Article

SCIENTIFIC MISPRISION

David Green

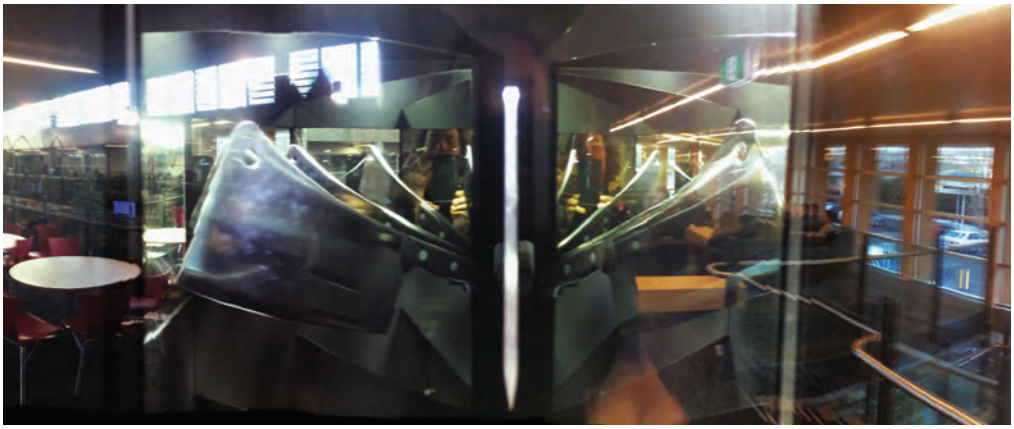

Figure 1. David Green, *Connecticut* (2014).

THE REALITY PRINCIPLE OR MÉCONNAISSANCE

When art engages with science, broadly speaking, there are two types of outcome: one intends to illustrate a specific idea or process generally upheld by the scientific community; the other is a response to, repositioning of, and/or reconfiguration of an accepted scientific proposition.

The first is called 'scientific visualisation' and has as its goal the illustration of complex scientific concepts, potentially through lateral or innovative technique. It attempts to bring the viewer to a heuristic understanding of anything from intricate theory to a complex database through translation into an accessible sensory abstract, be that visual, aural, or any other form that is effective. In this sense it is an expanded mapping or graphing, and in extended forms might involve the use of metaphor or even operate within a narrative or allegory. Great scientific visualisations are aesthetically compelling and very like some artworks in the sense that they serve a body of content and extend a particular discourse. In that they seek to reify a specific theory or database, they are by their very nature the expression of a 'closed' idea. In that sense, if you are a specialist, you either agree with the concept a visualisation illustrates or you don't. If you are less knowledgable, you might simply accept the illustration as fact simply because it looks plausible and is convincingly presented.

On the up side, scientific visualisation can offer the viewer a lightning flash of insight into a complex idea. On the down side, in mass media representations, particularly broadcast media, scientific theories and databases are often distorted to enhance story. Corporate management structures tend to reward thrilling and/or angst-provoking narratives in order to increase audience numbers. At the dark end of the game, exercises in scientific visualisation as popular entertainment deteriorate into a kind of factual and conceptual asset-stripping in order to offer a sensationalistic view that both misrepresents and shuts down thinking.

Having attempted both points of entry I much prefer the response model to scientific proposition, inviting viewer engagement through poetic misprision[1] or artistic conflation of established ideas. By taking this lateral or intuitive approach to the process of devising an artwork, I want to invite an 'open' response to the content with which it engages, through a sort of creative misreading of formal relationships. In this way, I would hope to tease out other questions for the viewer to consider. By posing a familiar idea, somewhat incorrectly, the viewer must process it differently. So if the 'science' in my artwork isn't somehow wrong, then the artwork itself can't be right.

Having cut my teeth on the perfidy of television advertising, the artwork I most enjoy triggers for the viewer a cascade of free thought, perhaps directly related, perhaps fragmentary or even tangential to the apparent subject of the piece at hand. It invites me to reconsider fixed ideas and relationships. It doesn't sell anything; it seeks to resolve nothing; it rewards simply by activating the mind. In this way I agree with Kant[2] that artworks should be 'disinterested' while offering the viewer an opportunity for 'play' or 'free harmony.'

From my point of view, an analogy for an ideal gallery experience is the resonance an empty bottle (the artwork) makes when you (the viewer) blow across its lips. I believe that if an artist has any agency, it is in the action of the artwork as reagent.

With Peter Stupples' and Ruth Napper's first joint University of Otago/Dunedin School of Art Exhibition, "Art and Neuroscience," at the Hunter Centre in July 2013, I found a prompt to play with ideas around mind, identity, and self in the video installation *mindthegap*. In this work I appropriated Carl Jung's 100-word 'association method' list first developed as a clinical diagnostic tool. For the subsequent "Art and Anatomy" exhibition (July 2014) I installed a sculptural work, *Connecticut*. This artwork, prompted by research into the history of anatomy and the complexities that accompany our simple urge to know, comprised the representation of an Ideal Form presented in a hermetically sealed box.

