Creating Purpose: A Case Study of the Creative Process of an African American Teen in Maker Education

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Abstract: This case study utilizes three theoretical lenses on creativity—cognitive, sociocultural, and Afrocentric—to visualize the creative process of an African American teen as she engages in making practices to design an Afrofuturist artifact. The study looks at how these lenses illuminate different facets of her design process by depicting her cognitive activities; visualizing the social, material, and temporal distribution of her practices; and revealing the emotions and cultural values that inform her decisions. By opening the space to community-derived knowledge in both the design and analysis of maker education, we aim to meet participants' worldview and advance our understanding of culturally sensitive learning.

Introduction

Creativity has gained attention in education both as a learning goal and as a learning practice in itself (for a review, see Hanchett Hanson, 2013). As a learning goal, creativity is portrayed as a fundamental skill for students to successfully adapt and thrive in our fast-changing world (Friedman, 2007), contribute to overcome humanity's pressing challenges (Gruber, 1989), and have fuller and meaningful lives (Csikszentmihalyi, 1996). As a learning practice, it is believed that engaging in the creative construction of artifacts affords meaningful and playful interaction with complex ideas (Zhang, in press). The use of creativity as a learning practice is greatly enhanced in maker education, where learners ideate, design, and build physical or virtual artifacts to address personally and socially meaningful problems (Blikstein, 2013).

Because humans have been making since ancient times (Dougherty, 2016), one may hurriedly think that the expansion of the maker movement is due to the massive participation of diverse people bringing their crafting experience and wisdom together. However, on the contrary, researchers have pointed out time and again the lack of diversity among its visible participants, mostly middle-class white men (Buechley, 2013; Calabrese Barton & Tan, 2018; Holbert, 2016; Vossoughi, Hooper, & Escudé, 2016). Given the potential of maker education to enhance learning, promote creative thinking, and master powerful technology, the maker movement can potentially perpetuate and increase educational inequities if participation is not intentionally addressed by considering inherent issues of culture and context (Blikstein, 2008).

While the propagation of makerspaces—or spaces equipped for making—across the globe has facilitated access to making activities (Fab Foundation, 2019), there are reasons to "suspend the assumption that participating in sanctioned makerspaces is inherently desirable" (Vossoughi, Hoppe & Escudé, 2016, p. 218). The first step toward inclusion is to consider how making—for being rooted in the experience and ideologies of a narrow and privileged segment of the population—can be alienating for others. In other words, rather than imposing practices and epistemologies such as making, we must reflect on the ways creativity and making are understood by other communities (Blikstein, in press) and be open to alternative values, practices, and beliefs.

Among those most underrepresented in making practices and associated science, technology, engineering, and mathematics (STEM) domains is the African American community (Calabrese Barton & Tan, 2018). Despite a rich inventing and crafting tradition, the maker movement is still missing "the powerful knowledge, practices, and collective wisdom of communities of color" (Calabrese Barton & Tan, 2018, p. 4). Although fragmented and suppressed, the African Diaspora maintains a connection through a shared history of oppression displayed in a variety of creative expressions in music, dance, and the visual arts (Ramos, 2010). Creativity is indeed deeply grounded in African American tradition as it has served as a critical source of endurance, survival, and resilience (Jenkins, 2005). According to Afrocentric theory, creativity is a core value for the Diaspora descendants to thrive despite dislocation and oppression (Karenga, 1996). Beyond personal enjoyment and self-fulfillment, creativity is, for this community, a crucial tool for bearing hardship and a shared communitarian value grounded on stories of survival. Through a distinctive philosophical language infused with traditions and beliefs, the Afrocentric worldview portrays a picture of creativity that, at its core, echoes the scholarly accepted idea of creativity as a sociocultural act while contending conceptions of creativity as an internal cognitive process

