The Body Creative

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Abstract

The perceived split between mind and body is, in its Modern incarnation, entangled with Eurocentric binaries and Western models of valorisation. As a result, our 'minds' are gendered, raced, and classed based on Enlightenment understandings of value and rationality. This collective narrative and its resulting dynamics of societal inequalities influence all that is engineered, designed, developed, and used at the intersection of technology and creativity, and thus provides varied possibilities of exploration in relation to embodiment and bias. Within this discourse, technologies are frequently aligned with properties of the mind: rationality, Reason, and sense as separated from nature, impulse, and emotions. Creativity, in contrast, takes on a more dialogical role between the identarian polarities set out by Eurocentric thought. In this text, I explore the notion of a *Body Creative*, an approach to creative embodiment which acknowledges its composition of multiple, interconnected, and potentially counteracting parts which retain distinctive identities – much like body parts – whilst working together as a whole. I utilise immersive technologies (XR) as a technological example to propose two versions of the Body Creative: a personal one based on one's self-perception, positionality, and one's resulting biases and pre-sets; and a collective notion of a Body Creative which places individual actors, creative contributions, and technologies in the context of collective creation and societal reproduction.

Keywords

Embodiment, Creativity, XR, Collective Creation, Eurocentrism

1. Introduction

James C. Kaufmann [1] challenges the idea that there is no universally agreed-upon definition of creativity by stating that while this is technically true, 'just as there is no universally agreed-upon definition for literature, love, pizza, or turtles' (p. 4), there is enough consistent terminological consensus to de-mystify its elusiveness. This prompted me to consider whether, at the intersection of creativity, technologies, and embodiment, the parts of ourselves which perceive as the most intuitive, and perhaps the most obvious, elude us through a complex network of assumptions and biases. In this text, I will explore the historico-cultural underpinnings of the narratives which engulf and permeate these assumptions and trace their lines of technologically facilitated cultural reproduction. In the process, I will question possible loci of creativity and its processes in relation to our bodies and the technologies we enact with, as well as the physical and virtual spaces we inhabit.

To begin this discussion, I am inviting you, the reader, to engage in the same exercise I asked the participants of this workshop (ICCC 2022, The Role of Embodiment in the Perception of Human & Artificial Creativity) to participate in: Close your eyes and imagine you had to describe your body to a person who cannot see you. Take a few moments to think about how you would describe your body, what your first thoughts and priorities are. Following this question, I asked workshop participants – like everyone who I invited to this exercise previously and subsequently – four questions:

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Did you begin with a description of your face?
Did you start with your hair colour?
Did you begin with your gender?
Did you start with your ethnicity?

In both the workshop and the anecdotal examples gathered prior and since, the answers to all four of these questions were overwhelming negative. Notably, most people perceived it as counterintuitive to start a description of their bodies by describing their heads. Hair colour was an occasional outlier, but I would have to investigate the statistical relevance of this in a quantitative sample of larger size, and with a more thorough methodological approach than asking four questions to people in my vicinity. These questions were, however, less of an attempt to pilot an empirical study on self-description and more of a questioning of the assumptions we collectively make about our own bodies, and those of others. These assumptions, I argue, influence our interactions with technologies, the way we embody creativity, and how we connect these two planes of interaction. Thus, it is relevant to investigate where these assumptions are rooted, and how we can proactively engage with them when creating and interacting with technologies. I have chosen the semantic separation of the head, representative of the more entrenched notion of a mind/body divide, as my starting point to discuss the intersection of embodiment and technologically facilitated creativity. In this paper, I propose the *Body Creative* as a tool of self-reflection for our individual and collective interactions with emerging technologies and creative processes within them.

2. Key Terms

Creativity. In this text, I understand creativity in the sense James C. Kaufmann [1] defines it, as consisting of two components: firstly, creativity 'must represent something different, new, or innovative' (p. 5) and secondly, it must apply a useful or relevant way. Dean K. Simonton [2] condenses this definition as Creativity = Originality x Appropriateness.

Technologies. Unless otherwise specified, technologies encompass mechanical, digital, and informational mechanisms, practices, and methods. In this text, I particularly focus on immersive technologies in relation to their role in what Arjun Appadurai [3] calls technoscapes: the global configuration of technologies which 'moves at high speeds across various previously impervious boundaries' (p. 32).

