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An alternative (to) reality

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2 An Alternative (to) Reality

Derek Jones

Abstract

This chapter explores the idea that the generation of successful virtual environments relies on a better understanding of how we conceive virtual and physical realities in our minds, in particular, to recognise that our *conception* of these realities is at least as important as our *perception* of them. The failure and success of certain virtual environments are explained as the failure and success of the application of conceived phenomena.

Firstly, making use of philosophical phenomenology and recent scientific research, our understanding of physical reality is considered in terms of phenomenal conception and it is shown that 'objective' perception is only one part of our relationship to physical environments. Secondly, the other point of view is considered and virtual environments are argued to be just as valid phenomenal conceptions as their physical counterparts.

Finally, the translation of phenomenal conceptions between realities is considered, providing a different way of considering how we think about and design all types of reality. Several interesting potential avenues of investigation are identified and examples of the emergence of this approach are presented.

2.1 Introduction

Virtual Reality has become a recognisable phrase often referring to environments generated and hosted electronically, but the word virtual leads to natural conclusions about the nature of these 'places'. Virtual suggests simulated, copied, mimicked - that there is an *a priori* reality that is the thing of greater value and that the virtual version must therefore be nothing more than a simulacrum.

Virtual worlds come in a variety of forms, from collections of information that generate a social body of knowledge (such as a virtual learning environments or social media environments) to multi-user virtual environments (such as Second Life or online gaming environments), where a computer generated 3D graphical representation of an environment is provided, within which a user can navigate and interact with the environment and other users.

The word virtual in all of these terms is the starting point for this paper and it is suggested that, by using it, we immediately frame the environment in terms of a duality – that there is a ‘real’ world and the ‘virtual’ world, and that the latter is in some way a copy or simulacrum of the other. Yet there is compelling evidence to suggest that such a simple distinction between the two may not be so easy to establish when we compare how we react and behave in both. Studies have demonstrated that some cognitive functions are observable in both physical and virtual worlds and there is growing observational evidence that other psychological and social behaviours are shared in both environments.

Our lack of deep understanding of these virtual worlds has not prevented their use – the popularity of virtual world gaming, for example, represents a significant part of the total entertainment market. Virtual worlds in education have seen a fashionable uptake followed by variable results with (arguably) only the most capable environments persisting. Similarly the use of virtual learning environments offering entirely online content seems to be increasing in response to economic and user demands. Some recent examples represent quite complex socially immersive ‘places’ to learn.

The tendency to use 3D virtual worlds to simply copy physical reality is well documented (Addison & O’Hare, 2008; Gardner, Scott, & Horan, 2008; Grove & Steventon, 2008). There is also evidence to suggest that we do not use this new technology to its full potential (Hobbs, Gordon, & Brown, 2006; Hollins & Robbins, 2008).

It will be argued that copying reality and unfulfilled potential are symptoms of the same thing – that the essential part of how we conceive of any environment is not properly recognised. It is proposed that this essence is the phenomenal conception we generate from an environment and not simply the perception or cognition that arises from it.

The first part of this chapter will consider how we conceive of physical reality and show that the *conceptions* we generate of the world around us are as important as the *perceptions* we have of it. The objective, physical world will be presented as only one aspect of our overall mental picture of reality.

Using this idea of conceptions of reality, it will then be argued that similar (if not identical) mechanisms of conceptualisation occur in virtual worlds. Direct examples and analogies of physical and virtual worlds will be presented and the link between these is suggested to be the conception we generate of both. The notion of conception in education is also introduced as an importance aspect of significant learning events.

Finally, the possible implications of making use of conception in the design of physical and virtual environments in education are considered in terms of the barriers and potential for transfer of practice between physical and virtual. Examples of physical and virtual places are presented to demonstrate that it is possible to design with the conception in mind and that the conception in education design is of significance and worth further consideration and research.

Let us begin by posing the question ‘Why do we use gravity in virtual environments?’ This apparently simple question may seem a strange starting point and, with a little thought, may also seem to be answered quite simply. But there is potentially another way of looking at this question, which also provides another way of looking at all realities, whether virtual or physical. Gravity is a physical element that affects almost everything we perceive and this in turn affects how we think about the world around us. It is this effect on our idea, or *conception*, of reality that is the subject of this chapter.

Gravity does more than appear to make things fall.

2.2 Physical reality as phenomenal conceptions

2.2.1 A brief introduction to phenomenology

Gaston Bachelard, in his book *The Poetics of Space* (Bachelard, 1994), describes architecture in a phenomenological way, providing us with a vivid alternative view of how we conceive the physical world around us. Rather than simply viewing our environment as a series of (objective) elements, we are constantly interacting with it – interpreting, filtering, or applying value. The ultimate idea (or conception) we have of reality is very different to any objective measurement we may make of it. Bachelard presents a phenomenological view of architecture and of reality itself, where the ideas we conceive are every bit as important as the physical things we perceive.

