The Freedom of the Sketch and the Tyranny of the Digital Image.

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ABSTRACT The contemporary architectural studio places more emphasis on digital production than traditional process. The reason this is problematic is the easy access to, and the often naïve utilisation of, prefabricated elements available within advanced CAD systems limiting a student's potential. This paper presents the traditional mode of [architectural] graphic production via the medium of the sketchbook, viewed through Deleuze's position on the virtual and actual. The discussion is then opened up by referencing Baudrillard's commentary on contemporary media, initiating an interrogation of the digital image as a conduit of architectural ideas. The paper argues that the architectural sketchbook opens up infinite virtual possibilities that are lost, ironically, when dictatorial digital technologies are the sole agency in designing built artifacts. The paper seeks answers to the question of how to embrace existing and emerging technology while maintaining the critical, inquisitive, and inspired [designer's] mind.

Much of the existing literature surrounding the status of the digital studio, process and production, is focused on its role in the design process and how it is received by the jury during assessment of student work. Complementary to many of the existing studies, this paper aims to evaluate the content and function of architectural graphics within presentation of student work in the academic studio as the tangible artefact and outward expression of student design activity and problem solving process. The aim of the review of literature is to contextualize digitally produced visual architectural artefacts within broader phenomena.

It is important to consider design protocol from both a paper-based and digital position. Although many well-known CAD applications aim to mimic paper-based design functions, the

physiological processes are vastly different and therefore may affect cognitive experiences as well. The following empirical studies focus on protocol and cognitive activity during the design process and the approach to problem solving that is unique to the designerly way of thinking. Cross[1] reviews a selection of empirical protocol studies from the point of view of both paper-based and multi- modal approaches to design activity. Cross' survey found that during traditional (paper-based) studio based design activity, where participants were presented a design problem brief and example of typological precedent, advanced student designers appeared to be 'fixated' on the example design provided with the brief producing solutions which contain many identical elements from the precedent sample. Thus, suggesting that such 'fixation' hinders conceptual design development in preventing the designer from considering all of the relevant knowledge and experience that should be brought to bear on the design problem. These designers may be too ready to re-use features of known precedent rather than exploring the problem and generating new design features and solutions.[2] This view is shared by Al-Qawasmi[3] arguing that the phenomenon goes further and that identity is lost as students begin to design for the global 'techno-identity' by not engaging in brief and context specific queries.

A second form of 'fixation' discussed by Cross amongst the designers is an attachment to early concept ideas fostering a resistance to progressive iteration of problem-definition and solution. Cross discusses generative reasoning and creative leap arguing that good designers are able to modify their concepts fluently and easily as difficulties are met during the design process and are open to exploration of alternative concepts unlike those with a propensity towards 'fixation' and over-reliance on precedent. Suwa and Tversky,[4] and Cross,[5] argue that paper- based design activities facilitate problem-solving and understanding during the design process including 'generative processes' introduced by Cross. In particular, paper-based sketching facilitates inference, problem solving and understanding by encouraging exploration of visually plausible inference solutions.[6] Suwa and Tversky point out that traditional paper-based modes are superior to CAD techniques in so far as they encourage reflexion by suggesting that while sketching, designers become aware of unanticipated relationships that foster the revision of ideas. Further, Suwa and Tversky bring an awareness to the reader that these ideas are favourable to the current trends of thinking in the cognitive sciences.[7]

The academic studio is embedded in tradition while simultaneously embracing innovation. Therefore, its nature is one of conflict in theory, discourse, and practice. Gore[8] discusses a way of studio teaching that emphasizes a direct experience with tangible materials arguing that it is the space in which innovation occurs. This practice reflects Cross'[9] argument for generative reasoning as students build and rebuild their projects for critical review before an outcome is achieved. Allen[10] recognizes that speed is fundamental to the rhetoric of the computer and that it is processing speed and not disk capacity that is the limiting factor of CAD applications. Moreover, these physical technological challenges or faults are reminiscent of the modernist ideals of efficiency and productivity. Thereby contradictory to the postmodern promise of a

[1] N. Cross, 'Design cognition: Results from protocol and other empirical studies of design activity', in *Design knowing and learning: Cognition in design education,* (Oxford, UK: Elsevier, 2001), pp. 79-103.