The study of Afrocentric theory in education is not new. Asante (1991) proposed Afrocentrism as a way to challenge the ideology of White supremacy in education. He asserted: "The little African American child who sits in a classroom and is taught to accept heroes and heroines individuals who defamed African people is being

actively de-centered, dislocated, and made into a nonperson" (p. 171). Dei (1993), noted the value of indigenous African knowledge in the context of education for environmental sustainability. Schiele (1994) and Johnson (2001) developed Afrocentric implications for African American students to thrive in higher education. Gaskins (2016), used Afrofuturism as a culturally relevant narrative to help minority high school students navigate STEM curricula in maker environments. In line with Gaskins, we aim to contribute to much-needed research on the potential of Afrocentrism to guide not only the design but also the analysis of creative making practices

Because the overwhelming majority of research and theory on creativity comes from Western perspectives, there is a tendency to impose values and ideas when analyzing the experience of non-Western people. We see creativity as a sociocultural construct whose meaning is made and remade by our ever-evolving societies. In other words, creativity is, in itself, a creative outcome of humankind. In line with Hanchett Hanson (2015), we believe that the concept of creativity "is one of our culture's most distinctive ways of thinking about change" (p. 200). Therefore, creativity is tied to culture and must be analyzed as such. As researchers interested in the educational value of creativity, we strive to find ways of making creativity visible for analysis and graspable for educational practice, and furthermore, counteract popular assumptions that position creativity as an invisible and individualistic force available only to a few. Analytic descriptions of creativity in educational contexts allow both researchers and practitioners to demystify the concept in order to advance toward more concrete applications.

The purpose of this study is to draw on cognitive, sociocultural, and Afrocentric lenses of creativity to examine the creative process of an African American teen as she engages in making activities. Through this analysis, we aim to understand: What do cognitive, sociocultural, and Afrocentric lenses of creativity reveal about the creative process of an African American teen? What aspects of her creative process become apparent when applying each lens? How do these lenses intersect, conflict, or differ when accounting for her creative process?

Theoretical framework

With the aim of both, making creativity apparent and also diversifying our understanding of it in the context of maker education, we will focus on three perspectives on creativity—cognitive, sociocultural, and Afrocentric.

The creative cognition lens

Cognitivist scholars attempted to unveil creative thinking by empirically tracing its inherent cognitive structures and processes. However, they concluded that despite the extraordinary outcomes that the mind can produce, creative thinking is nothing but ordinary thinking oriented toward solving a problem (Smith, Ward, & Finke, 1995; Weisberg 2006). To demonstrate this, Weisberg (2006) meticulously traced the creative thinking activities of famous artists and inventors. For example, in a case study, Weisberg (2006) broke down Picasso's process of painting Guernica into simple problem-solving activities such as remembering, planning, anticipating, judging, perceiving, comprehending, recognizing, and interpreting. Wertheimer (1982) noted that in addition to ordinary thinking, which involves the recall and application of prior knowledge, some problems require productive thinking in order to obtain a novel solution. Similarly, other authors (Perkins, 1981; Sternberg & Lubart, 1991) argued that problem-finding—or the conscious redefinition of problems—is a fundamental feature of creativity.

Psychometric approaches contended that divergent thinking—the personality trait of being able to produce many, different, and original ideas—facilitates ideation (Guilford, 1977; Runco, 2011). However, the correlation between divergent thinking and the production of novel outcomes has been challenged. Comparative studies found that while collaborative brainstorming can be stimulating, it can also generate cognitive interference as idea generation is continuously interrupted (Nijstad, Diehl & Stroebe, 2003). Likewise, case studies have shown that rather than thinking outside the box, "creative people actually think inside the idiosyncratic, often complex and interesting boxes they have acquired over their lives" (Weisberg & Hanchett Hanson, 2013, p. 72).

The creative cognition lens illuminates the structures and processes of creative thinking. Nonetheless, affective, cultural, and social components can only be understood by analyzing how creation is always situated in a physical and sociocultural environment.

