Abstract

Romantic views of creativity define creativity as a unidirectional process, from the internal (creative agent), onto the external (outer world). These romantic notions assume that creative individuals are able to tap into the innermost parts of their being to bring and outpour new ideas into the world. Contrarily, Byrne defines creativity as a process wholly shaped by the external world's influence in the artist. I will argue that both Byrne's and the romantic notions are false as they fail to realize that the true nature of creativity is multitudinous and therefore fail to consider the feedback loop between the internal and the external, such as in the listening and correcting processes that expert musicians unconsciously do during practice (Brown, Zatorre, & Penhue, 2015).

This paper draws from Wheeler's argument, which defines creativity as tripartite, constituted by the internal, the embedded, and the external. Wheeler states, in his words, that "the path of creation is revealed to be routinely constituted by dynamic arrays of body-involving and environment-involving processing loops." (Gaut & Kieran, 2018), which means that the creative mind is constantly influenced by the interplay of things like the agent's body (the internal), the cultural and socioeconomic context in which it lives and performs creative acts (the embedded), and the agent's interactions with others, as well as with technology and external environments (the external). This paper also argues that Wheeler's argument is compatible and greatly benefits from discoveries in neuroscience about creative states of mind and the brain functionalities associated with such states, although these findings may imply that creativity is more than just tripartite, that is not to be read as a contradiction to Wheeler's but rather a confirmation and further dive into the nature of creativity and creative states of minds. Such understanding of creativity as constituted by a continuous interplay between internal and external factors allows for a much more nuanced definition in which the factors that feed, influence, and shape creativity are not only both internal and external but also in continuous dynamic interplay, and so they have perpetual influence and effect (on) each other.

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Introduction

In this paper, I argue that creativity is without a doubt a complex and multifaceted concept that involves at least internal and external factors. Opposite to my understanding are those known as traditional views of creativity, also called "romantic," which have a much-simplified notion of creativity that places its focus on the inward process of generating ideas as a gift of creative individuals who are able to tap into the innermost parts of their beings to come up with new "fully realized" ideas to put out into (which "burst out into") the world. It is seemingly evident that such a view is at the very least incomplete, as it fails to consider the effects of the external world on the creative agent. Hence, other views like Byrne's suggest just the opposite. That creativity flows inward from the external world into the creative agent. In other words, it's not up to the agent's internal thoughts or interior emotions; rather the agent is influenced and moved by his interactions with the external. In response to such romantic views, Byrne says: "I think the path of creation is almost 180° from [the romantic] model. I believe that we unconsciously and instinctively make work to fit preexisting formats" (Gaut & Kieran, 2018). In this quote, the agent is moved or inspired by the external. Meaning that he is moved to create a piece that is inherently designed to fit a format – that could be an oil painting, a musical composition structure, or an engineering problem that has to fit and abide by physical rules. Meaning, something that exists outside of the creative agent motivates and gives shape (while also limiting) to the agent's creative product.

Wheeler's argument

Differently to both previous views, in his essay "Talking about More Than Heads" Michael Wheeler challenges such unidirectional notions and proposes an "entangled, inside-and-outside logic," he also posits that the creative mind is tripartite (a) embodied, (b) embedded, and (c) extended. Meaning that the creative mind is influenced by things like (a) an agent's body, (b) the cultural and socioeconomic context in which it lives and performs creative acts, and (c) interactions with technology and external environments.

Wheeler's view highlights that both internal and external factors play their role in creativity, which he suggests is a dynamic process, which I further interpret as an interplay between the internal and the external giving rise to not only creativity but also learning and self-regulating (Brown, et al. 2015) – these last two may be lacking, at least in explicit form, from/in Wheeler's argument. Still, Wheeler's view allows for a more nuanced understanding of the factors that feed, influence, and shape creativity, and for an understanding of the creative process as a feedback loop between internal and external. Meaning that the interplay between the embodied, the embedded, and the extended, is the fuel of creative acts. This conceptualization of creativity could not be grasped by examining only one aspect of the creative mind like the romantic views suggested. Furthermore, by involving both internal and external factors alike, Wheeler's notion of creativity further challenges the traditional idea that the creative process is a solitary one, instead, it is a collective process shaped by a multitude of variables that are part of the agent, the agent's environment, and the agent's interactions with others.