Our consciousness arises from a brain as extension of body that evolved through the adaptive gains from processing threat and opportunity in its immediate environment. From that point of view it follows that much neural and cognitive innovation, not to mention cerebral space, has been devoted to scrutinising and predicting the nuanced behaviour of our own species. Both artworks arose from my interest in the evolution of neural structures and the cognitive structures they enable.

We attend to fragmented reflections of the world we inhabit via complexly networked regions, including those in the thalamus and frontal lobe mediated by the amygdala, while other neural networks process in parallel the lesser fragments our memories retain.

Driven by functionality, our brain's systems for coding, recall, and interpretive processing must necessarily leave any truly objective 'reality' far behind. (Plato and Aristotle both commented on this gap, which I will return to later in this article.) Despite considerable limitations and vulnerabilities, our species somehow evolved to become successfully predictive and flexible enough to survive our earthly spin in ever-exploding numbers.

Similarly, rhizomatic external processes reward us as individuals and collectives to create, identify and then act gainfully upon 'others' (this conceptual boundary extending all the way to the shared environment), first by the early developmental process of abstracting 'self'[3] then 'non-self,' and using this second distinction to further hone 'self.' Like the illusion of colour-banding in a rainbow, through this string of iterative binaries we misperceive discontinuity in the world in which we find ourselves.

It stands to reason that adaptive developments in neural structure are always species-specific. From that point of view, processes for identifying specific affordances like food, and other key resources, are relevant for any heterotroph; but, for example, every sexually dimorphic species would, by necessity, develop complex neural processes dedicated to gender-specific signals for members of its own species; pack-hunting predators must evolve a higher level of species-specific signal processing; and so on. It follows that for any particular species, that which has no relevance is essentially invisible. It would also stand to reason that, if so empowered, any species would completely rehabilitate their found *terra nullius* into a world of structures and objects that are, if not useful, at least readable. One might consider them forgivably oblivious to the fact that the very ground may be – or may have been – already populated with innumerable intertwined others.

We are unable to process everything in the environment so the human mind assuages panic by tessellating fragments of information into a faux gestalt. We process and reproject this assemblage back onto the world using what could be described as a Rube Goldberg/Heath Robinson[4] amalgam of neural processing systems with their associated biomechanical sensors and appendages. Essentially, adaptive processes for survival have bred in us an imprudent certainty through the positive feedback loop of short-term functionality.

How do we as a subspecies manage to maintain such a self-confident swagger while mediating vast information gaps? As we learned in Plato's Cave, our individual and shared views of the world, based on limited sampling, are highly creative, illusory at best, and yet remain absolutely convincing to ourselves and to each other.

Darwin suggests that our highly developed brain has brought us to preeminence within the world of animals through high-level intraspecies collaboration.[5] But at the same time we are rewarded for our ability to enact, sometimes instantly, boundaries of 'self' that exclude the 'other' even within our own species.

Now, we who have prevailed one way, and another, are individually and tribally 'winning' our way to what appears to be the systematic destruction of our own platform for living, while eradicating pretty much every identifiable 'other' enfolded within it.

Through my artwork I am interested in provoking a reconsideration of specialist processes and cognitive gaps that enable perception, mask blindness, and underwrite certainty.

The installations *Connecticut* and *mindthegap* refer to questions about 'othering:' how (and perhaps why) the human brain perceives, processes, identifies, calculates persona, and enacts particular boundaries.

I am interested in exploring anomalies in our thinking that afford us a sense of 'self' in order to colonise (i.e., cannibalise) what we believe to be 'other,' enabling us to succeed so absolutely as the dominant terrestrial species while compulsively painting ourselves into an evolutionary corner.

Our internal experiences as a subspecies feel rich and varied; our actions logical and sensible. The same multifarious neural adaptations that have evolved to make us flexible and responsive as organisms have brought us the remarkable

spandrel of sentience. We (and the bees) are the only ones who can perform for each other rich narratives of the miracle of being here (and where to find the nectar).

And to be fair, diverse cultures abstract diverse and complex borders of 'self'. There is a remarkable plasticity in these boundaries throughout humanity. Certain ideas, like the Moanan[6] concept of the *vā*[7], offer the opportunity of different ways of relating to the world and the 'other.'

The *vā* identifies and acknowledges unseen connective 'tissue' in the interstices between us as individuals and everything else. Moanan cultures invest greatly in the care of these spaces. Here the world is not deemed modular, with component parts instantly separable. Great significance is given to the invisible fibre of relationship intricately woven in-between. No action can be taken (or lack of action for that matter) without careful negotiation (i.e., if you cut it, it bleeds; if you ignore it, it dies).

This is a worldview necessarily invisible to the hardline materialist.

In sharp contrast is the traditional Western narrative of the Gordian knot: In order to resolve this knot (a test of wisdom and intelligence for anyone aspiring to rule the Kingdom of Phrygia), Alexander the Great simply applies his sword to this puzzle in an act of violent severance as a sort of mythological one-liner: brute force prevails while the fabric of culture is fed to the pot. This exemplifies the sort of short-term solution that serves well, as long as there is new territory to move onto and exploit, once the current locus has been sectioned, stripped, and shipped.