Consider where you are just now and, in particular, how you feel about that place. What is suggested here is that your reaction to that place is not simply to do with the colour of the walls or how high the ceiling is – it is how you respond to these and thousands of other elements that matters. This is necessarily a subjective thing, generated by you from your memories, preferences, mood, activity, etc. It is this interaction with the world around us, these events or phenomena, which is the main consideration of phenomenology.

Philosophical phenomenology, as originally formalised by Edmund Husserl (Honderich, 1995), considers the difference between the thing perceived in our environment and the thing in the mind. More importantly, we must realise that the perception of anything is necessarily subjective and relies on our cognitive interaction with it - that is, what we think about the thing.

Heidegger develops this in greater detail with respect to our interactions between perception and cognition (Heidegger, 1995). We may see a thing, but once we have interacted with it, we have a different relationship with it. The interaction in itself has developed our idea of the perceived thing and this in turn affects our relationship to it. Both Husserl and Heidegger rely on a duality of (at least) per-

ception and conception – i.e. that the perception of a thing occurs by a consciousness and becomes an idea in the mind.

But it was Merleau-Ponty who synthesised this duality to suggest that neither should be considered *a priori* (Merleau-Ponty, 1962). For Merleau-Ponty, both must be considered as a single embodied entity – our perception of a thing and any conception of it are at once the same thing, separable only by definition (if at all). When we touch something, we actively conceive of it as we interact with it.

Once again, consider what you are doing right now. Your interactions with the physical aspects of these words are (hopefully) the least part of what is happening in your mind. Your relationship to the text is potentially far more fundamental than simply seeing light reflected (or projected) from whatever medium you are using. In fact, your basic relationship with the medium you are using to read has a considerable effect on what you think about it. Essentially, you are not just looking at words - you are considering them, playing with them in your mind, dismissing them, reacting to them.

It is this phenomenon that is of greatest interest in this paper. Even if you cannot subscribe to a phenomenological philosophy of reality, it is still perfectly possible to apply the arguments to the notion that the idea of the thing in our minds is necessarily different to the reality of the thing outside of our minds. The significant aspect of concern is the conception - the event we conceive in our minds.

This is a (very) brief description of the main points of philosophical phenomenology. Mingers (2001) is well worth reading for an expanded (and much better) summary.

2.2 Architecture as phenomena

Returning to Bachelard, he provides the examples of cellar and attic as two very different conceptions of place in a house :

“Verticality is ensured by the polarity of cellar and attic, the marks of which are so deep that, in a way, they open up two very different perspectives for a phenomenology of the imagination.” (Bachelard, 1994)

Bachelard is suggesting that there is something very different in our conception of going up to an attic when compared to going down to the cellar. We do not only perceive the attic and cellar, we react to them as very different objects with different values attached. For Bachelard, the phenomena of attic and cellar are the ‘real’ events – not simply the physical objects themselves. Indeed, Bachelard uses the notion of dreaming to argue the fact that the ideas we generate about our physical existence are as important as our physiological interactions with it.

Moreover, he also suggests that these two examples, attic and cellar, are conceived so strongly that we actually generate a third conception – that of verticality.

In doing so, Bachelard presents the importance of the mind in generating our notions of space, place and reality.

All architecture can potentially be considered in this way, from the feeling of entering a building to how we react to a particular shape of room. The conception we have of space generated by built form is where the architecture happens. As Clark & Maher (2001) suggest, Architects create space – people bring Place – and it is Place that is argued to be the most important element in terms of human interaction and understanding. In architecture, this is sometimes referred to as *genus loci* (Norberg-Schulz, 1980) and the meaning that Place can embody in architecture has been discussed and used by many architects throughout history.

Aside from the philosophical argument, the fact that we respond cognitively to buildings is a well documented phenomenon (see Anthes (2009) for some interesting examples), particularly when a physical and mental map do not align (Carlson, Hölscher, Shipley, & Dalton, 2010). What is important in all these examples is the requirement for people to conceive of their environment - not simply perceive it. To generate the meaning or value we apply to (or take from) places, we must embody both the physical perception and the cognitive reaction. It is argued here that this embodiment, or conception, should be the object of interest.

It is worth noting here that this is perhaps one of the reasons why superficial copying of physical reality does not always translate as expected to virtual worlds. It is possible to copy the elements but if the conception of these is not translated then a different phenomenology can occur – the triggers of the ‘value’ of a physical place must be translated as well, and these triggers are not always the simple physical elements.

2.3 Reality as phenomena

It is also possible to extend this idea to events that may not seem to be traditional forms of architecture. In fact, it is argued that reality is, in some respects, ‘virtual’ when considered from the point of phenomenology. If we realise that the thing conceived is not the same as the thing perceived, then we must accept that a truly objective reality cannot exist (see Fingelkurts et al. (2009) for an interesting view on this).

