

In Search of Architecture in Virtual Space

An introduction to *The Virtual Space Theory*

Or Ettliger, Ph.D. Arch.

Faculty of Architecture
University of Ljubljana
Zoisova 12, 1000 Ljubljana
Slovenia

www.virtualspacetheory.com

e-mail: virtualspacetheory@gmail.com

Abstract

Over the last decades, the terms 'virtual' and 'virtual space' have come to take an increasingly central part in our culture. Yet, they seem to acquire very different meanings in the various contexts in which they are used – ranging from 'imaginary' or 'metaphysical' to 'computerized' or 'hi-tech'. In this paper I will propose a consistent view of what 'virtual' and 'virtual space' are by drawing an arbitrary line in the current fog of their multiple meanings. At its heart lies the interpretation of virtual space as the overall space which we see through pictorial images – e.g., paintings, photographs, films, video games, TV – and of 'virtual' as describing any visible object which is located inside of that space.

This paper is an introduction to *The Virtual Space Theory* – the theoretical core of my book *The Architecture of Virtual Space*.¹ The paper starts with a discussion of a significant case history and the theoretical sources which sustain my approach. The main body of the discussion then presents some of the theory's underlying principles: the connection between virtual space and the phenomenon of illusion; the relationship between virtual space and physical space; the relationship between virtual places inside of virtual space; the difference between this theory and others that might be confused with it; and the terminology with which it approaches its discussion of virtual space.

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Introduction

Over the last decades, the terms 'virtual' and 'virtual space' have come to take an increasingly central part in our culture. They are recurring in fields as diverse as media, art, science, technology, philosophy, and architecture. As computers and technology spread, we hear ever more often of all things virtual: the Internet offers virtual shops, virtual museums, and virtual classrooms; books have been published about virtual teams, virtual music, and virtual art; we hear of virtual communities, virtual meetings, and the virtual office; computers use virtual memory and run virtual machines; and to sum up its fears of technology, the pop band Jamiroquai sings of 'virtual insanity'.

Yet in most of these examples the term 'virtual' seems to acquire very different meanings. Some of them use it to mean 'something with computers', or even more generally 'something related to advanced technology'. In some cases it is used to mean 'imaginary' or 'fictitious', and in others it stands anywhere between 'abstract' and 'metaphysical'. 'Virtual' is used as a loose intellectual metaphor with which to cover any intangible idea or nameless phenomenon floating around us about life, technology and civilization. There is no consensus over the practical meaning of 'virtual', no common ground for a truly viable discussion – it is an idea which remains totally volatile.

The Virtual Space Theory proposes a consistent view of what 'virtual' and 'virtual space' are by drawing an arbitrary line in this current fog of multiple meanings. It is intended as a theoretical point of reference around which a coherent approach to virtual space might arise. At its heart lies the interpretation of virtual space as the overall space which we see through pictorial images, and of 'virtual' as describing any visible object which is located inside of that space. By pictorial images I refer to paintings, photographs, films, video games, TV, and so on – physical devices that allow us to visually experience through them something that is not physically there. This point of view intentionally defines virtual space as a phenomenon that is empirically observable, and yet independent of computers. It obviously excludes many of the phenomena currently referred to as virtual, whether they are to be found in technology, philosophy, or contemporary art. However, this is not to say that those are not valuable ideas in themselves, only that *The Virtual Space Theory* does not consider them as belonging to its conception of what virtual space is.

Art, Illusion, and Architecture

Since architecture is also known as the art of space, it is only fitting that in our attempt to interpret the world of pictorial images in terms of a space, we would turn to works of art with architectural content in them. The history of art is rich with examples where architecture is used as a means of framing the picture, or as a background for the main theme of the work, or as a setting inside of which the central theme takes place. Works of art in which a building or a place form the actual theme itself are rather rare, but they are the ones which will assist us best in this discussion. The single most obvious example of such a work of art is the painting *The Tower of Babel* by Peter Breugel the Elder [1]. Its subject was a recurring theme in the 16th century, particularly in the city of Antwerp, and Breugel was neither the first nor the last in his time to have painted it. Yet the mastery with which Breugel portrayed the tower of Babel clearly allows us to raise the question that will form the basis of this discussion: *Where is the tower?*

As we try to answer this question, we will begin to see that it is not as simple as it may seem at first. It is an interesting experiment which I have held with several unsuspecting people. Conversations like these tend to go in unexpected directions, some of them verge on the absurd, but all are useful for our purpose. What follows is a sequence of possible answers and the limits which arise from each of them:

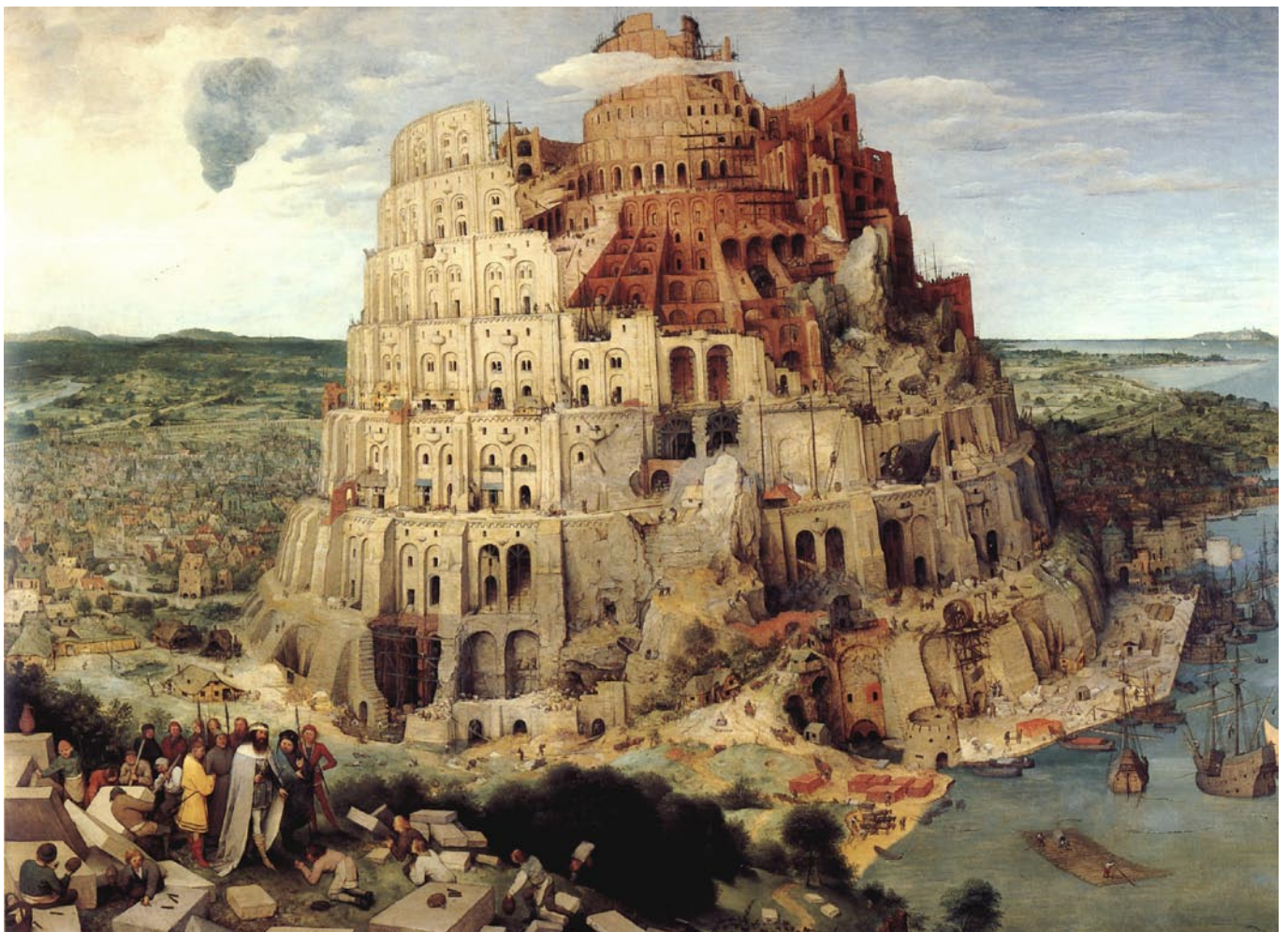
It is in the picture. What we have in front of us is a small print of a reproduction of the original painting. It is nothing but ink on paper, and seen on a computer screen it is nothing but pixels of colored light. No tower there. We could even go to Vienna to see the original painting itself hanging in the Kunsthistorisches Museum. It would surely be more impressive than the prints, but what would actually be there is paint on a wooden panel, not a tower. The painting serves as a medium, but a medium to what?

It is in our head. Our head contains our brain, a highly complex construction of neurons which science is still far from fully understanding. What we do know is that no brain surgeon has yet reported having found a tower inside of a person's head. This statement therefore uses the head as a metaphor for whatever processes happen inside of it which we might not clearly understand.

It is in the imagination. When we speak of the imagination, I propose that we usually refer to one of two different phenomena, depending on the context of the conversation. One is the 'creative engine' which generates mental images, and the other is our private 'mental space' in which we view such images and make them alive. Yet whichever one of them we may mean by speaking of 'the imagination', it still does not tell us exactly *whose* imagination the tower is in.

It is in Breugel's imagination. The tower is certainly a construct of Breugel's 'creative engine' imagination. It is also likely that as he was working on it, he had a prototype of it inside his 'mental space' imagination as well. It does not matter to us if he had constructed it all in his imagination before painting it, or whether he continuously modified his imagined image of it as his work on the painting progressed. The point is that what we have before us now is a painting. We have no direct access to Breugel's 'mental space' imagination, only to the works he managed to make based on it.

1 Peter Breugel The Elder
The Tower of Babel, 1563



It is in our imagination. We could say that our ‘creative engine’ imagination interacts with Breugel’s painting in letting us see a tower where in the physical world there is only paint on a wooden panel. Then, once generated, we have a tower within our ‘mental space’ imagination. However, any other person looking at the same painting would have a very similar tower in his own ‘mental space’ as well. True, there may be some differences between those towers due to personal differences of interpretation. But this is so not only with paintings, but in the physical world as well. It is likely that any two people looking at the Eiffel Tower would also construct slightly different images of it in their imaginations. This does not stop us from realizing that the actual Eiffel Tower itself is located in the Champs de Mars in Paris, whatever images either observer may have of it in their respective imaginations. In Breugel’s painting, then, *where is the tower?*