I am interested in our long-term behaviour as a subspecies. My artwork seeks to investigate and interrogate our neurological and cognitive structures that have served us so well, and so badly. I see in colonisation, for example, a tragic dissonance of 'self' and 'othering' that exploits our brain's remarkable ability to 'not see' for the purposes of short-term individual and tribal profit.

In the last 60 years it has become undeniably clear to us that our entire planet is itself only an island; the extra-terrestrial options are looking bad, and we are fresh out of new worlds. What information can we salvage in order to successfully navigate this unanticipated predicament from the hard-won knowledge and critical histories of long-since 'othered' island cultures like those of Moana? What wisdom has survived the tsunami of colonisation?

In its many forms, colonisation contrives to eradicate or marginalise 'othered' cultures by intentionally severing their continuity narratives (precisely in the manner of neurotoxins) while simultaneously boxing up local environments for shipment and distribution to the 'Mother' country (and this is the same *dispositif*[8] that offers us the bitter object lesson of Medea). Colonisation is formulated as an acid bath that systematically unlinks complex bonds (interpersonal and environmental relationships, cultural knowledge) into constituent elements and 'curiosities' for reabsorption elsewhere. It operates with the economic efficiency of a steam train laden with 'Cleopatra's Needles' fueled with mummified cats, bound for Paris, London, and New York.

Even now, in the latter stages of the Anthropocene age[9], the 'slam dancing' on the deck of the *Titanic*'s construct of 'sustainability' is built on the extended fallacy that a species-specific survival strategy is even plausible. How can we buy into the idea that it is possible or even desirable to discretely preserve our subspecies without extending the boundary to include 'others' as inseparable from a shared environment? This is a perfect example of our dangerous susceptibility to flawed theoretical models. This kind of thinking brought us the proposition of the earth as exclusive platform for one race of human.

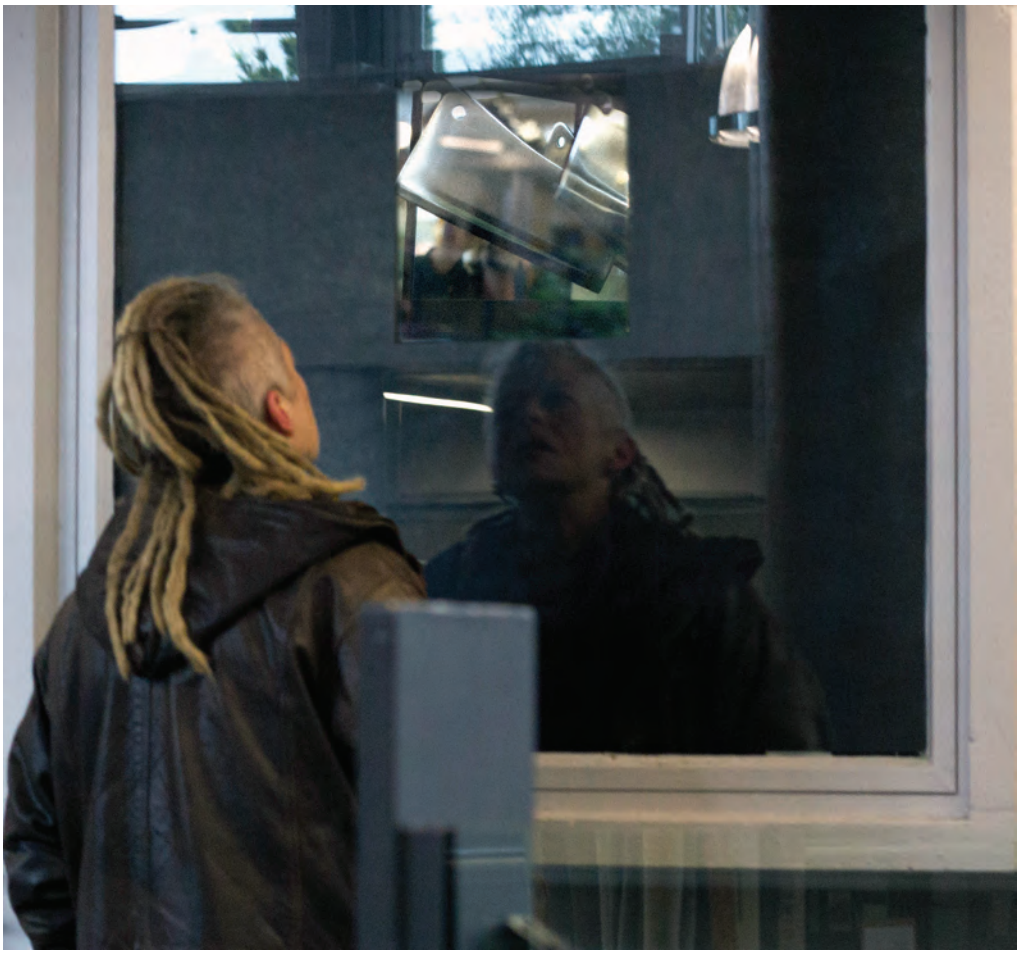

Figure 2. David Green, *Connecticut* (2014).

