, and emotional development; all we need do is drive a few miles, walk a few blocks, or, in most cases, step out of our front door to witness spaces that precipitate deterioration and want rather than renewal or regeneration. If the environment in which one depends for survival includes home or school settings with no electricity, little, if any, running water, vermin or insect infestations, high incidents of violent crime, living arrangements in the area of, or next to, high levels of pollution, drug overdose, sex crimes, and child abuse as a result of chronic racism, homophobia, xenophobia, and misogyny, it is important to consider the important reality for children who often endure these abominable situations: they have virtually no choice but to adapt to the environment, even those children in loving and supportive families. Might this, then, be a case in which Piagetian constructivism leads to human privation? This question is posed because, shortly after birth, children construct their own

knowledge as they interact with their spatial, emotional, and social worlds. Children who live within and around factories and industrial complexes, for example, consider such environments as “normal” because they have lived this experience for nearly their whole lives.

Indeed, huge swaths of the population are subjected to pollution and rapidly declining open and public spaces, many of which contain diverse flora and fauna. Eventually, most will consider these conditions as the standard to which all other, and healthier, environments are measured. Children who are accustomed to living in areas with fairly high levels of air pollution concentration—areas with limited connection or contact with wildlife and open spaces—will eventually be made to believe such areas as the exemplary model to which all other living spaces, more specifically, cleaner living spaces, are judged. In other words, living spaces with high levels of chlorofluorocarbons eventually become the norm as wild and open spaces with cleaner air become the exception. To this end, the diversification of a child’s experience with different environments may contribute to lowering the impact of environmental generational amnesia.

In this paper, our overarching goal is to explore a possible cause of epistemicidal predispositions of the dominant Eurocentric curricula. We will argue that this putatively invariant and standardized curricula is responsible for the committing of curriculum epistemicide. In addition to the death of knowledges, the educational policymakers responsible for these curricula sadistically hold children and teachers accountable for poor scores on high-stakes tests (Pinar, 2017). We posit that one way to determine a plausible contributing factor of this increasing devastation, not only in schooling but in science and philosophy in general, is to consider this situation through the lens of intellectual development—that is, the development of knowledge from the early years and the identification of its trajectory beyond early childhood and into adolescence and adulthood. To do this, it will be necessary to examine parallel patterns of behavior in the domains of developmental and cognitive psychology. Indeed, exploration of this nature cannot be finalized here; much more investigation is necessary to uncover the root causes so that both theorists and practitioners have the tools necessary to stop policymakers from committing epistemicide in our schools and centers of knowledge.

However, we do discuss an alternative framework to the Western conception of space within formal K-12 education by presenting the Navajo conception of space and play. Throughout the paper we argue that all students—and especially those living in poverty in commercially constructed, large urban areas—deserve (and need) an educational framework that expands rather than constricts their schema of space and facilitates their agency to renew and regenerate their environment.

### Environmental Generational Amnesia and Constructivism in Reverse

While the meaning of constructivism is impossible to capture in a few sentences or a paragraph, it is possible to generalize that one of its main principles is that during the course of cognitive development, humans construct new knowledge based on prior or current experiences through active engagement in their surroundings (DeVries & Zan, 1994; Von Glasersfeld, 1998). As they actively interact in their unique environments, individuals implement these past and present experiences in both previously occupied and novel activities. During these events, they will eventually accommodate new knowledge as they encounter discrepant events—occurrences that are not anticipated by the individual—that are dependent on the situational contexts of their surroundings. The root of the term constructivism is connected with the notion that we build or *construct* our own meanings of the world. Therefore, constructivism is a philosophical and theoretical approach to the idea of knowledge under construction—that is, a theory of how individuals and groups of people make sense of the environments in which they experience in their everyday lives (Ness & Farenga, 2007). A commonly held position in Piagetian constructivist philosophy and its use in educational circles, then, is that, in constructivism, intellectual (i.e., knowledge-based) tasks improve in accuracy or complexity over time. So, while humans' initial conceptions of the world can be misinterpreted—namely, those that are often based on preconceptions of reality—children (from the semiotic function period and older) and adults have the potential to hone and re-hone their ideas about the world and their unique environments.