XR. Extended Reality (XR) is an umbrella term which encompasses Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) [4]. VR is, in this context, a virtual space which alters a user's perceptive experiences across multiple sensory modalities (audio-visual, haptic, somatosensory, etc.) whilst entirely obscuring their material environment [5], whereas Augmented Reality (AR) overlays physical environments with a virtual layer of information [6]. Mixed Reality (MR) denotes a seamless blending of virtual and physical elements in a user's perception [7], which most AR practitioners aim for, but that is currently not fully implementable. Throughout this text, I synonymise XR with immersive technologies.

Embodiment. As Guckelsberger et al. [8] outline, there are at least six modes of embodiment (*structural coupling, historical, virtual, physical, organismoid, humanoid,* and *organismic* based on [9]) which are relevant in relation to computational creativity. In the context of this paper, embodiment denotes the bodily manifestations of socio-cultural concepts and ideologies as well as tangible and virtual bodies in physical and digital spaces.

3. Positionality

The way I am approaching the Body Creative follows my personal perspective and positionality in interacting with technologies, embodiment, and creativity. I am a White, European researcher at a Russell Group UK university, and most of my research draws on decolonial and postcolonial theory in relation to digital technologies. This is the political, ethical, and epistemic position which underpins my

arguments. I explicitly engage with decolonial discourse from a perspective of Critical Whiteness [10] and do not speak for any community of which I am not myself a part.

4. The Severing of the Head: A History of Dualism in Embodiment

While French Enlightenment philosopher Rene Descartes [11] was by far not the first to consider the relationship of body, mind, and soul, it is Descartes' conceptualisation of dualism which subsequent Western[2] philosophers used to manifest their universalist ideas. The basic premise of Descartes' argument is that the mind can be understood as independent of the body and vice versa. It is evident that this line of thought has persisted in broader society by the very existence of the phrase 'my body' in many languages[3]. The body, as a concept, differs from other aspects of our selves in the sense that it is not a descriptor for one part of us (like 'face') but a totality of parts, a sum. It seems hardly coincidental that a triadic religion such as Christianity produced three-fold understandings of human existence, split into mind, body, and soul[4]. In post-secular scholarship, the notion of dualism has been largely discredited: according to the current state of knowledge in neurological science, there is no 'mind' without the electric impulses which govern people's behaviour, language skills, cognitive abilities, and thoughts [14] [15] [16]. And yet, the idea that our minds are more than 'just' hormones and complex biological processes persists firmly in our collective cultural imagination as well as the scholarship which critiques this divide [17] [18]. This can be partially traced to the hegemonic dominance of Eurocentric thought, and its global propagation through colonial systems of knowledge dissemination.

Loosely based on Aristotle's and Plato's respective versions of dualism [19], post-Cartesian notions of bodies distinguish between the mind and the body. Gottfried Leibniz' psychophysical parallelism [20] stipulates a complete separation between mental and physical causes and effects, whereas epiphenomenalism, as articulated by Thomas Henry Huxley [21] based on Hobbes' materialism, views mental events as causally inert by-products of physical events. Immanuel Kant [19] conceptualised a radically different form of dualism which is concerned with epistemic dimensions, rather than a strict mind-body divide, whilst not actively dismantling Cartesian demarcations between mind and body. Similarly, Hegel critiqued Cartesian dualism in favour of an absolute idealism which emerges from the tensions arising from dualism and promotes unity of the self, with others, and with nature, rather than fundamentally questioning a body/mind divide [22].

Nigel Rapport [23] leans on the philosophical approaches of John C. Eccles and Karl Popper [24] to argue that a division of mind and body remains necessary in a universe constituted by ever-changing processes of energy exchange, where 'even the most stable particles that we know […] are subject […] to entropy', because the mind is 'the pilot of the human ship, the body and its brain' [23] (p. 176). While I do acknowledge that centring individual experience is a necessity to navigate quotidian life to some degree, I do not agree with the assumption that this justifies a Cartesian mind/body divide. As Andrea Fontana [25] argues, the self is incarnate in the sense that it cannot transcend its physical sensations which give it its stimulations to act, and thus is constituted by emotion, anxiety, biological urges, and cultural traits just as much as Reason and thought. With Cartesian dualism being firmly embedded in Eurocentric knowledge reproduction, Rapport's separation between the pilot and their human ship feels as intuitive as that between the mind and the body. This is where technologies form a useful bridge to question these dichotomies: rather than thinking of a sailing ship with a captain, what if we consider the human self as a self-driving ship governed by sensors, Artificial Intelligence (AI),, and its environment simultaneously? If there is no differentiating between the ship itself and its constituent parts, does it become easier to step away from a dualist perspective on embodied experiences?

It is telling that comparing our selves to machines, which we do not conceptualise as having minds, evokes a different spectrum of possibilities in relation to how we approach creativity and embodiment.

