THE INCOMPLETNESS OF THE VISUAL WORLD

THE SELF: A VOID IN THE VISUAL WORLD

by

Fernando Casas, PhD

Introduction

David Hume argued famously that when we survey our multitude of experiences we never find among them an impression of our own selves. The idea of a self, he concluded is simply a "fiction"[1]. Immanuel Kant agreed with Hume that the self is not found in experience, but he did not conclude from this that the self is a fiction; instead, he advanced a transcendental argument for the existence of a meta-physical self. Although we do not have an experience of our own selves, the self, he argued, is a necessary condition for the possibility of any experience. This self - what Kant called the "transcendental apperception" - is the necessary logical subject of any thought, perception or feeling.[2]

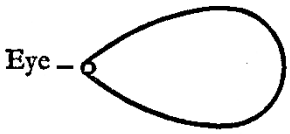
Along the same lines, Ludwig Wittgenstein holds that there is no such thing as a subject that thinks and contains ideas. However he adds:

"5.632 The subject does not belong to the world; rather it is the limit of the world.

5.633 Where *in* the world is the metaphysical subject to be found? You will say that this is exactly like the case of the eye and the visual field. But really you do *not* see the eye.

And nothing *in the visual field* allows you to infer that it is seen by an eye.

5.6331 For the form of the visual field is surely not like this"[3]



Following the phenomenological tradition Jean Paul Sartre claimed to have discovered that "consciousness implies in its being a non-conscious and transphenomenal being"[4].

Against these views and specifically against the view shared by Hume, Kant and Wittgenstein that the self, (or metaphysical subject[5]) cannot be found in experience, I shall argue - in effect I shall literally show - that we*can*detect the presence of our own selves in experience. My claim sounds outlandishly self-contradictory: if the self is indeed meta-physical it would seem to follow by definition that it cannot be found in experience, while if it is found in experience it

seems obvious that it is not metaphysical. Yet a careful and comprehensive analysis of our visual world will reveal that we are both present in, and absent from, our visual world. We shall find that a phenomenological examination of our all-encompassing human visual field discloses the presence of a meta-physical self in that visual space. The above apparent contradiction is avoided because the metaphysical self is present not asan object among other visual objects but rather as a localized absence; what an observer perceptually detects in her visual world is her own presenceas a localized and irremovable *blind spot*whence she perceives the world. In other words, with the aid of a phenomenology of vision, we shall find visual evidence for Wittgenstein's claim that the metaphysical subject is the limit of the visual world. We shall see that the presence of this irremovable blind spot in the fabric of visual space renders it – the visual world - necessarily incomplete, signaling the presence of a meta-visual, meta-physical self. What I recognize as ***here*** - the location from which I perceive the world - is a location that I can find inside and,paradoxically, altogether outside the visual world.

The evidence marshaled in this paper for the conclusion that the visual world is incomplete rests on two independent grounds, one phenomenological the other pictorial. 1) We shall see that a phenomenological examination of our visual space – particularly aided by two experiments – reveals the presence of an absence - an irremovable blind spot – in the fabric of any visual world. Further, it shows that visual space is necessarily incomplete and discontinuous. This evidence is purely phenomenological and hence independent from any visual

illustration of the situation one may choose to offer for it and, in particular, independent from the visual illustrations offered in this paper. 2) The second source of evidence for the presence of the meta-physical self in visual space is pictorial and it comes from those efforts made to create a complete and faithful map of surrounding visual space of an observer. These efforts made clear that a complete depiction of the surrounding visual world is impossible in principle and that this impossibility is due to the presence in visual space of an inescapable absence – a blind spot created in the very location that the observer occupies within the fabric of that visual space. The representational system used is the well known system of *Linear Perspective*. After becoming aware of some of its limitation however, I transformed the system in order to make it coherent and to greatly expand its representational capacity so as to allow the observer who wants to create a representation of his visual world to depict not just a portion but his entire surrounding visual world. This expanded system is *Spherical Perspective*. Hence I would like to pause in my argument for a moment to address both, Linear Perspective and Spherical Perspective.

1. *LinearPerspective*. I do not see the need any longer to argue for the validity of linear convergent perspective. That it is the most *faithful* system of spatial representation and not just one among several possible, "conventional", systems – as it was once claimed by scholars such as Nelson Goodman[6] – is something that has finally been established by Anthony A. Derksen in his paper *Linear Perspective as a Realist Constrain.* In it he argues that linear perspective is "an

objective, realist device to organize three-dimensional pictorial space…" [7] Linear perspective, he shows, is more "faithful" to the depicted world than other conventional systems. By 'faithful' he means a depiction of pictorial space that we experience as closely resembling the depicted world. Henceforth I shall use the term in this same sense.

2. *Spherical Perspective*. Unlike linear perspective, the validity of Spherical Perspective needs to be demonstrated. In section III I shall argue first that the visual world is a surrounding reality and not just a window-like scene. Next I shall argue that this surrounding visual reality – the visual world – can be captured fully and faithfully by extending the window-like linear perspective into a full spherical system: a six-point, non-Euclidean perspective system called Spherical Perspective.[8] Aided with this system of visual mapping I shall be able to show that the visual world is necessarily incomplete, i.e., it exhibits as a necessary feature of the depiction an absence in the position occupied by the seeing subject.