This is not simply a philosophical construction – the difference between objectively measured reality and our conception of it is well documented. A good example is the finding that we do not conceive of colour the way it exists physically (by objective measurement) and that it can be influenced by cultural conditioning (Lotto, 2004). Lotto demonstrates that two people may look at the same object and see different colours simply because of the way they been taught to see colour. This finding can be difficult to accept simply because we are so used to our own conceptions of reality – as far as we are concerned, ‘red’ is very well defined. But this is simply projection of our own conception. A significant amount of the reali-

ty you experience seems to behave itself in quite a predictable way. For example, this sentence is extremely likely to make sense - or to at least be formed from recognisable shapes. So why should you not expect other people to share the same understanding of that simple observation?

It is this difficulty of discussing reality beyond our own conceptions that is precisely the problem and the subject here. The fact that an apparently objective object may be conceived in different ways only as a result of social conditioning seems counter-intuitive, but this is indeed the case.

This example from cognitive neuroscience is not isolated. The idea that the conceptions we form from perception are essential to understanding our world has support in Psychology (Velmans, 1990), information systems theory (Mingers, 2001) and, of course, philosophy (Merleau-Ponty, 1962).

We must consider that, if we cannot even agree on seeing 'red', our notion of physical reality is, at least in part, as much an idea as it is an objective event. It may be difficult to accept the full phenomenology of Bachelard but the conception we create of the world around us is at least as important as the objective measurement of it.

Once again, what is important here is the difference between *perception* and *conception*. The idea we generate in our minds (conception) is more than perception of the physical world around us. Our conceptions are informed by our psychology, sociology, culture, memory, mood, attitudes, and many other complex elements.

In physical world design, when we ignore the conception people form in their minds, then we ignore a significant part of their experience of physical reality.

2.3 Virtual worlds, information and education as phenomenal conceptions

2.3.1 Virtual worlds as phenomena

We now consider our relationship with virtual worlds and argue that similar conceptions of these 'places' are formed in our minds. This can be demonstrated directly from the arguments above. We copy physical reality in virtual worlds since we believe them to be a translation between physical and virtual and, generally, we observe that many of the perceptions formed in physical reality can also be formed in virtual worlds. For example, we generate physical 'rules' to maintain analogies - we make sure avatars cannot go through walls, we have gravity, we make use of spatial arrangements that make sense in terms of physical reality.

But in doing this, we are also providing conceptual environments – ones that makes sense to us in terms of our interaction with and response to them. The sim-

ple physical elements of a virtual world can come together to form something that is greater than the sum of the parts and a sense of place can be achieved (Doyle, 2008). Moreover, in an educational context, this sense of place seems to be an important aspect of the richness required in a virtual world (Clark & Maher, 2001).

We often tend to assume that because the virtual world is simply ‘virtual’ that there is no physical interaction but as far as our minds are concerned this is simply not the case. Our mapping of physical and virtual worlds generate very similar cognitive responses (Dalton et al, 2002) and it is argued here that it is precisely these interactions that are vital to permitting the embodied phenomenology required for conceptions to form. As Hollins & Robbins (2008) state, “After all, all computer use is interactive.”

There is also something about ‘doing’ that is important in this process; something that goes beyond being a passive observer. Doing is not just a physical act - it is also a mental one and this is especially true of generating conceptions. Merleau-Ponty requires his phenomenology to embody both object and person to generate a phenomenon but even if we consider dualist phenomenology the same argument can be applied. When we interact with the world, something happens. This simple act of interaction is one of the essential requirements for conception - without it we are simply engaging in perception and, as we have already seen, it is not possible to ‘simply’ do this without more complex conceptions being formed.

In addition to our physical interaction, virtual worlds can clearly allow social conceptions to exist, with communities forming and social interaction taking place (see Twining & Footring (2008) for one of many examples of this). Even negative aspects of any socially organised system can be found (see Carr, Oliver, & Burn, 2008; de Jong-Derrington & Homewood, 2008; Minocha & Tungle, 2008, for several examples).

None of this would be possible without a conception of the virtual world. An event that is more than simple perception of the ‘objective’ reality being presented is *only* possible when it is conceived.

2.3.2 Information as phenomena

The conceptions we generate in our mind are not limited to conceptions of physical elements. For example, it is suggested that *any* information can generate a conception. To be more precise, our interaction with information generates and relies on our conception of it.

On the simple level we could argue this from the fact that perception is information and this will automatically lead to conceptions of that information being formed. It is extremely difficult to conceive of data in isolation, without giving it meaning. To say that a thing is ‘two’ makes very little sense unless we apply that datum – i.e. that we have two things, or that two things relate. In each case we generate a relationship to construct a conception of the information and its mean-

ing. Tim Berners-Lee refers to ‘the information space’ (Berners-Lee, 1999), clearly indicating what we know intuitively – data have value only when a conception of them are created to give meaning and sense (in this case, a spatial/relational meaning).