But what if this new knowledge under construction is not based on experiences that encourage or foster intellectual development? What happens when an entire generation is exposed to and possibly develops commonly held beliefs or assertions that are not based on fact or evidence drawn from data sources? Might the absence of reality in a conception and framing of an event or phenomenon (deficit views produced, for example, by schools, the media, urban stressors) be a situation of reverse constructivism (Ness, 2018)—that is, when constructivist tendencies are not based on fact or evidence? Kahn (2011) provides a useful example of a simple idea that demonstrates what we refer to as reverse constructivism: the rising and setting of the sun. To this day, many of us use cognitive shorthand when we explain daytime hours to be those between sunrise and sunset. Clearly, from both physical and ontological perspectives, the sun neither rises nor sets; rather, the earth rotates as it revolves around the sun. But based on our everyday experiences, we don't see it that way because as humans, we don't interpret our reality from a perspective at the macrospatial level—that is, we are not physically in the position to grapple with reality in astronomical terms.

Perhaps one of the most illuminating discussions on the problem of the reversal of constructivism is that of environmental generational amnesia, a term coined by Kahn (2002) that conveys the idea of an individual's lack of positive experiences in specific environments—those that seem to develop inaptly. Kahn demonstrates environmental generational amnesia in terms of air quality, and posits that if people live in a region with poor air quality or water pollution for a lengthy time period, they begin to be desensitized by the harmful consequences, even from nonpoint source pollution (Farenga & Ness, 2007), and will begin to suffer from unanticipated maladies associated with them. In support, research also suggests that the neighborhood in which a child resides influences social, emotional, and cognitive development that can lead to narrow, misguided conceptualizations of reality (Brooks-Gunn, Duncan, Klebanov, & Sealander, 1993; Leventhal & Brooks-Gunn, 2000). Even though parents may attempt to counteract the narrowing conceptions of reality, they are subject to the same environmental factors and messages as their children are. Kahn argues that when an entire generation begins to develop conceptions of events or phenomena that are not based on reality, members of that generation develop what he calls environmental generational amnesia. Thus, it is possible to argue that numerous generations have settled on the idea of sunsets and sunrises and not earth rotations; this is where environmental generational amnesia sets in. But those of us who learn about the nearly 24-hour rotation of the earth as it revolves around the sun know that when we use the terms “sunrise” and “sunset,” we are doing so insouciantly, but with no intention of deceiving others. And, reinforcing the possible hegemony of environmental generational amnesia, open spaces are increasingly becoming privatized or restricted in use (Garrett, 2015). In this regulation of increasingly shrinking open, public spaces, the educational environment in the school becomes especially important.

Environmental generational amnesia is more toxic when the constructions of realities fail the individual to the extent that they damage both physical and social environments. In developing the concept of environmental generational amnesia, Kahn draws from Diamond's (2005) concept of landscape amnesia, which describes what happens when subsequent generations of a given culture or society continue to exploit the land and its growth (trees and plants) for the purpose of building shelter or selling lumber. If we consider the problem of deforestation in Chaco Canyon in present-day New Mexico during the period between 600 and 1200 AD, the first generation of those who inhabited the area and engaged in logging for the primary purpose of heat and shelter might have believed that there would be limited or no extensive harm to the natural environment. However, after several generations, inhabitants of the area most apparently became enculturated in the act of logging because they probably did not realize (or did not have the thought of realizing) what forests actually looked

like decades or centuries earlier. As a result, constant acts of deforestation led to the point that woodlands were completely destroyed. In sum, reverse constructivism became a staple of the inhabitants' ways of knowing.

Kahn, himself, has expounded on environmental generational amnesia with a personal life experience that shattered the idea of constructivism—that is, constructivism in reverse—as a means to progressive social and intellectual development. In an interview conducted by The Natural Histories Project, Kahn states thus:

The land above my cabin that I built as a teenager was old growth...30 feet behind the cabin. And over subsequent years it's been logged five times. And each time it was logged...it was taken down to 11 inches in diameter on 60 degree slopes. And I walked the land and I cried because it's so sad and devastating. But now the problem is that people from the city, when they come up to these sorts of areas, they come and they see trees that are 11 inches in diameter and they think these are really good, healthy, and reasonable forests. What's their calibration? Their calibration is from urban settings or much more devastating settings. (Drummond & Steele, 2017, "Transcript" section)

Kahn is asserting a crucial point here: current generations (with exceptions), many from large metropolitan areas, are generally ignorant of the essential realities of nature. In his example, healthy trees had diameters much larger than 11 inches. But trunk diameters of 11 inches or less were thought to be "healthy" by current generations visiting the countryside from the city environs. With young children growing up in urban and suburban environments, descendants run the risk of developing environmental generational amnesia. As seen in previous examples, such a trend can lead to devastating consequences in future generations. Kahn also warns against adverse uses of various technologies and media. In raising the issue of technologies, he argues that while electronic technologies can be useful in the course of human development, it can be harmful if children are not, at the same time, engaging with their natural world. In short, technologies can be most helpful if they serve society by connecting children with the outdoors and the natural environment afforded to them.