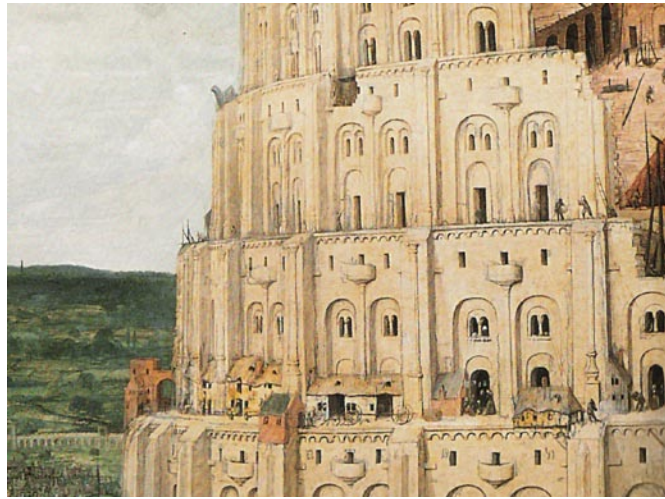
It is in Babel. This is where the conversation starts to become hazy. The geographical region which was known historically as Babel or Babylon, does not have Breugel’s tower in it, nor have there been found any ruins truly similar to it. It does have historical towers of archeological interest, just not that specific one. For the sake of argument, let us assume that we could send H.G. Wells in his time machine with a camera some four millennia back to the days in which the tower is said to have been built. Even so, the resulting photograph would hardly look like Breugel’s tower. The architectural style of the tower would be completely different, as would the ships in the harbor, the clothing of the people, the town, and the landscape. His tower seems to belong to the Antwerp of his time much more than it does to ancient Babel. We happen to know also that the tower is not in Antwerp, but we still do not know where it *is*.

We are far from having exhausted the possible ways to answer the question at hand. To avoid any entanglements in irrelevant directions however, I would like to call on the field of the history of art for support. In his book *Art and Illusion*, the renowned art historian E.H. Gombrich presents an analysis of illusion in art, which will provide us with useful tools from which to proceed further.² Gombrich’s main ideas relevant to this discussion are contained within his detailed analysis of techniques of illusion, and the specific chapters on *Conditions of Illusion*, *Ambiguities of the Third Dimension*, and *The Analysis of Vision in Art*. The four following sections summarize each of these chapters and apply them to our discussion of Breugel’s painting.

Techniques of Illusion

The first lesson we could learn from Gombrich is to understand the extent to which the act of representation, so skillfully performed here by Breugel, relies on highly complex techniques of illusion. These techniques have gradually evolved throughout the history of art, and by Breugel’s time in the mid 16th century, there were many discoveries and developments already available to the artists who took the time and effort to learn them. In our own time, where images are abundant, we may have lost the ability to truly appreciate the difficulty in producing such a true likeness. We may think that it is just a matter of careful observation and of simply learning to paint what we see. But then, can we really see what is ‘out there’ without our knowledge of it interfering with our vision? And if our knowledge affects what we see, then how can we keep that knowledge from entering the painting we make? Gombrich’s answer is that we can not keep out the knowledge of things seen – what we need is to acquire the knowledge of painting. The wider it is, the more able we will be to make a painting that would make us react to it in a similar way we would react to the physical world.

The history of art is therefore the history of conventions, of the agreed ways how things seen should be represented in painting. It is this change of conventions in different times and different places which causes the changes in what we call ‘style’. What the artist learns and develops is ‘schemata’ – ways of applying paint on canvas to which we would



react as to 'a rock' or 'a house'. It is only by applying those schemata and further modifying them that he could eventually make 'a balcony' or 'a gate' [2]. Note the use of the word 'make' – by perfecting the schema to match his idea of a balcony, Breugel here does not *represent* a balcony, he *makes* one.

The schemata he learns and the new ones he develops by himself provide the artist with a vocabulary of things he can paint. In Breugel's case this is coupled with his knowledge of architectural elements and construction, from which he developed a vocabulary of architectural elements that he could paint. It is based on this vocabulary that he made a different type of gate for each level of the tower, each with its own arrangement of arches, windows, buttresses, pilasters, and balconies. It is based on his vocabulary of construction principles that he made the complex web of rising barrel vaults and concentric staircases that form the internal structure of the tower. It is based on his vocabulary of construction equipment that he made the scaffolds, frames, and cranes. Eventually he could put it all on canvas because he developed a vocabulary of painted equivalences to all of those, along with a vocabulary for rendering various materials, people in action, ships, towns, and landscapes.

Conditions of Illusion

According to Gombrich, what allows an illusion to succeed is our ability to look at it and decipher its code in terms of the physical world. This in fact has nothing to do with art, but with our natural tendency to project a hypothesis on anything we see in an attempt to recognize and classify the world around us. We see elephants in the clouds and faces in the texture of a rough stone. It is the artist's task to harness this 'imitative faculty' of ours to the experience of looking at a painting, and make us see in it precisely what he wished to represent.

Our perception is influenced by what psychologists call our 'mental set', our state of mind. Breugel's painting will therefore look different to us when we come to it with different expectations or are differently attuned. It would seem different if we saw it hanging in a museum or printed in a fashion magazine, if we saw it next to a medieval painting or next to a contemporary photograph. Our expectations influence our observations.