[2] Cross, pp. 79-103.

[3] J. Al-Qawasmi, 'Digital Media in Architectural Design Education: Reflections on the E-studio Pedagogy.' *Art, Design, and Communication in Higher Education*, v. 4 no. 3 (2005) 205-222.

[4] M. Suwa & B. Tversky, 'What do architects and students perceive in their design sketches? A protocol analysis', *Design Studies,* v. 18 no. 4 (1997) 385-403.

[5] Cross, pp. 79-103.

[6] Suwa and Tversky, 18, p. 385.

[7] Suwa and Tversky, 18, p. 386.

[8] N. Gore, 'Craft and Innovation: Serious Play and the Direct Experience of the Real.' *Journal of Architectural Education*. v. 58. no. 1 (2006) 39-44.

[9] Cross, pp. 9-103.

[10] S. Allen, 'Terminal Velocities: The Computer in the Design Studio' in the *Virtual Dimension*, ed. by John Beckmann. (New York: Princeton Architectural Press, 1998) pp. 242-255.

future fully integrated with technology and a promise to recover what had been destroyed by modernity in the first place.[11] Allen's anxiety about speed is different but not entirely autonomous from the concerns raised by Cross and Carter drawing on the work of Paul Virilio who distinguishes between the inconsistency of metabolic speed, that of the living being, and artificial technological speed. The technological speed of the computer is invisible in its working and only visible as an effect. Thus, the computer in the design studio simultaneously provokes extravagant claims and high levels of anxiety.[12] Allen views the computer as a tool, with very specific capabilities and constraints, particularly in the studio.

The authors posit that traditional hand drawing and the informality of the sketchbook supports a cognitive process. The process is a function facilitated by fine motor skills in order to represent the designer's creative intention. Additionally, the authors observe that historically and many contemporary CAD applications lack the intuitive nature that bridges concept, idea, and representation- thus communication. In the orthodox sense, it can be argued that images created first in the digital realm, without the rigour of one's own creative process, are not true representations of an original creative idea, but rather a function of predetermined elements.

I

The time-honoured traditions of sketchbook practice are becoming an endangered species within the digital environment of the contemporary academic design studio and professional design office. Increasingly, the manipulation of a digital image acts as a tabula rasa from which a built artefact emerges, a process that is essentially an end in own right, leaving no tracings of the intellectual and creative journey towards such an end. The digital image can be perceived as a fait accompli, possessing qualities intrinsic to its nature which suggest that the built artefact appears as a scripted readymade, materialising as a finished and thoroughly complete object. It is as if the finished artefact has been decided

before those affected have knowledge of it, leaving few options but those of acceptance and acquiescence.

The designer's sketchbook and its contents, by contrast, are a far soupier, messy affair. At its heart, the sketchbook celebrates and encapsulates the unfinished, the unscripted, and the temporary. Its primary role is that of exploration, experimentation, and the storing up of emerging ideas, one leading to the development of another, and then onto towards yet another idea or iteration. At the core of this process lies a questioning spirit, a will to ask how or why things might be. Moreover, the sketchbook offers up the possibility of becoming a fluid transient space, since it functions as a gateway through which creative purposes can find their fix in the world. It presents the designer with an immanent field of potentiality whereby the virtual can find expression in the actual. Between its sheets it channels the virtual – the nearly as – into the world of ideas and artefacts, allowing for the discovery of infinite ascribable possibilities. Furthermore, the sketchbook supports the reclamation of the original notion of 'virtuality,' being of a kind quite other to the algorithmic 'virtuality' associated with digital design technologies.

The contemporary use of the word 'virtual' is almost exclusively bound to the domain of digital technologies, its context now synonymous with the digital environments of virtual reality, virtual gaming, virtual friendships, virtual sex, virtual tourism, virtual communities, and so on. By contrast, in referencing Henri Bergson's theory of duration, Gilles Deleuze portrays the virtual as latent potential yet to become actualized. For Deleuze, there are two states of reality, these being the 'virtual' and the 'actual.'

A common mistake concerning the definition of the 'virtual' and the 'actual' is to consider them in the same way as the 'possible' and the 'real.' For Deleuze the 'virtual' is not a possibility as such, for a possibility does not exist; rather it describes a potentiality that may exist as a result of any given set of circumstances acting upon it. By contrast, the

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[11] Allen, pp. 223-4.