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[2] Western, in this context, is a descriptor for originating from the 'West', denoted by Stuart Hall [12] as a set of ideas, historical events, and social relationships which privilege Eurocentric ways of knowing.

[3] There are non-Western versions of dualism, as for instance outlined in [13], but given the prevalence of Western ideologies in Big Tech, I focus on Eurocentric dualism and its influence, specifically.

[4] Since this is not a theological treatise, I have chosen to leave the notion of a 'soul' as a body-and-mind-transcending existence out of my subsequent argument.

Before I dive deeper into this point, I wish to acknowledge that not all Eurocentric writers who critique Cartesian dualism choose to replace it with an equally monolithic concept to replace or expand the mind/body divide. Ludwig Wittgenstein's earlier work [26], for instance, stretches the notion of a mind-body divide into more collective realms which position individual actions within constellations of societal conventions and the resulting games of social interaction. This acknowledgement of an individual's embeddedness in larger patterns of societal repetition fits well within the spatial considerations Henri Lefebvre articulates in [27], and thus forms a useful bridge between considerations of embodiment, space, creativity, and technologies. In the same way that looking at ourselves as machines allows us to suspend our own preconceived notions of mind/body divisions, considering ourselves as parts of collective productions of space which do not demarcate between our thoughts, bodies, and environments, allows us to consider ourselves as not only ships, rather than pilots, but as bolts and planks of much larger, more complex ships, the limitations of which we can hardly fathom as individuals. Understanding these collective ships requires an acknowledgement of the limitations which our individual biases and positionalities bring to these collective productions, as well as the histories upon which they rely.

Thus far, I have narrated body/mind divisions as a localised Eurocentric practice which is rooted in a specific set of epistemic, theological, and ideological beliefs. However, within decolonial and postcolonial discourse, there are well-established challenges to the notion of 'just one Europe or just one Western modernity' [28] (p. 17). Accordingly, Southern Europe, the early pioneers of Modern colonialism, became a 'periphery, subordinated in economic, political, and cultural terms to Northern Europe and the core that produced the Enlightenment' (ibid.). When positioning Southern Europe as part of an inner-European constellation of oppression [29] [30] [31], scholars commonly distinguish between the South (Portugal, Spain, southern France, Italy) and two Northern Europes (Eastern: Poland, Russia; and Western: Germany, France, England, Scandinavia) [32]. Eurocentric viewpoints are predominantly rooted in the latter category, and specifically favour privileged, White, male, heteronormative perspectives which claim universal applicability. The term is not representative of the diversity of European thought and cultures but describes a specific local ideological practice which underpins many Modern cultural institutions [33].

The writers referenced thus far fall into this category, despite their stark differences in opinion and philosophical orientation. The universalism with which Descartes, Hegel, & Co. articulate their viewpoints tends to mask the socio-cultural specificity of their opinions, and the cultural fluxes which shaped them. Accordingly, Eurocentric conceptualisations of mind/body are not gender neutral nor raceless or ageless. When Hegel talks about the unity of the self, with others, and with nature, they do not refer to Indigenous practices in the Americas which have been living this philosophy for millennia. When Kant specifies Reason, rationality, and logic, they do not paint a picture of Black teenage girls in relation to these terms. If asked to assign a gender to rationality, a race to Reason, and a social class to logic, there are clear historico-cultural biases which guide individual expectations. In a way, this is fair, since we are all limited by our own experiences and frames of reference. However, Enlightenment philosophy does not tend to centralise the extent of these inherent limitations. The very term Humanism assumes a range of applicability which transcends the lived experience of its representatives, and arguably ignores, if not erases, the embodied knowledges and experiences of other humans. Crucially, the enormous global cultural influence Humanism, the Enlightenment, and Eurocentrism stems from and has been propagated by Western colonialism, rather than universal transferability. As such, these ways of knowing are closely entangled with the dissemination of Christianity, Modern capitalism, and Man's domination of Nature.