I. Kant, Euclidean Geometry, and Linear Perspective.

Kant thought that the space we encounter in our experience was an 'infinite *given* magnitude" with Euclidean properties.[9] There is little doubt that he held this view in part because the only kind of geometry developed until the end of the 17th Century was Euclidean. It is also likely that Kant's belief was

reinforced by the developments of Linear Perspective during the Renaissance. This system conceived the human visual field as a flat, Euclidean window (Figure 1) onto which the image of the visual world was projected.

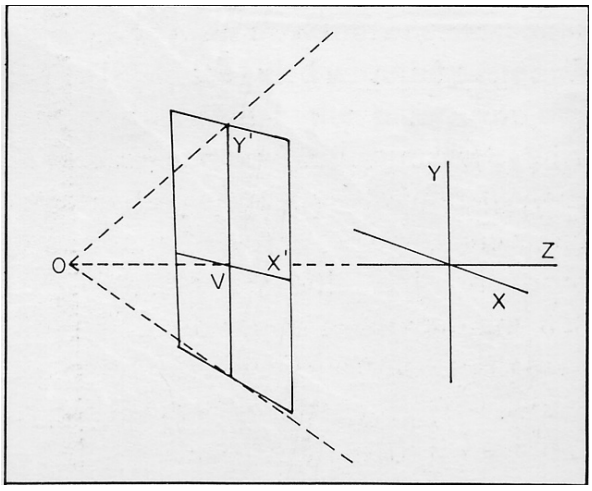


Figure 1

More relevant to the aims of this paper than the chronology and possible causal connection between the development of Euclidean geometry, the development of linear perspective, and Kant's claim that phenomenal space is Euclidean is the underlying and undeniable fact that the visual world that we ordinarily encounter seems to be Euclidean. It seems to be a space in which parallel lines seem not to curve and never to meet. I shall argue that, in fact, this only seems to be the case, that on careful scrutiny we can discover that the geometrical structure of the visual world is non-Euclidian. It only seems to be Euclidean because 1) we do not usually pay attention to those situations where the curvature becomes most apparent - when we are forced to see objects very

close to the eyes, and 2) because our span of vision is too reduced to notice the curvature of our visual world without some effort. I shall examine the first of these in this section and the second in the next section.

That perceived parallel lines seem never to meet is evident enough. When we draw two parallel vertical lines on a piece of paper or contemplate the two vertical sides of a skyscraper, for example, we grasp them as lines that if extended indefinitely would never meet. We experience two horizontal parallel lines in a similar way, as lines that do not meet and, moreover, as lines that, however much they may extend, we would never see converging. Our experience is, *prima facie*, strikingly different in the case of parallel lines that are neither vertical nor horizontal, but rather depth parallel lines that run in front of us like the lines of train tracks. In this case, we see the parallel lines converging at a point. (Point v in figure 1)

But this discrepancy in appearance between the vertical and horizontal on the one hand and the depth parallel lines on the other is only superficial and fundamentally non-existent. If we attend to our visual experience fully and carefully we shall notice that all three spatial dimensions have the same structure, that is, all three are curvilinear and convergent. Vertical, horizontal and depth parallel lines (X, Y and Z lines in figure 1) – the three sets of lines that articulate the three spatial dimensions – actually appear in our visual perception as curved and converging at vanishing points. Thus, although the vast majority

of human beings are not aware of it, our visual world appears to our eyes as a non-Euclidean reality in which all straight parallel lines (not just the depth lines) appear as if they were the curved 'Great Circles' of a sphere that surrounds us. The reader can confirm this by performing a simple experiment. Hold a string taut between your two hands in front of your eyes and quite close to them. Now, paying attention to the string but focusing somewhere beyond it, move the string up and down in front of your eyes. You should clearly see that the taut string curves upwards and downwards as you move it up and down in front of your eyes. This taut string is the straightest possible line in perceptual space, and yet in its different positions it appears curved to the observer. Moreover the set of lines that correspond to the different positions of the string appear to curve and converge, aiming at two vanishing points at your left hand side and your right hand side. (You actually do not see these vanishing points; you only see the lines aiming at them.) These lines, in fact, appear to be portions of Great Circles of a sphere. The experiment can be repeated for the vertical dimension. In this case you can see the vertical lines of the string converging and aiming at two vanishing points opposite each other above and below you. Further, you will observe that the pronounced curvature of the string when close to your eyes rapidly decreases when you move the taut string away from your eyes. Its curvature becomes less and less noticeable as it is moved away from the eyes. This shows that the curvature of the lines is not just a peculiarity of the proximity of the lines to the eyes. The proximity to the eye simply dramatizes their curvature.

