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Presence: Is it just pretending?

Phil Turner

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Abstract Our sense of presence in the real world helps regulate our behaviour within it by telling us about the status and effectiveness of our actions. As such, this ability offers us practical advantages in dealing effectively with the world. It is also an automatic or intuitive response to where and how we find ourselves in that it does not require conscious thought or deliberation. In contrast, the experience of presence or immersion in a movie, game or virtual environment is not automatic but is the product of our deliberate engagement with it, an engagement which first requires a disengagement or decoupling with the real world. Of course, we regularly decouple from the real world and embrace other, possible worlds every time we daydream, or engage in creative problem solving or, most importantly, for the purposes of this discussion, when we *make-believe*. We propose that make-believe is a plausible psychological mechanism which underpins the experience of mediated presence.

Keywords Presence · Pretending · Make-believe · Engagement · Immersion

1 Introduction

Presence, as an academic discipline, dates from the early 1990s with the publication of the first journal dedicated to its research. This is not to suggest, however, that designers, artists and writers have been unaware of the power of their media to create a sense of immersion or transportation or feelings of being present elsewhere, from long before this time. Prehistoric cave art may have been created for this very purpose, and the use of stained glass in churches and cathedrals has been recognised as a means of transporting churchgoers to higher, spiritual dimensions. Indeed stories of all kinds, irrespective of medium, have this power to transport, immerse, engage and to create a sense of being other than where we currently are. The English romantic poet Samuel Taylor Coleridge coined the term, "the willing suspension of disbelief" to describe the apparent willingness of readers to engage with stories irrespective of their credibility. (Though we are mindful of the earlier and more sober observations of the David Hume who wrote of *imaginative resistance*, that is, the reluctance we feel when we are invited to embrace something unbelievable.)

So, before considering what others have defined as presence, just what is our central question? It is this, what is it that a cave painting, a stained glass window, a poem and a myriad of digital technology have in common? A tempting answer might lie with inverting Coleridge's "the willing suspension of disbelief" from a double negative to the positive statement, "the willingness to believe". However, even if we emphasise the temporary nature of this belief, *belief,* in itself, is much too powerful a claim. When we watch a (fictional) movie we do not believe what we see, nor do we suspend disbelief instead *we act (think and feel) as though* what we are engaged with were the case.

So, returning to the examples we have already considered, we do not propose that the people who first gazed on cave paintings actually believed themselves to be in the presence of aurochs nor, while in churches, to be in the company of spiritual beings. Neither do we propose that people believe themselves transported to a "stately pleasure dome" after reading Kublai Khan nor fighting aliens

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on the surface of Mars with their space marine buddies in a games arcade. What we *do* propose is that people readily act, think, react and emote as though we were or might be in these situations.

This "as if", "as though" and "might be" indirection is one of the key differences between believing and making-believe (and as we shall see, the difference between sanity and psychosis). So rather than believing that we are elsewhere, we propose that we make-believe that we are.

The power of make-believe is not to be underestimated. It is astonishingly ubiquitous and can be found at work in everything from the kind of mundane "what if" thinking we might engage in when deciding what to have for dinner, through to scientific reasoning (e.g. Einstein famously imagined himself chasing a light beam) or competing in the world "air guitar" championships (Guitar 2014). Carruthers (2011) has also argued that these forms of adult creative expression and childhood pretend play share common cognitive resources/origin; indeed, Vygotski (1978) argued that imagination is "internalised" pretend play. Further, this form of thinking may be a relatively recent evolutionary development which may have first appeared some 50,000 years ago and is responsible for the flowering of human creative thought which has continued ever since then.

This paper seeks to make a case for the role of make-believe in the experience of presence. So let us begin by considering the experience of presence.

2 Defining presence

Early, formal definitions of telepresence, that is, the sense of presence created by technology have included, "the sense of 'being there'" (e.g. Held and Durlach 1992; Sheridan 1992); and famously as "the perceptual illusion of non-mediation" (Lombard and Ditton 1997) who wrote that, "An illusion of non-mediation occurs when a person fails to perceive or acknowledge the existence of a medium in his/her communication environment and responds as he/she would if the medium were not there". This description is highly reminiscent of both Norman's (1999) *disappearing computer* design proposal and Heidegger's observation that when we are absorbed in activities such as hammering, the hammer and the nails disappear and only the hammering remains (Heidegger 1927).