The sociocultural creativity lens

The sociocultural lens moves the concept of creativity outside of people's minds and towards the context by shifting the attention from *what* is creativity to *where* is creativity (Amabile, 2017; Csikszentmihalyi, 1996). Rooted in Vygotsky's observations, sociocultural perspectives see creativity not as an internal insight but as a dialogue between the individual and reality through the means of artifacts such as objects, tools, symbols, and language (Vygotsky, 1980). Individuals not only *use* artifacts, but they also *create* them; they internalize, transform, combine, and externalize the world through them. Cole (1996) observed that human activity is not only mediated by artifacts but also situated within a community and its shared goals, rules, and roles. Therefore, creative outcomes are not the achievement of a singular creative mind but instead of the combined mediated

actions of individuals within a community. Building on that, Glăveanu (2013) argued that creativity is fundamentally distributed action across space and time. According to him, the affordances of the physical place, technologies, and artifacts are all incorporated into the creative process while networks of actors such as collaborators, community, mentors, providers, and audiences are also integrated. As a result, creativity arises from a synergy between the person and the world. As Csikszentmihalyi (1996) explains, "it is easier to enhance creativity by changing conditions in the environment than by trying to make people think more creatively" (p.1).

The sociocultural lens encompasses the cultural, social, material, and temporal dynamics that characterize creative work. These variables are particularly salient in the context of maker education where collaboration is promoted, and construction with tools and materials is believed to enhance learning. Given the centrality of the African American experience in this research, the Afrocentric lens can provide further specificities about the sociocultural experience of African American participants.

The Afrocentric creativity lens

Kawaida theory (a Swahili word that means tradition) is an intellectual synthesis of Pan-African values adjusted to the Diaspora experience envisioned by the scholar Maulana Karenga during the Black Power movement in the 60s to raise self-awareness and pride among the African American community. It proposes a value system that aims to reconstruct the African worldview while connecting it to the present challenges and aspirations of the Diaspora (Karenga, 2014). Among those values, Kuumba or creativity is defined as "to do always as much as we can, in the way we can, in order to leave our community more beautiful and beneficial than we inherited it" (Karenga, 1996, p. 551). From that definition and an examination of Pan-African values, we can deduce that creativity is conceived both as a social and transtemporal phenomenon.

The emphasis on the first-person plural personal pronoun *we* indicates that, as in sociocultural theory, the African worldview sees creativity as a social endeavor. While several Eurocentric models still see self-fulfillment and self-actualization as drives for creativity (Gruber & Davis, 1988) in Afrocentrism the purpose is the benefit of the community. In words of Karenga, creativity is "to heal, restore, and renew the African community by making things better and prettier and offering to the world the best of what it means to be African and human" (Karenga, 1996, p. 549). This conception is rooted in a collective notion of self and humanity explained in the Nguni word Ubuntu that roughly translates "I am because we are; and because we are, therefore, I am" (Mbiti, 1969, p. 108). Traditional African ways of living demanded a collective commitment of all members of the tribe for the subsistence of the whole (Nobles, 1972). Therefore, African people "understand the world in terms of we, in terms of the interrelatedness and interconnectedness of the Creator, cosmos, society, and the person" (Beatty, 2002, p. 213). It follows that the sense of togetherness characterizes not only humans' relationships but also human-nature dynamics which are vital to thrive as a species (Dei, 1993; Nobles, 1972).

Creativity in the African view is also a transtemporal phenomenon as it aims to restore the past to project the future. Creativity does not mean *made out of nothing*. It is a process that happens across time; it is about the new, but also about what is inherited. Rather than being a call for a reinvention of a new race, it is a movement toward the healing and restoration of the remains of a community toward its original greatness in order to "contribute to the forward flow of human history" (Karenga, 1996, p. 543). This constructive understanding of creativity is illustrated in the Adinkra philosophical symbol of Sankofa. The graphic image depicts a bird with its head turned backward, taking an egg from its back to represent a call of not being shameful of reaching back to reclaim what is lost in order to move forward (Muhwati, 2010; Temple, 2010). When applied to creativity, it implies that previous experiences and cultural-historical background are cornerstones to build the future.