[12] Allen, p. 245.

virtual is as real as the actual. Indeed, the 'virtual must be defined as strictly a part of the real object - as though the object had one part of itself in the virtual into which it plunged as though into an objective dimension.'[13] Essentially, the virtual is in every sense real, though yet to materialize.

In terms of design praxis, the activities associated with keeping a sketchbook (as one might do with a diary) make it an effective tool for formulating an alternate mode of design-orientated processes. More specifically, it is an incubator for prioritising the unscripted, the temporary, and the disposable. The sketchbook is a modus operandi for effecting an instantaneous, vigorous, and intuitive engagement with the materialization of ideas, concepts, and new ways of thinking. Such an engagement rekindles the original meaning and significance of the term 'virtual' as a central part of sketchbook-praxis, reasserting both the original meaning of the word and its theoretical importance to Deleuzian philosophy.

II

The possibilities and potentiality of a sketchbook are infinite. Whilst observing its clean pages, it becomes clear that the only apparent restrictions are contractual arrangements formed through personal consciousness and praxis. The latent potential of the sketchbook, coupled to the private nature of the content, draws the practitioner to commit not only their embryonic ideas to paper, but also map out their observations, thoughts and questions concerning the world they operate within.

The empty sketchbook presents its creative user with an untamed, unmapped field of possibilities, a vista into which the designer lays out new pathways and connections as circumstances allow. Overtime this topography is mapped and, as the last page is filled, the sketchbook's potential may take on a different trajectory as ideas re-emerge, sometimes many years later, becoming further iterations of dormant potentialities awoken once more.

When the integral potential of the sketchbook is comprehended, it provides the user with a limitless horizon of possibilities, a complex, and interwoven mesh of ideas that might emerge, or become, because of the forces at play within its pages. Such fluidity and potential is often evaporated during the production of more fixed or completed artefacts. In its most flexible condition, the sketchbook is analogous with the conceptual metaphor of Gilles Deleuze and Felix Guattari's 'rhizome'[14] in that it seeks to form connections and extensions in ways that differ from more orthodox patterns of design development. Rhizomic plants bifurcate for Deleuze and Guattari, growing their roots in a fundamentally different manner to that of other plants, yielding shoots and grasses in unexpected locations. Their root networks split and divide, producing alternative and unexpected pathways through the darkness of the earth where normative boundaries and restrictions become irrelevant. The unknown and unplanned nature of this activity mirrors divergent thought patterns commonly found in sketchbook praxis.

Following Deleuze and Guattari's allegorical analysis of the rhizome and the tree (where the rhizomic plant offers limitless and often surprising outcomes whilst the tree remains fixed and rooted), it is possible to form analogies within the production of architectural images. For Deleuze and Guattari, by way of comparison to the rhizome, the tree remains fixed in structure, its potential limited to the restrictions of trunk, branch, twig, and leaf, '…where everything branches out from a central trunk – the little twigs branch out from larger ones, and so on, back to the central core.'[15] In a likewise fashion, the same metaphor helps to illuminate the essential difference between the unscripted nature of the sketchbook and the scripted nature of a computer generated image. One is fluid, the other fixed. Whilst the sketch is unfinished, unscripted, and open to change and mutation;

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[13] G. Deleuze, *Difference and Repetition* (Edinburgh: Edinburgh University Press, 2003) p. 209

[14] G. Deleuze and F. Guattari. *A Thousand Plateaus* Translated by Brian Massumi, (London: Continuum, 1988) pp. 3-29

[15] Deleuze and Guattari, p. 208.

the digital image is complete, scripted, closed to change, and therefore resistant to further evolution. One representation is in a state of becoming, whilst the other is a fait accompli. For Deleuze and Guattari, such a condition is endemic throughout the entirety of Western thought and culture, stating

"…we're tired of trees. We should stop believing in trees, roots, and radicles. They've made us suffer too much. All of arborescent culture is founded on them, from biology to linguistics. Nothing is beautiful or loving or political aside from underground stems and aerial roots, adventitious growths and rhizomes."[16]

