The Ecology of Vision:
A saccade through phenomenal field requires coordination between two forms of attention, a direction of flight vector through condensed contextual field with the reassessment of the target location as that factor dissipates or unwinds with the eye movement.

There isn’t a frame of reference. There are none to be had. You can of course conjure them up by abstracting reality in order to calculate or create some instrumentation to help facilitate the taking of a record but what the measurement means applies as much to the nature of the conjuring act as it does to any insight into the nature of reality.

There is however perceptual structure and our subjective interrogation of the real in the form of generated phenomenon. The phenomena occur to us and not our instrumentation. Does subjective experience actually trump calculation and measurement? Of course it does; the trick is to understand how and why.

Phenomenal field, incorporating our presentation of vision isn’t anchored by what’s out there in the world it’s anchored by the perceptual structure the sentient being generates. We see the world in relation to ourselves. What ‘other’ is there? A virtual or artificial reality taking place within a frame? Our awareness of the world manifests within perceptual structure as an extension of the dynamical system running through all things including us. There is a universality of connection involved here that doesn’t run through the content of the records made by our instrumentation because those instruments record what they were designed to and not what’s there to be encountered. As they were not designed to account for, they do not encounter.

The ‘nature’ of the universal dynamic runs at a deeper level to that proffered by a device such as a camera or a microphone or even a radio telescope, so what do their records ‘mean?’ The deeper more fundamental ‘nature’ of experiential reality impregnates our very makeup as complex biological systems. It is through this that we develop our relationship with the real. I find it difficult to imagine that there could be anything more fundamental than this but it must then follow that there is no more significant ‘absence’ than this in our current record making and models? Progress will only be made with a change in ontology away from third party observation to experiential reality and the primacy of perception.¹ This ‘primacy’ is not linked to accuracy of measurement but to the phenomenology.

It is true of course that it’s possible to conceive of or conceptualise about, a notional frame of reference or inertial frame and through that consider the world. This notional vantage assumes a situation were the world is there to be prodded at all scales, measured or projected or re-presented within the confines

¹ The Primacy of Perception, Maurice Merleau-Ponty
of the frame of reference. However, the very potential to form that vista develops out from subjective awareness, the approach rests on a deduction and so is conceptual in nature. The benefit of such terms of engagement to our understanding of the nature of reality carries with it inherent limitations. The approach has a threshold of usefulness and reliance upon it will ultimately constrain what can be taken from the situation under investigation even if what manifests at its outer limits clearly present the un-reality of the discoveries tabled. For ‘believers’ these conditioned un-realities are positioned as reality because they are certain. They will be held in position not by measurement but by the belief system or ontology that gave rise to the notion of measurement presenting a hall of mirrors. The approach lacks a critical distinction; the distinction between reality and the real where reality is the relationship we as biological systems form with the real. It’s here that the nature of reality is to be encountered.

Fig 1. The Three Dancers, 1925, Picasso, Tate Modern London
Many artists have clearly retracted from the geometry of picture space with its frames of reference in pursuit of direct engagement and what that reveals to us. Picasso danced within its graces. (Fig.1) These elegant and teasing manifestations derive from perceptual engagement but are in some respects incomplete. The painting fails to articulate a strategy for depicting implicit spatial awareness. The Three Dancers also reside within a picture frame or boarder even if the format of the content challenges the very notion. Visual art bottomed out the constraints of pictorial geometry a long while ago and broke loose. Science must learn to do likewise or stall within the limits prescribed for it by its adopted ontology, a situation requiring the acceptance of paradoxes as they are generated by repeated if not relentless application of what proves to an inappropriate ontology.

*I am aware that I am aware of certain stuff but I am also aware that I am just aware of a load of other stuff that I don’t need to think about to comprehend. If I weren’t just aware of the load of other stuff then what I am aware I am aware of, wouldn’t make much sense!*  

Context is everything, but how do we effortlessly perform the task of spatial contextualisation? We are not really fully conscious of context and certainly not its formation. Indeed, it presents or unfolds spatial salience as opposed to forming it. Our comprehension of this order of saliency is actually in temporal advance of what we take time to consider about the environment.