5. The Mother of Intervention: Nature, Technologies, Bodies

The premise that it is possible for humans to dominate nature assumes a separation of our species from our natural environments. As a result, we differentiate between human-made and naturally occurring mechanisms, distinguishing a weaved basket from a bird's nest [34]. Considering human-made technologies as products of evolutionary assimilation invites a blurring between humanity and other sentient beings which renders the 'mastering' of nature absurd [35] and undermines Judeo-

Christian and Eurocentric narratives which justify humanity's role on in the world. Notably, being 'born to rule' foreign lands or nature at large is an essentially colonial concept that has been absorbed into globalised patriarchal systems, justifying the dominance of men over women (no other genders allowed), of White 'people' over non-White 'heathens', of aristocrats over 'low-born' peasants. Technologies seemingly present as much of a progressive chance to overcome these structures as capitalism does: through technological invention, there is an opportunity to change one's lot in life, to use innovation for progress. In the early days of mass-adaptation of the Internet, virtual spaces were conceptualised as quasi-utopian environments which would allow participants to leave their bodies behind and partake in a community free of physical prejudice [36]. However, the following decades effectively demonstrated that, like the well-established narratives of capitalist progress, technologies are by no means level playing fields of equal opportunity [37].

In fact, if we consider how they are gendered, raced, and classed in Eurocentric thought, their framing quickly negates any possibility of neutrality [38]: technologies are positioned as artificial, even though every technology is made of materials that were originally found in nature, and transforming them into a new form does not make them inherently 'unnatural'. Arnold J. Toynbee [39] describes the telescope as 'an extension of the human eye, the trumpet of the human voice, the stilt of the human leg, the sword of the human arm' (p. 277). Yet, analogue to our colloquial differentiating between mind and body, despite our knowledge about the biological processes which form our thoughts, the perceived division of technologies and nature is deeply engrained in societal knowledge reproduction. Crucially, it functions amongst the same lines as the mind/body divide: technologies, as instruments of human dominance over nature, are cast in opposition to nature. Thus, emotionality, intuition, impulse, organic matter, and nature form one side of this constructed dichotomy, and thought, logic, rationality, calculation, and Reason the other. Since we have established that the latter properties – the aspects cast as belonging to the mind – are hegemonically positioned as White, male, and educated, embodied biases follow: 'Mother' nature is unpredictable and impulsive, whereas machines are rational and logical to a fault. Within Eurocentric discourse, there is little reflection on how this dichotomy omits the influence by which the creators of technologies exert on their creations, and how those creations fit into collective spatial and virtual knowledge reproductions.

Technologies, however, do not merely act as embodiments of their creators' and users' respective ideological underpinnings – they also interact with physical bodies, shaping the environments in which these ideologies are shaped, manifested, and reproduced. While other emerging technologies like AI retain these influences into back-end languages which only a few skilled operators may fully grasp, XR technologies incorporate dimensions of knowledge reproduction in a more interface-based, user-oriented way. Thus, they do not only grapple with ideological embodiment in the sense of metaphorical or allegorical manifestations of a set of values or norms, they also interact with physical bodies, and their respective roles within virtual and mixed spaces. This form of embodied interaction, in the sense that it overlays physical and virtual bodies, provokes a plethora of challenges to programmers, designers, and users.

In 2001, Paul Dourish wrote an influential book [40] on embodied interaction, which Fernando Maldonado-Torres [41] critiqued for presuming universalised, race-less bodies based on Eurocentric notions of embodiment. This assumption is, according to Maldonado-Torres, an issue because the memories, connections, and knowledges which an individual projects onto a space – in Dourish's case, a VR-altered space – are, invariably, influenced by their situatedness and physical experience of their socio-cultural environment. This applies to engineers, programmers, designers, content creators, researchers, and users alike. The risk with universalising a virtual body is that it reiterates the possibility of bodily neutrality which has been made hegemonic by Eurocentrism, and thereby inadvertently reproduces a constructed norm as 'blank' and 'invisible' [42]. In contemporary globalised society, this norm of cultural hegemony affirms White centrality and heteronormativity, thus obscuring what Joe R. Feagin refers to as the 'White racial frame' (ibid.). Accordingly, White perspectives and White bodies are framed as 'neutral' and 'colourless' while all other racial positionalities are orientalised and Othered. In quotidian practice, this translates to, for instance, BIPOC (Black, Indigenous, and People of Colour) writers being labelled by their ethnicity (e.g. Black feminist writer Audre Lorde) whereas the same is not applied to White writers (e.g. White feminist writer Judith Butler, or White author Ernest Hemingway) outside of decolonial, postcolonial and anticolonial scholarship. Maldonado-Torres argues that because of this societal conflation of Whiteness and neutrality, a supposedly raceless virtual

body (e.g. with grey skin and no discernible facial features or hair structures) still reproduces White centrality. This is important to consider in relation to technologically mediated bodily presences: societally imbued biases underpin individual interactions with technologies and shape the interpretative spectra of an experience as well as the technologies which facilitate them, which can inherently never be neutral.