Although such a comparison is an intellectual leap (for Deleuze and Guattari have much more on their minds than the trauma of the disappearing sketchbook) the preceding analogy serves to illuminate an important point here; the freedoms offered up by a simple sketch have no place in a polished computer generated image. Moreover, a computer-generated image/solution is an end itself, its inherent graphical projection and representational presence being its primary goal. A sketch, buried away in a sketchbook, is an idea in becoming, a vehicle for imaginative manipulation. Moreover, it becomes apparent that a sketchbook nurtures rhizomic modes of design related thinking and action. In its raw form, a sketchbook is not immediately predisposed to becoming an arborescent root and branch configuration, but rather, its inherent potentiality suggests the formation of the opposite kind of engagement, an approach more akin to that of the rhizome. Whilst there might be a passing resemblance to a homogenised structure whereby each idea is a further expression of the same exploration, these are passing moments in a far more expansive and interrelated network of ideas, observations, thoughts, statements, appointments, 'to do' reminders and even shopping lists. Rather than merely being a controlled catalogue of past or old works, the design sketchbook is a dynamic network that allows for the free flowing of theoretical and imaginative applications enfolded within a process of incubation.

III

The creation of a designed artefact, irrespective of the discipline within which it is executed, is defined by the methodological constraints imposed upon it by the means of production. This is particularly true in the case of designed images and the realisation of complex artefacts, buildings, and machines. Commercial designers and architects, by the nature of their practice, have to conform to all manners of commercial influences and compromises that are normal to the production of designed items. The complexities and rigour of commercial production inevitably define and shape any initial design vision as the needs of users, clients, budgets, and the modes of production always manipulate the final iteration of the designer's primary conception. In effect, the nature of production leads to the formation of pre-determined habits of practice; ones that are worthy, reliable modes of production and as such can endure the rigours of the commercial environment.

The practice of keeping a sketchbook, however, engages the individual designer in a soupier, far messier affair than the systemic logistics of commercial production. They allow freethinking, generating sporadic and untimely propositions beyond the rigidity of the design 'for client' process. The contents of a sketchbook have a propensity for meandering, coupled with an inherent appetite for finding lines of flight steering away from fixed modes of thinking and doing. Engagement with the sketchbook's propensity for negotiating other, less rigid and confined avenues of thought, encourages its user in the development of unconventional modes of operation and eccentric forms of expression. The sketchbook offers up immediacy in its latent potentialities, it is 'too hand' and primed for action in ways that digital devices and software only offer limitations.

IV

Standardized architectural graphics associated with orthographic and perspective drawing

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[16] Deleuze and Guattari, p. 15.

have evolved since the Renaissance; however, their principles remain intact and applicable to image making processes synonymous with contemporary architectural practice and the academic studio. Despite an overwhelming discourse, that prioritizes the architectural image over that of the lived experience of a building, architectural designers and educators persist in their efforts to endorse a sense of fit between the traditional perspective drawing and the production of digital visualization. Whereas, as this paper proposes, there are absolutely core and fundamental problems with perceiving the digital image as being the same animal of representation to that of the hand drawn visual. Moreover, we would argue, the digital image is the absolute antithesis of the creative process as experienced in the keeping of a sketchbook.

The contemporary architecture studio – whether educational or practice based – is littered with the paraphernalia associated with the production of digital visualizations. Today, such spaces are rarely furnished with rows of drawing boards and drafting stools, rather they are superseded by the disembodied computer screen, giving the impression of being more call centre than design studio. Moreover, the contemporary perception of architectural design practice is that it is chiefly concerned with the production of images (virtual simulations of final built forms) rather than the production of representations that require interpretation by the client, and further translation by the designer, in order to be fully realized as buildings.[17]

Frascari[18] famously highlights these issues in his concerns regarding architectural image making and the legitimacy it lends to the construction of the built artefact. Historically, the drawn image of a proposed building has featured degrees of separation with its built derivative, leaving scope for imaginative interplay to occur between its visual representations, the designer, the client, and the final iteration of the drawn as a physical artefact. Moreover, Frascari argues that the utilisation of architectural image making as a vehicle of the architects authority and

legitimacy concerning precise similarity between the virtual architectural artefact and its actual built form has driven an impenetrable divide between architectural documents and their authors. In addition, he argues that