Also within the painting itself, what we will see is determined by what the painter leads us to expect to see. Given the right conditions, he can make us see in it things that are not painted there. Alternatively, he can make us see what he wishes to represent by deliberately drawing it in an unclear manner. Even if a drawn detail becomes too ambiguous to be read correctly, the artist can rely on our tendency to expect a consistent reading, and construct his painting accordingly. This is why we still see balconies between the but-



tresses along the edges of the tower even though the way they turn out of view makes it difficult to draw them accurately. This is also why we can see people on top of the tower even though they are merely made of tiny dots of black paint [3].

Ambiguities of the Third Dimension

A painting is not an attempt at making a double of the painted object; it is an appeal to the visual imagination. What an image can do is represent only certain aspects of its prototype. To ensure a correct reading, it must then rely on conventions. One such convention is that of perspective, which was scientifically developed in the 15th century. What makes the illusion of perspective work is our conviction that there is only one possible interpretation of the visual pattern before us. But we never know for sure what is really there, all we can do is guess, and our guesses will be influenced by our expectations. Much has been written and said about perspective, questioning its validity in providing a true representation of our world. As a technical tool however, it is a correct one. What we need to remember is that its task is to provide an image, and not a relational model. Its ambiguities are the same ones inherent to the vision of the physical world from a stationary point.

We always project a guess at what we see, and not just see a shape. Our guesses proceed from simple assumptions followed by corrections, expecting constancy and a stable world. In the physical world, when we stand at a stationary point and project such a guess, we actually predict what will appear if and when we move. "It is one of the miracles of art," writes Gombrich, "that it can compel us to apply this attitude, this test, to an imitation of nature, a stationary image... such an imitation does indeed stimulate us to probe and anticipate, to project our expectations, and thus build up an imaginary world of illusion." In a painting, the artist's task is to give us sufficient messages and cross-references, such that, though ambiguous each in itself, "their interaction even without the test of movement proves a very strong instrument to weed out false guesses."³

The Analysis of Vision in Art

The only way the artist can deal with all these ambiguities of vision is to make something on canvas and then try to get it to match its prototype. To achieve this, artists have been learning to perfect their schemata over centuries. Then, in the 19th century, artists were given the new demand of looking with 'an innocent eye', supposedly recreating the image on their retina directly on the flat plane of the canvas. But once the relevance of the artists' schemata has been thus undermined, the road was open to rejecting the quest for likeness altogether. This is how the 20th century saw the rise of art movements that

shifted their preoccupation from creating the illusion of a world on a flat plane, to the exploration of that flat plane itself, as well as other pursuits. However, for an art that does deal with creating illusions, the ideal of the innocent eye leads to a paradox. There is no such thing as an innocent eye – our ability to see is precisely our capacity to interpret our visual impressions in terms of a possible world. We then test those interpretations for validity and correct them as needed. We are built to see things in terms of a three-dimensional world, not in terms of a flat plane. We interpret stimuli searching for consistent possible worlds, looking to transform the ambiguous patterns into the image of something ‘out there’. Gombrich writes, that “Ambiguity cannot be seen, and so we rightly ignore the innumerable weird interpretations that must also lurk behind the serene surface of the painting. For as we scan the flat pigments for answers about the motif ‘out there’, the consistent reading suggests itself and illusion takes over.”⁴

Whether the prototype is in front of the artist’s eyes or inside of his imagination is irrelevant just as well. The procedure is the same. The mental world can be no more transcribed than the physical world can. Even if Breugel could have built up his entire *Tower of Babel* inside of his imagination, it would still be only a prototype, a source of reference for his painting to come. The only tower we can see is the one he eventually made on canvas. The artist can only make and match, make and modify. Whatever his prototype was, the result of his work stands in itself, as one that is entirely made by the painter. To make a painting then, Gombrich states, is to *make a possible visible world*.

An Alternative Theory of the Pictorial Image

I would like to continue from where Gombrich left off, and propose a direction towards which we could take the results of his analysis a step further. We saw that the ‘possible visible world’ proposed by Gombrich is a world which we can visually interpret in the same terms with which we understand the physical world. Breugel’s tower is not part of our physical world, but he made it such that it just as well *might* have been. He used the accumulated artistic knowledge of many centuries to make it that way. As far as the effect of the tower on our vision is concerned, it *might* have had physical properties no less than we know the Eiffel Tower to have. In our experience, we can relate to the tower as something that is there, even though we know very well that it has no physical existence. We can fully perceive its colossal size, its huge mass, and its infinite complexity. We can imagine ourselves slowly climbing our way up, occasionally exploring where some of its inner chambers might lead to, and wander in the maze of its countless staircases and corridors. Its essence is right there for us to perceive; just its physical manifestation is missing.

There is a word in our vocabulary which matches that phenomenon precisely. It is an adjective that describes its noun as something “that is so in essence or effect although not formally or actually.”⁵ This word has been used and misused so often in technological contexts that we can barely think of it anymore without automatically thinking about computers, or conversely, as something which is fictitious, make-believe, or imagined. The word I am talking about is the word *virtual*. In fact, this word has nothing to do with computers, nor does it truly have any of these other meanings that are commonly associated with it.