Moreover, how much of an interactive space is being technologically mediated impacts the dispersion of influence on bodily self-perception and external (re)construction. Dourish [40] uses a VR example, which means participants do not see their own physical environments, or their own bodies, at all in within this study's virtual experience. Thus, their interpretation angles on a pre-designed body-environment constellation determined by engineers, developers, designers, and researchers. This does not necessarily apply to other forms of XR: in 2019, Joris Weijdom and Paul Cegys [43] developed an installation for the Prague Quadrennial called 36Q° Blue Hour, which involved MR and other forms of immersion. In this context, participants were not entirely removed from their own bodily perception. In my anecdotal experience with asking people to describe their bodies, I observed that when I did not ask people to close their eyes whilst formulating their description, most people looked down at themselves. The moment they turned their eyes at themselves, it became even harder to consider their eyes – or the brain which processes thoughts, speech, and emotions – as part of their bodies. If this were supported by larger datasets, one could pose the hypothesis that an immersive technology which does not remove participants from their own bodies by obscuring them virtually invites an inherently more embodied experience. However, I would argue that without sufficient critical contextualisation, this difference may just as easily bear no influence. Weijdom and Cegys observe that there are aspects of technological immersion which participants do not necessarily regard as part of the experience but that they, as researchers, consider essential to the immersive narrative. One of their examples are conversations participants had whilst taking their shoes off prior to beginning the 36Q° Blue Hour experience. This is a well-established point of consideration in immersive design studies and relevant in relation to XR technologies: the biases inherent to our bodies and our perceptions of other bodies follow us into any digitally mediated space, and none of these spaces are free of the bodily experiences of the people who created them.

This is particularly pertinent to consider in relation to Augmented and Mixed Reality experiences, which are increasingly blurring the boundaries of perceived organic/technological divides. There are, for instance, AR contact lenses and implants which make the distinction between body and technology rather fluid for the user [44] [45]. As a result, the moment of 'taking your shoes off' seemingly disappears, and what is a physical body and what is a virtual body blends together through technology. When considering embodiment in relation to immersive technologies and creativity, this future directionality is important to factor in: while the normalising of hybrid body/technology experiences is not necessarily problematic, the unreflected reproduction of hegemonic perspectives as a universal 'norm' is. It does not only risk the erasure and exclusion of non-normative groups, bodies, and ways of knowing from digitally facilitated creative spaces, but also stifles variation, experimentation, and play, which are all vital for collective innovation.

In the contemporary capitalist world-system [46], being aware of our biases and their influence on technologies, spaces, and creative processes is easier said than done: variation, experimentation, and play are often incompatible with profit margins, grant limitations, and projected outcomes of large-scale studies. While creativity is hypothetically encouraged, profit-oriented institutions are not particularly well-equipped to support the preconditions for its facilitation [47]. Regardless of this practical limitation, creativity, in comparison to technologies, inhabits a much more dialogical role on the spectrum of Eurocentric binaries: it may be used to express emotions and impulses, and mediate between nature and culture. If we consider creativity in a triadic relationship with technologies and embodiment, it faces two intersecting dichotomic axes: one which poses a mind/body divide, and one which separates technologies from nature. For the purpose of exploring how creativity may navigate these axes, I will return to the previous image of our selves as ships. If we do not consider our selves as traditional ships with captains, but as fully automated ships with a networked form of agency, can we equally step away from the notion of a ship an artificial technology, and regard it as an evolutionary extension of our species' adaptability instead? Within this framing, would we then consider creativity as a form of evolutionary randomness, of adaptation through variation? As such, would we locate

creativity within our bodies, our minds, both, or within the cultural environments which condition our self-perception?

6. The Body Creative: A Dual Model

In the medieval allegory of the Body Politic, the image of a body is used to project different areas of functionality within a nation state [48] [49]. For instance, the king would act as the head of the state, because they have ultimate authority over what the rest of the body does, and institutions like the military, for example, would be the hands which execute the king's will, or the legs which bring the state into new territories. One reason for the lasting popularity of this image and the perpetuation of its implications – like the contemporary use of the term Head of State for the leader of a nation-state – is its versatility: there is not just one Body Politic, there are various different interpretations which may co-exist with comparable validity. I propose to apply a similar approach to the relationship between technologically mediated creativity and embodiment. I therefore invite you, the reader, to imagine an allegorical body which represents different aspects of creativity as a constellation of multiple, interconnected, and potentially counteracting parts which retain distinctive identities – much like body parts – whilst working together as a whole. In order to explore where creativity might be located within this body, and how technologies interact with it, I further propose two non-exhaustive interpretations of this *Body Creative*: an individual interpretation and a collective one.