Why is it then that to Kant and to most people the visual world seems to be Euclidean? Only a partial answer can be given at this point. The visual world appears Euclidean because we tend to pay attention only to the area in our visual field that we have in focus. We neglect to notice the surrounding areas, moreover, because we normally focus only on objects that are at a certain distance from our eyes resisting for example looking at objects that are very close to the eyes because they are out of focus. When we attend to our visual field more fully and more carefully, the curved appearance of all 'straight' lines in the world becomes obvious.

II. The Presence of the Surrounding Visual World

1. The SphericalVisual Field.

The perceptual visual field, as defined in the Psychology of Vision, is the 2-D span that we experience in front of us when we open our eyes; this span roughly oval in shape, covers about 150 degrees of visual angle vertically and 180 degrees of visual angle horizontally. This momentary, window-like expanse corresponds to the visual field that Linear Perspective conceived as a flat window. It is within the boundaries of this visual field that we perceive the 3-D visual world. We shall see next that this window-like conception of the visual field is artificially narrow and ill conceived. By attending carefully to our visual

experience we shall see that our visual field is, in fact, not like an oval window but rather boundless like the surface of a sphere.

Although I have a window-like visual field in front of me at *this moment*, I am also aware that I can turn my gaze to my right, my left, up, down and behind me and find more of the visual world. It does not matter in what direction I turn or how far I turn my gaze I always find the visual world without ever encountering a boundary to it. I am also aware that after a complete turn of my gaze I return to the same place in visual space I had just left from the opposite direction. In sum, I easily attest that a visual world surrounds me completely. I may not be able to see it all at once; but I can see all of it by turning my gaze so as to capture successively the totality of it. It is evident that any more or less instantaneous experience permits me to see, in a window-like fashion, only a portion of the surrounding visual world. The momentary, window-like visual field is then a portion of a larger spherical visual field that surrounds me and consequently, it should be conceived as a non-Euclidean, concave expanse.

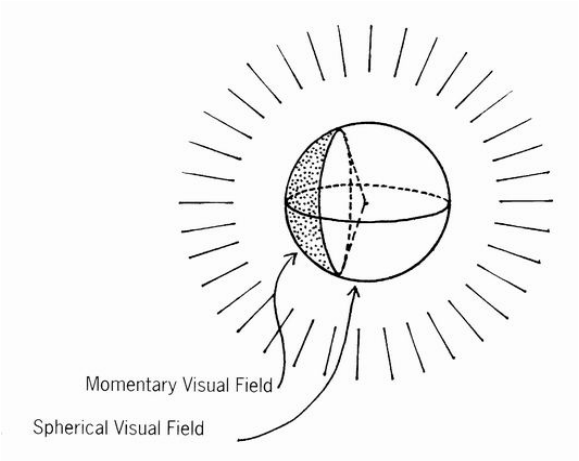


Figure 2

The surrounding visual world is not given to me at an instant, rather it comes to me in the temporal sequence of successive concave portions - the collection of all of these constitute the complete spherical field. Visual space isa surrounding presence that is given to me in a manifold of successive appearances and consequently the experience that I have is that of seeing the visual world as from the center of a sphere. Furthermore, any single instantaneous visual perception we care to consider is never a discrete, self contained whole. It only gives us the impression of being discrete because we artificially frame a window-like portion of the surrounding visual world with our limited visual organs. The perceived 3-D space that appears framed in our momentary visual field does not come to an end at 'the frame', so to speak, of our momentary visual field. We are in fact aware that visual reality continues beyond the frame. When looking at some objects in front of us we are invariably aware, even if only implicitly, that those objects are visually/ spatially connected to other objects, at the moment not perceived, in other parts of our larger surrounding spatial world. We always know that by just turning our gaze away from a given direction we will find other parts of the visual world that we automatically identify as to the left, or right, or in front of the original direction. Thus, although we may not be explicitly aware of it, the entire surrounding visual space is present in any instantaneous visual experience - it is present as the

'horizon' (in the phenomenological sense of the term) within which the window-like visual perception takes place. This horizon is boundless, finite and articulated by the three special coordinates. The visual world is, then, a three-dimensional space that presents itself as surrounding me - as a spherical surface would surround me. The three sets of 'parallel' lines belonging to the three dimensions of the visual world appear on the spherical visual field as three sets of lines converging at six equidistant vanishing points; this is the structure of *spherical perspective* illustrated in Figure 3.

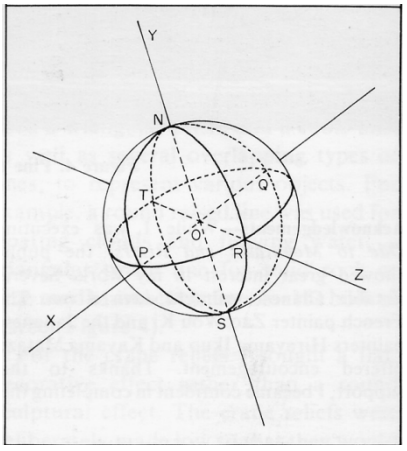


Figure 3

Now we are able to understand more fully why the vast majority of human beings are not aware of the non-Euclidean nature of their visual world. It is because most people are not explicitly aware of the surrounding presence of their visual world and, some who are 'intellectually aware' of it still fail to take explicit notice of its visual manifestation. Most people simply think of the visual world as the reality that they have just in front of their eyes at a given moment