Afrocentric and sociocultural lenses highlight how creativity is distributed across people, space and time. However, in the Afrocentric view, creativity is also a tool for resilience, perseverance, spiritual healing, and collective purpose toward the flourishing of humanity and nature. In the context of maker education, Afrocentric theory can potentially foreground the values that shape the creative process of African American participants.

Methods

The context of this study was the Remixing Wakanda project, a research implementation that occurred in a makerspace at a University campus in New York City. The project invited African American youth to design Afrofuturist artifacts by engaging in critical constructionist design. Critical constructionist design is a culturally relevant framework for making that consists of iterative activities of reflection, ideation, and making oriented toward critical analysis of past and present circumstances through the projection of future-thinking artifacts (Holbert, Dando, & Correa, in press).

Because the research team consisted of white American men (second author) and a Chilean woman (first author), we made specific moves to center the Black experience of participants. First, we openly recognized our position as outsiders and often antagonists of their narratives while positioning participants as the authorities on

their experiences and knowledge. Second, most sessions were co-facilitated by Black artists and scholars—such as award-winning designers Drs John Jenning and Stacey Robinson. Third, the Afrofuturist topic provided participants a personally meaningful aesthetic for engagement and creation. Finally, the makerspace was transformed and filled with African and Afrofuturist artifacts and materials for participants to appropriate.

Participants included five female African American teens ages 14-16; however, in this case study, the focus of analysis is in the creative process of one participant, which we will call Salena. While the novelty of all participants' creations is undeniable, we choose to focus on the creative process of Salena as it is particularly revealing to illustrate and contrast the features of each theoretical lens.

Using a case study as a qualitative method allowed us to dig deeper into a bounded unit of analysis through the multiple instruments used throughout the study (Merriam & Tisdell, 2016). We held a group interview at the beginning and end of the project and two interviews (online and in-person) during the prototyping phase. In each interview, we invited participants to share their work in progress, talk about how they came to their ideas, and discuss design decisions. We also took photographs and videos of all the making process, including journals, brainstorming boards, prototypes, and in-process and final artifacts.

All interviews were transcribed and later coded alongside with videos and photos. Triangulation between sources was used to map Salena's descriptions with her actual interactions in the space. The three theoretical lenses guided the data analysis process, which consisted of iterative cycles of coding and analysis according to key aspects of each creativity lens. For the cognitive lens, we looked for manifestations of fluctuations between divergent and convergent thinking processes and also problem-solving activities. For the sociocultural lens, we looked for specific ways in which the participant incorporated the physical place, technologies, artifacts into her process. Also, we searched for concrete influences of her peers, facilitators, teachers, family, and community. Finally, for the Afrocentric lens we looked at how Salena incorporated her community and her African American cultural heritage in the creative process. This preliminary top-down coding system derived in three stories, one for each theoretical lens. Later on, the three stories were compiled into a singular narrative that highlights how the different lenses complement and diverge throughout Salena's creative journey.

Findings

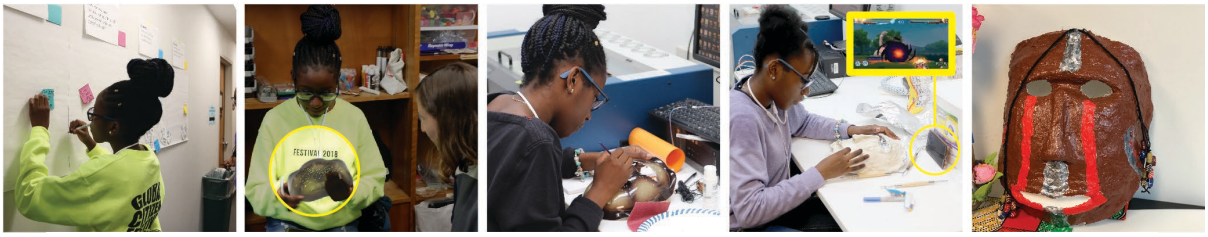
Salena joined the group in the third session. Upon her arrival, a facilitator briefly introduced Salena to the ongoing work: "We are designing a better future based on our past and present experiences, and today we are doing a brainstorm." Participants were invited to write down ideas in sticky notes in a series of boards labeled with topics proposed in the previous week: energy, nature, health, self-care, healing, socialization, and diversity. Because Salena skipped the first two meetings, she missed relevant discussions about the meaning of Afrofuturism as a framework for critical design. Instead, she received a rather vague explanation of the project and was thrown into the ideation and construction process.