A square chromium-molybdenum-vanadium steel blade hangs above you, frozen in the motion of a downward arc. Beside two opposing front-silvered mirrors the instrument is seen repeated, fanning out in a neat circle – ready to section the universe into 12 wedges. It is a perfect array of cleavers in a perfect state of suspension. So perfect that it transcends its own materiality as an object to reveal itself as the universal. The interior of the box claims an impossible space. Peering in you catch multiple reflections of yourself facing the blade from multiple angles, each knife positioned to section you vertically in two. It is the Ideal Form of a cleaver floating securely behind a glazed concrete cube on the second floor of the Hunter Centre (a Medical School building at the University of Otago). If only subconsciously, you can't help but imagine the arc of motion complete, and a graphic section view of your own head as if photographed or hand-rendered for an anatomy book. The blade seems remote, unreachable, and yet it is only millimetres away.

Our subspecies has a long history of playing with knives. It is arguable that the first human tool was actually a butchering blade ready-made from razor-sharp shards of shattered rock. 'Cleave' is one of those magic words whose list of definitions also makes it its own antonym.[10] It can be used variously to mean split, divide, penetrate, or conversely stick or bind to (in the sense of making a larger whole as opposed to smaller parts). The proposition of a meat cleaver as Ideal Form immediately appealed to me because under its reign you will arguably find most simple and complex devices we are motivated to create as humans. In the context of anatomy, of course we have and continue to invent any number of devices to split, section, peel, and reveal. Rockets, airplanes, submarines, cars and trains cleave air, water, land, space. Clocks and the family of chronometers cleave time. Tribes, cultures and governments cleave human populations and the earth they stand upon. We either cleave to each other or come at each other with a cleaver, and will sometimes do both in no particular order.

For our species it seems there is nothing more tempting than brutally demystifying a magical mechanism that has captured our youthful imagination. It is a rare child who has not, in one way or other, taken a moving thing to bits in order to gain some sense of its inner magic. You could almost say we do it instinctually. One of the first concrete lessons we learn in how things work is through that kind of invasive exploration which, while edifying, tends to involve great sacrifice. By extension, these early forays, and the inevitable adult backlash that follows, reveal to a child that actually gaining deeper understandings through these means, even when possible, is potentially costly on a number of levels.

In order for any investigation of anatomy to be relevant, you have to recognise enough about yourself to identify something in the other that is near enough to merit closer study. At the same time, you must be aware enough of your own boundaries to feel reasonably assured that an aggressive investigation will not also be harmful to self. So it follows that this self must also have limited levels of attachment to its own likeness.

The history of anatomy includes the vivisection of those 'othered' who, through legal process or circumstances of war, had been 'cut' from societal ties. Around 400 BCE Herophilos was given permission to vivisect 600 criminals in Alexandria in order to study anatomy and organ function.[11] In the seventeenth and eighteenth centuries, the demand by medical students for cadavers was so great that bodies were exhumed from fresh graves, and society's disenfranchised were actually murdered for supply. In 1832, in order to slow down the black marketeers, the British parliament passed an act that allowed executed murderers to be gifted to anatomists. In the meantime, some were so keen to get a look in that they dissected their own freshly deceased family members in desperation.[12]

So, in this way, an absolute determination of otherness is two-fold. It exists first on the organismic level of direct physical effect (as in 'ouch!!'), and secondarily on the social continuum. In this way a strategy for aggressive investigation is pre-meditated and 'rightly' calculated. This 'self' must understand that if it walks next door and vivisects its neighbour there will be indirect but concrete consequences, but other ways and means are possible.

'Other' as accessible mirror of 'self' style investigation is certainly not something our species has evolved beyond: National Socialism made space for vicious and arbitrary experiments on living human victims. This behaviour was even more recently enacted by a Western capitalist democracy in a quiet corner of Macon County, Alabama,[13] where for 40 years African-American men infected with syphilis were left to mentally and physically deteriorate until they perished of the easily treatable disease. But the crime didn't stop there: The men had no idea they were carriers and continued to spread the disease in their communities, while at their regularly scheduled visits to the clinic they were led to believe medical professionals were administering them free healthcare provided by the US federal government. The study was only terminated because details were leaked to a newspaper in 1972. Clinical drug studies offer some similar scenarios: As recently as 2006 during the human trial of TGN1412[14] in North London, six healthy young men suffered organ failure, with subjects' heads swelling to twice their normal size. Simple safety protocols that were ignored would have significantly reduced the scale of this disaster. And many mammalian mirrors continue to provide ample clockworks for our inquiring minds to experiment with and disassemble as well.

We have the natural curiosity of the primate – the need to know that marks us as a successful species, forming the first step in our unprecedented ability as animals to manipulate the environment on a hyper scale, along with the seemingly irresistible urge to see the inner workings of our analogous, but disenfranchised, fellow beings.

As sentient beings it is impossible to imagine our lives without a sophisticated knowledge of the internal form and function of the human body, as well as the fundamental workings of the world around us.