Implicit spatial salience gleaned directly from the real setting occurs to us without the requirement for consideration. We don’t have to turn central vision onto each area of visual field in some sequence to comprehend the generality and indeed if we made the attempt the order of spatial data being sort would be lost from the areas attended to. We can’t chase it down through the phenomenon. What’s gleaned on a holistic basis through the dorsal stream subconsciously ‘presents’ away from our primary form of attention. However, there is no paradox in the scenario where implicit saliency rendered out in a representation or painting can to some extent be attended to using both pathways either holistically of area by area. (Fig 2)

Peripheral vision isn't 'peripheral', it proffers implicit spatial awareness and it’s this context that grounds experiential reality. The point being that with Vision-Space we now have some computational understanding relating to the presentation of context and this has to proffer a significant lead in our attempts to understand awareness in general and the nature of reality. Understanding the twilight world should tell us a good deal about ourselves as biological systems and how the universal dynamical system extends to our sense organs and through our perceptual structure.

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In my version of the Three Dancers I plot and to some extent overlay an interrogation trajectory of saccades from one head to another to the vase. (Fig 2.) Given the incremental condensation towards the perimeter of contextual vision, a situation that ensures a discrepancy between the actual location of objects in real space and their perceived location in perceptual space, a change of fixation must trigger a general trajectory for the saccadic eye movement towards the new point of interest or target area in phenomenal field but then break off to allow for the effect of the condensation to be accounted for or accommodated. (Fig. 3) This suggests that contextual holistic attention must handover to the
processes governing explicit attention. Different regions of the brain involving both visual processing systems must be employed within a saccade. (Fig. 4)

**Right and left Hemisphere characterisations**

**Left hemisphere:** dependent on denotative language and abstraction, yields clarity and power to manipulate things that are known, fixed, static, isolated, decontextualised, explicit, disembodied, general in nature, but ultimately lifeless.

**The right hemisphere:** yields a world of individual, changing, evolving, interconnected, implicit, incarnate, living beings within the context of the lived world, but in the nature of things never fully grasppable, always imperfectly known.

McGilchrist (Master and his Emissary)
Fig. 4 Saccade through condensed perceptual space requires a reassessment to guide the eye to the correct position in the real setting to form the next fixation.

Fig 5. Once the target (vase) of the saccadic eye movement has formed, perceptual condensation within contextual vision dictates the new conditions governing layout across phenomenal field.
The 'picture' never forms because in experiential terms they never do, but an 'image' of the encounter endures.

*Picture being:* “a real representation, an ordered record, such as a video-signal, a photograph, an activity pattern in a neural structure. The order of the picture is purely conventional and exists only with respect to an external agent.

*Images:* “always contain more than pictures because the whole structure of the receiver (a lifetime’s experience) is summed up in them.”

Professor Jan Koenderink (abridged quote)

I should perhaps be made clear that this painting doesn't reference any perceived movement of the dancers. They remain static. This is about subjective eye movement within phenomenal field and then how we as the system's arbiter, relate the structure of the phenomenon to the real. In other words how we use the phenomenon to navigate our environment. (Fig 5 & Fig 2.)

So back to Picasso's Three Dancers. (Fig. 1) It's always been one of my favourite paintings as it clearly plays with our perceptual system while at the same defying standard aesthetic protocols. I can sense all the little perturbations from the pictorial norm but they play into sensory perception and not away from it. This type of departure from pictorial geometry also appears in my painting (Fig. 9,10,11,12). Their manifestation is not a sign of abstraction from reality, it deepens our understanding of it because they actually occur to us and help to generate the saliency of vision. They are part of us forming our relationship with the real, artefacts of perceptual process. In my view Picasso never abstracted from the experiential, he helped to penetrate it. It's the picture of the scene set out in accordance with optical projection or central perspective that actually satisfies the label 'abstract'.