From a cognitive perspective, the brief introduction can be interpreted as an ill-defined problem—"to design a better future"—that Salena was prompted to solve through creative making using her "past and present experiences." To aid this process, she was invited to engage in divergent thinking through brainstorming (See fig. 1a). While Salena contributed with four ideas, none of them and none of her peers' ideas were directly related to her final project. This finding matches research findings (Nijstad, Diehl & Stroebe, 2003) that demonstrate the little influence of divergent thinking in the creative process. However, her future project lies in the space of self-care and healing, which may indicate that the topics on the boards narrowed her solution space and provided a cognitive framework for further convergent reflection and ideation (Weisberg & Hanchett Hanson, 2013).

A sociocultural lens would further highlight that a broader social and cultural context shaped Salena's incipient ideation. The material, cultural, and social dimensions of the place suggested ways for her to act, using her previous experience and cultural background. She entered an ongoing social dynamic shaped by norms and structures that, while common in makerspaces, could be foreign for her and her peers. As Calabrese Barton and Tan (2018) explain, in a makerspace before any making happens, participants necessarily engage in *place-making*. From a cultural-historical perspective, when Salena stepped into the makerspace, she reconstructed it through her cultural background, including her African heritage and her identification as a *Black Panther* fan.

The ongoing social dynamics may have contributed to further insights about the activity. When Salena arrived, participants were discussing initial ideas. One participant whispered to another: "I am thinking of making a cape, but not like a Superman cape." Another is looking at images of an Afrofuturist city on the big screen of the computer. Meanwhile, Salena sat down to read comic books and play with a Wakandean alphabet. By grasping the materiality of the space, she incrementally made of the makerspace a place for personal expression. The makerspace was packed with comics of Black superheroes, African American and traditional African textiles, symbols, and art pieces placed alongside technological tools to suggest and invite remixing of technology with

tradition. Between a computer and a laser-cut machine, Salena found a small place that she referred to as “her favorite spot” and where she worked painstakingly every weekend.



(a) (b) (c) (d) (e)

Figure 1. (a) Salena participating in brainstorming, (b) finding the tortoise carapace, (c) painting while remembering how to connect with her feelings, (d) working with paper mâché while watching anime, and (e) displaying the resulting mask that has two red lines and a brown background.

In the next session, facilitators shared materials and tools while encouraging participants to try and touch anything. One facilitator pointed to a shelf filled with old toys and suggested to repurpose them for their prototypes. Salena grabbed a plastic carapace of a disassembled tortoise toy and observed it. After that, she asked the facilitator how she can cut off two holes “like eyes” in the hard plastic (See fig. 1b).

From a cognitive lens, the genesis of Salena's idea resides in her encounter with the toy, which suggested the shape of a mask. This event exemplifies what Weisberg (2006) describes as an ordinary thinking process—such as the perception of similarity—oriented toward solving a problem. On the other side, a sociocultural lens could offer further nuances to this episode. Salena reinterpreted the toy through her interests and toward her goals. The tortoise toy was not originally intended to become a mask; nonetheless, “once launched, an artifact takes a life of its own, thus transcending both the author's intention and any singular act of interpretation” (Ackerman, 2007, p.5). This way, the tortoise through Salena's imagination becomes a mask, and her project emerged through her interaction with the material world around her.