For example, we naturally represent a value’s magnitude in geometry by a line ‘rising’ or a data point becoming ‘larger’. This might seem a truism, and in many ways it is – our ‘natural’ understanding of lower and higher will automatically be applied in an analogous way to anything we conceive of as having magnitude. But we need to recognise how many other things we apply the conception of lower and higher to and recognise this as a direct analogy to Bachelard’s going ‘up’ to the attic and ‘down’ to the cellar. The information itself is given meaning by our conception of it.

In fact there is a growing tradition of interpreting abstract data in a visual or phenomenal way. Rosling successfully demonstrates how we can re-conceptualise data when we look at it interactively (2006). *We Feel Fine* (Harris & Kamvar, 2011), takes blog postings starting with ‘I/we feel...’ and visualises them, providing the user with an interactive space to experiment with this data. In doing so, a user develops their own conception of the data and ultimately the meaning of it from this conception.

Mingers (2001) argues that Artificial Intelligence and Information Systems need to merge to break the duality they create, similar to the assumed duality created by a Platonic world view (or by early philosophical phenomenology). In other words, just as we must recognise that an objective reality and the perception of it can no longer be treated as separate entities, so too must information and the perception of information be reconciled.

This conception of information is important and should not be underestimated. Stories are nothing more than information, yet they create very vivid conceptions in our minds (in fact storytelling actively relies on this happening). Some of the earliest human communication was representative and descriptive. A cave painting of an animal is clearly not the animal itself; rather, it relies on the viewer conceiving the representation being made. All storytelling relies on a conception of the information being presented and we are asked by authors to imagine, project or immerse ourselves in this conception. Modern storytelling continues this tradition but it relies on the same principle. *Dreams of Black* (Milk, 2010) presents an online example of modern storytelling where an interactive virtual world and traditional storytelling combine. And what of Shakespeare in *Second Life* (Chafer & Childs, 2008) – is the story or the medium the conception being created?

As an example, Sweeney (2008) suggests that immersion and eye tracking are related in the virtual world game *Runescape*, created by Jagex Games Studios. It is argued here that the user’s attention on the 3D element is simply one aspect of the conception of the environment. Having seen the deeply immersive effects of *Runescape* firsthand, it is clear that an immersion is occurring but it is suggested that this is one of conception and does not rely only on the physical representation of the environment alone.

When a Runescape player is immersed, they are considering all of the information being presented and generating an overall conception. The player statistics are as important a part of that environment as the virtual space – in fact, it is the information that gives Runescape its value and meaning for players. Without it, the player would simply be moving in a 3D representation of reality and this has very little immersive value indeed. It is suggested here that the eye tracking evidence in Sweeney’s study is actually indicative of greater immersion in a phenomenological sense – more information is communicated and interacted with, hence a richer conceptual environment is formed.

In other words, users are immersed in the story being presented to them: the information, 3D environment and, therefore, the conception of the Runescape virtual world. To simply take one aspect and assume that it is the analogy without understanding the conception, runs the risk that many virtual world designers face - that without all the parts that make up the conception, you are simply left with a simulacrum or representation.

It is also possible to imagine other information repositories as ‘places’ of information. Peachey (2008) refers to Oldenburg’s ‘third places’ in virtual worlds, and cites Glogowsky as suggesting that an online blogging community can also be viewed as such a ‘place’. Here, information is suggested to generate some conception that is beyond the mere perception or interpretation of the information itself and many educators will be aware of the need to generate an ‘atmosphere’ or ‘momentum’ in an educational forum.

If information in this context is not a conception, then how is it that we can even conceive of an ‘atmosphere’ when we refer to a series of letters and colours in a forum?

2.3.3 Education as phenomena

Education can be argued to rely entirely on the generation of conceptions - not the transfer of facts. In fact, information transfer is arguably the least part of education. Problem Based Learning, Constructivist Learning or Personal Learning Environments are all examples of approaches to education that focus on the generation of conceptions in the mind of the student. The transfer of information is of a lower priority to how that information may be used or how meaning may be derived from it – and there is some evidence that virtual worlds are suitable environments for this (see 2.4.1 below)

It is worth noting that this is not limited to virtual worlds and is certainly not new - despite the latest names or acronyms. We can all reflect on physical learning events that have stayed with us throughout our lives and might recall a specific teacher at school, a particular subject (or even concept) and certainly the sense of place. In each of these memorable cases, it is argued that the phenomenon is the thing remembered.

Ramondt (2008) discusses the ‘gift of drama’ in education and how a teacher can generate conceptions in learning rather than simply presenting information. So it is perhaps worth pausing for a moment to recall your own significant moments in learning. For me, a particularly memorable one would be Mr. (‘Buff’) Bailey explaining resonant frequency, making use of the full length of the classroom and the vivid image of him pushing his Aunt Maggie on a swing. Out of phase resonance was explained as the unfortunate collision due to bad timing (all appropriately acted out by a biology teacher, storyteller and stuntman).

Trivial as this may seem, I can honestly say that my understanding of this concept is directly linked to this moment of education. Through storytelling, physical demonstration and perfectly timed words, I conceived of the mechanism by which light of certain wavelengths were absorbed in plants. The conception was strong enough that it could be applied to any and all such analogous events.