The word ‘virtual’ originates in the ancient Latin word ‘vir’, which initially, simply meant ‘man’. As such, that word also stood for all good qualities associated with manhood, such as courage, principle, honor, and fertility. Accordingly, the Roman term ‘virtus’ was used to refer to any good or attractive quality worthy of ‘a real man’: strength, vigor, character, courage, aptness, capacity, worth, excellence, moral perfection, and strength of spirit. Centuries later, in English, this term evolved into two separate ones: ‘virility’ and ‘virtue’. ‘Virility’ took the meanings associated with actual manhood and fertility, and relates also

to 'virtuosity', in the sense of 'ultimate performance'. 'Virtue' on the other hand, took the more abstract meanings of 'virtus', referring to goodness, morality, purity, power, ability, and efficacy. 'Virtual', then, was a way of describing something which held specific powers capable of achieving measurable physical results. Over the centuries, however, 'virtual' came to also stand for the existence of such powers in their own right, independent of their potential outcome.⁶ In our day, then, to describe something as virtual would be to say that its existence is due to its own self, due to its own inherent qualities rather than due to their physical manifestations. Therefore, to describe Breugel's tower as virtual is to say that it maintains its own existence regardless of the fact that it has no manifestation in the physical world.

When speaking of 'worlds', we should note that what we usually refer to as a world in one context, may be referred to as a place in another context. We think of planet Earth as a world, but in the context of our galaxy, it is merely a place inside of it. This is a relative matter, and in this discussion we will interchange the terms 'world' and 'place' accordingly, depending on their context. The hut at the bottom of Breugel's tower by its entrance is a place within the possible visible world he created in this painting. That possible visible world, as the next section will show, could be seen also as merely a place within the much wider world of pictorial images as a whole.

The way the ideas presented so far connect with each other is in their formation of an alternative theory of the pictorial image. What I propose is that the making of a painting is *the creation of a virtual place*. By applying paint on canvas such that we interpret it in terms of the physical world, the painter creates a new place for us to experience. It does not exist as a physical place in physical space, but it exists nevertheless, as a virtual place in virtual space.

This allows us to further elaborate on what an illusion is. When looking at Breugel's painting we would normally say that it is an illusion. But we would also say that the tower depicted by it is an illusion, and even describe the fact that we can see it at all, as an illusion as well. I propose that illusion is the overall phenomenon that is taking place here, but it is made of more specific elements. At its heart lies the *device of illusion* - what we traditionally call the 'work of art'. The device of illusion is strictly physical: it is a physical arrangement of physical matter in physical space, which is made by a physical person. However, this physical device is made such that it allows the experience of a virtual place, which is located in virtual space. An illusion occurs when a physical person in physical space uses a device of illusion, and through it he experiences a virtual place located in virtual space. Therefore, in the context of this discussion, illusion is *the perception of virtual space*.

We are now fully equipped to answer the question presented at the beginning of the previous chapter, *Where is the Tower of Babel?* The Tower of Babel is in *Virtual Space*.

What is Virtual Space?

There is no such thing as virtual space. It is a loose and abstract term used in multiple ways in various contexts, for which I propose here a specific and consistent definition. This definition narrows down the possible uses of the term and limits it to serve uniquely as a model with which to refer to the phenomenon of pictorial images. It does not necessarily make all of the other uses of the term invalid, and yet it reinterprets many of them as being metaphors, for which this model now offers a well-defined reference. This model consists of a body of principles which I refer to as a whole as *The Virtual Space Theory*. It forms the theoretical core of my research which is published in my book *The Architecture of Virtual Space*. As such, virtual space is not subjected to the burden of proof, nor does it require that it be believed in. It is merely an interpretation, a point of view one may

choose to adopt.

Virtual space is a visible space. The first step towards *The Virtual Space Theory's* definition of virtual space is the distinction between two possible uses of the term 'space', which result in two types of space accordingly: visible and conceptual. Visible spaces are spaces that we can experience visually, whether by looking around us or using our mental abilities. Conceptual spaces in turn, are ones in which the term 'space' is rather used metaphorically, as a way of relating to an abstract, non-visible phenomenon which occurs within certain definable boundaries. In that sense, for example, the Internet might be spoken of in terms of a space, 'inside' of which people exchange information, chat, or shop. These activities may have certain visual manifestations in the form of text symbols and graphics, and some people may even picture such activities themselves, within their own minds, as taking a spatial visual form. And yet, none of these render the Internet *itself* visible as a space. Referring to the Internet in terms of a space, therefore, is valid only metaphorically – as a conceptual type of space. Virtual space however, is rather a fundamentally *visible* space. It may require the use of language, words, and concepts in order to define it, but in its essence as well as in its contents, it is purely visual.

Virtual space is one of the three spaces that can be visually experienced. The next step towards *The Virtual Space Theory's* definition of virtual space is a classification of our visual experiences by following the question "where is what we see?" According to this proposed classification, anything we can ever experience visually is bound to be located inside of either one of three spaces: physical space, mental space, or virtual space. Physical space is our immediate tangible environment, the physical world in which we live. Mental space is a term which I use to refer to all of what we visually see in our mind's eye – whether it is a visual memory of something that is outside of ourselves, or a product of our visual imagination. A thorough discussion of mental space is obviously beyond the scope of this paper. Basically however, the key characteristic of mental space, as opposed to the other two, is that its experience is utterly private. Virtual space, then, is the space we experience through pictorial images, of any medium. Similar to mental space, this is a space which has no physical existence, but unlike mental space, its visual experience is given by the direct encounter with a physical object of a particular kind: a device of illusion – i.e., a window to virtual space.

