

# **Robot Avatars and the Vicarious Realm**

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## **ABSTRACT**

I introduce the concept of the vicarious realm as existing between physical ‘place’ and virtual ‘space’. Using the words of students who employ telepresent robots to attend class for them, I speculate on the role of the robot as a pliable representation of a person, and how it offers the human the opportunity to retain an embodied presence in a place (classroom) in a way that is impossible via the use of a screen. Embodiment and interaction – known as intercorporeality – is unique to the notion of ‘place’; without it, we cannot lay claim to being in any place. This assertion has implications for the argument that there can be such a thing as an online ‘place’. It is my intention that my paper will provide an inspirational base for future researchers to consider our relation to place as our notions of being somewhere come to be questioned.

## **KEYWORDS**

Robotics, disability, identity, representation, virtual

## **Introduction**

In August 2017, Jade, a disabled British student introduced the world to Bee (figure 1) – the telepresent robot who attends school for her when she is too ill (Gee 2017). Bee is present in the classroom while the student interfaces with a tablet to stream video, sound, and also to transmit her voice via Bee. Vaguely humanoid in appearance, Bee’s head can be controlled remotely, thereby allowing the student to have a 360-degree view of the classroom. This capability sets the functionality only slightly apart from current teleconferencing software which has the potential to do most of what Bee can do and is much more readily available.

Bee is, by no means, a unique case as there appears to be a trend in the use of robots (albeit with varying levels of functionality) by students who feel that, without their mechanical emissaries, they would otherwise be missing out on at least some elements of an educational experience (Gilani 2011; Metro 2011). This is a curious phenomenon but one with some pertinence. As events arising from the Covid-19 pandemic marked a necessary shift to online environments in all spheres, changing relationships with people and places, and with robotics ever growing as an industry, in what ways could a robot offer the user (student) a different experience than that which could be offered by the screen alone?

Answering this main question will require addressing the sub questions contained within. Given that it acts as an agent for the student user to interact with the environment, it is necessary in the first instance to consider the relation that the student has with the robot and, further to this, thought should be given to the relation between the robot and others present within the environment – in this case the classroom. Secondly, a distinction must be made between the realms of online, physical, and vicarious experience (as I have termed it). An understanding of the distinctions will allow for a comparison between differences in experience between the use



**Figure 1.** Bee the Telepresent Robot (Gee 2017)

of robots and technology with similar functions which offer a virtual presence, as well as how this might compare to being physically present.

### **Methodology**

The aim of this paper is to advance a speculative proposition on the use of the robot as an ‘avatar’, or a representative of oneself, and to offer an introduction to my original concept of the vicarious realm – as a middle ground between physical and virtual – with a view to considering how this impacts on a feeling that one can ‘be there’ (in Jade’s case, in class) while somewhere else. In order to advance my arguments, I have undertaken a hermeneutic analysis of literature chosen for its relevance to the paper’s themes and performed conceptual analyses of the main concepts ‘avatar’ and ‘vicarious realm’, presented here in their briefest forms.

The literature I have engaged with crosses a range of disciplines, as I have referred to philosophers of education, mind, psychology and imagination; academic discourse in robotics and artificial intelligence; and science fiction.

As this paper will be addressing student experiences to an extent, it is only logical that it will refer as directly as possible to the words of the students using the robots, especially Bee's primary user as she has been most articulate in her experiences with the robot, as quoted in the newspaper articles referenced above (Gee 2017; Gilani 2011; Metro 2011).

In setting out the difference between 'place' and 'space', or physical and online, I will refer to the work of the contemporary educational philosopher (and technologist), Norm Friesen (2011). His account of the phenomenological differences between the classroom as a place – an identifiable, enclosed destination with a value – and online as a space – imbued with freedom, blank possibility and nothingness – provide a backdrop to the discussion on the distinction between these two forms of experience (which, despite clear differences in definition, Friesen tells us a determination of experiential difference between them is not so simply defined), as well as allowing me to introduce my own conceptualisation of the vicarious realm as a middle ground.

As well as philosophy of education, I refer to writers of philosophy of mind, imagination, image, and psychology to support me in constructing the argument that the role of the imagination is imperative when considering the robot to be more than just a tool to its user. Similarly, writings from contemporary researchers in artificial intelligence and robotics are used to consider human-robot interaction, and the possibility of robot to become a representation of one's identity.