and since the curvature of the visual world in this momentary, window-like reduced visual field is not very noticeable then, most people simply assume all perceived straight lines to be Euclidean. In fact our momentary span of vision is so reduced that it allows us to perceive at once only one vanishing point. We cannot even see at once the vanishing points to our left and right sides, let alone, up, down and back. If our field of vision were just a little wider – beyond 180 degrees - we would be able to see not only the depth rails of a train track converge in front of us but also all horizontal lines converge into two vanishing points at our left and right. The experience of being completely surrounded by a visual world is, fundamentally, the experience of seeing the world from a privileged position, as if from the very center of a sphere. My experience is the experience of myself as being*here*, at the very center of an enclosing, surrounding visual reality.

The wish to compare oursphere of vision to the spherical image reflected on a spherical mirror - for example the image on a floating soap bubble - is understandable. The similarity between these is strong at one level but the comparison can be extremely misleading and inappropriate. Both, the sphere of vision and the reflection on a soap bubble articulate an image of a 3-dimensional visual world on a spherical surface in such a way that the three dimensions in the image are arranged in a perspective system with six vanishing points. The reflected spherical image is, in this respect, a good model of visual perception. But it is dangerously misleading if the analogy is carried any further for it can lead us to think erroneously of the perceptual space of an observer as if it were a

physical object among others objects in a public space which, like the bubble, can be contemplated from outside. The claim advanced in this paper that our visual field is spherical does not imply that we are surrounded by an actual membrane-like spherical surface on which the images of the surrounding visual world fall as onto a concave screen; nor does it imply that in some sense what we 'really' and 'directly' perceive are these images (visual sense data) in stead of the objects themselves. The notion of a spherical visual field developed here - as against a Euclidean one - is simply meant to indicate two things: 1) the non-Euclidean geometrical organization of the perceived three-dimensions in our visual field and, 2) the fact that this field surrounds us[10].

2. **Visual Space is Perspectival**.

Figures 4 and 5 show two paintings made with the aid of *sphericalperspective*. In both paintings an observer has depicted his surrounding visual world including the appearance of his own body in it.

Figure 4 shows the perceptual image of the entire visual world surrounding an observer who appears sitting out-of-doors on an open field at the center of the image. It is of the utmost importance to realize that the image of the painting represents what this observer in the picture sees from **his** point of view.