Presence has also been described as, "A mental state in which a user feels physically present within the computer-mediated environment" (Draper et al. 1998) and "the subjective experience of being in one place or environment, even when one is physically situated in another" (e.g. Witmer and Singer 1998). Further and following Coleridge, Slater et al. (1994) have described presence as "the (suspension of dis-) belief" of being located in a world other than the physical one". As Riva (2009) notes, these accounts explicitly define presence as a consequence of using or interacting with the technology. This assumption, explicit or otherwise, also serves to define real world presence as the standard against which instances of this technologically mediated presence (*mediated presence* hereafter) can be compared.

2.1 Theoretically rich accounts of presence

More recently, these early definitions have been challenged by more sophisticated and theoretically rich treatments. These are, of course, correspondingly much longer and more detailed than the initial, rather snappy, one line definitions. For this reason, we will focus on only one of these and here the work of Riva and Waterworth is an obvious choice as it offers a particularly detailed and complex account. They began by posing the question "What is the purpose of presence?" and have systematically answered it from a series of evolutionary-psychological, neuro-psychological and cognitive scientific perspectives. They argue that presence either evolved for no particular purpose (that is, as an emergent or serendipitous property of the nervous system) *or* it must offer evolutionary advantage. In examining the latter alternative, they note that "the appearance of the sense of presence allows the nervous system to solve a key problem for its survival: how to differentiate between internal and external states" (Riva et al. 2004).

From there, they have drawn upon neuropsychology to propose a mapping between the different forms of self or "layers" of consciousness which Damaiso's work has uncovered and corresponding forms of presence (Damasio 1999). They have successively paired *proto*-presence, *core*-presence and *extended* presence onto the *proto*-self, *core*-self and *extended* self. With each step up this phylogenetic "ladder", the experience of presence becomes richer, more detailed and more recognisable. From here, they recognise that the experience of presence is intuitive, that is, the product of unconscious and largely automatic cognitive processes. Thus, we do not make a conscious decision to be present in the world but find ourselves here as an immediate cognitive response. In recognising presence as an intuitive process, they also locate it within the dual-process accounts of cognition. These dual-process accounts comprise a broad family of theories which, while disagreeing in detail, do recognise that there are two basic forms of thinking, one is fast and intuitive (usually described as type or system 1 thinking) while the other is slow and deliberate (system 2 thinking). (We return to this point in Sect. 4). Most recently, they have added the dimension of embodiment into their account which seamlessly affords the

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integration of tools into the body schemata. The inclusion of activity theory also allows us to consider presence from the perspective of (human) objectives and goals (e.g. Riva 2009; Riva et al. 2009; Riva and Waterworth 2014).

In all, Riva and his colleagues have a comprehensive and coherent account of real world presence. Their work has located real world presence in a plausible evolutionary context and mapped expression of presence to different layers (self) of consciousness. This is a singular achievement. Other approaches have their own strengths and weaknesses but this work provides a flavour and overview of contemporary thinking in the presence of research. So far we have only really considered real world presence, but what of the technologically mediated variety?

2.2 A make-believe account of presence

We are present in the real world but we also frequently decide to immerse ourselves and to feel present in media. We will argue that the means by which we feel present in these other "worlds" lies with our ability to make-believe. When we pretend (particularly as children), we make-believe or imagine we enter alternate worlds. These worlds may be not as vivid, immediate or as tangible as the real world, but they can be very engaging. These worlds are often solely the product of these abilities but very often they are directed and shaped by external media and artefacts such as toys, stories, other people and, of course, digital technology (Walton 1990).

These episodes of mediated presence/make-believe are a consequence of cognitive decoupling and are "sandboxed"—or equivalent, in that they are labelled as make-believe. When we stop pretending we return to the real world. (*Before we develop this argument further, we should emphasise that we not are suggesting that pretending is in any sense concerned with deception or the wilful duping of innocent researchers*).