Another example of this might be the teaching of multiplication. It is certainly possible to learn the information (i.e. that $1 \times 1 = 1$, $1 \times 2 = 2$, etc.) but it is surely of more value that students understand the concept of multiplication (i.e. that ‘x’ means ‘of’). With the concept of multiplication in your mind, you realise the meaning of it - the value of it. It belongs to you as an idea of the mind and this is both a personal and rather fundamental conception to hold

In education, if we seek to develop more than the simple transfer of information, then we need to provide more than data. The creation of conception requires richer elements of learning - it requires a storyteller, dramatist, entertainer, psychologist, anthropologist, ...

Tolstoy (quoted in Schon, 1991) describes this well :

“...Each teacher must ... by regarding every imperfection in the pupil’s comprehension, not as a defect of the pupil, but as a defect of his own instruction, endeavour to develop in himself the ability of discovering new methods...”

2.4 Synthesis of physical and virtual

If we accept that we can consider physical reality, virtual worlds, information and education in a phenomenological way, then it may be that we can translate conceptions between these environments. Moreover it allows us to start with, and focus on, the phenomena or conceptions themselves and these ideas are considered next. But before this we do need to understand the difficulties in doing so. Finally, we must also consider the implications for the design of such artefacts.

2.4.1 The barriers to phenomenal design

There are good reasons why we do not just jump straight into an abstract reality made from conceptions. Design for virtual worlds require just as much attention as their physical counterparts and in many cases these considerations are more important to ensure a reasonable translation of the design intent.

We know that students require induction to understand how to relate to virtual worlds (Addison & O'Hare, 2008; Trinder, 2008; Truelove & Hibbert, 2008). Similarly, the challenges facing MUVE socialisation design are known (Minocha & Tungle, 2008), and simply translating 'rules' from physical reality to virtual worlds can be difficult (Barker, Haik, & Bennett, 2008). But in each of these cited examples, evidence is also presented of how these problems can be managed or overcome. Once a conceptual framework is embedded there are genuine benefits to be gained and people can adapt to these new environments.

In fact, as Carr et al. (2008) note:

"A degree of disorientation or ambiguity might be productive in one learning context yet completely counter-productive in another."

And

"The 'anything goes' nature of SL [Second Life] meant that our students took little for granted. For example, they questioned the various pedagogic decisions that had been made."

Moreover, it is often the challenge of the new environment that is the reason for it being created. In computer gaming, there are several examples of entire games generated around radical shifts in conceptions of physical reality. Portal (Valve Corporation), The Company of Myself (Piilonin) and Shift (Armor Games) are all examples that not only require the player to adapt to a different conception of the reality they are presented with, but require the player to actively engage with that conception in order to progress in the game. In effect, the method and mode are synthesised into a phenomenon – an embodied event of conception through interaction.

So making use of conceptions in design offers us an alternative goal for the design process or an alternative method of considering the designed object. At the very least, understanding the simple fact that our design intent may translate to a very different conception in the minds of the users is necessary.

This are, in addition to the opportunities, several other reasons that it might be worth considering these challenges:

- The formation of these places can be emergent (Minocha & Tungle, 2008) and this emergence is already occurring. We naturally design phenomena but often at an instinctual level without understanding or recognising it explicitly. Being able to consciously design for the emergence of phenomena, or at least being aware of this mechanism, is required. The failure of physical copies of campus-

es in virtual worlds is an example of the failure to translate the phenomena or conception of those campuses.

- Designers are working beyond their ‘expertise’ and this, rather than being a negative outcome, is leading to some genuinely excellent inter-disciplinary solutions. This knowledge needs to be recognised and shared with further lines of design investigation followed. In fact the potential this may offer may be only now truly emerging.
- If we aim for student centred and adaptive pedagogies, then we must consider the affordances of conception based virtual worlds. Problem Based Learning has been demonstrated to be possible (Brown, Gordon, & Hobbs, 2008; Burden et al., 2008; Burton & Martin, 2008). Constructivist Learning may operate more effectively in a virtual world (Grove & Steventon, 2008). Atwell’s Personal Learning Environments (Atwell, 2007) are effectively conceptions of learning places.

There is also a self-referencing argument to be made with respect to educational virtual worlds. It is all very well starting with pedagogy but if we do not know what is possible with a new mode we have no way of realising how a pedagogy can be applied (or even affected) by its use. A very good point is made by one of the educators interviewed in Minocha & Reeves (2010) :

“I find the political correctness of ‘pedagogy must lead technology’ to be rather sterile. We need to be more interactionist about this. The teachers don’t know what is possible [in Second Life], and the technologists don’t know what the teachers might want to achieve if they could...”

Perhaps our design of these places needs to learn from the duality of early phenomenology – that both should collapse to a single conception of mode and pedagogy. After all, if we acknowledge that the creation of conception requires embodied interaction (e.g. application of theory and practice), then we require an embodied pedagogy that does not assume a simple cause and effect model of education – we require an emergent pedagogy where the method is the teaching and vice versa.