After making a prototype with the tortoise, she decided to use paper mâché for her final design. In the following session, a facilitator shared a Youtube tutorial video that guided her to make detailed facial expressions with the material. When describing her construction process, Salena had a pluralistic way of referring to her actions using the pronoun “we.” This illustrates how she, consistent with the Afrocentric worldview, perceived her creative work as the result of collaboration. Furthermore, a sociocultural lens will highlight how her creative process was also influenced by other remote actors such as the Youtuber in the video (Literat & Glăveanu, 2018). Similarly, she explained how she integrated indirect collaboration from pop culture and anime: “Honestly, while working on this, I was watching anime, and that's how I was actually inspired. It reminded me of my favorite movie Spirit Away and one of the characters, his name is No-face, so he has no face” (See fig. 1d).

If we were to look at it from a cognitive lens, Salena's aesthetic choices were the result of ordinary thinking activities such as perceiving similarity between her mask and the appearance of No-face. However, she also combined the influence of anime with her African American identity; In allusion to the character, she painted two red lines running under the eyes and, signaling a proud sense of Black identity, she painted the rest of the mask in brown. She explained: “I love brown because I don't know. I love my skin. It's brown” (See fig. 1e).

While the idea of the mask emerged in Salena's first day, she defined the ultimate purpose and meaning of the artifact later on while she was painting the prototype. She explained that initially, the mask was intended to make the world a better place by changing anything you look at through its eyes. However, not satisfied with the idea she became a critic of her own artifact: “I was thinking ... you need to think more in-depth with your project, it has to have a deeper meaning.” From a sociocultural standpoint, this illustrates how creativity involves becoming an audience to one's own action and thus decentering from the singular actor perspective” (Glăveanu, 2015, p. 171). She stated: “My first idea was trash. I was like, —you are definitely not doing that. And then I was like, —What is important to me? You know what? I feel like knowing your inner self is very important.”

This reflective process can be also be interpreted as a cognitive problem finding effort oriented to re-state the problem by positioning her interests at the center. However, an Afrocentric perspective further recognizes her feelings—and not only her rationality—as a valid form of knowing (Schiele, 1994). The Afrocentric epistemology accepts that “the most direct experience of self is through emotion and affect” (Akbar, 1984, p. 410). She asserted that she was going through a phase of stress that prevented a connection with her inner-self: “Honestly, I'm a very spiritual person, but [...] there's like no time to burn my candles and put lavender going on and just meditate and just ah relax.” She explained that in times of hardship or when it is raining, she would go

out to her backyard and color pictures as a way to reflect on her mood and feelings. The act of painting the mask (See fig. 1c) enhanced this memory and subsequent insight: “I was painting [the mask], and I was like, wait, this is another way people can know their spiritual self!”

From a cognitivist perspective, this sudden insight—far from mysterious—is the result of another well-known mental activity, analogical reasoning (Gentner, 1983). She realized that the mask could work as a means for people to connect with their spiritual selves in the same way that coloring was for her a way to connect with her feelings. This way, by channeling her emotions and thoughts, the final purpose emerged: “The mask is supposed to be like a spirit connector. Where you can connect to yourself spiritually, because you think you know yourself, but sometimes there are certain things you just don't know about yourself, and you need to find out.”
The significance of the new meaning of the mask shines through the Afrocentric lens. When describing how the mask will connect the inner self, she explained: “it shows you through the eyes. And then it's kinda like you're in the moment rather than just images you're living it so you can like walk touch and do stuff.” Her description of the inner self closely illustrates the African view of self, which is “open, a kind of arena, rather than something closed and private” (Beattie, 1980).

As Salena talked, it became apparent that for her, the mask also had a collective purpose expressed in human's oneness with the natural environment. According to her, the mask reveals connections with nature through the means of spiritual animals: "In Africa, there are so many animals, [...] you can wear this mask and find out, what is your spirit animal, what's some connections you have to nature, to have with the motherland." This illustrates how, in the Afrocentric cosmology, all elements of the universe—including people, animals, and inanimate objects—are interdependent as they share a common spirit, and therefore her own spirit (Schiele, 1994).