Let us consider the following two scenarios. The first of these is set in a children's tea party while the second considers the exploration of a virtual recreation of central London. In the first instance:

> A child proposes that she and her friends might hold a tea party. They agree to participate and equip themselves with toy tea cups and a toy teapot. The teapot is filled with water in lieu of tea. The children lay the tea set neatly on a tablecloth. One child acting as "mother" (the tea pourer) pours everyone a cup of "tea". As each child drinks from their cup of "tea", they may then chat and perhaps share pretend "cake". As the "tea" is drunk, "mother" refills the empty cups. The party reaches its natural conclusion.

For the duration of the tea party, the group of children have made-believe that water is tea, and they have behaved as if they were adults by imitating how they have seen their parents behave at a real tea party. Cups have been drunk from emptied and refilled. Conversations were enjoyed, and "cake" may have been consumed. Having behaved as if they were at a tea party, the children disperse.

In the second instance:

> A potential tourist using an immersive re-creation of London to get a sense of the city before booking a trip there. The tourist, in the immersive suite of the travel agent's premises, puts on a lightweight head-mounted display and a set of headphones and instantly finds themselves standing at the heart of Trafalgar Square. Looking around them they see pigeons completing a circuit around Nelson's Column before they head down Whitehall towards the river. The potential tourist is a little disappointed to find that it is not raining in London but is convinced enough that they want to go there in person.

For the duration of their trip to London, this tourist has made-believe that he has engaged with a faithful representation of the city. They have made-believed what they have seen and, within the constraints of the technology, they have acted as through they were there.

While there are enormous differences between toy teacups and water in the first scenario and a head-mounted display and a virtual model of London, there are also striking parallels too. In both instances, the "players" decoupled the real world in favour of a make-believe world. They act as they were engaged in a tea party and as though they were in Trafalgar Square. While make-believe (or its synonyms) may not be the only psychological mechanism involved in mediated presence it is nonetheless central to its experience.

3 The anatomy of make-believe

We all pretend. We develop this ability early in life and subsequently exercise it along with making-believe and imagining. These activities are probably at their most compelling when they are exercised in conjunction with external artefacts such as toys, books and works of art or more recently with digital technology.

Pretending is important to the social and cognitive development of children through its expression as (pretend) play. Russ (2004), for example, has argued that the development of a number of cognitive and affective processes rely on pretend play. Pretend play involves the exercise of divergent and convergent thinking, and it also facilitates the expression of both positive and negative

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feelings, and the ability to integrate emotion with cognition (e.g. Jent et al. 2011; Seja and Russ 1999). Early pretend play has also been implicated in creativity in later life (Russ 2004; Singer and Singer 2005). Significantly, Garvey (1990) tell us that pretend play is the "voluntary transformation of the here and now, the you and me, and the this or that, along with any potential action that these components of a situation might have".

Pretending is purposive, and Rakoczy et al. (2004) have reported that children as young as two are able to appreciate the difference between trying to perform an action in the real world, and pretending to perform the same action. This ability is essential; otherwise, we would be unable to discriminate pretending from any other form of action. Examples of pretending are myriad but citing children's tea party remains a firm favourite.

So, returning to the tea party in a little more detail: once embarked on this pretend play, the individual child makes attributions such as, "I am drinking tea with my friends" and this is one of many instance which are not the case. Further, her friends are making similar attributions of themselves and they are also each attributing the mental state of "we are having a tea party" to each other. We note that these mechanisms (and attributions) are examples of social intentionality in action which is a necessary condition for *social* presence.

Adult pretending is little different. Some of us are all too readily transported to the battles fought in Middle Earth (Green 2005) or are happy to pretend that we can fly to other planets and speak to the aliens we find there. Just as the tea was not real, nor is Middle Earth and faster than light travel is even less likely than being able to speak to aliens. Nonetheless, we readily make-believe these things, which are *not* the case, at least for duration of our pretence, TV episode or scientific discussion.

Thus, pretending is the ability to engage in *what if* thinking and as a consequence and, in short, the ability to run mental *simulations*. Pretending as *what if* thinking is evidenced in domains as diverse as design thinking (e.g. Buchanan 1992), scientific reasoning (e.g. Toon 2010), acting on stage (Goldstein and Bloom 2011) and our propensity to anthropomorphise technology (e.g. Fogg and Nass 1997).