Furthermore, due to its propensity as a genre to articulate concepts beyond the scope of current common-sense thinking, I intend to use some ideas drawn from science fiction. Science fiction as a field of inquiry itself has been studied by academics since the 1960s (Williamson 1996), and its inspiration may be felt in research fields across the sciences (for example, the field of Robotics bears a name invented in fiction by Isaac Asimov). I use it here, however, as a means of speculating on a present day reality through projections of alternate created worlds (Latham 2014); it is a useful way of critiquing what is now, based on what could be/could have been. In this case, it has been used to speculate on the role of robot as a means of representing identity, or holding a role beyond mere tool or machine. This is something which is addressed often in a fictional sphere, but less so in the academic sciences and so I look beyond them in order to draw inspiration. Particularly interesting here are the robot stories of Isaac Asimov (1995) which speculate on the potential relationships between human and robot from a number of perspectives. Furthermore, the imagining of the world as populated by remotely controlled robotic representations of humans as posited in the film *Surrogates* (Mostow 2009) has pertinence when considering vicarious experience and robot as extension of self, both of which are ideas with some relevance in this paper.

**'Bee makes people feel comfortable': Human-robot relation, anthropomorphism, and identity expansion**

In describing her relationship with Bee, the student who uses it – Jade – refers to it both as a tool, in terms of performing a function for her, but also explicitly assigns human-like qualities to it. Bee has been given a name, the student has engendered Bee as female, and she even goes further to suggest that Bee has experiences independent of her: ‘Several times, she’s come back [from friends’ houses] with big red lipstick marks all over her’ (Gee 2017). It occurs to me that, although anthropomorphism refers to a tendency to give human-like attributes to any non-human entities (consider the idea of pets treated as children, for example), in the field of robotics and artificial intelligence this is something which is especially prevalent. It is suggested in literature that the design of the robot lends itself to ‘higher anthropomorphizability’ (Zlotowski et al. 2015, 347), meaning that those machines designed with a humanoid appearance make it easier for us to project human qualities onto them. At first glance, this theory may seem logical; it retains echoes of the idea that, regardless of how abstract something may appear, there is a general inclination to look for a human face, or a human characteristic, within it (Balazs 1970). This is a short journey to make when the machine already displays some of those physical, human characteristics. However, this theory does fall down somewhat when considering that consumer AI products such as the Google Assistant, Apple’s Siri and the Amazon Alexa do not look in any way human, but their voices, their names and their quasi-conversational method of interaction encourage the user to treat them as though they *were* human. Our intrinsic inclination to anthropomorphise still happens, but without a physical hook, the journey becomes a little more challenging.

It is a familiar science fiction trope: the notion of robot created in the image of a human. The first use of the word robot occurred in the 1920s (in Karel Capek’s play, *R.U.R.*, referenced in Asimov 1995) to describe machines that were identical to humans in appearance. Since then, it has been a staple of the science fiction genre to represent robots in the humanoid form – C3P0 from the *Star Wars* (Lucas 1977) franchise; Marvin from the *Hitchhiker’s Guide to the Galaxy*, complete with personality prototype (Adams 1995); and Mr Data, the incredibly lifelike droid from *Star Trek: The Next Generation* (1987), among countless others. For the purposes of this inquiry, though, we are concerned primarily with Bee – and others like it – with its comparatively naïve design and functionality far from the level of the aforementioned sophisticated, autonomous robots. The question of whether Bee can be considered strictly humanoid could be debated with regards to Asimov’s description of the humanoid as ‘indistinguishable from the human being’ (1995, 189), however such a debate is not wholly necessary here. It is enough to consider how the modelling of the head and ‘eyes’ render a vague semblance of a person, and how this approximation of a particular concept, or image, of person impacts on those people who come into contact with it. I suspect that the cultural familiarity of robot, certainly in a Western context, represented in the (vague) human image is what ‘makes people feel comfortable’ (Gee 2017) around Bee and its counterparts. Indeed, the ‘Uncanny Valley’ theory posits that there is a non-linear relationship between how realistic a robot is and how likeable it is (Zlotowski et al. 2015). According to this theory, people do not relate well to robots that are too lifelike, although Sethumadhavan (2012) counters that we expect human-like robots to have more warmth and, for that reason, this is the preferred design for machines built to interact with people. Perhaps Bee’s popularity, and what has been an

apparently successful integration, among Jade's peers can be attributed to its appearance as an appropriate balance of human-like but not so lifelike as to elicit feelings of discomfort.