The window metaphor. The Renaissance artist, architect, and theorist Leon Battista Alberti described a painting as a window through which we can look at the visible world.⁷ Several decades later, Leonardo da Vinci said that "perspective is nothing else than seeing a place behind a pane of glass, quite transparent, on the surface of which the objects behind the glass are to be drawn."⁸ *The Virtual Space Theory* proposes that this metaphor holds also when speaking in terms of making virtual places, except that they are not limited to the technique of perspective alone. Whatever the way by which a possible visible world is made, it would be a virtual place located in virtual space. Traditional texts about perspective also refer to the space seen through the painting in terms of the 'image space' or 'illusion space'. Although this may sound similar, this is not quite the same as virtual space. What these terms refer to is the space within each painting in itself, regardless of the existence of other paintings which depict other virtual places. Virtual space is a far more general idea, created by considering *all* those local 'image spaces' as one overall entity.

Virtual space is the sum of all virtual places. A virtual place creates its own 'image space', inside of which it is then located. The idea of *virtual space* is generated by the possibility of considering the accumulated local spaces of *all* virtual places as forming a single overall entity. Such an entity is obviously highly fragmented, since it is made up of countless, separate, 'possible visible worlds'. Such a conception of the idea of virtual space is made possible by the simple fact that the space of a virtual place is not a concrete object such as an apple, but rather – a visible space. An apple plus an apple makes two apples. A space plus a space, however, makes a larger space – even if it consists of two separate

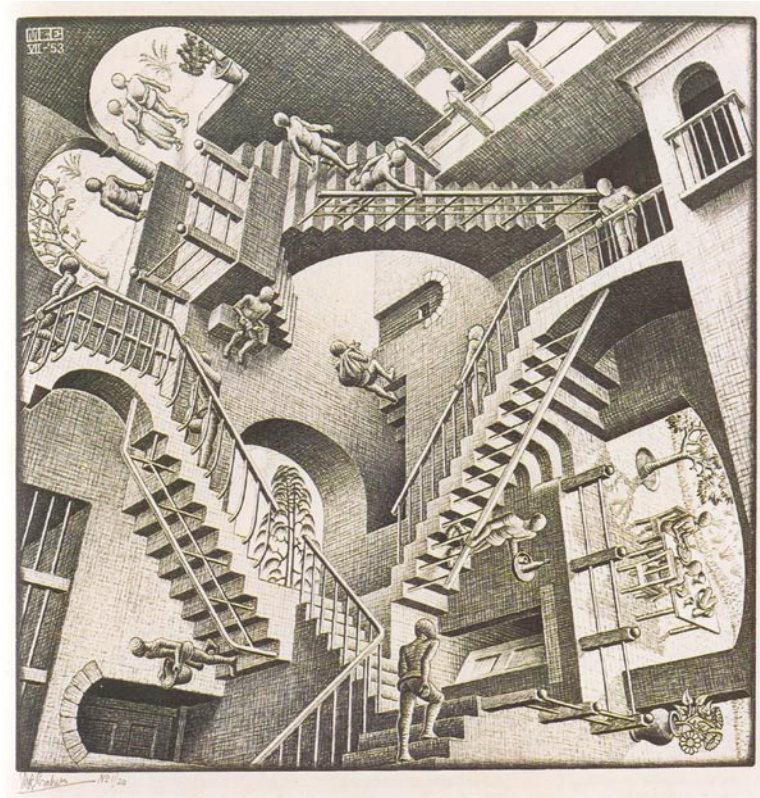


parts. Therefore, virtual space is made up of countless virtual places, and any respective object included within them is then, by definition, located in virtual space – or in other words, it is ‘virtual’.

Virtual space is a limitless and discrete space. Limitless, because it is as vast as there are ‘possible visible worlds’ created in human civilization. Discrete, because it is not a continuous space in which we can move freely from one place to another like we might do in physical space. The landscape behind the Tower of Babel in Breugel’s painting does not connect with the landscape seen in Leonardo’s painting *Mona Lisa* [4], and whatever their relationship may be, we cannot define it in geographical terms. Each place in virtual space is accessed separately. The landscape behind the Tower of Babel is accessible via Breugel’s painting, and the one behind *Mona Lisa* is accessible via Leonardo’s painting.

The characteristics of places in virtual space are based on the characteristics of physical space, which serves as their initial point of reference. A simple example would show why this is important: imagine a virtual place which consists of five physical dimensions and no gravity. Any attempt to actually paint such a virtual place is likely to result in an image that is too ambiguous to be successfully interpreted by us in terms of the physical world – it would look more like flat patterns on canvas. However, this does not limit virtual places from defying the rules of the physical world, as long as they remain recognizable as *possible visible worlds*. The drawing *Relativity* by M.C. Escher [5] is an example of such a virtual place. It clearly defies the rules of the physical world, but remains close enough to its principles such that we can make sense of what we see and interpret it in terms of the physical world.