Finally, from an evolutionary psychology perspective, Cosmides and Tooby (2000) tell us that being able to pretend is the result of cognitive de-coupling which they define as our ability to make use of contingent information and the artefacts which embody that information. They write, "arguably, one central and distinguishing innovation in human evolution has been the dramatic increase in the use of contingent information for the regulation of improvised behaviour" (p. 53). Thus, we pretend when presented with media such diverse as cave art to the latest Imax movie and in doing so temporarily divorce ourselves from the everyday and mundane.

3.1 The curious nature of pretend play

The existing research into our ability to pretend has been largely confined to the study of pretend play in young children. Indeed, Nichols and Stitch (2005, p. 20) have commented on the paucity of research into adult pretending. However, from their own work, they conclude that adult and childhood pretending is not very different. While this judgement may be a little broad, there is no extant evidence to the contrary.

It should be noted that the primary focus of these studies has tended to be the nature and dynamics of pretend play and its role in the cognitive or social development of the child. However, children's ability to pretend *per se* has also received attention.

Pretending (and pretend play) presents a number of intriguing, if not downright astonishing, problems for the researcher as identified by Leslie (1987, p. 412), "Pretending ought to strike the cognitive psychologist as a very odd sort of ability. After all, from an evolutionary point of view, there ought to be a high premium on the veridicality of cognitive processes. The perceiving, thinking organism ought, as far as possible, to get things right. Yet pretence flies in the face of this fundamental principle. In pretence, we deliberately distort reality". In essence, we can pretend before we have formed a veridical view of the world. He continues with the observation that our ability to pretend should, more reasonably, arise at the end of our intellectual development rather than "at the very beginning of childhood". Most recently, Nakayama (2013) has presented evidence of children as young as 7 months old pretending to cry merely as a means of obtaining "caregiver physical contact". There is widely accepted evidence that children are able to engage in pretending soon after their first birthday, and this is years earlier than any suggestion of a fully developed cognition. Having achieved cognitive mastery of the world, one might expect an individual to be able to demonstrate this ability by deliberately distorting the representation and then returning to it skilfully, but not before complete competence had been acquired. Finally, in a form of language which is reminiscent of computer science, Leslie poses the following questions just how is it possible for a child to think about a banana as though it were a telephone? His point is, if the representational system, which cognitivists claim to underpin cognition, is still in the process of "mapping" the world, how does it manage to tolerate distortions such as this? How is it that our cognition does not "crash" given this arbitrary onslaught? While his own solution to this problem is to propose a meta-representational account of pretence (about

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which we have more to say in Sect. 4.2), Harris (2000) has challenged his reasoning.

3.2 Imagining

If children pretend, then adults imagine. Vygotski (1978) writes that "Imagination is a new formation that is not present in the consciousness of the very raw young child is totally absent in animals and represents a specifically human form of conscious activity." We have already noted that imagination is "internalised" pretending or is "pretending without the physical actions".

We have adopted a fairly pragmatic perspective because imagination and imagination have proved to be highly resistant to definition. One of the problems with defining, much less understanding, imagination is that it might reasonably be applied to such activities as day-dreaming, fantasising, visualising, wishing (and, of course, pretending and making-believe) and a whole host of other slippery concepts. Further, the word itself also suggests the involvement of visual imagery which may or may not exist as a definitive and distinct mode of representation (e.g. Pylyshyn 1973, 1981).

However, Harris (2000) describes imagination as the capacity to consider alternative possibilities and their implication. He also tells us that this emerges early and transforms children's developing conception of reality. We note that his position is quite similar to that explored in this paper but our terminology is different, and his work is primarily focussed on child development. Helpfully, he identifies three roles for imagination (p. 161): (1) to become "absorbed in make-believe or fictional worlds"; (2) to make "comparisons between actual outcomes and various outcomes"; and (3) to explore the "impossible and magical". This reference to absorption in make-believe worlds points clearly at a role for imagination in the exploration of the magical worlds of digital media.

3.3 Make-believe

So far we have adopted a simple approach to key definitions. Pretending is child's play, and imagination is internalised pretending. What of the operation of make-believe? Here, we follow Walton (1990) and implicate the external world in make-believe.