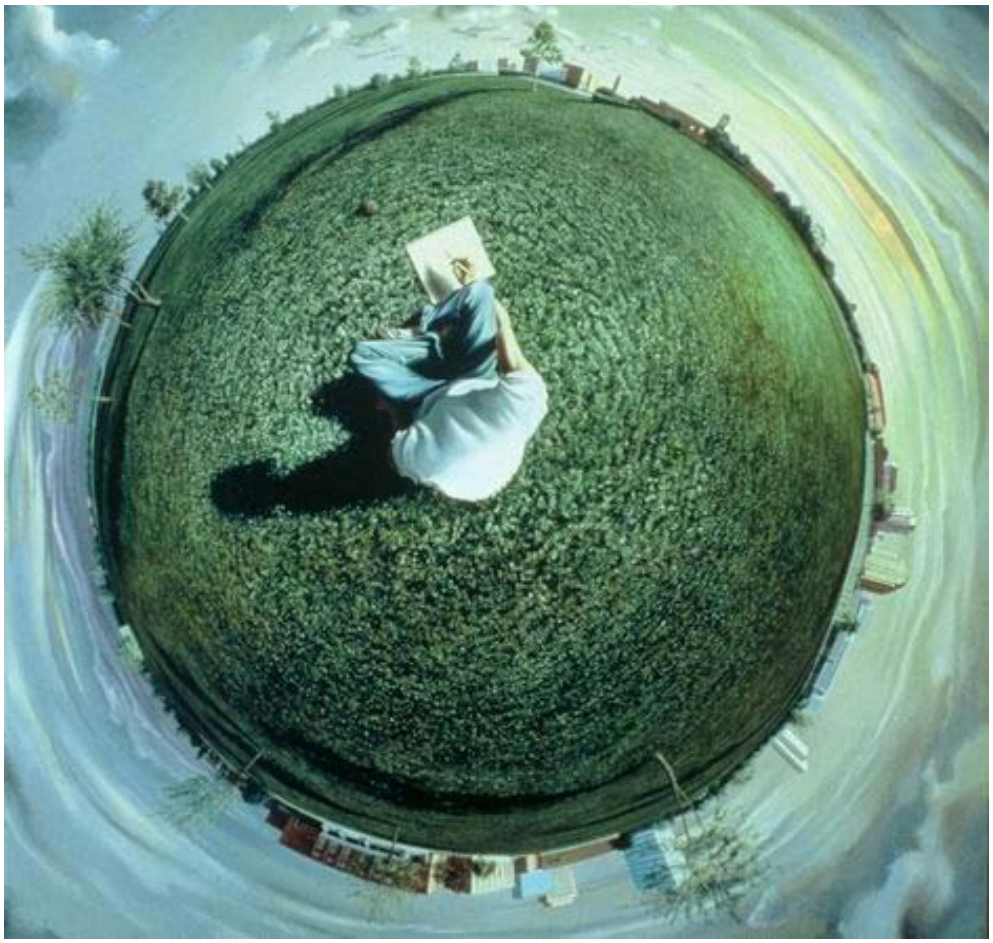


Figure 4

Figure 5

The perceptual spherical image of this observer, however, has been topologically altered, it has been flattened by an imaginary process consisting first of piercing it at a certain point, and then, flattening (and stretching) the sphere of vision conceived as an elastic surface. The point at which the sphere of vision is pierced and then stretched becomes the perimeter of the whole painting. By virtue of this transformation we, the observers of the painting, can see the entire image of his sphere of vision at once. Figure 5 is the result of exactly the same kind of topological transformation. In this case the observer, at the lower left corner of the painting, is indoors engaged in conversation with three other human

beings. The artist, however, has taken some liberties during the flattening process: here and there some cutting and folding of the spherical visual field has been introduced for artistic purposes, but the overall flattening process and result is exactly the same as the one used to create the painting of Figure 4.

Figure 4 is an *accurate* representation of this observer's visual experience. *Accurate* here means that the neighborhood relations of any and all (visually identifiable) points in the percept (the depicted world) have been translated onto the picture (or pictorial space.) Hence, the percept and the painting are isomorphic maps. (There is however one and only one point that is not mapped; this is the point at which the spherical image was pierced in order to be flattened.)

It is immediately apparent that the observers depicted in these images each obtain a location within his observed visual world. This makes it obvious that visual perception is necessarily *perspectival*. Perspectival here means that visual space is seen from a specific location within that visual world[11].The perspectival nature of visual perception is a fundamental part of any visual experience. Visual perception is always the experience of the world from a given spatial location that the observer can identify as *here*. Heidegger refers to this feature as a "local sense of place"[12], an awareness of always being somewhere. To see the world involves an awareness, if only implicit, that the world is seen

from, here, from the position that the observer obtains vis-à-vis the other objects in the world that he sees. This visual awareness of ‘seeing from here’ is experienced by the observer at least by virtue of two features of visual phenomena. First, because all the objects appearing in a given visual field exhibit precisely the face or look that is obtained only from the given point of view of that observer - from among the infinitely many faces or looks that each object can exhibit to other points of view. Second, because all these objects have a perceived relative position and distance vis-à-vis the location of the observer. Hence, I can visually recognize that I am closer to some items and further from others. This awareness of my own self as ‘being here’ is part of every visual experience that I have.

In the previous section I noticed that I, the observer, am in a privileged position vis-à-vis the visual world, for I constitute the center of its surrounding presence. Now, quite differently, I discover that I have, like the observers in Figures 4 and 5, a location within my visual space that has no privileged status at all: I obtain a position in that space no more remarkable than the position of any other object within it. I can find myself, for example, like the observer in figure 4 sitting at the certain spot on the ground relative some trees. This location is spatially no more privileged than the spot next to it or any other position on the universe. I shall return to this contrast between the privileged and perspectival positions in section III.

To see the world is, then, to see it from a particular location within it sharing a common space with the objects of vision. A visual world is obviously something not perceivable from without, it is something necessarily articulated from within. Wittgenstein's drawing showing an eye and its visual field is meant (among other things) to illustrate this absurdity – the absurdity of seeing an eye and its visual field from somewhere outside them. Part of the absurdity is that the eyeball and its visual field are *visual objects* in two very different senses. An eyeball is a physical object that can be seen alongside other visual objects like hands, brains and trees. A visual field is not such an object, although in a sense, its image may contain physical objects. One could never find a visual field - the visual experience of a conscious being - as an object alongside trees, hands, or eyeballs. But the absurdity that concerns us here is the suggestion that a visual field by itself could be seen from outside it as if it were an object having a certain shape defined by boundaries. A visual field has no such external boundaries or shapes for the simple reason that it is something that it is seen from within itself and also because it is spherical and the surface of a sphere, although finite, has no boundaries.(The rectangular boundaries of Figures 4 and 5 are the artificial result of the topological transformation, the piercing and flattening of the spherical image.)

3. **Visual Space is Incomplete and Discontinuous.**

Whence exactlyis thevantage point from which the observer of either Figure 4 or 5 sees the world? It is obvious that it is not in any part of his body that appears

in the image. His knees, hands, arms, legs, etc. are seen objects; they are not doing the seeing. Where in the image is the observer, or at least, whence is the location from which he is articulating his perceptual image of the surrounding visual world? The obvious answer seems to be where his head and his eyes – his visual organs – are.