Unusual though it may seem to give human characteristics to something which functions as a tool (consider whether you would name a screwdriver, to give a glib example), it is my contention that Jade's assignation of human characteristics to her robot is a necessary consequence as she uses it to represent (at least part of) herself to others. There is a plurality here as Bee could be described as both a tool which performs a function for Jade, and a representative of her in a world from which she would otherwise be excluded. This echoes Bainbridge's (2014) assertion that developments in technology both extend the scope of human action and permit the extension of our identities. Another student in Moscow named his robot after himself (Metro 2011) – a clear indication that he viewed his identity and that of the robot's to be very strongly linked, if not one and the same.

I have referred, in this article's title, to the robots used by these students as avatars, a term which is commonly associated with the online gaming world and can be identified as 'an interactive, social representation of a user.' (Gunkel 2010, 128). Avatar also seems an accurate term to use when describing these robots as they act as representational proxies, allowing the students to access the interactive and social domain of the 'real world' classroom. Online avatars are not always fully representative of the real-life physical attributes of the user – Gunkel (2010) suggests that they offer opportunities for both exploration of one's identity and deliberate concealment of (perceived) less appealing attributes; however, it is interesting to note that when choosing online gaming or social avatars, it is more common than not for users to choose ones which closely resemble how they look in real life (Best & Butler 2013). Robot avatars do offer further opportunities for experimentation with identity as explored, somewhat exaggeratedly, in the movie *Surrogates* (2009). In a world populated almost entirely by robot avatars (surrogates) which are remotely controlled by humans from the safety of their own homes, the main protagonist in this film encounters one user controlling multiple surrogates in multiple configurations – none of which bear any physical similarity to the original, root user. Indeed, everyone with a surrogate has configured it to be, at the very least, a more physically attractive version of themselves. Sadly (or not, depending on your point of view), such sophisticated machines are yet to exist outside of the realm of science fiction and the robots currently in use by disabled students are not so amenable to aesthetic customisation. However, with its strikingly neutral appearance, Bee offers possibilities for Jade to assert a part of her identity among her peers by allowing her to represent herself to them in a way that conceals physical attributes with which she is uncomfortable. She admits, 'I don't want people to see me stuck in a nappy' (Gee 2017), and Bee definitely spares her this indignity.

Further to this idea, Bee, in its role as robotic avatar, whilst assuredly remaining not Jade, also comes to be *essentially* Jade. This is an idea which will come to be referred to again in the following section as the realm of vicarious experience is discussed, but pertinent to be introduced here as we consider the robot as a representation of identity. Just as a photograph or image can present the essence of a person – 'the presence of the thing in its absence' (Lechte 2013) – by appropriating the image of that person, so too does Bee present Jade's essence by appropriating the aspects of her identity that it is possible to show (given the inherent

limitations of the technology), and those which Jade herself is comfortable showing. It may even be argued that the robot, by virtue of its ability to streamline one's identity by obscuring that which the user sees as less appealing, could become representative of an 'ultra-essence'. I am reluctant to speculate too far in this regard as it would require a discussion which lies far out of the scope of this paper so it is sufficient to understand that robot and user maintain a link beyond that which is purely communicative.

Referring back to the original question of the difference between the experiences offered to students by the robots and those offered by similarly functioning technology, I conclude, partially at this midway point, that the key distinguishing factor between telepresent robots and telepresence hardware and software is the establishment of the robot as a pliable representation of the identity of the human user. Where an on-screen presence gives the student the chance to *see* what is going on and offer a contribution in a kind of passively participative way, the robot presents an opportunity for something of them to *be* present while they are not strictly present themselves. I accept that, in terms of base functionality, it may be argued that the robot is essentially a slightly more sophisticated version of the kinds of video communication technologies that are gaining traction across modes of life for some of us; however, a digital communication link between two people can only exist in a virtual space, with the only recourse to the physical being that which can be glimpsed in the background of your interlocutor(s). A representative present in the physical space of the classroom transitions from entirely virtual to, I suggest, somewhere between the physical and virtual. In the next section, I will attempt to distinguish between the realms of physical, online, and vicarious experience to determine how the use of robots may offer a different kind of experience than the use of, for example, telecommunications software and a laptop.