"A drafters contract based on this process of legitimisation obliges the architects to produce drawings that should not nurture any imagination. The outcome is that the reading of drawings has become an unimaginative routine; what was once a pleasant walk in the intangible vagueness of the realm of discernment and construing of factures is now a sterile exercise of the realm of contingency."[19]

This increasingly popular perception of the architectural designer as being primarily an image-maker in the production of buildings is not restricted exclusively to those outside of the immediate discursive field of the architectural profession. Designer as image-maker, rather than maker or builder, is gaining acceptance, or increasing levels of acquiescence, with architects and architectural academics alike. By endorsing the production of such images, architectural designers and educators often unwittingly contribute to the prioritization of the scripted digital visualization over the incomplete, unscripted, sketch-based representation. However, such is the ubiquitous nature of digital technology, that by seeking a compromise between traditional modes of representation and the digital visualization of architecture (or, conversely, by denying it altogether as a valued form of architectural representation) characterises much of the discourse concerned with the production of digital images within architectural design practice and education.

In effect, the representation of a building design through a measured perspective has always operated as a simulation of reality, as all optical media functions in a similar vein, producing comparable ocular tricks and effects in the way that they emulate the human experience of sight, depth and spatiality. However, the drawn perspective, by merit of its unfinished status exercises considerable

[17] N. Temple, *Disclosing Horizons: Architecture, perspective and redemptive space* (London: Routledge, 2007)

[18] M. Frascari, *Eleven Exercises in the Art of Architecture* (Oxon: Routledge, 2011)

[19] Frascari, p. 110.

restraint in its efforts to become a full virtual simulation of a built form.[20] The same cannot be afforded to the advanced optics of 3D software and graphics programs, where the hyper-real simulation of the actual leaves no room for interpretation or imagination. In many respects, such simulations become objects of desire in themselves, a folly of the perspective representation, giving rise to a fantasy of the actual building that, once the actual building is experienced, leads to a sense of disappointment in the actual. The real becomes rather a let-down when compared to the promises enshrined in its virtual simulation.

Frascari[21] highlights these concerns also, attacking the pseudo legitimacy afforded to photorealistic representation (whether mechanical or digital) as generating a '…trivially unimaginative and visually impaired view of the constructed world.' He goes on to align such representations of architecture as being '…equivalent to those dreadful children's colouring books…' that '…brings about a feeling of having imagined an image, when it is has been merely a following of guidelines. With use of drafting machines [electronic or non-electronic], imagination is useless, only neatness is required'[22]

Julia Wood, professor of communication studies, describes communication as the systemic process through which individuals interact with symbols to create meaning.[23] Having established that this paper is contextualized by and concerned with issues surrounding discourses in relation to architectural representation, it can be inferred that visual communication within the field of architecture is culturally generated through the practices and production of discipline specific artefacts such as architectural graphics. Stuart Hall anchors communication and meaning within the visual domain by stating that;

"Culture, it is argued, is not so much a set of things... as a process, a set of practices. Primarily, culture is concerned with the production of meanings, the 'giving and taking of meaning' between members of a society or group..."[24]

Arguably, this is the process by which representation functions through the exchange of buildable information between the producer-sender and the receiver charged with interpreting meaning from the artefact through a system of signification. Digital visualization, however, imparts non-decodable information from itself to receiver in a swift one-way transaction eliminating the opportunity for two-way exchange. The scripted nature of the digital image, and its inherent propensity for communicating the completed artefact, negates the opportunity for exploration. Indeed, the closer the digital visualization becomes to a 'photorealistic' image of the building as will be, the less likely the opportunity for change, evolution, and development can be realized. For such to happen, the digital image has to unpicked, demanding a reverse motion through the design process. The sketchbook, by comparison, encourages the exploration and evolution of a building towards its presentation as a proposal rather than finished artefact. Whilst sketchbooks and the act of sketching offers up freedom of creative endeavour, the digital image overwhelms such opportunities, evoking a tyranny of scripted control over creative exploration, it dictates the completion of the design journey. The journey effectively ends before the first steps are taken.

There are, of course, many stages of the design process that lie in between to the diametrically opposed architectural representations of sketch and digital visual and stages that capitalise on the various merits common to both representational methodologies. Designers may well print out digital images, trace over them by hand, then transfer their attentions to further sketchbook-based exploration. This mixed approach to the production of architectural representation goes someway into claiming back the fixed, scripted nature of the digital image; it redeems and reclaims the digital image, allowing it to become transient and open to change once more.