Children's environmental generational amnesia is evident from the experiences of Johnson and Johnson (2006) as they set out to teach in a high-poverty rural elementary school in northern Louisiana. They provide a poignant chronicle of elementary school children's destitute spaces and circumstances in Redbud, Louisiana:



Many of the children who attend Redbud [Elementary School] are the poorest of the poor. Their homes are substandard and include trailers, shotgun houses, and housing project apartments. Some lack electricity or running water. Most of the children, 80 percent of whom are African American, live with a single parent, an aunt, or a grandmother who holds a minimum-wage job in a fast-food restaurant or discount store. Many of the children do not receive medical or dental care. Their neighborhoods teem with alcohol and drug abuse. Several have witnessed shootings and other types of violence. The children often come to school hungry and leaving nothing on their school breakfast and lunch trays (2006, pp. xvii).

This real situation describing the appalling living conditions of young children and, no doubt, their older siblings, and related adults, is one that serves as a perspicuous microcosm of thousands of areas throughout the so-called Western world. These living conditions are indeed an abomination, and Johnson and Johnson's portrayal of one of the poorest regions of the United States should resonate with nearly everyone. Their passage also sheds light on how living norms can lead to environmental generational amnesia. Johnson and Johnson state how shootings are common in children's living space in the Redbud community. If shootings and related forms of violence become regularized to the point that they are common experiences, these conscious experiences become situations or events that are assimilated in the individual's schemata. These experiences take up space, namely the places where poor children live and are expected to attend school. We can state, then, that living conditions involve places and spaces in which potentially adverse situations are construed as "normal."

Also of note in this discussion is the intrinsic link between neurological changes in the brain and children's experiences over time. In post-Piagetian research, developmental studies have increasingly shown the manifold nature of constructivism in terms of the unfolding of ideas through one's experiences and its impact on our biology, what Newcombe (2011) refers to as neoconstructivism. In sum, Kahn's position regarding environmental generational amnesia and Newcombe's suggestion of neoconstructivism shows that biological factors are inherently intertwined with the way we think—that is, greater diversity of experiences leads to neural imprinting, which thus increases young children's potential in intellectual tasks.

### **The Case of the Navajo Conception of Space**

We can extend Kahn's position regarding environmental generational amnesia and conclude that its pernicious impact on the curriculum since the American Gilded Age can, arguably, be seen as a crime against humanity. For the last 150

years or so, heads of corporate enterprises—from the robber barons to present-day education policy makers who genuflect to billionaires and politicians—both directly and indirectly contributed to the destruction of curricula (Paraskeva, 2016). Yet various ways of knowing during this time were either erased and replaced or slowly died away, oftentimes, with the cultures that were responsible for their enlightenment and development. In classrooms, they were erased and replaced by normative discourses that shaped knowledge around white, usually male, privilege. An extreme case of this process is found in the “Native American” boarding schools, the loss of black teachers in schools following *Brown v. the Board of Education*, and the de facto regulation of LatinX culture in southwester US schools. With time, corporations gained control of state and federal entities, including those involving mass education. From a Marxist perspective, there would be a continuation of the struggle between social classes—specifically between the bourgeoisie, or capitalists, and the proletariat, or workers, whereby the workers would be “educated” to engage in manual labor activities (Hill et al., 2002). As corporations transformed from manual labor into that involving white-collar commerce, so too did so-called Western nations as they transitioned from an industrial society to a post-industrial, virtual mindset. Thus, educational policymakers throughout the decades during the 20<sup>th</sup> century to the present time engaged in curriculum revisionism, whereby ways of knowing would be streamlined into categories or tracks; students of marginalized groups would be forced to engage in westernized systems of knowledge that have further suppressed their social and educational progress. As Kahn has argued within the context of generational change in spatial environments, particularly with regard to deforestation and the destruction and abuse of natural resources over time, a parallel argument can be made with the destruction and abuse of cultural curricula throughout the last century and a half.