SPLITTING HAIRS

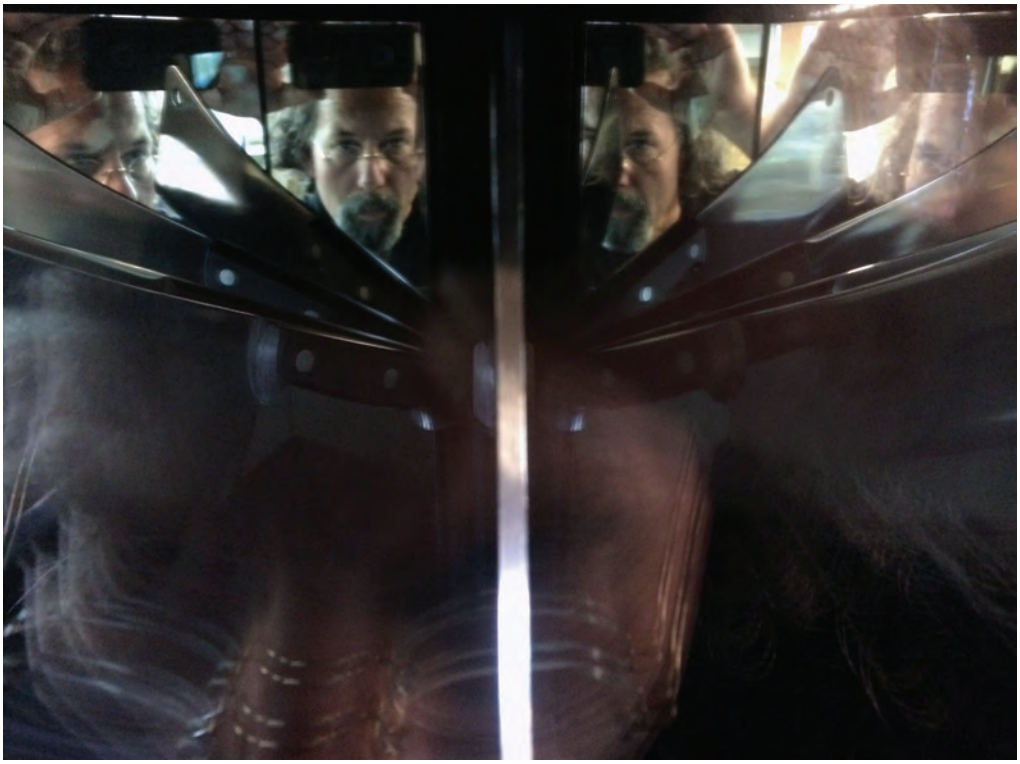

Figure 3. David Green with *Connecticut* (2014).

Ronald Fairbairn and then Melanie Klein have developed the idea of 'splitting' in object relations theory. It is also known as 'all or none,' or binary thinking. 'Splitting' is seen both as a necessary developmental stage and a regressive position. (I have my own binary tension around our species being a purely disruptive force on the complex fabric of the biosphere – against our equally agreeable tendency towards curiosity and understanding; our empathy and love; our sentience; and our ability to celebrate a world that would go otherwise uncelebrated.)

In my initial design of this installation, a hidden light source illuminated the cleaver, causing it to glow. I experimented with two different approaches to lighting the object invisibly (not easy given all the mirrored surfaces). Once I worked out a methodology, a problem emerged because the fully illuminated cleaver had absolutely no literariness.[15]

It was simply there before you. The viewer didn't have to engage in any process of inquiry in order to discover exactly what they were looking at. The object was immediately visible and conclusive. So I removed the fixtures, allowing the only light to enter through the viewing portal. This meant that looking required a little more time and a certain amount of head repositioning in order to add up.

In retrospect, perhaps I should have taken that obscuring of the object even further. I noticed that viewers tended to look very briefly and move away quickly. (Of course, this makes good sense, since as soon as you orient yourself you discover you are standing under a cleaver.) My attempt to attract with the *blickfang* (or 'eye trap') of the visual multiplicity caused by four reflective planes does not overcome the initial discomfort of the discovered viewing position, nor does it hold the viewer for long enough to engage in any sort of lengthy object contemplation. (On the other hand, my colleague Clive Humphreys describes his encounter with Richard Serra's *Trip Hammer*[16] at the Tate in this way: The proposition was reconsidered in retrospect as a sort of anxious memory rather than contemplated during the moment of viewing in the gallery.)

The artworks *Connecticut* and *mindthegap* contrast the classic views of Plato (as 'being') and Aristotle (as coming into being or 'becoming'). The *Connecticut* cleaver fits comfortably within the World of Ideal Forms. The faces of *mindthegap* embody a formless becoming in the mind of the viewer.

LIKE A SPIDER OR SPIT

Figure 4. David Green, *mindthegap* (2013.)

'Then the soul is more like the invisible than the body is, and the body more like the visible.'
'Necessarily, Socrates.'
'Now we have also been saying for a long time, have we not, that, when the soul makes use of the body for any inquiry, either through seeing or hearing or any of the other senses – for inquiry through the body means inquiry through the senses, – then it is dragged by the body to things which never remain the same, and it wanders about and is confused and dizzy like a drunken man because it lays hold upon such things?'