We propose that pretending and imagining must share core cognitive resources—one being the "adult" version of the other and we can also reasonably say that both reflect our embodiment. Vygotski (1978) (again) telling us, "Like all functions of consciousness, [imagination] originally arises from action". However, both pretending and imagining routinely make use of external artefacts. Walton (1993) writes "Dolls and hobby horses are valuable for their contribution to make-believe. The same I true for paintings and novels. These and other propos stimulate our imagination and provide for exciting or pleasurable or interesting engagements with fictional worlds. A doll, in itself just a bundle of rags or moulded plastic, comes alive in a game of make-believe, providing the participant with (fictional) baby". Walton calls this "prop oriented make-believe" which he contrasts with "content-oriented make-believe".

Make-believe, in the context of the current discussion, is of this form though "affordance oriented make-believe" may be a more cogent description.

4 Make-believe as cognition

It is now well established in both the philosophical and psychological literature that there are two kinds of thinking, one fast and intuitive and the other slow and deliberative (e.g. Epstein 1994; Hammond 1996; Sloman 1996; Evans and B. T. 2003; amonst many others). Further, this distinction has not been confined to theoretical consideration alone as these two forms of cognition have been researched in domains as diverse as judgment and decision making (Kahneman 2002; Kahneman 2011); learning (Dienes and Perner 1999; Reber 1993), social cognition (e.g. Chaiken and Trope 1999; Epstein 1994) and enaction. For example, Hutto and Myin (2013), from a radical enactive viewpoint, distinguish between "basic minds" and "enculturated, scaffolded" minds. The former is responsible for the "vast sea of what humans do and experience" while our encultured minds are capable of language, more speculative thinking and planning.

And because of the huge diversity of terms used to describe these two forms of thinking, it has become something of a convention to designate them system 1 or system 2 thinking.

System 1 is the form of cognition common to both humans and other animals. As we have already noted that its operation is fast and intuitive and is responsible to our day-to-day coping with the world. System 1 thinking has a long list of attributes associated with it including being high capacity, associative, contextualised and not conscious. Kahneman (2011) adds to this list "able to complete the phrase, 'bread and …'", being able to answer the question, "2 + 2=" and being able to read and understand simple sentences. In reality is probably not a single system, but may comprise to be a set of autonomous sub-systems (e.g. Stanovich and West 2003; Stanovich 2004).

Dual-process theorists claim that human beings evolved a powerful general purpose reasoning system—system 2—which coexists with our older system 1 abilities. Unlike system 1, system 2 is slow, has limited capacity and is

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conscious. System 2 thinking is also uniquely human and may have evolved quite recently—perhaps within the past 50,000 years. System 2 thinking is sequential and has a relatively limited capacity; it is also slower than system 1 thinking. However, system 2 permits a number of operations which are not available to system 1 thinking. These include abstract hypothetical thinking and make-believe.

4.1 System 2 thinking and the origins of culture?

From an anthropological perspective and as we have already noted, Mithen (2002) has argued that there is (indirect) evidence of the appearance of system 2 thinking in relatively recent times writing, "… modern humans had a cognitive advantage which may have resided in a more complex form of language or a quite different type of mentality… Support for the latter is readily evident in from dramatic developments that occur in the archaeological record relating to new ways of thinking and behaving by modern humans." (p. 33). He also comments on the sudden change in the archaeological record c. 50,000 years ago with the appearance of representational art, religious imagery and rapid adaptations in the design of tools and artefacts.

Tattersall (2006, pp. 67–68) also notes that "When the first Cro-Magnons arrived in Europe some 40,000 years ago, they evidently brought with them more or less the entire panoply of behaviours that distinguishes modern humans from every other species that has ever existed. Sculpture, engraving, painting, body ornamentation, music, notation, subtle understanding of diverse materials, elaborate burial of the dead and painstaking decoration of utilitarian objects—all these and more were an integral part of the day-to-day experience of early Homo sapiens …".