The most remarkable feature of figures 4 and 5 is that the location where the heads of these observers is supposed to be has been left blank; it appears as a void in the fabric of the painting. A human being cannot see his own head, but why leave a blank in this place? Would it not have been more accurate to suture this void, eliminating it from the picture? The answer is no. The elimination of this void that keeps the shoulders, chest and back apart would contradict the neighborhood relations that hold true in the experience of the visual world. I do not see my two shoulders touching each other in my visual field. They are separated and, disquietingly, I do not see what keeps them apart. At this location, between the shoulders, there is something that I cannot see as the observers in Figures 4 and 5 cannot see. Hence leaving a blank space in that area of the image is correct, it is accurate, for it represents the presence of a perceptual blind spot. This is the pictorial argument for the presence of the self as an absence, as a blind spot mentioned earlier. And it is this absence that renders the visual world incomplete.

But it may be thought that this blind spot is only a peculiar shortcoming affecting human observers and hence not a feature of any significance to vision

per se. It might be argued that indeed the observers in Figures 4 and 5 see all around them but fail to see in the area between their shoulders simply because something obstructs their view, namely their necks. This, of course, is an all-too-human condition, for even though we can turn our gaze in any direction we wish all around us, our necks inevitably and at all times stand in our way creating a permanent blind spot. The blind spots of Figures 4 and 5 then may seem to be merely the result of our anatomy and, therefore reparable in principle: it seems that we could render a complete image of the visual world simply by mapping the visual field of an observer unencumbered by anything like a neck. The question then arises: Does the visual perception of an observer who could, seamlessly and all at once, capture the entire surrounding visual world have such a blind spot? Availing ourselves of the floating soap bubble analogy, we can pose the question thus: is there a blind spot on the image reflected on a soap bubble? Appearances to the contrary, the answer is yes.

I will show next thatif this imaginary observer - neck-less, all-around and all-at-once perceiver - were to examine his surrounding visual field, he nonetheless would become visually aware of the presence and location of a blind spot, one created by his own presence in his visual world. This is so because with careful scrutiny he would inevitably become aware that the perspectival location whence he is observing the world is missing from his all-around visual field. Given that the observer is visually aware of his relative location in the visual world that he experiences (as explained above) he may, then, take visual notice that his location – *here*- is missing in the visual world he experiences. We shall see next,

with the aid of two thought experiments, how this observer can visually detect the presence of this blind spot in his vision. These thought experiments also constitute arguments for the incompleteness and discontinuity of the visual world independent from the pictorial arguments above.

Thought-experiment I. **Incompletness**. Let two objects approach the all-around-observer in a straight line from opposite directions. Their trajectory would lead them to meet each other exactly at the point whence the observer is seeing them, but these two objects will never come to visually meet. The two objects can come to meet each other only by changing direction and moving around and in front of the observer or behind him.[13] Between the left side of the observer and his right side there is a gap that cannot be bridged visually. Similarly, there is a visually un-bridgeable gap between the closest points in front and back and, up and down. This is so because this point, the point in visual space where these two objects are coming to meet – the vantage point of the observer - simply does not exist in that visual space. Thus, the blind spot can be visually located and its shape determined: the blind spot is the sphere drawn by all the objects that are visually the closest to the observer in front, back, up, down, left and right of him.

It may be thought that this incompleteness can be eliminated by reducing the size of the phenomenal bubble to a point without extension. Thus, a trulyperfect observer would see the whole world without creating a blind spot with her own presence. But such an observer is impossible, for a point without

extension can never be a visual field.A field of vision is, by definition, a visually extended space, therefore, if the spherical field becomes a zero dimensional point, it becomes extension-less and on a point that lacks extension an image cannot appear.[14]

Thought-experiment II. **Discontinuity**. Let us imagine a moving object approaching an all-around and all-at-once observer from her left side and in a straight path. This observer could never have the visual experience of such an object first approaching her from her left side and then continuously orseamlessly see the object continue its trajectory as it moves away from her by her right hand side. Even if we imagine the observer as nothing but an extension-less point (something we argued above to be impossible) the observer would witness necessarily a radical discontinuity, a *perceptual flip*taking place. The incoming object would undergo three transformations. 1) The object flips its direction of motion relative the observer. First the observer sees the object approaching her, and then receding from her. 2) The object flips its appearance as if it had rotated 180 degrees. First the observer sees the approaching object's face, so to speak, and then as it recedes she sees its back side. 3) The whole scene undergoes a perspective flip. First the approaching object is seen cut against the perspectival background view of the left and then it is suddenly seen receding against the background view of the right.

Therefore, the visual world of even an all-around-observer and all-at-once observer has that peculiar blind spot and it is necessarily an incomplete and discontinuous visual world.

Figures 4 and 5, manage to capture these features, but with some important limitations. The blind spots in the paintings, in stead of being areasdevoid of visual content, appear as white surfaces with clearly drawn borderlines. A white surface is conventionally used to represent a blank area, and a blank area is used in the painting to represent an area voidof visual content, a blind spot. So the presentations of the perceptual blind spot in these paintings - whitesurfaces with drawn borderlines - are highly conventional and to this extent not *faithful* but they are nonetheless *accurate*. The criterion of faithfulness, which is a criterion of visual resemblance, is simply inapplicable because what it is at issue here is capturing the presence of something that literally cannot be seen, a blind spot. But the absence, the blind spot, is nonetheless something that can be detected and located and hence the mapping criterion of accuracy is appropriate.