In contrast to precepts associated with westernized developmental ways of knowing in light of Piagetian theory, we argue against the idea that mathematical and spatial thinking are entirely a priori constructions. Rather, this corpus of knowledge is based on the cultural boundedness of epistemological systems. To this end, research concerning the development of a posteriori universals will enable researchers and practitioners to recognize and appreciate the similarities and differences of mathematical and spatial thinking between two or more cultural groups. Pinxten et al. (2018) discussed cultural universals of spatial thinking and present an argument for a culturally-bound geometry curriculum. They address this curriculum specifically toward Navajo ways of knowing, but contend its usefulness in the learning of space and geometry for most populations. Based on Pinxten and colleagues’ work in unearthing the Navajo spatial curriculum, the notion of the strict universality of so-called Western geometry

should be challenged; Western conceptions of geometric and spatial thinking is incommensurable with that of the Navajo perspective.

Before discussing Pinxten's work related to the gathering of Navajo spatial constructs, it may be useful at this point to present an alternative definition to the a priori Eurocentric conception of space and spatial thinking. For one thing, westernized conceptions of space and spatial thinking are polysemic. In other words, unlike non-western meanings of space, which may not necessarily have multiple definitions or classifications, westernized versions have a plethora of meanings, each corresponding within different contexts. For instance, westernized conceptions of space have macro versions (e.g., astrophysics), micro versions (e.g., geographic spaces, such as distance, area, or volume), psychological versions (e.g., depth perceptions and occlusion), casual talk (e.g., parking space), and so forth. In grappling with this dilemma, one possible a posteriori leaning definition might be "one's ability to perceive, recognize, or conceptualize physical or intellectual constructs in terms of their position or location in both static and dynamic systems" (Ness, Farenga, & Garofalo, 2017, p. 10).

Pinxten (1976) developed a system for understanding universal aspects of space so that researchers are able to identify spatial behaviors characteristic of all cultures studied. He calls this system the Universal Frame of Reference, or UFOR. Pinxten's UFOR was created as a means of identifying universal spatial relations through semantic categorizations of specific spatial concepts. His categorization of universal spatial concepts of the UFOR were developed a posteriori. That is, the UFOR is a product of a great deal of detailed analyses from fieldwork, discourse, and observation. Each code or category, then, is based not on a priori assumptions or "absolutes," but on an empirical approach used while studying Navajo spatial characteristics. In explaining his rationale for the UFOR, Pinxten (2018) states

Piaget described the spatial system of the Western child as a logical and hierarchical structure.... It is by no means obvious that this structure...is universal. A first glance at the Navajo spatial model in the present model...or at the spatial knowledge of other cultures...immediately makes clear that neither the strict logical structures nor the hierarchical ordering of notions, need to be present in non-Western systems. Therefore, the relationships between each and every notion of space cannot be presupposed by the researcher. (p. 185)

For Pinxten, the universality of spatial thinking lay not solely in the tenets of the Western philosophical tradition. Instead, it is based on empirical data collected from both Western and non-Western cultural knowledge systems. Pinxten's view, then, diverges from Kantian tradition, which considers the form of space an a

priori structure. Moreover, he argues that philosophers and researchers in the spirit of Kant and his predecessors value the notion of spatial structures solely from the perspective of the so-called Western “academic” tradition. At this point, we provide two examples that demonstrate clear distinctions in westernized and Navajo ways of knowing space: hierarchical considerations and part/whole distinction.

### **Hierarchy**

In *Early Growth and Logic in the Child*, Piaget (1964) elaborates on the development of classification from early childhood through adolescence. Consider six plastic shapes: a thin, blue, small circle; a thick, red, large rectangle; a thick, purple, small circle; a thin, green, large circle; a thick, yellow, small rectangle; and a thin, brown, large rectangle. One way of classifying these shapes would be to place the three circles in one pile and the three rectangles in another pile. In this case, the class refers to shape. A second way of classifying them would be to place the three thin pieces in one pile and the remainder in a second pile. The class in this case refers to thickness. We could also separate the pieces in terms of small and large, in which case the class would be size. In a more advanced system, an individual might identify a country within a continent, a state or province within a country, a county within a state, a city within a county, a village within a city, and a neighborhood within a village. These examples of hierarchy demonstrate the westernized atomistic tendency to separate objects or ideas into corpuscular entities. In general, it is a hierarchical progression whereby a so-called higher, more complex construct necessarily implies the inclusion of so-called lower, more embryonic constructs.