'Certainly.' Plato, *Phaedo* 17

One hundred years before Plato and Aristotle, a pre-Christian, postmodern Heraclitus held the view that anything we can sense as humans is rocking and roiling, never locked in any particular form, and is uniquely perceived by any particular individual at any particular moment. According to Aristotle, Plato agreed that this was true of the 'sensible' world: that as humans we can only perceive the dancing shadows of Ideal Forms.[18] Plato asserted that only being is really being because becoming never arrives. It is or it isn't. There is no road to being; there are the Ideal Forms and sublunary objects that can only try their best to emulate them, and then there is Heraclitean flux.[19] Aristotle contests these assertions: They don't explain motion or change. How is it that things come into being if not from a more complex set of causations and not simply mimicry of Forms?[20]

Two and a half thousand years later, in 1929 from the pen of the Surrealists' enemy within, the Heraclitean doctrine of flux returns with George Battaille. In his *Critical Dictionary*, Georges Bataille defines the informe, or formless as

> "… not only an adjective having a given meaning, but a term that serves to bring things down in the world, generally requiring that each thing have its form. What it designates has no rights in any sense and gets itself squashed everywhere, like a spider or an earthworm. In fact, for academic men to be happy, the universe would have to take shape. All of philosophy has no other goal: it is a matter of giving a frock coat to what is, a mathematical frock coat. On the other hand, affirming that the universe resembles nothing and is only formless amounts to saying that the universe is something like a spider or spit"…[21]

Twenty years later, another world war under the belt, these formless thoughts coalesced again, inspiring the Fluxus movement.

STUDY FOR HEAD OF LUCIEN FREUD

Figure 5. David Green, *mindthegap* (2013)

This three-in-one channel digital video installation illustrates the unique rhythm and variation in reaction and response performed by eight individuals; the subtle processing variances through which we as observers intuit personality. The idea for this artwork emerged while I was researching ideas and theories about how the brain synchronises the multiplicity of processes occurring simultaneously in different parts of the brain in such a way as to allow us to perceive, as an example, bodies in motion as discrete and continuous. The 'binding problem' is studied in the fields of neuroscience, cognitive science, and philosophy of mind. Professor Brian Hyland (Department of Physiology, School of Medical Sciences, University of Otago) brought it to my attention while we were discussing sentience and sense of self during our lunch consultations in 2013.

In *mindthegap* a number of friends, colleagues and students at the Dunedin School of Art in New Zealand reacted to a translation of Carl Jung's 100-word 'association method' formulary. Jung developed this method of prompt and response for patient analysis, carefully charting reaction time and noting particular word choices to reveal psychopathological conditions, particularly in repressed patients.[22] In my piece, the subjects are constrained to respond to a single word prompt while looking in one camera and then asked to turn and respond with the delivery of a single word of their own choosing in another, while passing their gaze through a camera in between.

My idea of using Jung's list was not to expose hidden psychological conditions, but rather as a performative device to engage the participants in a simple stimulus and response exercise to see how well the viewer could track and individuate distinct personalities. I further complicated this process by employing multiple camera views composited as triple exposures on digital video with synchronic offset. The result is what could have been an inchoate set of audio and video signals, but as actually experienced remains remarkably discernible to the viewer. As such, we ingest this triple formless overlay of piecemeal expression, gesture, sound, and behaviour, then simultaneously project back onto the screen an emergent persona of our own creation. According to Deleuze and Guattari:

> The organization of the face is a strong one. We could say that the face holds within its rectangle or circle a whole set of traits, faciality traits, which it subsumes and places at the service of significance and subjectification. What is a tic? It is precisely the continually refought battle between a faciality trait that tries to escape the sovereign organization of the face and the face itself, which clamps back down on the trait, takes hold of it again, blocks its line of flight and reimposes its organization upon it…[23]

In a Deleuze and Guattari inspiring moment, Heraclitus posited that as everything is in a constant state of flux it is therefore itself and its opposite simultaneously; a unity of opposites.[24]

In processing the same list of words, each subject responds uniquely to each prompt and their response is often accompanied by a certain amount of leakage or *fuite*. This *fuite* takes place in many forms; it can be in a gesture, a sound, a laugh, a facial expression, a hesitation, and along with this a discernable pattern of movement and delivery develops. The digital video records every subtlety, but then replays it from parallax views overlaid three times on a single image. There is a remarkable volume of information appearing simultaneously formless yet loaded with detail. In opposition with Jung's crisp diagnostic intentions, a sense of persona emerges from this *informe* array, coalescing in the mind of the viewer. The chaotic sound and vision is somehow miraculously netted and processed in the viewer's mind and, despite what appears at first to be a high noise to signal ratio, a distinctive personality emerges.

Three cameras are placed to capture the point of impact, field of trajectory, and point of spillage. The participants are aware of the circumstances and the responses are consciously performed. What we perceive as the viewer are not subliminal readings but projected characters as consciously performed by the participants before unhidden cameras.