Wittgenstein was not correct when he said: "And nothing *in the visual field* allows you to infer that it is seen by an eye". Actually the presence of this blind spot in the all-encompassing visual field indicates the presence, not of an eye necessarily, of course, but of an observer. The observer can discover his own presence in his visual world not as an object but as a void: it "shows up" as a blind spot wherein he perceives no thing. A visual field is essentially something

that has a limit, more precisely, something that comes to an end at a certain location; and this location can be made visually evident and it can be mapped. Furthermore, the observer recognizes this location as *here*, as his location.

Allow me to return to the pictorial argument. The fundamental blind spot we have just discovered becomes most detectable when one attempts to create a complete map of one's own spherical visual field. For in order to notice the incompleteness of the visual world it is necessary not only to thinkof the visual field in its entirety (as Wittgenstein did when he drew his diagram) but also attempt to accurately map its overall visual perspectival structure. Only when such a mapping system exists, the incompleteness becomes apparent and unavoidable. The absence of an all-encompassing system of visual representation before the twentieth century is the most likely reason why this blind spot was not (visually) identified before. In fact, it was during the years that I develop spherical perspective in the 1970's that I stumbled withthis blind spot, which I considered initially simply as an obstacle in the pursuit of the ideal of creating a truly complete map of the whole of the visual world. I attempted by many means to eliminate it. What I had to acknowledge ultimately is that the elimination of this void is, in principle, impossible and inaccurate and that its presence reveals the fundamental incompleteness of the visual world.

III. Phenomenology of an Ontological Boundary

What exactly is the relation between a visual observer and her visual world? How do I stand vis-à-vis my visual world? As mentioned above, the indexical ‘here’often refers to that position in the three-dimensional world that I occupy relative all the visual objects that surround me and with which I happen to share a spatial world. I am aware, however roughly, of the varying distances and positions that objects have relative to me, here. I shall use *s-here*(spatial-here) to indicate this spatial, perspectival position that I obtain relative the visual objects in the world. But on the other hand, I also notice that I do not and cannot see the exact place from where I am seeing, for the parts of my body that I can see are not doing the seeing and, most importantly, *here*-the location whence I see the world - shows up as a blind spot. So, where is this *here*? The experiencewas described above as seeing the world fromthe center of and inside a sphere of vision. This*here*is a privileged “position” – a position that is clearly different from the above spatial *s-here*; it is the center of apprehension and it does not belong to visual space. It is a meta-visual, meta-physical here and to distinguish it from the other I shall call it *m-here*. Figure 6 illustrates these two different “locations” of *s-here* and *m-here*.

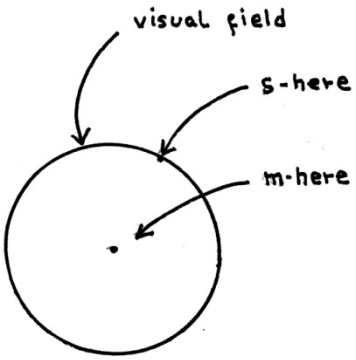


FIGURE 6

'S-here' and 'M-here'

I must now make explicit the paradox inherent in the above description: on the one hand I recognize that my visual experience appears organized as a spherical image – the phenomenal sphere – which, as explained above, cannot be reduced to a zero dimensional point. Further, a sphere, by definition, contains a volume. All these factors seem to point to the conclusion that the sphere of vision is really a sphere, and as such we would be entitled to ask for the magnitude of its volume, the area of its surface and distance between the center of the sphere, where presumably the observer resides and the surface of the sphere. These conclusions are, however, incorrect and profoundly absurd. All those factors notwithstanding, "inside my sphere of vision" I see nothing; inside my sphere of vision I experience no visual objects, no space, no distances, not even an inside. The sphere of vision has no interior space. I perceive none of

these visual realities precisely because the sphere marks the limit where visual space comes to an end. Hence, quite paradoxically, our experience is, indeedspherical-I am surrounded by visual space -but it is a sphere that does not surround any interior volume of space.The notion of a sphere that has no interior space is a strange notion. We can make more sense of the situation, however, if we remember that the phenomenal sphere constitutes an ontological boundary and as such it, must have disparate properties appertaining to the two ontological 'sides' which it delimits. It must be a sphere - or some other visual/spatial entity - if it is to set a limit to the visual/spatial world. It belongs to visual space and it must be visually detectable. And it must also be non-spatial, non-visual if it is to be the limit where visual space comes to an end, i.e. if it establishes the presence of the absence of visual space beyond a certain border. The reality of a boundary cannot be captured by its description from only one of its sides: we are forced to describe the boundary in contradictory terms.