Finally, the Afrocentric lens explains why Salena conceived others and nature as an integral part of connecting with the inner self. She explained that the mask promotes "unity and togetherness" with people you have a "spiritual and friendly connection." Therefore, far from individualistic, the mask promotes harmonious interdependence, which is a marked characteristic of the African worldview. Furthermore, she explained that the mask shows “not only your present self but also with your past self and your ancestry because your ancestry [...] leads to who you are and what you do.” In those words, she revealed a sense of belonging to a cultural heritage that, despite being historically disrupted by oppression, defines who she is now and what she creates.

Discussion and implications

Theoretical lenses can profoundly influence what we see and the stories we tell. The analysis of Salena's creative making through three creative lenses provides a whole picture of the complex dynamics of making practices and highlights how the lenses complemented each other while offering alternative nuances to the story.
The cognitive perspective provides, especially in early stages of ideation and prototyping, a systematic account of cognitive activities involved in making. The retrieval of memories, problem-finding and solving, and analogical reasoning are all examples of cognitive processes that, while ordinary, combined have the potential to unleash novelty (Weisberg, 2006). Knowing that creativity is available to anyone and that it is far from an extraordinary event, helps demystify the concept while promoting creative self-efficacy among participants. However, while cognitive activities can be discerned from ideation to outcome, they are not enough to explain how thoughts become increasingly intertwined with social and cultural dimensions in a makerspace.

The sociocultural lens foregrounds the networked nature of creative making and the central role of materials and technologies so abundant in makerspaces. It also reveals how creative processes, far from isolated, arises from social dynamics across community, peers, facilitators, other remote actors, and the creator himself (Glăveanu, 2015). During the prototyping and construction processes, it becomes clear how creativity emerges as a dialogue between creator and creation through repetitive instances of detachment and perspective-taking (Ackermann, 2007). However, at the core of maker education is the development of personally meaningful projects (Blikstein, 2013) and, to understand the purpose and meaning behind a creation, the generic sociocultural lens is not sufficient. A culturally specific lens, such as the Afrocentric in this case, can provide deeper insight.

A culturally specific theoretical lens can illuminate aspects of the creative process that are unique to each participant. For instance, examined from a cognitive or sociocultural lens alone, the functionalities of the mask—connect with the self, others, nature, and ancestry—would seem more like a collection of playful attributes hardly related to one another. The Afrocentric lens, on the other hand, bounds these functionalities as a coherent and integrated purpose derived from a holistic and allocentric understanding of self (Beatty, 2002). The Afrocentric lens centers the participant's perspective and reveals how her ways of knowing and making are founded in a timeless system of values, and beliefs. Additionally, the Afrocentric lens situates heritage influences into a broader historical and communal context while recognizing emotions as valid sources of knowledge (Schiele, 1994).

Connecting to a virtual reality where it is possible interact with the many dimensions of the inner self is a radically new direction for technology. Because her idea is rooted in a non-Western worldview and personal

concerns that are not being addressed today, it is the Afrocentric lens the one who reveals the novelty of Salena's mask and the significance for her community. The possibility of spiritual healing is, in many ways, a response to the struggles of the Diaspora and particularly of African American youth in times of increased hatred and racism.

Conclusion

The combination of Western and non-Western creativity frameworks allows visualizing the complex cognitive, sociocultural, temporal, and emotional aspects of the creative process of an African American teen as she engages in making practices. Maker education strives to provide diverse people with opportunities to learn through the creation of personally meaningful artifacts. Diversifying our frameworks of analysis can help visualize and legitimize the meaning behind the creative work of minorities that are not frequently invited to create and express. Through understanding and embracing a more diverse range of intellectual resources and less conventional theoretical frameworks we can begin to recognize, support, and validate other practices, values, goals, meanings, and epistemologies in the context of maker education.

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