While Calvin (2006 p. 85) observes that "… intelligence arose primarily through the refinement of some brain specialisation… The specialisation would allow a quantum leap in cleverness and foresight during the evolution of humans from apes– perhaps the creative explosion seen about 50,000 years ago, when people who looked like us […] finally began acting like us." Although there is some debate about the timing of this "overnight flowering", it is generally agreed that modern humans are capable of (Lewis-Williams 2004, p. 97): abstract thinking; the ability to act with reference to abstract concepts; planning depth; the ability to formulate strategies […] and to act upon them in a group context; behavioural, economic and technological innovation; and symbolic behaviour, the ability to represent objects, people and abstract concepts with arbitrary symbols. These are some of the many behaviours which distinguish modern man from our ancestors. It is plausible to believe that the development of system 2 thinking is the source of these abilities to think imaginatively, to engage in what "if thinking" and to engage in make-believe.

Given that we are able to engage in two distinct forms of thinking, we must inevitably be able to switch between them. In practice, this means decoupling from the predominant system 1 thinking which is busy allowing us to cope with the everyday demands of the world and engaging with the slower, deeper and more imaginative system 2 thinking.

4.2 Cognitive decoupling

We regularly witness cognitive decoupling when our minds wander or when we actively imagine, make-believe or pretend; however, there is also a substantial body of work on cognitive decoupling which to be found in the developmental psychology corpus and which we now consider.

4.2.1 Metacognition

Leslie (1987) begins by supposing that the child is able to create a representation of the world which is accurate and faithful. This he calls the *primary representation,* and this has a direct semantic relation with the world. For pretending to occur, the child must make a copy of this representation and change it. This copy is decoupled from the world being a copy of a copy- a meta-representation, and it is this which forms the basis of our ability to pretend. He goes on to propose a semantics of pretence. Of course, children need to be able to distinguish between acting and believing in the real world and pretending and this is achieved by quarantining the meta-representation from the real copy (of the world). The key to Leslie's account is the de-coupler which has three main components—perceptual processes, cognitive systems and the de-coupler itself. The de-coupler in turn comprises further elements, which are responsible for making a copy of the primary representation and its subsequent manipulation and quarantining. It should be noted that this model relies upon the supposition of a common representational code governing the whole process (*cf.* Prinz 1984).

4.2.2 Possible world boxes

Nichols and Stitch (2005) have created an influential cognitive model of pretending which itself is based on a modification to what they describe as the "widely accepted account of cognition as adopted by people working in this field". Nichols and Stitch make it clear that they do not believe that their account is necessarily complete or definitive but that they do think that they have, in contrast to other researchers, described pretending quite fully. Their most frequent criticism of other accounts being that they

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are "under-described". They begin by noting that the mind (*sic*) contains two quite different kinds of representational states, namely, beliefs and desires. Beliefs are what we know, true and false, about the world. Desires are what we want, and Nichols and Stitch implicate the bodily systems of being the source of them.

To pretend is to create another "world" in the *possible world box* (partition) of our cognition. They tell us that pretending begins with a premise ("let's have a tea party") which, if adopted by the pretender, forms the basis for subsequent *inference* and *embellishment*. They also recognise that the premise may be bound or constrained by schematic structures, writing: "clusters or packets of representations whose contents constitute 'scripts' or paradigms detailing the way in which certain situations typically unfold" (p. 34). The contents of the possible world box have full access to our beliefs and from there to our practical reasoning faculties. An updater mechanism keeps us informed as to the status of the pretend episode. The *possible world box* is populated with representational tokens which are different from those found in the beliefs and desires boxes. These tokens neither represent the world as it is, nor what we would like it to be, but rather represent what the world "would be like given some set of assumptions that we neither believe to be true (that is, we believe to be the case) or want to be true"(Nichols and Stitch, *ibid* p. 29). The precise nature of the *possible world box* in their account is, unhappily, a little under-described.

4.2.3 Twin Earth

Finally, Lillard (2001) rejects the meta-representation account of pretending and offers the "Twin Earth" model in its place. The "Twin Earth" model has its origins with Putnam's Twin Earth thought experiment.[1] Lillard writes that pretend play for children is similar to this Twin Earth thought experiment. She tells us that when children pretend, they create another world that shares many of the characteristics of the real world. While much remains the same, there are, of course, significant changes, such as the "child becomes the mother [and]… sand becomes apple pie", (*ibid*, p. 22). Then, the child reasons about the constituent parts of this twin world. Many of the relationships are unchanged, for example, while the child may pretend to be the mother; this (twin) mother treats her children just like the real world version. Lillard notes that both pretend play and Twin Earth are quarantined worlds which are *decoupled* from the real world.