Different places inside virtual space may have their own characteristics independent of each other. One virtual place may be finite, another may be infinite. One may follow the rules of the physical world, another may defy them. Additionally, the discontinuous nature of virtual space as a whole does not prevent virtual places inside it from being continuous themselves. Breugel’s painting suggests a virtual place which is continuous. Its space is also infinite, and it follows the rules of physical space. Leonardo’s painting suggests a place which is also continuous, infinite, and yet defies the rules of physical space: the horizon behind the right side of *Mona Lisa* is higher than the horizon behind her left side.⁹



Virtual space is a public space. Virtual places have an objective existence that is independent of personal interpretation. When we experience physical places in physical space, our private impressions of them may somewhat differ, but they are nevertheless comparatively similar since their initial stimulus is the same publicly available place. The same goes for virtual places. People's private experiences of them may differ slightly, but are comparatively similar just as well – they all originate in the same, publicly available, virtual place in virtual space. As such, anyone who has the ability to read an illusion, inherently has the ability to access virtual space. Similarly, anyone who has the ability to make an illusion, inherently has the ability to add places to virtual space. These interactions take place in physical space, by means of a device of illusion. Multiple copies of the same device of illusion, however, count only as additional windows to the same already existing virtual place, and therefore do not add places to virtual space. Devices of illusion may be of various mediums and can be accomplished using various techniques. This discussion is centered on painting, but *The Virtual Space Theory* sees these principles as equally applicable to additional mediums as well.

What Virtual Space Is Not

At this point it is important to stress what this proposed idea of virtual space is *not*. Upon first encounter, its initial description may seem similar to other existent theories, ideas, or phenomena, and I would like to avoid any such confusions: virtual space is not the spiritual world, and it is not Plato's world of ideals; it is not a parallel reality, and it is not Utopia; virtual space is not mental space, it is not the world of the imagination, nor even collective imagination, and it is not fantasy; it is not the world of dreams, it is not a hallucination, and it is not the world of fiction; it is not potential space, and it is not hyperreality; it is not a computer-generated space, it is not cyberspace, not hyperspace, and it is not 'Virtual Reality'; virtual space is not our memory, and it is not our sensorial perception.

Delving into each of these theories, ideas, and phenomena, and pointing out their differences from *The Virtual Space Theory* is obviously a lengthy matter. Generally speaking however, each of them may have a certain connection with virtual space, but a careful examination of their respective characteristics would show that none of them is *equiva-*

lent to virtual space: some virtual places can have spiritual qualities, while others do not; the creation of some virtual places can be inspired by a dream that their artist has had, while others can be an attempt to transcribe the view outside his window; some virtual places can be made as an expression of a Utopian ideal, some as a reconstruction of one's memory of a physical place; some virtual places are made with computer graphics, some with brush and paint; some virtual places are experienced using the physical device called 'Virtual Reality', and some through watching a film.

There may be other theories I have not mentioned, but they are all probably comparable to at least one of those already listed above. Therefore, as a rule of thumb, if you find yourself saying "oh, virtual space is like..." and then fill in the name of any other theory, then what you are talking about is probably *not* virtual space. In this discussion, virtual space is just virtual space – the sum of all pictorial images ever made for which physical devices of illusion are available to us and make their virtual places perceivable to us.

The Terminology of Virtual Space

The common confusion between all of these different theories, ideas, and phenomena, and between virtual space, is first and foremost a matter of language. Within the fields that are commonly perceived as related to this discussion, our language simply lacks sufficient words with which to clearly distinguish between all the various phenomena we experience. Furthermore, ever new such phenomena, theories, and ideas are being introduced to us at an increasing rate. If we experience difficulty in understanding the reality around us, then what we need is to first sort out the confusion in our use of language.

One of the sources of confusion is the popular use of the term 'virtual reality'. This term was originally coined as the name of a technologically-advanced device for experiencing computer-generated virtual places. By using a special helmet and glove connected to a computer, it is intended to provide an experience of virtual places at a level which aims at a maximal detachment from the experience of the physical world. The catchy name of this specific product has become a widely-used reference to some general, unclear, computer-related phenomenon. The media hype around 'virtual reality' made its success as a marketing name become its failure in providing the public an understanding of what it actually is.

Part of what makes this term so catchy is that 'virtual reality' initially sounds like an oxymoron, which implies that 'virtual' is the opposite of 'reality'. Now since the word 'reality' in itself sounds very close to the adjective 'real', we find ourselves thinking of 'virtual' as the antonym of 'real'. The problem here is that it has led serious publications discussing virtual reality or its related phenomena to oppose it to what they call the 'real reality'. Then, in order to avoid the inherent vagueness and absurdity of such a term, the reference was further refined to " 'real' reality ". This implies a difference between 'real' with and without quotation marks – which in this case is another way of saying 'you know what I mean' when we do not know how to say what exactly it is, and only hope that we will be correctly understood. It proves the limitation of our current language as a common ground for a meaningful discussion.

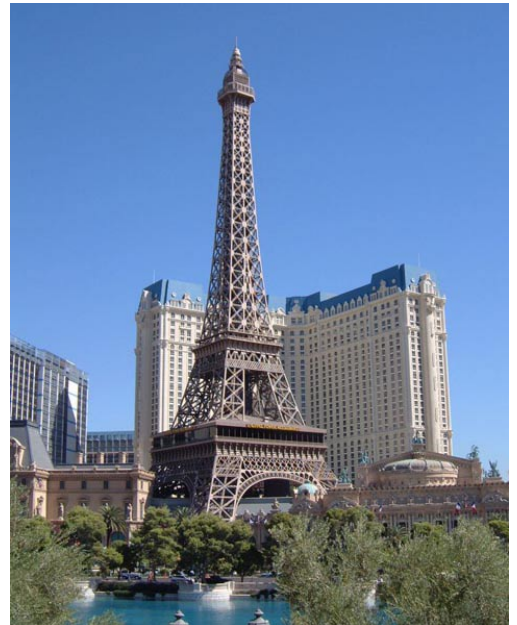
The assertion of *The Virtual Space Theory*, however, is that the antonym of 'virtual' is not 'real' – the antonym of 'virtual' is '*physical*'. Whenever in doubt whether something is virtual or not, the simplest test is to replace the word 'virtual' with 'non-physical'. Additionally, when discussing the visible world, we can think of virtual in terms of location rather than in terms of a quality. The question 'Is the flower red?' asks about a quality the flower has. The question 'Is the flower virtual?' rather asks *where* the flower is, as in 'Is the flower in virtual space?' Therefore:

– Is Breugel's tower virtual? Yes, it is non-physical; it is in virtual space.