2.4.2 Knowledge and concept transfer

It is now argued that phenomena or conceptions can translate directly between environments, allowing exciting opportunities for designers. For example, architectural design in education can be used in virtual worlds and knowledge from educational virtual worlds can be used in physical architecture. The ceiling height in physical schools has been previously reported to have a measurable effect on creation task type performance (Anthes, 2009). Now consider the finding in Sweeney (2008), where the removal of the ceiling/roof led to claustrophobia. Here, it was

considered that the space still led to a feeling of enclosure, thought to be as result of the surrounding, windowless walls.

Here, we have an apparent contradiction between virtual and physical environments yet, when we consider it further, the analogies still hold. A direct physical analogy to the ceiling-less space in Sweeney (2008) is the Memorial to the Deportation (Mémorial des Martyrs de la Déportation) Paris by Georges-Henri Pingusson. This built object relies entirely on the fact that we feel claustrophobic not despite the fact that we are able to see the sky but precisely because we can. Being able to see into the far distance of sky without being able to perceive any other context at all actually dislocates the user and engenders a feeling of enclosure and claustrophobia. This conception is intended by the designer in this physical place but it is also the conception generated in the virtual place reported by Sweeney.

It is argued here that it is not simply the measurable height that generates the observation made by Anthes; it is the conception of the space. The variety of factors that encourage ‘openness’ is huge but essentially, in natural language, the more ‘open’ it feels, the more ‘open’ our minds might become. There are obvious parallels and lessons to be learned by both physical and virtual architects in these examples and this may represent the smallest example of future study.

But we do need to remember what is common between these things – we need to recognise that it is the conception formed in our minds that is the thing of relevance. The difference between physical and virtual is typically made by considering only perception and this is insufficient to understand the whole phenomenon.

Neither is it sufficient to consider only the cognition. By this, it is meant that there are no single, predictable mental processes that operate in reaction to perception on their own. There is no part of our brain that deals with ‘ceiling height’ or ‘view of horizon’ as single cause and effect operations. We may draw on these (whatever they may actually be) but must also draw on past experience, cultural upbringing, mood, time of day, etc. The entire result is the thing of importance - is the conception.

The ceiling example above is simply a transfer of conceptual events. It may work at a practical level (i.e. there may appear to be a cause and effect that we can put to practical use) but understanding the phenomenon allows us to extend its use to other knowledge domains. We now have a bit of the knowledge of how to affect the phenomenon of ‘openness’ (at some level and in some way) and this is a very powerful knowledge to have. But we also know that if we want to create the conception that arises from a higher ceiling that there are other ways

We must realise, too, the potential of transfer from virtual to physical. Why not work on a real world version of the wonderful extending table (de Jong-Derrington & and Homewood, 2008)? We know that desk configurations have an effect on attention and work methods in schools, so how can we enable this knowledge in physical and virtual environments? What other wonderful virtual world ideas can we turn into physical reality?

2.4.3 Start with the conception

What begins to emerge from the above is that it is the conceptions we form (the phenomena) that are the things of potentially greater interest – not the environment, whether virtual or physical. Can we, therefore, start designing with the conception we wish to convey rather than the object(s)?

Three brief and recent examples of this happening are now presented from design practice and education. But before they are, it is important to state that this is in no way new. This is not some new way of considering the design of our physical or virtual realities. Designers have known this, and made use of it, for centuries and good design generates a strong conception (or permits one to emerge). As we saw earlier, the emergence of the conception is incredibly important and it always has been. Whether the good designer was aware of it, or perhaps used other language and terminology for it, they were in the business of the design of conceptions.

U101 Design Thinking - U101 Design Thinking: Creativity for the 21st Century (Open University, 2011) is the Open University's entry-level course for the Design and Innovation Degree. It was designed around the idea of a design atelier, a design studio 'space' where social, peer-to-peer and student-tutor collaboration would be possible and in turn form one of the main teaching and learning objectives. To achieve this, the module makes use of a variety of media in an online blended learning environment – from text, audio, and video information through to forums, shared online portfolios, and asynchronous whiteboard communication environments (for further details see Lloyd (2011)).

It is the idea behind the course that is of interest here and it is suggested that the conception of the design atelier genuinely infiltrated the entire design of the course. In the atelier, students are expected to engage with the idea of design as a process of thought and action, which is then informed and modified by interaction. The interaction element is of vital significance since it is this that generates the learning feedback with student peers and tutors.

Moreover, the focus of the assessment is on process, not product. The duality of process and object is embodied as a single pedagogy and students are engaging with a conception and not simply a set of instructions or learning tasks. This embodiment of idea and action is at the heart of Donald Schon's idea of 'reflection-in-action' (Schon, 1991), a central tenet of all design education. It is also a central requirement of Merleau-Ponty's embodied phenomenology.