For these performances, I was curious to find a simple praxis to document the line of flight (in this case, *fuite*) between stimulus and response; a sort of X-ray machine to capture in mid-air the ineffable moment of mental processing. From the other side, within the abstract motion of shifting pixels tiny artifacts of persona are reconfigured into cohesion within the mind of the viewer. The viewer's sensing of the participant lies somewhere in the realm of qualia, or the "introspectively accessible, phenomenal aspects of our mental lives."[25] This is the electron shell zipping around the hidden nucleus. It is a buzzing noisy thing that coalesces only in the mind of the beholder as each cumulatively distinctive character builds through repetition, rehearsal, revision, response. Here nothing is fixed, all is experiential and *informe*. It is a fly that never lands, seen and yet unseen; a motion blur. Les Joynes again:

> The spectator's eye must negotiate unassembled pieces to create a semblance of a whole. The formless reveals a slippage or gap in construction. Its existence reveals a universe onto which we attempt to collage meaning. It may be interpreted as a tear in the fabric of language that reveals language as an imperfect construct (thereby calling attention to itself as a construct). [26]

If we can create experiential wholes from evidential fragments and so make for ourselves patterns and distinctions – let's say to choose to engage or eschew – these are not only assessment but also navigation tools. We use these tools to consider and predict future outcomes, yet to do so our neural and cognitive processes must collate diverse packets of information and by necessity must jump gaps on every scale.

The fragmented participants in *mindthegap* reconstitute themselves as distinct personas in the mind of the viewer. (Think: Seth Brundle's teleportation pod in David Cronenberg's 1986 film *The Fly*.) These intuitive constructions are revealed in the behaviour between the prompt and the response. They reveal themselves through the performance of listening, processing, answering. The third camera that receives the response word is where the subject's gaze is least found. Once the processing is over, the word is deposited there and the gaze returns to the first camera where the consciousness awaits the next prompt. Sometimes the responses are machine-like and regular like a typewriter carriage. These sounds and images capture the lines of flight as the 'self' of the 'other' flows out through a task of processing.

We have been documenting our own struggle with the wonderful predicament of sentience for millennia. Our ideas about this state are rich and varied; our ability to process the world is limited. Despite this, we remain highly confident. In the words of Karl Popper: "The old scientific ideal of episteme – of absolutely certain, demonstrable knowledge – has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative forever. It may indeed be corroborated, but every corroboration is relative to other statements, which, again, are tentative."[27]

Perhaps in our over-eagerness as a subspecies to act on every 'other,' our only real enemy is certainty.

David Green is a lecturer in electronic arts. An acclaimed director, director of photography and visual effects supervisor at RGA graphic film studios in Manhattan, he was represented by Lee Tamahori's Flying Fish Productions in New Zealand where he became known for directing a number of iconic and internationally award-winning television commercials before coming to work at the Dunedin School of Art.

1 Harold Bloom, *The Anxiety of Influence: A Theory of Poetry* (New York: Oxford University Press, 1997), 14-16.

2 Hannah Ginsborg, "Kant's Aesthetics and Teleology," *The Stanford Encyclopedia of Philosophy*, ed. Edward N Zalta, summer 2014 ed., http://plato.stanford.edu/archives/sum2014/entries/kant-aesthetics.

3 Jacques Lacan, "The Mirror Stage as Formative of the Function of the I as Revealed in Psychoanalytic Experience," in *Écrits: A Selection*, trans. Alan Sheridan (New York: Norton, 1977), 1-7.

4 Popular early-twentieth-century cartoonists in the US and UK respectively who specialised in devising absurd machines that operated through humorously illustrated chain reactions.

5 "It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over other men of the same tribe, yet that an increase in the number of well- endowed men and an advancement in the standard of morality will certainly give an immense advantage to one tribe over another. A tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection." Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*, 2nd ed. (London: John Murray, 1974), 178-9.

6 A pre-European term for the Pacific Ocean. See National Museum of Australia, Audio on Demand Transcript, *Arts of Tattoos, Lashing, House and Boat Buildings: Mahina's Moanan Theory of Ta And Va* (Time and Space), Siosiua FP Tofua'ipangai (aka. Lafitani), National Museum of Australia, 16 June 2009, http://www.nma.gov.au/audio/transcripts/vaka/NMA_Tattoos_20090616.html (accessed Jan 2014).

7 Albert Wendt, "Tatauing the Post-Colonial Body," *New Zealand Electronic Poetry Centre*, http://www.nzepc.auckland.ac.nz/authors/wendt/tatauing.asp. Originally pub. Span, 42-43 (April-October 1996), 15-29.

8 "What I'm trying to pick out with this term is, firstly, a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions – in short, the said as much as the unsaid. Such are the elements of the apparatus. The

apparatus itself is the system of relations that can be established between these elements." Michel Foucault, "The Confession of the Flesh" (1977), in *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, ed. Colin Gordon (New York: Pantheon, 1980), 194-228.

9 Paul J Crutzen, and Christian Schwägerl, "Living in the Anthropocene: Toward a New Global Ethos," *Yale Environment 360*, 24 January 2011, http://e360.yale.edu/feature/living_in_the_anthropocene_toward_a_new_global_ethos_/2363.

10 cleave1

[kleev] /kliv/ IPA Syllables verb (used without object), cleaved or (Archaic) clave; cleaved; cleaving.