### **'Bee allows me to be part of the class': Distinguishing between physical, online, and vicarious experience**

"Bee lets me do everything I didn't think I'd ever be able to do," says Jade. "It allows me to *be there*, and hear first-hand what's being said, and be part of the class." (Gee 2017, emphasis added). At first glance, this does not seem like an odd comment to make. Indeed, often it is spoken about 'being' on social media, on a video call, or online when it is probably more semantically correct to say that we are using social media, making a video call, or using the internet. Nevertheless, *Jade's* assertion that she can be in the classroom when she is, in fact, sitting on her sofa at home in front of her tablet screen is one that remains curious for the very reason that it exploits this minor semantic inaccuracy to suggest something greater: that it is possible to be in two physical places at once – classroom and home – via the manipulation of a virtual space using a physically embodied subject.

In the previous section, I determined that the robot could be viewed as a representation of the human user, one which carries something of the identity of the person at the controlling end (their essence, perhaps) and allows for the possibility of identity expansion and exploration. In making distinctions between physical and online experience, I will argue that it is this ability to represent the identity of the human in a physical form, as an extension of their own body, which allows the robot to offer, for the user, a middle ground between the entirely physical and the entirely virtual – a realm which I have called vicarious.

A well-quoted axiom which attempts to succinctly identify the main difference between physical and virtual is that which appears in Jay Griffiths' *A Sideways Look at Time* (2004, cited in Doyle and Kim 2014; Doyle 2010): 'There is no place in cyberspace – there's no Africa there, no mud, no beads or wells or such humanity in the air.' What I interpret from Griffiths' quote is that cyberspace lacks the sensory experience that we associate with being in a place. In the example, anyone present in Africa, provided they held the requisite sensory faculties, could see the beads, smell the mud, and touch the wells although in cyberspace, the quote assumes that could never happen (debatable though this may become as technology continues to advance). This echoes the definitions of 'place' and 'space' I have adopted from Friesen (2011) in his attempt to distinguish between pedagogical relations in classroom and on screen. Place, as he defines it, is a destination with an identifiable value which is always enclosed. Africa, it can be agreed, is an enclosed place (by virtue of its borders); the interactions with the mud, beads and wells, and the sensory experiences resulting from these interactions how we identify and evaluate the place. Space, on the other hand, is without such experiences or enclosure; it is a nothingness. The idea of a nothingness can be construed in a positive sense, whereby it can foster freedom from the enclosures of place. It may be considered to have a negative aspect, in that its emptiness leaves the space without the sensory experiences we come to value.

These definitions represent an attempt to make a distinction between the ontologies of place and space; however, Friesen (2011) suggests that the difference between experiences in place and space, or, as in the quote above, real and virtual, is not so easy to define. The multimodal nature of the lifeworld, the world experienced by us, means that we cannot only describe it in terms of sense. It must also be thought of in terms of lived time, lived space, lived body, and lived relation. The place (of the classroom, in this case) and the space (of the screen) encourage differences, sometimes subtle, across each of the modes of experience. For example, Friesen discusses the similarity between the classroom and the computer in regimenting 'time, space and body' (2011, 81), but identifies a difference in the possibility of the students in the classroom being able to interact directly with the teacher and others in the classroom; whereas online, the screen remains a mediating entity – a barrier, it might be suggested, with all of its connotations of obstruction and obfuscation. I understand this to mean that the classroom, or indeed any physical place, brings forth opportunities to share lived time, space, body and relation where the virtual space has limited potential to share these experiences with others (despite attempts by some to overcome these limitations by sharing much of their lives online).