Let us think of this situation in terms of a floating bubble which is presumed to be a complete image of the visual world (keeping in mind, however, the very important reservations and dangers involved in this comparison noted above). When we ask, 'where in the image on the surface of the bubble is the bubble itself?' we become perplexed. Since we know that the bubble is just one object among others in the world that it reflects then, we would expect to find an image of the bubble alongside the other objects of this visual world. Why then is it that its image does not appear in this visual world? We then would be inclined to say that the bubble is, in fact, in the reflected image: it is the **whole** spherical image

after all! In a sense this answer is quite correct and also quite revealing for it shows with striking clarity the privileged status of the bubble itself vis-à-vis the objects it reflects. The contrast makes clear that the bubble (the spherical surface), is the necessary condition for the existence of the image displayed on its surface and also that it can never appear as another object in this image. Moreover the space inside the bubble is a space that does not belong and in principle cannot belong to the space of the image on the surface of the bubble. This is a limitation that affects the optical model.

The contrast is even more striking when we leave the optical model and consider the situation purely phenomenologically. In this case a conscious observer can visually detect the pertinent blind spot, realize that this void signals his very own presence and, thus, become aware of the fundamental incompleteness of the visual world and of his paradoxical stance as a being at once in the world and also altogether 'outside' it. Figures 4 and 5 show that in a very important sense m-here and s-here are at the same location. *m-here* and *s-here* are both a localized void in the fabric of the spherical visual field and this void is surrounded by the visual field. The visual field surrounds and defines the void; it defines me (at least partially). On the other hand, if I just close my eyes this visual world disappears. This visual world is necessarily incomplete because it depends for its very existence on the presence of an observer (human or otherwise), who does not belong to the visual world. This is who I am: a conscious observer firmly located inside the visual/spatial world that I experience,

s-here, and also altogether outside this world, *m-here*. This is not a new thesis; Kant and Sartre among others seem to have held views not too different from this one. What is novel here are two things, first, the visual grounds offered as evidence for this view, and second, the recognition of the visual world as necessarily incomplete.

F. Casas PhD

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[1] *A Treatise of Human Nature* (London and Toronto: J.M. Dent & Sons Ltd & E.P. Dutton 1926) Vol. I, p. 241

[2] *Critique of Pure Reason*, Trans. Norman Kemp Smith (New York: St Martin's Press, 1965). p. 136

[3] *Tractatus Logico Philosophicus*, trans. D. F. Pears & B. F. McGuinnes (London: Routledge & Kegan Paul, 1966), p. 117.

[4] "Jean Paul Sartre: Basis Writings," in Stephen Priest, ed., (New York: Routledge, 2001) p. 87.

[5] The notion of a subject, understood as part of the well known subject / object polarity, belongs to a particular modern metaphysics and epistemology. This is neither assumed nor implied by this text.

[6] *Languages of Art: An Approach to a Theory of Symbols* (Indianapolis: Hackett, 1976), p. 37.

[7]. "Linear Perspective as a Realist Constrain," *The Journal of Philosophy, Inc.*, X, (2005): 235-58.

[8] Fernando Casas, "Flat-Sphere Perspective", *Leonardo*, Vol 16, N0.1 (1983) 1-9.

[9] Critique of *Pure Reason*, Trans. Norman Kemp Smith (New York: St Martin's Press, 1965). p. 69.

[10] We should also guard ourselves from thinking that the perceptual visual field is an object, something like a spherical retina. A retina, or the image on the retina of an observer, is not the same thing as the visual experience of the observer. The optical, anatomical and physiological arrangements that give rise to the experience of visual space are not at issue here. The object of our investigation is perceptual space, i.e. the experience of visual space. It seems clear that a variety of anatomical, optical and physiological factors give rise to this visual experience of a surrounding three-dimensional visual space. Some mammals, for example, seem to have a much larger panorama of vision than human beings by virtue of the location of their two eyes on opposite sides of their heads. In general organisms seem to articulate a single visual experience from a variety of sensory sources: multiple eyes, compound eyes, etc. It is their eyes, plus their optic nerves, plus their brains that allow many animals to have the experience of visual space. An organism with a spherical retina is conceivable; but even in this case, the spherical retina should not be confused with the experience of the surrounding phenomenal visual world that this retina may give rise to.

[11] I use the term ‘perspectival’ here to refer not to th specific perspective system used in this representation, nor in its phenomenological sense but, rather, I use the term in the fundamental sense, implied by any perspective system, that the perceived space is perceived from a specific location within that same visual space - as against something like a view from nowhere, or from some point outside the visual space, or from several points of view at the same time, etc.

[12] *The History of the Concept of Time* , trans. Thewodore Kisiel (Indiana University Press, 1985), pp. 158-159.

[13] I assume the reader understands that such an ideal observer would not have a ‘front’ and a ‘back’, etc. I do use these terms nevertheless because, although they are strictly speaking inappropriate, they make the description simpler and my meaning more evident.

[14] The optical model of vision is not assumed in this paper. However, it is worth noting for those who would insist on the optical model, that it is also affected by this incompleteness. In order to create an all-around optical image it is necessary to have a spherical surface on which the surrounding light beams fall. These light beams would necessarily fail to create an image of the spherical surface itself and of the volume it encloses. In other words, when we examine the image that appears on a floating bubble we never find the image of the floating bubble itself in it. Hence even the image on the surface of a floating bubble is necessarily incomplete.