Are there other links between Picasso’s painting and my experiential encounter with three dancers? A saccade through phenomenal field requires coordination between two forms of attention, a direction of flight vector through condensed contextual field with the reassessment of the target location as that factor dissipates or unwinds with the eye movement. If you are able to remember the location of the original fixation as you alight on the new object you will understand that everything in the field of vision has altered. The scene has been set out differently from the new location. If you remember the former and only if you remember the former, then the distance between the first and second fixations has undergone an expansion. If you assess the height of the central figure across the saccade it has increased. (Fig.6) Also the perceived distance between the new and former fixation points will have increased. (Fig.7) Both these factors are common to the Picasso and my record taking.
Finally, the rectangle of the stretcher holding the canvas in my rendition of the Three Dancers is entirely irrelevant with respect to the image presenting on its surface. The structure of the image is in no way contingent upon the material structure of the stretcher supporting the canvas upon which it's drawn. They are unrelated and this is significant. There isn't a ‘frame of reference’ here. (Fig. 2)

Just imagine the dances to come as we commune and re-engage in the magic of experiential encounter delighting in the relationship each of us forms with the real and what the terms of such entanglement reveals about the nature of reality. Just imagine what perceptual technologies founded on experiential ontology will bring forth.
How does the painting form?

Around each fixation an area of influence exerts a presence. (Fig. 8) The three areas of influence superimpose to an extent and where mismatches occur they have been left ‘open’ with no attempt made to ‘resolve’ or ‘hide’ any non-pictorial misalignments. (Fig. 9) Outside the areas of influence selected information relating to the rest of the scene is entered usually in the form of lines colour references to each fixation point. Red line relating to the drawing set on the mouth of the man, yellow on the eye of the woman and blue/violet on the vase on the table. (Fig. 10)
Fig. 9. Missalignments render visible the dynamics of visual awareness.

Fig. 10. Each rendition of the scene is condensed from the selected fixation point and can be appreciated as overlays referenced in different colours outside the areas of influence.
So the image involves referencing the scene three times, three renditions of condensed phenomenal field. Each of these renditions includes binocular stereo information primarily in the from of the vertical split through fixation point with information from the left eye appearing on the left hand side and vice-versa. (Fig.11)

Fig. 11 The setting out of left and right eye views occurs either side of vertical lines bisecting the selected fixation points

This is a complex drawing challenge so the alternation crescents that appear either side of fixation have only been referenced in a limited way. (Fig.12)
Fig. 12 A reference to the stereo alternations zones

If we look at the renditions in the fixation area we can see that they are also composite. We modulated the data sets available to us over time, we contemplate objective form. (Fig. 13)

Fig. 13. Two profiles identify that two data sets are being modulated

I think these processes are akin to the observations made by artists like Francis Bacon and even Picasso. Bacon fixated all over the heads he was painting and so recorded a proliferation of positions. Picture space is replaced by the dynamic of experiential process. I don't see a distorted face I see an attempt to overlay the 'reality' of conscious investigative observation with aspects pertaining to each fixation retained. (Fig. 14)
Fig. 14, Three Studies for self portrait, 1976, Francis Bacon, The process of looking, the experiential engagement creates an image and not a picture portrait.

If some of the terms used here lack definition within the text you will probably find full explanations in the exploratory presentations listed below.