On an individual level, I invite you to consider the previously discussed societally reproduced biases and limitations we each bring to a creative process, and ask yourself where would you position the locus – or loci – of creativity. Is creativity produced in your brain, through hormones, your eyes, your hands, or a combination of these aspects? Do associations of impulse and emotion with areas like the heart or stomach contrast rational decision-making within the head? Does creativity arise from either, or a combination of these areas, or neither? Perhaps, one could follow an Ancient Greek position which locates creativity not within the individual body at all, but deems it a spirit external to us [50]. Instead of viewing ourselves as the source of creativity, this view merely sees our bodies as a vessel through which other dimensional beings articulate their agencies. While I acknowledge that for people who do not believe in sentient spirits, this might be too far a departure from their worldview, entertaining this possibility is useful in detaching ourselves from the Eurocentric dichotomies which we are culturally engulfed in. Arjun Appadurai [3] provides a framework in which the external and internal processes which govern our perception are articulated in terms of intermingling cultural flows. An externalising of underlying biases, cultural pre-sets, and tacit influences should not, however, translate into a negation of responsibility for an individual's engagement with creativity, technologies, and embodiment. Rather, I would argue, it should spark an awareness that we never truly take off our shoes, and that whichever technologically mediated form of creativity we engage in, is inherently changed by our personal positionalities, biases, and assumptions, just as we are irrevocably changed by the technologies we interact with.

Applying this consideration to the Body Creative, where does this intersection lead us? Whether we regard technologies as artificial or an extension of our species' adaptability, does this change the locus of creativity in a human-machine co-creation? Are there multiple loci with conflicting agencies or a centre with clear peripheries? If so, is this centre outside of our bodies, within the technologies we interact with, or in a virtual sphere in which there is no clearly delineated difference?

A clear limitation of an individualised interpretation of the Body Creative is its literal application: one may easily argue that the Body Politic is an allegory which could not be applied to a single person, but a nation-state as the interpretative totality of a multitude of agencies. It is a sum, rather than a single digit. This critique solicits a second interpretation of the Body Creative. Beyond our personal considerations, there is a collective dimension which cannot be entirely extracted from any creative process, whether technologically mediated or not: this is the Body Creative as an allegory for societal co-production.

Partially, this collective interpretation was motivated by the fact that in my preliminary questions about people's self-descriptions, most people opted for relational measures: they described themselves as 'tall', for instance. 'Tall' has no meaning outside of an assumed societal consensus on normativity in relation to all possible bodies. It is, in other words, an inherently collective and relational

measurement, one that considers us as part of our social environment. Hardly any human, I would imagine, would describe themselves as 'tall' in comparison to a tree, or their movements as 'robotic' in comparison to an actual robot. When we describe someone as creative, whether it is an individual, a group, an entire civilisation, a machine, or a network of algorithmic decisions, what are we comparing them to? This question encapsulates a core function I see in the notion of a Body Creative: it is a tool which allows us to reflect on where we are positioned in a larger context, and how these relationalities shape the definitions, understandings, and processes we co-produce.

Therefore, these two versions of the Body Creative fulfil two complimentary purposes as instruments of self-reflection: the individual interpretation invites us to reconsider our internalised assumptions about our own bodies, and those of others; the collective interpretation asks where the bodily biases we are individually attached to fit into the societal networks which constellate technologically mediated creative processes, their outcomes, and interactions with these outcomes.

7. Conclusion

Fontana [25] suggests that to 'comprehend the ordering and patterning of the world is to appreciate that utter diversity and complexity whereby the true values of time and space depend on context and perspective'. With emerging technologies becoming more integrated, the rigid lines between us and technologies, between the physical and virtual dimensions of the spaces we inhabit grow increasingly fluid. The more fragmented and rhizomatic our embodied experiences and creative processes become, the more we need to pay close attention to the biases, assumptions, and pre-sets which shape these constellations. Firstly, this entails acknowledging the historical narratives which our respective perspectives emerge from, and are embedded in, as subjective, local, and tied to a specific set of positionalities. How we perceive our own bodies, and those of others, shapes how we design, interact with, and program creative technologies, which in turn influence our bodily experiences and those of others. One aim of the Body Creative as a conceptual tool is to gaze inwards, to use our eyes to see how our eyes function, how they are augmented by the technologies they interact with, whilst they shape the respective functions and futures of these technologies.