Not so in the Navajo conception of space. Rather than a hierarchical structure, in Navajo space, there are organizational structures, which consist of three primary concepts: movement, volumeness versus planeness, and dimensionality. Westernized hierarchical systems follow an essentially Euclidean model that is identified through its staticity and atomistic organization. Instead, the Navajo-based organizational concepts are topological in nature and related to the lived environment, thereby demonstrating a more dynamic model. None of the three concepts are lesser than others (as in the Western model); they are composites that codetermine themselves and are not higher or lower in terms of subordination. It can be said, then, that the organizational disposition in the Navajo spatial system is not related at all to the westernized, hierarchical notions exhibited by children interviewed by Piaget. Therefore, educational procedures that would be appropriate for teaching concepts about space in Navajo cultural settings cannot, and should not, take the Western hierarchical notion of space putatively.

### Part/Whole Distinction

Similar to considerations of spatial hierarchy, the part/whole distinction in the westernized conception of space is founded on atomistic considerations. To be sure, the environment, in Western terms, is objectified to the extent that science accepts the separation of things from their settings as entities in and of themselves. Moreover, in westernized curricula, students are exposed to particular entities—objects, places, living organisms—abstracted from their own environments. Pinxten et al. (2018) noted that the segmentation of objects makes this approach all the more powerful in that entities in the Western physical and psychological worldview can be sliced and diced into smaller parts, which can be analyzed in themselves in more detail. For example, in cognitive and developmental theorists have historically concerned themselves with the segmentation of the mind and brain. So too have physicists and mathematicians prioritized the role of analytical investigation as a means of tapping the corpuscular nature of things. We see this also in school curriculum, which overwhelmingly emphasizes the notion of “taking apart” in order to know something better. The teacher might drill a subtraction fact as a means of abstracting it from its general context when students make repetitive errors, or, in the case of language, might take a word or phrase out of its context for the purpose of categorization. The science teacher will present the DNA molecule completely devoid of context for students to undergo analytical inquiry.

Unlike its importance in the Western perspective, part/whole distinction plays only a minor role in the Navajo worldview. The Navajo way of knowing the world is one in which processes and fluxes play a more governing role than dissection and segmentation. The emphasis is on change, transition, and progression, not on atomism and structure. The world is constituted of dynamic events, changes, and interactions that can be delved into and analyzed as such. It is less apparent, then, that an individual who identifies with this non-western framework seeks not to partition or separate aspects within a system that makes more sense in a fluent and ever-changing perspective. In this respect, objects cannot be viewed in the same manner as they would be in the dominant Eurocentric tradition. Likewise, form and structure are essentially minimized in importance since all characteristics of reality are based on processes and not on things.

Thom (1977) argued that, for the Western mindset, dynamic systems in non-Western ways of knowing, like Navajo conceptions of space, are petrified—that is, they are rendered still so that they can be dissected and then analyzed. For the Navajo mindset, this approach is foreign, unfitting, and peculiar in at least two respects. First, from a practical standpoint, land, for instance, cannot be divided and fenced off (as is the case in Western societies) because by doing so, one is

entirely misconstruing the idea of land as a living and ever-changing qualification of the world. And second, from a theoretical standpoint, one cannot engage in sensible discourse about the workings of the human body or another living organism by thinking atomistically since these workings are part of a system of fluidities and changes. It is worth noting, however, that part/whole distinction is by no means bereft to the Navajo framework. But it does play a secondary role.

### **Resuscitating Knowledges through Play and Resistance**

In this paper, we posited that the deaths of various knowledges—the committing of epistemicide—are the result of a stealthy Eurocentric, nationalist, one-size-fits-all set of curricula that has aimed to hold children and teachers accountable through rigid instruction and high-stakes testing procedures. We also suggested that this epistemicidal wave is caused, in part, by a developing form of reverse constructivism—akin to environmental generational amnesia expounded by Kahn (2002; Drummond & Steele, 2017). Undeniably, poverty plays an acute role in the onset of reverse constructivism as our acquired knowledges are often the outcome of how we engage in the environments in which we live and work. Simply consider the comparison between a child living in a middle-, upper middle-, and upper class household that possesses the necessary amenities for above average to excellent living conditions, and another child living in diminished conditions in which living quarters lack heat and hot water in the winter months, lead paint on the walls, broken doors and windows, infested by insects or animals that pose high risk of disease, no access to healthcare, dental care, or insurance, and are located in neighborhoods that promote constant fear and anxiety. Despite this constant suffering, we acknowledge the resistance and cultural knowledge of these neighborhoods—their ways of survival over centuries of oppression. A tragedy is that the rich cultural knowledge existing within such neighborhoods—often offering alternative conceptions of space and nature—may be contained and even erased by these stressful environmental factors. The eradication of poverty must be a key step in leveling the playing field so that all students can benefit from learning and exploring new and creative ideas.