6 The Eiffel Tower
Paris



7 The Eiffel Tower
Las Vegas



- Is the Eiffel Tower virtual? No, it is physical; it is made of physical matter in physical space.
- Is Breugel's *painting* virtual? No, the painting itself is a physical object; it is made of physical matter in physical space - it is rather the *tower* which is virtual.

We are left with the task of determining what the antonym of 'real' is. Let us continue with the example of the Eiffel Tower. The Eiffel Tower in Paris is real [6]. It is also physical. But what about the Eiffel Tower that is standing in Las Vegas? Is that tower real? It is surely not a virtual tower, as it is made of physical matter in physical space [7]. It is not real either, because the real one is in Paris, but calling it a fake or a copy is not quite accurate enough. We can find help in contemporary philosophy where we discover the term 'simulacrum'. A 'simulacrum' is a 'simulated object'. It is an object that has many of the same visible attributes as its original, yet it does not share its essence. The Eiffel Tower in Las Vegas is then a simulacrum of the Eiffel Tower in Paris.

We have dismissed the duality of 'virtual vs. real' and replaced it with two new dualities: 'virtual vs. physical' and 'real vs. simulacrum'. We are now ready to address a more difficult question. Let us consider the example of the castle from the Disney film *Sleeping Beauty* [8]. This castle has become a visual synonym for Disney in general, seen in graphic simplification in the opening of every Disney film. Accordingly, Disney theme parks feature such a castle physically built at their center [9].¹⁰ The question is, is the castle real? The castle in the theme park is not real, but rather a simulacrum. It is the castle in the film which is the real one. In the terms of our discussion, we would say that the *real* castle is the *virtual* one.

8 Sleeping Beauty
directed by Clyde Geronimi,
production design by Ken
Anderson and Don DaGradi,
1959

9 Sleeping Beauty's castle
Disneyland, Paris

Virtual places are real, just as real as physical places are. The Eiffel Tower is real, a real physical tower. Breugel's tower is also real; it is a real virtual tower. The tower of Saruman



in the film version of Tolkien's *The Lord of the Rings* is real as well. Within the virtual world of this film trilogy, it is a real tower with very real implications. If this seems difficult to agree with at first, it is simply because we are so used to thinking of virtual as meaning *non-real*, rather than *non-physical*.

We have left the noun 'reality' untouched, and for good reason. In order to avoid getting into deep metaphysics, it is safer to relate to reality as a whole, without adding any adjectives to it, be they 'virtual', 'physical' or any other. This discussion was not an inquiry into the nature of reality, but into the nature of our reactions to the visible world. And that visible world, as we have seen, includes both physical space and virtual space.

The matter was elegantly summed up by René Magritte in his painting *The Treachery of Images*. This famous picture features a pipe along with the statement 'this is not a pipe' [10]. If there is a treachery in images, it is not in the images themselves but in our relationship to them. If we expect the pipe in the image to be a physical pipe, we will surely be tricked. Therefore, Magritte was right. What he has made is indeed not a pipe – it is a virtual pipe.

10 René Magritte

The Treachery of Images
1928-29



Notes

1. Ettliger, 2008.
2. Gombrich, 2002.
3. Ibid.: 233.
4. Ibid.: 278.
5. The Oxford English Dictionary, Volume XIX, 1989: 674.
6. Ibid.: 672-679.
Lewis, 1958: 1994-1997.
7. In his treatise on painting, *della pittura*, published in 1435-6, Alberti wrote: "First of all about where I draw. I inscribe a quadrangle of right angles, as large as I wish, which is considered to be an open window through which I see what I want to paint."
Alberti, 1966: 58.
8. Gombrich, 2002: 253.
9. Gombrich, 1995: 303.
10. Both the discussion on simulacra and the example of the Disney castle are given also by Jean Baudrillard in his book *Simulacra and Simulation*. However, the ideas which he presents with them are completely different than the ones I am discussing here, and not related to *The Virtual Space Theory*.
Baudrillard, 2003.

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2. Breugel, *The Tower of Babel*, detail.
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4. Leonardo da Vinci, *Mona Lisa*, c. 1502. Oil on wood, 77 x 53 cm. Louvre, Paris.
5. M.C. Escher, *Relativity*, 1953. Lithograph, 28 x 29 cm.
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8. Still image from: *Sleeping Beauty*, 1959. directed by Clyde Geronimi. Burbank, CA: Disney. [video:DVD]
9. *Sleeping Beauty's castle*. Disneyland, Paris.
10. René Magritte, *The Treachery of Images*, 1928-29. Oil on canvas, 64 x 94 cm. Los Angeles County Museum of Art, Los Angeles.