The idea of a learning community is certainly not unique in online learning environments. Many rely on the very fact that a 'virtual world' consisting of individuals sharing a single learning goal can work. Many of these also rely on this simply emerging from the elements provided rather than specifying it in the design. What is interesting about U101 is the fact that this community, and the reason for the community, was an explicit requirement from the start and that each activity and online event was designed to support this. It was not couched in terms of con-

ception or phenomenology, but it most certainly started as a simply stated but complex idea.

It is argued that this idea was a conception and that it was also composed of the original intent, the designed learning environment and (perhaps most importantly) the continued recognition and maintenance of this conception by tutors and students. The two essential points to observe here are that the conception is dynamic (not a static design) - it achieves its dynamism from its own story and the stories brought to it by all parties involved. The other point is that the conception is embodied in a phenomenology of idea and action - the activities require thought and the thinking requires activity. This, in itself, is an incredibly powerful conception.

MIRACLE Implementation in the Norwegian Museum of Science and Technology - A direct example of starting with the conception in design is given later in this book by Jornet and Jahreie (based on the paper Jornet and Jahreie (2011)). In this example, the entire design process was driven by the desire to create 'place' and acknowledging the complexity that is embodied in such a term. The authors observe that, by making use of space as the "shared object", a negotiation took place between different points of reference. This negotiation ultimately allowed the emergence of place to occur, through a shared exploration of the stakeholder's ideas.

In doing so, it is argued that the authors suggest that any space (or indeed any interactive object) relies as much on our conception as it does the simple perception of it. This naturally leads to immediate difficulties in terms of having to deal with the entire range of possible human subjective reactions and how these disparate views can be mediated in a shared conception.

Interestingly, the authors recognise and actively take advantage of precisely this difficulty, considering the design process in the project study as a "learning process". This affirms what many designers know intuitively - the process of design is one of incompleteness where discovery and emergence are essential. But in this particular case study it was essential in both defining the shared conception and resolving its designed solution.

What becomes clear from this example are the difficulties involved in expressing and consciously dealing with the conception. The case study suggests one explicit way in which this difficulty is mediated - through the use of representations of space (architectural drawings) as a communication tool. The authors identify this as central to the individual stakeholders' ability to move beyond their own conceptual boundaries and enter into shared conceptions with one another. By sharing a conceptual object around which they can communicate, the parties arguably share (at least partially) a conception of that object. Co-operative, inclusive and open-minded design thinking seems to allow this possibility - in fact it could be argued that it will naturally follow from this type of design process.

Of course, this does require genuine collaboration - not just coordination or co-operation (Pollard, 2005). The conception to be designed has to arise in the design process itself and, since there is no simple objective way of measuring the breadth of human response, it is necessarily a wicked (or tangled) design problem (Rittel

& Webber, 1973). Using as wide a range of design thinking as possible simply makes sense to come close to a problem solution and it is arguably a natural extension of Schon's 'Reflection-in-action' (Schon, 1991).

One final observation is that there may have been a further medium for the shared conception, not just the representation of space. It is hinted at in both of the excerpts that drama (or storytelling) is a real consideration and all stakeholders pick up on this. It is suggested here that, like our conceptualisation of place, storytelling is a medium that allows us to go beyond individual positions and move into shared ideas. When we listen to a story we suspend part of our critical thinking, reject less and imagine more. When this happens, new (often shared) ideas emerge.

Building information modelling - In the building design and construction industry, Building Information Modelling (BIM), is changing the way designers work together (NBS, 2012). The adoption of BIM in construction disciplines is rapidly increasing and it may represent a significant shift in the approach and attitude to the massive task of designing an object as complex as a modern building (Sheldon, 2009).

BIM is the process of creating a virtual computer model of a building, effectively constructing a virtual building (sometimes many times) before it is physically constructed. But it is not simply the creation of the physical elements of the model that are relevant - each element also has information attached to it to provide a deeper and more informed database of design elements. It is this extension of the model to other 'dimensions' of information that enables designers to do far more in this virtual environment than previously possible.

Another key intent for this information model is the fact that all members of the design team work in it together, allowing them to collaborate in a single 'place'. It is suggested here that BIM is effectively a virtual world, allowing all stakeholders to work collaboratively - from the client's brief to the designer's model and right through to a final virtual building that can be used to manage the physical building itself.

It is the potential paradigm shift that is of interest in this example since effective BIM requires all stakeholders to share a conception of the process of design and the object being designed as a single entity. The two main features identified above effectively force collaboration in a single environment rather than the current practice of the linear transfer of discrete packets of information.

Effectively, the duality between the process and object becomes embodied to allow both to align much more naturally. As designers we seek to embody the idea and the thing together - not as separate entities. Ideas such as incompleteness and direct (non-specialist) stakeholder involvement are starting to emerge in the debate about how we should go about designing buildings.