Secondly, our individual bodies, creative processes, and the technologies we interact with are inevitably part of a collective Body Creative. Cultivating an awareness of which functions we fulfil within that body, and how we can do our share to ensure all the parts of that body are healthy and functional, is a step towards more daring play, wilder experimentation, and more creative innovation than one single body part could ever achieve in isolation. Considering the relationality of our reference points, and the impermanence of our respective experiences does not have to be a move towards thinking smaller – in contrast, it positions us within a larger narrative collaborative creativity. Thus, in addition to potentially facilitating an inversion of biases and challenging of societally re-enforced blind-spots, utilising the concept of the Body Creative may produce a sense of belonging. Whether we interact with an XR experience, design an app, or write about the creative processes of others, considering ourselves as more than the limitations of our limbs, and simultaneously as a limb of a larger body of creativity, should serve as a reminder that our ship does not drift in a vacuum, but steers through streams and fluxes which are forever altered by our presence.

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9. References

[1] J. C. Kaufman. Creativity 101. Springer Publishing Company, 2016.

[2] D.K. Simonton. Creativity, Problem Solving, and Solution Set Sightedness: Radically Reformulating BVSR. Journal of Creative Behaviour 46 (2012): 48-65.
[3] A. Appadurai. Disjuncture and Difference in the Global Cultural Economy, in: A. Appadurai (ed.), Theorizing Diaspora. A Reader, Blackwell, 2008, pp. 33-44.
[4] S. Doolani, C. Wessels, V. Kanal, C. Sevastopoulos, A. Jaiswal, H. Nambiappan, F. Makedon. A Review of Extended Reality (XR) Technologies for Manufacturing Training. Technologies 8 (2020): 77.
[5] J. Lanier. Dawn of the New Everything: Encounters with Reality and Virtual Reality, New York, Vintage, 2017.
[6] B. Furht. Handbook of Augmented Reality, New York, Springer, 2011.
[7] S. Benford, G. Giannachi. Performing Mixed Reality, Cambridge, MA, MIT Press, 2011.
[8] C. Guckelsberger, A. Kantosalo, S. Negrete-Yankelevich, T. Takala. Embodiment and Computational Creativity. arXiv (2021).
[9] T. Ziemke. What's That Thing Called Embodiment?, Proc. Annual Meeting of the Cognitive Science Society 25 (2003): 1305–1310.
[10] B. Applebaum, Critical Whiteness Studies, 2016. URL: https://oxfordre.com/education/view/10.1093/acrefore/9780190264093.001.0001/acrefore-9780190264093-e-5
[11] J. Almog. What am I? Descartes and the Mind-Body Problem, Oxford, Oxford University Press, 2001.
[12] S. Hall, S. Representation: cultural representations and signifying practices, London, SAGE/Open University, 1997.
[13] E. Slingerland. Body and Mind in Early China: An Integrated Humanities–Science Approach, Journal of the American Academy of Religion 81 (2013): 6–55.
[14] S. F. Spicker. The Philosophy of the Body: Rejections of Cartesian Dualism. Chicago: Quadrangle Books, 1970.
[15] R. Shusterman. Body Consciousness: A Philosophy of Mindfulness and Somaesthetics, Cambridge, Cambridge University Press, 2008.
[16] P.G.H. Clarke. Neuroscience, quantum indeterminism and the Cartesian soul, Brain and Cognition 84 (2014): 109–117.
[17] R. Manzotti, P. Moderato. Neuroscience: Dualism in Disguise, in: A. Lavazza, H. Robinson (eds.), Contemporary Dualism: A Defense, Routledge, 2013, pp. 81-97.
[18] L. Mudrik, U. Maoz. 'Me & My Brain': Exposing Neuroscience's Closet Dualism, Journal of Cognitive Neuroscience 27 (2015): 211–221.
[19] G. S. Stent. Epistemic Dualism of Mind and Body, Proceedings of the American Philosophical Society, 142 (1998): 578–588.
[20] M. Kulstad, L. Carlin. Leibniz's Philosophy of Mind, in: Edward N. Zalta (ed.), The Stanford Encyclopedia of Philosophy (2020), URL:https://plato.stanford.edu/archives/win2020/entries/leibniz-mind/
[21] T. H. Huxley. On the hypothesis that animals are automata, and its history, Fortnightly Review, 22 (1874), 555-580. Reprinted in: Collected Essays: Volume I, Method and Results, London, Macmillan, 1893, pp. 195-250.
[22] Farzad. Hegel's Solution to Cartesian Dualism of Mind and Body, Journal of Philosophical Investigations at University of Tabriz, 9 (2015): 61–78.
[23] N. Rapport. `The truth is alive': Kierkegaard's anthropology of dualism, subjectivity and somatic knowledge, Anthropological Theory, 2 (2002): 165-183.
[24] K. Popper, J. Eccles. The Self and Its Brain, Berlin, Springer, 1977.
[25] A. Fontana. Introduction: Existential Sociology and the Self, in: J. Kotarba, A. Fontana (eds.), The Existential Self in Society, Chicago, IL, University of Chicago Press, 1984, pp. 3-17.
[26] L. Wittgenstein. Logisch-Philosophische Abhandlung. Tractatus Logico-Philosophicus, Ditzingen, Reclam, 2022.
[27] H. Lefebvre. The Production of Space, London, Wiley, 1991.
[28] B. de Sousa Santos. Epistemologies of the South and the future, From the European South, 1 (2016): 17-29.
[29] M. Bernal. Black Athena: The Afroasiatic Roots of Classical Civilization (The Fabrication of Ancient Greece 1785-1985, Vol. 1), Rutland Local History & Record Society, 1987.