The embodied, the embedded, and the extended

To understand Wheeler better, I think we should examine what he means by embodied, embedded, and extended. First, to say that the creative mind is embodied is to say that it is rooted in (as in 'springs from', with a hint of causality) and shaped by the agent's physical body, as well as the agent's capacities and learned abilities. Wheeler ends his section on embodied creativity with the following passage: "The non-neural body is a proper part of the creative psychological machinery in play." (Gaut & Kieran, 2018; Kindle location 4703) To give some examples, a musician who is trained in a particular instrument or style of music may be influenced by his physical abilities and skills on that instrument, which can shape his creative output as a musician. More concretely, consider a musician who is skilled at playing guitar, he may be inspired to create music that incorporates intricate guitar work. Lastly, consider a musician who has a physical disability or limitation, he may be inspired to create music in a unique way as a result of his physical limitations. For example, a musician who has lost an arm may develop a unique style of playing, which he can use to create innovative and original music.

Second, to say that the creative mind is embedded is to say that it is influenced by the cultural and socioeconomic context in which the creative agent operates (where he creates, performs, and lives). Meaning that a musician's cultural background, history, and the places he habituates, all have an effect on his creative output. Since we're talking about musicians, the embedded may have effects on the patterns, themes, and messages shared and explored in music. In Wheeler's words, the embedded is made by "causal contributions made by environmental elements" (Gaut & Kieran, 2018; Kindle Location 4704). An example of this is a musician who incorporates Latin American rhythms and melodies into his music thanks to having been raised in a Latin American community. His cultural background has a profound effect on his creative output. Scientific research supports this idea as it's been shown that genres have unique melody and tonal patterns that are recognized within their musical

communities, and are utilized, internalized, modified, and played with by musicians of such genres (Biasutti & Frezza, 2009).

Lastly, to say that the creative mind is extended is to recognize that it is influenced by technology and other external tools and resources that we use to offload cognitive abilities or expand their boundaries. Let's consider two examples: (1) musicians who collaborate with other artists or producers are often influenced by the creative input and ideas of these other creatives, which end up shaping their creative outputs as musicians, both on an individual and on a collective level. Studies have shown that group creativity entails improvisation, collaboration, and emergence; and leads musicians who play frequently together to "think" similarly about music and improvise similar melodies and tonal structures (Sawyer, 2006). (2) A musician who is influenced by technology and the use of digital tools may be inspired to create music in a unique and innovative way as a result of these tools and techniques. For example, it is difficult to imagine Jimi Hendrix without the fuzz pedal and loud valve amplifiers; just as it is difficult to imagine the progressive techno-house genre ever being invented without mixers and modern beat-making software and interfaces also known as DAWs (digital audio workstations).

The extended does not have to be limited to other people and tools, it can also be a physical location or situation that allows for unique creative outputs. Consider for example a musician who gets the incredible opportunity of playing at a large arena like Madison Square Garden. The arena could be seen as an extension of the musician's creative mind, as for example, it provides reverberation and a unique acoustic profile. The size and scale of the arena, as well as the atmosphere created by the audience, can all contribute to the creative experience of the performer ultimately shaping his output, as it may allow the musician to think more expansively and experiment with new ideas in his live performance that cannot physically exist in a small, low volume environment. What's more, the cultural and historical significance of Madison Square Garden as a performance venue could also be

felt as an influence on the musician's creative output, if the musician is aware of them. In other words, the space itself can serve as a form of extended creative mind for the musician, influencing his creative experience and outcomes.

Interplay and feedback loops

Such interplay between the internal and the external is an essential part of the creative process, as it allows the individual to draw on both his own internal resources and external influences and stimuli (for example, from fellow creatives) in order to generate and produce new ideas. Meaning that the embodied, embedded, and extended all interplay simultaneously to allow for unique creative output. As a way to see this, let's imagine a musician, John, whose creative process is deeply influenced by his physical body and personal experiences (embodied). The callouses, the muscle memory in his fingers, and the way he holds the instrument are all physical aspects of his embodied mind that contributed to his musical style and creativity. John's love for guitar is influenced by his childhood experiences, like listening to Stevie Ray Vaughan with his dad every day on his ride to school. John's creative process is also influenced by his social and cultural context (embedded). Growing up in a small town in the southern United States, he was exposed to a variety of musical traditions, including blues, country, and folk – no wonder he was listening to Stevie Ray Vaughan instead of ABBA, John ingests the creative fuel that his context presents him. Such genres inspired his musical style and influenced the way he approached songwriting. In addition, the people he played music with, the gigs he played, and the places he performed all shaped his creative process in various ways. For example, when playing with a very melodious organ player, John (either consciously or not) changes his melodies to fit the organ player's lines – and the organ player then responds to John's melodies, and so on in a feedback loop style. Lastly, John's creative process is also influenced by the tools and technologies he uses to create music. He uses a range of software and hardware, including digital audio workstations, synthesizers, and effects pedals, to create and manipulate sounds, beats, and tracks. These tools allow him to experiment with new sounds and approaches, and to collaborate with other musicians in new ways. The story of John illustrates how the creative mind is embodied, embedded,

and extended all at the same time. His mind, physical body, social and cultural context, and the tools and technology he uses, all play a role in shaping his creative process and output.