The placing of the robot in the classroom, rather than the exclusive use of video-based communications, draws something from the idea of intercorporeality – the connection between embodied subjects (Friesen 2011). Embodied subjects are connected in both the physical place and the virtual space; however, there are significant differences between the experiences of the embodied subject within the classroom and the embodied subject at the computer. In the classroom, the subject has the ability to sit and move with other people while receiving a multitude of sensory input. Embodied subjects in a place share a body, spatial, and time relation. The experience of the embodied subject at the computer sat alone, looking at a screen, moving around to make things happen, cannot share a bodily relation, by virtue of being alone; nor a spatial relation since, even if they were accessing the same program as someone else,

their experience would be constrained to being unique due to the individual configuration of their hardware, software and environment. Only in synchronous activity with others can we claim that they share a relation in time, although this can also be argued in terms of delays in connection due to variations in speed or bandwidth (much more neatly termed ‘lag’). As such, intercorporeality as the connection of embodied subjects in terms of body, space and time is not something we can claim fully exists in the online world. All that is lacking, however, can be mitigated by having an embodied subject at the computer connected to an embodied subject in the classroom (the robot). In terms of Bee and Jade, although I have argued that Bee is representative of Jade in the classroom environment and is therefore a part of her identity, Bee is still a mode by which Jade can experience school vicariously, using her imagination to share the experiences that she perceives Bee to be having.

Such a mitigation, occupying a potential middle ground between physical and virtual, which I suggest is achieved by the use of robots by students who cannot otherwise attend school, are experiences which occur in the realm that I have termed vicarious, based on the definition of vicarious as something which is ‘experienced [...] through imaginative or sympathetic participation in the experience of another’ (Merriam-Webster 2019). As I have established that robots are, at the very least, an expansion of the identity of the students who use them, vicarious experience can be thought of as a midpoint between real and virtual as the actual presence of the robot in the classroom means that the life-world experiences of the students are a little less limited than if they were to be present entirely virtually via screen.

At this point, it may be tempting to draw comparisons between the vicarious realm and virtual reality technologies given that virtual reality, as an immersive experience, allows a person to be in two places at once (Heim 1993) – embodied in their living room, while the requisite equipment seemingly transports them to a space station near Jupiter, for example. Conceptually, though, the realm of virtual reality cannot be considered similar to that of the vicarious. In order to experience vicariously, at least two distinct, embodied subjects would be required, with an imaginal link between two places, whereas experiences in virtual reality require one subject to travel between worlds.

The role of the imagination in the realm of the vicarious cannot be underestimated. Pointedly, Currie and Ravenscroft (2002) tell us that it is the obvious function of the imagination to allow us to perceive the world from alternate perspectives: those of other, ‘real’ people, or the hypothetical perspectives of fictional characters. In the case of Bee and Jade, robot and user, the alternate perspective offered in Jade’s imagination is neither strictly real, nor strictly hypothetical. Nevertheless, the close relationship she has with the robot as a representative of herself encourages the depth of imagination required for effective transit to the vicarious realm. Imagination, if we accept the viewpoint of Vygotsky (2004), is bound up in our own experiences. It is a faculty by which we store, recall, and recombine past experiences in order to apply them to new situations and ideas. When this is used to consider the perspective of other people, real or fictional, it is an inherently solipsistic projection; any perspective gained can only ever be rooted to oneself, regardless of how much we want to believe that this is not the case. Notions such as empathy, particularly when it is defined in the popular way as to ‘put oneself in the shoes of another: emotionally, cognitively’ (Elliot et al. 2011, 133), rely on the



idea that it is indeed possible to see from another's perspective. Considering the social and relational significance given to empathy (Boella 2018), and the level of normative value assigned to the ability to empathise, it is little wonder that we may be reluctant to admit that while we may claim to be attempting to take the perspective of another person, it is more accurate to suggest that we are executing the inevitable transposition of our own perspective onto them.

Freed from this gordian knot of what it is to be human and the value of empathy in this, it is a much simpler task to consider the role of the imagination in attempting to gain the perspective of non-sentient objects as we can begin from the notion that our mind, and the image of our mind as it is projected onto the object, are one and the same. Such a projection of the user's mind onto the robot is further indicative of the capability of the robot to represent the identity of the user and perhaps reach beyond to represent their essence.