[30] G. Dietze. Decolonizing Gender – Gendering Decolonial Theory, Crosscurrents and Archeologies, (2014) 253-276.
[31] M. Baker. Civilizantional Analysis, European Modernity and Western Education: A Modern/colonial World System Perspective, 2016. URL:https://www.academia.edu/25409887/Civilizational_Analysis_European_Modernity_and_Western_Education_A_Modern_colonial_World_System_Perspective.
[32] E. Dussel. Eurocentrism and Modernity (Introduction to the Frankfurt Lectures), Boundary 2 (1993): 65-76.
[33] D. Chakrabarty. Subaltern Studies and Postcolonial Historiography, Neplanta: Views from the South 1.1 (2000): 9-32.
[34] S. Hurn. Humans and Other Animals: Cross-cultural Perspectives on Human-animal Interactions, Anthropology, Culture, and Society, Pluto Press, 2012.
[35] S. Howell. Nature in Culture or Culture in Nature? Chewong ideas on 'humans' and other species, in: P. Descola, G. Pálsson (eds.), Nature and Society, London, Routledge, 1996, pp. 127-144.
[36] M. Boler. Hypes, hopes and actualities: new digital Cartesianism and bodies in cyberspace, New Media & Society, 9.1 (2007): 139–168.
[37] A. Simmons. Technology Colonialism. Model View Culture 27, URL: https://modelviewculture.com/pieces/technology-colonialism
[38] L. Strate. If It's Neutral, It's Not Technology, Educational Technology, 52.1 (2012): 6-9.
[39] A. J. Toynbee. A Study of History, Oxford, Oxford University Press, 1964.
[40] P. Dourish. Where The Action Is: The Foundations of Embodied Interaction, Cambridge, MA, MIT Press, 2001.
[41] N. Maldonado-Torres. On the Coloniality of Being: Contributions to the Development of a Concept, in: W. Mignolo, A. Escobar (eds.), Globalization and the Decolonial Option, London, Routledge, 2010, pp. 94-124.
[42] J. R. Faegin. The White Racial Frame: Centuries of Racial Framing and Counter-Framing, New York, Routledge, 2010.
[43] P. Cegys, J. Weijdom. Mixing realities: Reflections on presence and embodiment in intermedial performance design of Blue Hour VR, Theatre and Performance Design, 6.1 (2020): 81–101.
[44] K. Gmeinwieser, N. Schock. Augmented Reality Contact Lenses – An Investigation of Technology Acceptance Drivers from a Potential User Perspective, 2020. URL: https://www.diva-portal.org/smash/get/ diva2:1441383/FULLTEXT01.pdf
[45] M. Wiemer. Mojo Vision: Designing Anytime, Anywhere AR Contact Lenses with Mojo Lens, Proc. SPIE AVR21 Ind. II (2021): https://doi.org/10.1117/12.2597476
[46] I. Wallerstein. World-Systems Analysis, Duke University Press, 2004.
[47] R. Giblin, C. Doctorow. Chokepoint Capitalism: How Big Tech and Big Content Captured Creative Labor Markets and How We'll Win Them Back, Boston, MA, Beacon Press, 2022.
[48] C. de Pizan. The Book of the Body Politic, Cambridge University Press, 1994.
[49] D. Harvey. The City as a Body Politic, in: J. Schneider, I. Susser (eds.), Wounded Cities – Destruction and Reconstruction in a Globalized World, Routledge, 2003, pp. 26-46.
[50] E. Gilbert. Your elusive creative genius, Video, 2009. URL: https://www.ted.com/talks/elizabeth_gilbert_your_elusive_creative_genius