[1] Putnam's Twin Earth thought experiment asks us to believe (pretend) that elsewhere in the universe there is a planet exactly like Earth in virtually all respects, refer to as "Twin Earth". Having said "virtually all respects", Putnam goes on to propose some differences between the two for the purpose of philosophical discourse and exploring the nature of semantics.

Although these three models are quite different in detail they appear to be logically very similar. By whatever means we are able to separate ourselves from the real world, and interact with, reason and emote about another.

5 Discussion

As film goers we agree to make-believe—at least for the 2 h of the movie—that James Bond does not appear to age or suffer from liver disease after several lifetimes of heavy drinking. This is not the suspension of disbelief. No one goes to the cinema muttering under their breath, "I know this is not real but I will suspend this disbelief for the moment", instead we readily make-believe despite knowing that what we are about to experience is not the case. The movie (game or virtual environment) is brought to life and is made real or real enough, by our ability to make-believe. Making-believe is a form of cognition which is decoupled from the real world and which enables us to explore and engage with fictional or imaginary worlds. If make-believe opens the door to other worlds, then the sense of mediated presence keeps it open.

This paper has presented a new account of presence which is based on make-believe. It has also proposed that make-believe is a form of system 2 thinking which serves to complement real world presence. We have also argued that the sudden appearance of artistic expression some 40,000–50,000 years ago may have coincided with the development of our ability to make-believe.

Having made a case for make-believe, just what does this tell us about the experience of presence?

5.1 What make-believe tells us about presence

Numerous researchers have observed that pretend play shares a pair of features that have labelled *mirroring* and *quarantining*. Indeed, we have already made oblique reference to quarantining already.

When children pretend, they tend to follow a number of "rules" which are analogues of real world thought and behaviour, and this behaviour been described as *mirroring*. Further, it has also been observed that pretend behaviour is restricted to the bounds of the pretend episode. With a few exceptions, our pretend behaviour is said to be *quarantined* and does not extend into the real world.

Finally, although mirroring and quarantining govern the behaviour of the pretender, there is also evidence of what we shall describe as "affective-bleed", or contagion, by which emotional states evoked in make-believe worlds can transfer to the real world.

We will now consider each of these in turn.

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5.1.1 *Mirroring and quarantining*

What is pretended (i.e. the contents of a pretend episode and the behaviour of those pretending) has been found to be governed by the same kinds of laws and restriction that we encounter in the real world. Reality may be suspended, but not wholly. Make-believe mirrors the real world. We still expect to hold a make-believe weapon such as a light sabre in our hands, and we are more likely sitting on the ruby throne rather than eat lunch off it. These "rules" make our pretending believable and when they are broken as in a movie "plot hole" the make-believe becomes unbelievable.

AQ1 Let us consider a tea party again. Leslie (1994) found that when he "tipped out" and "spilled" the contents of one of the (empty) teacups, the children regarded this cup to be "empty" while non-tipped cups continued to be "full". The basic laws of physics continue to hold. Walton (1990) has made similar observations in that make-believe games, cinema, and a variety of other media are governed by what he describes as "principles of generation" which are "reality-oriented". This *reality principle* is based on similarities to the real world.

He also proposes the *Mutual Belief Principle* for fantastic worlds (the Star Trek™ or Star Wars™ worlds). The principle is based on a tacit agreement between the creator of these worlds (and a set of rules which hold for these fantastic places) and those who experience them. In these worlds, for example, it is "agreed" that alien languages are mutually intelligible.

Quarantining complements mirroring in that the events which occurred within the make-believe episode are confined to them. Spilling make-believe "tea" will not result in clothing really being wet. Perhaps, the most interesting aspect of quarantining is when it fails. The failure to quarantine make-believe attitudes, beliefs and behaviours may be taken to be a symptom of mental illness. This is evidenced in the all too frequent reports of murderous gunmen attributing their behaviour to having played violent games.

Thus, the study of make-believe has a good deal to say about the believability of the experiences offered by digital technology (please see Turner et al. (in press) for a detailed discussion of this), and in turn may afford an explanation of many instances when presence breaks down—where, for example, fictional premises become too far removed from the real world or technologies operate in a manner which is internally inconsistent.