It is the imagination, therefore, which elevates the robot to a status above that of ordinary tool. As the user comes to employ their imagination as a projection of mind, the robot and the user overcome the limitations of technology as a tool only connected to the user by virtue of an 'extended mind' (Rudder Baker 2009): the idea that we might seek to expand ourselves by coupling with nonbiological entities via the extension of one's cognition onto tools in such a way that 'we become physical and cognitive hybrids – part biological and part artifactual.' (2009, 645). The concept of extended mind could become intertwined with that of the imagination as I have previously noted that Jade sees Bee as both a tool and as a representative of herself. It could be argued that even as a representative of a user, a robot remains a tool performing a specific function; however, even if we were to accept that this is the case, the thesis of the extended mind alone cannot account for the imaginative projection of the mind which must necessarily happen if the robot is to be used as a mediator of experience, or a vicarious subject, as in the case of Bee and Jade. Consider: an 'extension' of mind suggests an extrusion of what already exists to accommodate a second entity (the robot/tool); the tool is still external to the user. A projection of the mind places (at least part of) what already exists onto the second entity; the robot and the user are not only linked; they are the same thing. I will offer an analogy here to help illustrate my point: if a cinema projects a movie onto the screen, it is fundamentally the same movie that exists on the original celluloid. When presented with either and asked what they are, we would be likely to reply, 'It is [a movie]'. Thus when Jade makes an imaginative projection onto Bee, they become the same – the robot is the user.

This may suggest difficulties in using the term vicarious, given its definition of imaginative participation in the experiences of another; however, I have noted previously that Bee's role as an avatar representing Jade pits the robot in a position as not-Jade, since the holistic version of Jade exists as an entity in herself, but it could also be considered *essentially* Jade, as it manifests an imaginative projection of Jade's mind. As it occupies both positions, it is therefore possible for the robot still to be considered 'another'. Furthermore, we can argue whether Bee is able to experience anything at all as it is not really sentient and it is, after all, entirely under the control of Jade. However, it is my contention that, for Jade to be able to experience school vicariously through her robot, there is no need for the robot to be sentient. As I have noted, imagination is key in defining vicarious experience, therefore it only requires the student to imagine what Bee

is experiencing and this imagination can only be aided by her concrete knowledge of where her robot is and what it is doing at any given point.

## Limitations and Conclusion

In this exploration of how the use of robots in classrooms by disabled students might affect their experiences, I have identified two key factors which could have an impact and I suggest that these may be influencing the decision to send the machines into schools rather than to use more readily available, similarly functioning software. It is an exploration of some pertinence recently as online activity across the board has increased exponentially due to the effect of the COVID-19 pandemic, and the differences between the physical and the virtual have come to our attention more than ever.

The proposition that robots can be potentially viewed as a representation of the user in a way which allows them to assert, expand, or, in some cases, conceal their identity (or essence), allows the student to feel like they have a presence in the classroom. An on-screen presence may not elicit the same kind of feeling of ‘being there’ as it does not encourage the sharing of lived relations such as time, space and body (incorporeality) in a way that is inevitable with a physical place. In my view, in the virtual realm, the screen can act as a barrier between the people at either side – both metaphorically and literally.

Furthermore, the idea of vicarious experience compounds the feeling that the student has of ‘being there’. Introduced as a kind of middle ground between entirely physical and entirely virtual, I have suggested that having the robot mitigates the differences between the two to find a way for the student to have an embodied presence within the class.

This paper represents a speculative proposal of the vicarious realm, using literature that has undergone hermeneutic analysis. This is not without its constraints, as each paper/book/article/film referenced here has been included as the result of interpretation on my part; an interpretation which cannot be fully separated from my social and intellectual context as a white, Western female.

Furthermore, this paper does not represent a comprehensive delineation of any one of the contained concepts – it is intended to inspire further discourse and thought on the roles of robotic avatars, and our relations to ‘place’ and ‘space’ via the vicarious realm. As technology increases in sophistication, future research may look at the use of autonomous robotic assistants taking our place in a variety of roles and environments. Further questions could be asked about holographic representations of students and the experiential differences in which the use of such things could result. If a robot can be considered an embodied subject, can a holograph? Technology, it seems, will continue to provide a rich source of inquiry for a long time to come.

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