John Jupe
john.jupe@pacentre.org
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Video Presentation Links

Vision Space technology:
Vision Space presentation 1: The structure of monocular vision
http://youtu.be/AO71a8LzZSg
Vision Space Presentation 2: The incorporation of binocular stereo information
http://youtu.be/xLY60lm86Mk
Vision-Space: Process of information exchange within phenomenal field
http://youtu.be/8hmgutPGJmQ

Technology evaluation:
Vision Space: Embodiment demo http://youtu.be/sWZr5q1BtQ4
Vision-Space: Butterfly demo http://youtu.be/Cc00Neu2i2Y

Philosophy:
Vision-Space: Overview http://youtu.be/UpMFFbEKEx0
Vision-Space and the experiential ontology http://youtu.be/WJVC48a__50
Vision-Space: The protagonists http://youtu.be/516mjrU3aC0
Vision-Space: Addressing a blank piece of paper
http://youtu.be/x9niE3EKsx0

Visual art:
Vision-Space: The paintings and their story http://youtu.be/_Tj-r1XtWto
Manifesting dark light and setting out a Vision-Space painting
http://youtu.be/RJj7OdCzifM
Vision-Space: Visual cues appearing within the radial structure of phenomenal field
http://youtu.be/kYqsdTgI-i4
Vision-Space: A still life painting together with mirror, mirrored
Vision-Space: Self-reference Pt 1, within spatial texture
http://youtu.be/xUGOD1g3dtI
Vision-Space: Self-reference Pt 2, contributions from memory
http://youtu.be/hDDoRGHa0wE
Vision-Space: Self-reference Pt 3, exploring the extents of phenomenal field
http://youtu.be/SarFf6FA8Eg
Vision-Space: Self Reference Pt 4, painting phenomenal field, accessing the umwelt?
http://youtu.be/g8rOhQhcI0A
Vision-Space: Stressing presentation within phenomenal field http://youtu.be/q_to0w3CX7c
Vision-Space: Land and seascape 2, St Ives, Cornwall http://youtu.be/AQuQlqjyt7k
Vision-Space: Charting condensation across phenomenal field http://youtu.be/QgnJ3R3pdoA
Vision-Space: Awareness is a dance mediated and augmented by 'mind' within a multidimensional space https://youtu.be/-DCx5kLS2MQ
Vision-Space: The painter, reality and the real https://youtu.be/gzzBYOs6mc8
Vision-Space: View to Fowey from Bodinnick https://youtu.be/aFlxwP00oek
Vision-Space: Absence within contextual vision https://youtu.be/V81Yq74R7hg
Vision-Space: Without experiential encounter are we lost in space? https://youtu.be/0I8Hfx6e-nM

Physical theory:
Vision-Space: Having the courage of your perceptions - A physical theory http://youtu.be/NWdK8ZzuHgU
Vision Space and dark matter http://youtu.be/MGZFpKDMOak
Vision-Space: The scientific approach to understanding the nature of reality is incomplete http://youtu.be/BLFK8rd_QkQ
Vision-Space: Real-setting, decoherence, visual processing, awareness http://youtu.be/TzbyydODC1E

Vision sciences:
Vision-Space: Retinal processing and the research proposition
http://youtu.be/1ZMUPt6Oz_s
Primary spatial awareness direct from the light array?
http://youtu.be/8wUT0HGNSww

Vision-Space: Face recognition http://youtu.be/e01yFVIDOBw
Vision Space: Mechanobiology of brain function http://youtu.be/WIHbUGeg5UY

Vision-Space: Health implications of non-perceptually structured content and screen technology http://youtu.be/6gizIUuLL9mg
Vision-Space: Typical and atypical perceptual structures Potential links to ASD and stroke related conditions http://youtu.be/Pss3UOoiuyQ

Vision-Space: Some deficiencies of pictorial space with respect to the structure of phenomenal field http://youtu.be/i2a5lVz6DBE
Vision-Space: Retinal Receptor Functions http://youtu.be/XzA7zirZK7s
Vision-Space: Retinal Receptor Functions 2 http://youtu.be/-vDAn2a1Se8
Vision-Space: Awareness is developed and governed by Dynamical Systems http://youtu.be/xCfo7S-y0UE
Vision-Space: Living without pictorial geometry https://youtu.be/8sej-ueB6WQ