5.1.2 *Contagion and affective bleed*

Although make-believe is largely governed by mirroring and quarantining, both may be violated. Quarantining breaks down and becomes "contagion" when the contents of the pretence directly affect actual attitudes and behaviour. This is most readily witnessed when these attitudes and behaviour are predominately affective, for example, imagining something scary (for example, as a fierce animal in the kitchen) may "bleed" and give rise to actual hesitation such as reluctance to enter the room.

In attempting to explain thus Gendler (2008) has proposed a new form of believe—the alief which is "*a*ssociative, *a*ction-generating, *a*ffect-laden, *a*rational, *a*utomatic, *a*gnostic with respect to its content, shared with animals, and developmentally and conceptually antecedent to other cognitive attitudes" (the leading italicised "a's" are hers). An alief is also defined as an habitual propensity to respond automatically and affective to particular stimuli. So, for example, Gendler also tells us that while a subject may believe that drinking out of a sterile bedpan is completely safe, she may nonetheless show hesitation and disgust at the prospect of doing so because the bedpan invokes an alief with the content "filthy object, disgusting, stay away". By way of further example, Gendler describes the effect produced by walking on the glass-floored Grand Canyon Skywalk as an alief incorporating "the visual appearance as of a cliff, the feeling of fear and the motor routine of retreat" (2011). This, of course, immediately recalls Slater's experiments with the (virtual) visual cliff (1994) and offers an alternative explanation of his findings. In these experiments, participants were found to hesitate when faced with a virtual "pit". The relevance of contagion to presence research may also some way in explaining the successful use of virtual reality in the treatment of phobias (e.g. Rothbaum et al. 1995, 1996; Botella et al. 1998; Emmelkamp et al. 2002). In these instances, virtual re-creations of spiders, flying, confined spaces and so forth have been used to systematically de-sensitise those suffering from the corresponding phobias by presenting them with the object of their fear in a safe, managed environment but one which is capable of evoking an affective response. Perhaps, even more dramatically, Hoffman et al. (2006) have reported the successful use of virtual reality technology in the pain management of burns treatment. In their study, they reported that the feeling of cold (induced by a snowy landscape) can be used to reduce the pain from real world burns suffered by servicemen.

Clearly, at least part of the explanation of the usefulness of virtual reality in treatment and therapy may lie with the contagion aspect of make-believe.

5.2 Further work

There are (at least) two areas of further work which immediately present themselves: the first is the role of technology in make-believe; the second concerns social intentionality and social presence.

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To date, developmental psychologists have treated pretending and make-believe as embedded cognitive processes, that is, confined to the brain. However, there is clearly a case for artefacts as an essential part in making-believe and to date this has largely been limited to Walton's remarks as to the role of the external as prop. One route to elucidating their role in make-believe, and in turn, presence, would be to adopt an external cognition perspective following Clark and Chalmers (1998) or to adopt a more radical, enactive affordance only route (*cf*. Hutto and Myin 2013).

There is a broad consensus that being able to anticipate the behaviour and intentions of others is a necessary condition for social relations to exist. This ability is more usually known as "theory of mind" a term coined by Premack and Woodruff (1978). We need a theory of mind to communicate and cooperate with each other and without it there can be no sense of social presence, the use of technology to create the experience of being with other people (e.g. Biocca et al. 2003 and many others). This is a very broad area of research ranging from the study of the use of video and text conferencing to the characteristics of social networking sites and the effectiveness of avatars on web sites. Biocca and his colleagues (*ibid,* 456–457) define social presence as the "sense of being with another" where this other can be either a human or artificial intelligence. The others to which he refers include representations of other humans presented by way of text, images, moving images, avatars and so forth. Predicated on all of these approaches to "social interaction" is the need for the ability for one individual to understand the intentions, motivation and behaviour of others.

There is a wide body of research which has demonstrated clear links between pretend play and a theory of mind. Pretend play requires the child to able to coordinate multiple perspectives i.e. to hold two realities about the same thing in her mind. Further, when a child sees another engaged in this same kind of pretending, she must understand (or at least have a theory about) what is going on in her mind in order to understand the other's pretending. Social presence, social intentionality and theory of mind are intimately linked to our ability to make-believe.

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