1. to adhere closely; stick; cling (usually followed by to).

2. to remain faithful (usually followed by to): to cleave to one's principles in spite of persecution.Origin: before 900; Middle English cleven, Old English cleofian, cognate with Old High German klebēn (German kleben) Related forms: cleavingly, adverb

cleave2

[kleev] /kliv/ IPA Syllables verb (used with object), cleft or cleaved or clove, cleft or cleaved or cloven, cleaving.

1. to split or divide by or as if by a cutting blow, especially along a natural line of division, as the grain of wood.

2. to make by or as if by cutting: to cleave a path through the wilderness.

3. to penetrate or pass through (air, water, etc.): The bow of the boat cleaved the water cleanly.

4. to cut off; sever: to cleave a branch from a tree. Verb (used without object), cleft or cleaved or clove, cleft or cleaved or cloven, cleaving.

5. to part or split, especially along a natural line of division.

6. to penetrate or advance by or as if by cutting (usually followed by through). Origin: before 950; Middle English cleven, Old English clēofan, cognate with Old High German klioban (German klieben), Old Norse kljūfa; akin to Greek glýphein to carve, Latin glūbere to peel.10

11 Charles Singer, *A Short History of Anatomy from the Greeks to Harvey: The Evolution of Anatomy* (New York: Dover Publications, 1957), 47.

12 Mary Roach, *Stiff: The Curious Lives of Human Cadavers* (London: Viking, 2003), 41.

13 Centers for Disease Control and Prevention, "U.S. Public Health Service Syphilis Study at Tuskegee," http://www.cdc.gov/tuskegee/timeline.htm (accessed 25 Aug 2014).

14 Robin McKie and Jo Revill, "Trial and Terror," The Observer, Sunday 19 March 2006, http://www.theguardian.com/society/2006/mar/19/health.medicineandhealth (accessed 8 Aug 2014).

15 Viktor Shklovsky, "Art as Technique," http://www.vahidnab.com/defam.htm (accessed 8 Aug 2014).

16 Tate, Richard Sera, *Trip Hammer,* 1988, (image and artwork description) Two sheets of steel are delicately balanced. One stands upright, 2.6 m high and 1.3 m deep, and balances on an edge 5 cm wide. The other rests horizontally on this thin edge, with its only other means of support provided by its minimum contact with the wall. This large, heavy work dominates the space in which in stands, both physically and psychologically through the anxiety it provokes in the viewer.

17 Plato, *Phaedo* in, *Plato in Twelve Volumes*, trans. Harold North Fowler, vol. 1 (Cambridge, Mass.: Harvard University Press; London: Heinemann, 1966).

18 "In his youth Plato first became acquainted with Cratylus and the Heraclitean doctrines – that the whole sensible world is always in a state of flux, and that there is no scientific knowledge of it – and in after years he still held these opinions." Aristotle, *Metaphysics*, Aristotle in 23 Volumes, vols.17 and 18, trans. Hugh Tredennick (Cambridge, Mass.: Harvard University Press; London: Heinemann, 1933, 1989).

19 "The distinction between being and becoming is common in Plato's middle dialogues. By general agreement, the definitive statement of the distinction occurs near the beginning of the *Timaeus* (27d-28a). There a sharp line is drawn between "that which always is and has no becoming" and "that which is always becoming and never is". "Robert Bolton, "Plato's Distinction between Being and Becoming," *Review of Metaphysics*, 29 (1975), 66-95, at 67.

20 "Indeed, one of the most frequent charges that Aristotle makes against Plato's theory of Forms is that it cannot explain motion or change: "In the Phaedo it is stated in this way - that the Forms are causes both of being and of becoming. Yet though the Forms exist, still things do not come into being, unless there is something to move them; and many other things come into being (e.g. a house or a ring), of which they say there are no Forms. Clearly therefore even the things of which they say there are Ideas can both be and come into being owing to such causes as produce the things just mentioned, and not owing to the Forms". (Aristotle, *Metaphysics* xiii.5, 1080a2-8). Jiyuan Yu, *The Structure of Being in Aristotle's Metaphysics, The New Synthese Historical Library: Texts and Studies in the History of Philosophy,* vol. 52 (Dordrecht: Kluwer Academic Publishers, 2003), 20.

21 Les Joynes, "Positing the Formless and Entropy in Contemporary Visual Art Practice Formless," http://www.artinforme.com/research.html#_ftn6.

22 Carl G Jung, "The Association Method," *American Journal of Psychology*, 31 (1910), 219-69, http://psychclassics.yorku.ca/Jung/Association/lecture1.htm.

23 Giles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (London and New York: Continuum, 2004), 208.

24 S M Cohen, "Heraclitus," http://faculty.washington.edu/smcohen/320/heracli.htm (accessed 26 Aug 2014).

25 Michael Tye, "Qualia," *The Stanford Encyclopedia of Philosophy*, ed. Edward N Zalta, fall 2013 ed., http://plato.stanford.edu/archives/fall2013/entries/qualia.

26 Joynes, "Positing the Formless."

27 Karl Popper, *The Logic of Scientific Discovery* (London: Routledge, 2002), 280.