There are clear and relevant parallels between this and both preceding examples and it is suggested here that the conception is the thing that allows these parallels to exist. On a simple level, we might consider the shared virtual information model to be a shared spatial environment and, similar to the Jornet and Jahreie

case study, this will foster the interaction between parties and breaking down of individual conceptions.

At another level, we might consider the shared environment to be an opportunity to share a story - to communicate and collaborate in an entirely different way.

2.4.4 Conception Considerations

If we start with the conception (or phenomenon), there are several things we must bear in mind.

Phenomena - It is phenomena that are the essence of our relationship to any form of reality. When we make use of any information, the perceptual parts of it represent only a part of the conception we form in our minds. These conceptions are transferrable, allowing a single conception to exist in a wide variety of media and this offers an incredible variety of opportunities for the sharing of knowledge, ideas and methods. Moreover, we should not restrict our learning in only one direction – lessons in virtual design can equally apply in physical design.

Interaction - It is the interaction with (and within) these virtual worlds that is the driver (or enabler) for the conception to be maintained. All participants are able to affect their environment and the sharing of consequence of change is a large part of the process itself. The interaction with (and within) virtual worlds is just as important as it is in physical reality and this must be offered to users of these environments. Interaction is not simply pressing buttons or reading notes – it is the active engagement with phenomena. It is even possible that the phenomena do not exist without the interaction.

Collaboration - These conceptions make use of social phenomena and in particular collective interactions. The conception is a shared entity embodied not in the virtual world itself, but in the minds of the participants. Differences of conception will arise but these are embodied in the shared event, creating the potential for interaction. Expert and novice share the same space. Not only will novices learn expertise but the expert (with the right attitude) can realise that expertise is not the only way to go about their specialism.

Emergence - The conception is necessarily emergent and dynamic. People are different and are constantly changing. This is an important lesson for virtual world designers – the environment you create does not ‘belong’ to you and you cannot easily predict how it will be conceived by users. A simple lesson from physical design can be learned here - the spaces that allow the emergence of activity (especially those not imagined by the designer) can often be the most successful.

Design Thinking - To design effectively in virtual worlds (and in physical reality too) we have to recognise the above characteristics and work with and within them. This is very different to a traditional ‘expert’ based design method. As Lloyd (2011) infers, an architect may design space very well, but this is an ‘architectural’ solution emerging from that specific discipline. If it does not recognise

the dynamic, interactive and emergent capabilities of virtual worlds then it will not enable 'Place'. Design of virtual worlds requires the consideration of the phenomena being generated and this calls for design thinking, not only specialist design.

2.5 Conclusion

When we consider reality in terms of phenomena, we realise that the conception of reality in the mind is potentially more relevant than any 'objective' measurement of it. Reality, as an independent object, becomes far less important than the embodied understanding of it we each have, with the values we attach to it individually and socially. A similar observation can be made when we consider virtual worlds (of all varieties) and even information itself. In all forms of reality it is the conception we generate that is the thing of importance.

From this perspective, the reality conceived is the matter of relevance, which in turn means that we can consider the transfer of conceptions between a range of 'realities'. This cannot be achieved by simply copying objects between realities - it has to be achieved by transferring the possibility of conception.

This then leads to interesting opportunities in design. Making use of the conception as the starting point for the design provides us with an alternative approach and process to design in general. Emergent design becomes explicitly possible and the full spectrum of a design context becomes significant. Specialist design is only relevant as part of a holistic design thinking approach, where the specialism of the designer is as an expert in the process of design.

It is these overall conceptual (and collaborative) attitudes and processes that will see genuine alternative reality emerge. Moreover, there are many examples of this already taking place - both from history and in current practice.

In education, the opportunity to start with the conception in either physical or virtual design may offer a completely new way of looking at how we design learning spaces and events. Jornet and Jahreie (2011) have shown that this is possible to achieve in a physical space and it is argued that similar approaches can be applied to virtual places too - and not simply virtual worlds that recreate a 3D replica of a physical reality. All learning events can be considered as conceptual phenomena and starting from this point of design offers learning designers a different method and starting point in their design.

But it is necessarily difficult to design from this starting point. The subjective nature of the conception creates a difficulty since we cannot satisfactorily predict the ideas that will form in each student's mind. Instead, emergent, dynamic and interactive design processes are required because the objects we seek to create are themselves constantly nascent.

We can finally return to the question 'Why do we use artificial gravity in virtual worlds?'

It is proposed that we do this, not only to provide a simulacrum of the physical world; but to provide a phenomenon – something we can interact with to provide us with a *conception* of reality.

Gravity may help us translate physical reality into a virtual world but this is only a small part of what it does in our minds – it also translates a *conception* of the physical world. In many ways, the *idea* of gravity is as important as the physical thing itself. Without gravity in a virtual world, there is no up and down but, more importantly, Bachelard's 'attic' and 'cellar' might not exist – one of the central pillars of psychosocial storytelling would be removed and we would have no reference for the *meaning* of up or down in any of their many senses.

But then what would happen would be the emergence of new conceptions.

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