In ending this ongoing death spiral, it might be worthwhile to consider, and act upon, a noteworthy alternative to the status quo that is furthering the epistemicidal cycle in westernized curricula—namely, playful thinking in the arts, humanities, and sciences. In their inspiring work, Hirsh-Pasek et al. (2009) have appealed to education policy makers to consider revivifying play and playful learning, given that play is a quintessential part of a healthy education—not only in the early years but throughout one’s educational development. Little, if anything, can be more valuable than a clarion call to bring play back into the learning process.

Parents and legal guardians have incompatible views about the meaning of their children to engage in play, let alone playful learning. Unfortunately, they often fail to identify play as a foundation for imagination—a construct that serves as the hallmark for deepening students’ social engagement and intellectual predilections. While play research is often inconsistent when considering the extent to which play and playful learning leads to more successful social and cognitive outcomes, longitudinal studies have shown uniformity in that they suggest positive influences in children’s and adolescents’ intellectual development (Jirout & Newcombe, 2015; Ness & Farenga, 2016; Ness, Farenga, & Garofalo, 2017). Hirsh-Pasek and colleagues’ (2009) position on playful learning is based on the idea of the presence of a false dichotomy between play and learning. In other words, playful learning seldom, if ever, served as a foundational construct of curriculum—not even early childhood curriculum. While indoor and outdoor play have taken on a central role, play, especially within the context of imagination, was mutually exclusive from teaching and learning; the two never really did coalesce at any time in our educational history (Ness, 2022).

Play and playful learning are the key to free expression toward a liberating curriculum and positive everyday life experiences (Hirsh-Pasek et al., 2009; Ness, 2022; Ness & Farenga, 2016). As we nurture and cultivate play and playful learning, we are reminded by Wang (2020a, 2020b) that, as educators, we need to recognize and appreciate the individual student’s experiences and how each individual comes into contact with and lives through curriculum for oneself—that is, the practice of *currere*.

Unfortunately, capitalistic expansion and the extraordinary powers given to for-profit and not-for-profit corporations have contributed to the death of play in our society. An argument can be made, then, that an indirect relationship exists between the exponential growth of capitalist (i.e., corporate) monopolization and curriculum epistemicide. With respect to this paper, mathematical and spatial epistemicide in the present-day standards-heavy curriculum is the result of the death of play. Individuals from early childhood through adolescence who have not been provided the opportunities to play and search out the answers to mathematical and spatial challenges in their everyday goings on eventually fall into the environmental generational amnesia pattern. The lack of play in schooling has been a common theme for several decades at this point. Commencing in early childhood, environmental experiences influence the extent to which both nature-deficit disorder and environmental generational amnesia can impact one’s life. Increased childhood opportunities to play and exploration of wild areas can foster a healthier relationship to the natural world and increase physical activity. To this end, future preservation and conservation advocates will need to increase the

number of wild spaces to ensure that these areas become the model for a more humanistic developmental curriculum that benefits all individuals.

A second consideration in challenging curriculum epistemicide is directly connected at the grassroots level: teachers and students engaged in resistance. There has been a paucity of research focusing on teacher and student resistance against conditions based on neoliberalism and corporate hegemony. Indeed, state-wide and nationalized school reform efforts have only served to alienate and exclude the voices of students and teachers and hold them accountable for “poor performance” (Pinar, 2017). As Sawyer (2017) has suggested, teachers and students need to develop a pedagogy of resistance, one that is “grounded in action...that collectively generates embodied change and hope...,” and that is “imbued [with] art and joy—with performative structures that quite possibly disrupt...normative ways of viewing education...” (p. 290). While the teachers’ and education workers’ strikes in 2018 and 2019—particularly those in Arizona, Colorado, North Carolina, Oklahoma, West Virginia, and the Los Angeles metropolitan area in California—were good starts, they were not enough to rebel and campaign against a multiplicity of problems facing education. Therefore, a collective effort on the part of students and teachers to engage in civil disobedience in addressing curriculum epistemicide and the related problems of social justice in education is sorely overdue.

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