What Wheeler's creativity may be missing

Wheeler's conception of creativity is without a doubt more complex and nuanced than romantic definitions. But it still seems to be lacking something. At the very minimum, it is deprived of clarity. An example of a lack of clarity is easily illustrated by analyzing education and self-regulation. These could lay under the embodied category (the agent that learns on his own), the embedded category (the context that educates the agent), or the extended (other people and technologies that influence the agent – such as a professor, or a metronome). Such lack of clarity can have an impact on understanding and further research of the nature and workings of creativity. Still, it is understandable that the lack of clarity may be given the inherent complexities of the topic we are discussing.

Another potential shortcoming of Wheeler's tripartite model of creativity is that it may oversimplify the complexity of the creative process by dividing it into only three distinct categories Even though the model offers a helpful foundation for comprehending how both internal and external influences might affect or give rise to creativity at a high-level view, it might fall short of accurately capturing the complexities and intricacies of the creative process.

Wheeler may not want to over-complicate his model, though it could use a greater refinement or of within the categories, so that it's compatibility with other theories like The Componential Theory by Amabile (1996) that proposes three skill domains – it is unclear whether the skill domains fall under the internal, external, or embedded – given that one could argue that all three have an effect on skill domains, though skill domains are not inherently creative. It is shown then that the lack of clarity only hurts Wheeler's argument.

I further believe Wheeler's claims could use more scientific evidence if he is to aim at explaining the workings of the creative mind instead of aiming at building a purely theoretical, high-level model of creativity. Recent findings in the neuroscience of creativity in music like Brown's show

that the brain is simultaneously playing and listening to itself, meaning that during practice, musicians unconsciously are optimizing their movements (Brown et al., 2015) – in this case, the interplay is not between different parts of Wheeler's tripartite creativity, but rather, many processes are interplaying within the agent. Though this is compatible with Wheeler's view, it is at the same time out of the scope or approach of Wheeler, his argument may just be too simplistic.

Lastly, Wheeler could borrow from the Four-C model by Kaufman and Beghetto (2009) to make clearer distinctions on what type of creative products or processes have a true influence on the internal or the external – it is arguable that not all creative processes are conducive to meaningful learning, or impactful on a societal level – like repeating guitar licks over and over with slight variations in one's room (small C). Meanwhile, other creative acts (Big C) may have benefits for society or humanity as a whole. Wheeler's simplicity may make it seem like all creative processes and objects are produced in a similar fashion, and have similar effects on the internal, external, and embedded; though it is arguable that such is not the case.

Conclusion

To conclude, while traditional views of creativity often focus on the inward-facing process of generating and implementing new ideas, Michael Wheeler's notion of an "entangled, inside-and-outside logic" highlights the importance of considering both internal and external factors in understanding creativity. I support Wheeler as I too think we can better understand the nature of the creative mind and the ways in which creativity is shaped, as Wheeler suggests, by considering highlighting the never-ending interplay between multiple internal and external factors. The basis for my support is mostly empirical, as I myself have experienced most of the examples I've given in this paper. To make it practical, through the lens of musicians, we have seen how the interplay between internal and external factors shapes, feeds, and inspires creative experiences and outputs. The examples I've given are some of the experiences that make up being a musician, as it is true that a musician's physical body, capacities, and experiences (embodied), as well as his cultural and socioeconomic context (embedded), and the use of technology and interactions with external environments (extended) all shape his creative experience and output.

I further believe Wheeler's idea is a concept that springs from accepting that creativity is a complex and multifaceted concept and understanding that the multiple (both from internal and external sources) factors that make up the creative mind are at a continuous and cumulative interplay in which they touch or alter (have an effect on) each other. Nonetheless, I believe this view may be, in its tripartite nature, a little too simplistic for an examination of the nature of creativity in its full extension (embodied, embedded, and extended) which also entrails a more nuanced understanding of the complex nature of the creative process, something Wheeler hints at, but does not fully incorporate or expound in his arguments. Still, he provides what I believe to be a good 'platform' argument, meaning that he sets a good direction, although in my opinion too simplistic, for further philosophical

and neuroscientific research that accepts the intricate nature of the processes and variables that are in continuous interplay to give rise to creative acts and products.

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