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[20] Temple, N.

[21] Frascari, M.

[22] Frascari, p. 111.

[23] Dr. Tim, Muehlhoff, 2010. (lecture on communication theory posted on youtube). (accessed 10 March 2011).

[24] G. Rose, *Visual Methodologies* (London: Sage Publications Ltd.: 2001)

Frascari[25] notably extols the use of the 'hybrid' image in the production of architectural drawings, making similar claims to the redemptive power of chimeric images forged from analogue and digital systems of representation. More significantly, he claims that the utilization of hybridised imagery (being that of collaged elements of sketching, found photographic material and digital produced photorealistic representations) reinvests the ontological into the architectural image. A quality he regards as having been lost '…because of the present instrumental understanding of drawings which is firmly rooted in the erroneous notion that photographic representations must be the only ones able to sanction plausibility.'[26]

However, this redemption of the digital image through mixed praxis is not in question here. Rather, we are concerned with the exclusive representation of the built artefact through photorealistic digital representation. The use of hand drawn techniques within systems of digital manipulation inherently breathes life into the fixed tabula rasa of the photorealist digital representation. Arguably, if the two approaches are mixed, the digital image is no longer digital in the true sense of the word, but rather more fully virtual and actual in the Deleuzian sense. The integration of sketching and the digital representation produces a digital chimera that becomes open to change and interpretation via the action of osmosis through a scanner; in effect at least, the digital image becomes healthily polluted by an ontological infection afforded by the sketch.

Baudrillard considers the loss of meaning through the proliferation of information and the simultaneous reduction of communication claiming that artefacts, specifically images, no longer possess signification and therefore refer only to other images in a conflicting relationship between production, artefact, and meaning or reality.[27]

Freedom of design communication and its increasing reliance on digital technologies are

the paradox of postmodern culture. Devices and applications associated with contemporary architectural digital imaging are designed and manufactured to integrate and increase communication but, in fact, lead to isolation, segregation, and detachment from the process of architectural production and realization. Baudrillard maintains that communication technologies are designed to 'fabricate non-communication.' The very disciplines designed to illuminate the role of media technologies in the act of improving or facilitating better communication have merely aided the proliferation of a more closed, one-way conversation concerning the evolution of the architectural artefact.[28]

From Baudrillard's point of view, the image is not solely bound to the hyper-real representation. That is to say, the hyper-real architectural image, or more specifically the digital visualization, does not and cannot represent reality or the real. Not only is the visualization autonomous, it also displays the characteristic inability to communicate and connect conceptual references. With indiscriminate use, the digitally mediated, scripted and complete visualization is often reduced to its iconic properties. This is not the case with the representation that is produced within a system of signification, that being synonymous with the architectural sketch, the unfinished and unscripted idea that is in a state of becoming. The visualization, however, is grounded in redundant self-referential formalism of the scripted image.[29] The digital visualization may be prolific because of the function of its mode of production; nonetheless, it is simultaneously hermetic and self-indulgent. It bombards the viewer with information yet communicates nothing. Technologies available in the digital studio are keen to serve as the catalyst of the phenomena, fast tracking the trend without pause to consider the long-term effects on the profession, designer, student, or indeed, the contemporary built environment.

The purpose of this paper has been to extol the sketchbook and the process of sketching as

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[25] Frascari, M.

[26] Frascari, p. 113.

[27] J. Baudrillard, *Simulacra and Simulation,* (Chicago: University of Michigan Press, 1994).

[28] Baudrillard, J.

[29] A. Perez-Gomez, and L. Pelletier, *Architectural Representation and the Perspective Hinge* (Cambridge, Massachusetts: MIT Press 1997) p. 378

continuing to be a central activity in the evolution and communication of built artefacts amid the significant effect and impact of digital technologies on the same. Moreover, the paper argues that the architectural sketchbook opens up infinite virtual possibilities that are lost, ironically, when virtual digital technologies are the sole agency in the designing of built artefacts.

In conclusion, it is maintained that the production of digital images themselves are not indicative of the design process and problem solving ability. The sketchbook remains vital to the creation and testing of design problem solutions.

Perhaps it is of greatest importance to consider the status of communication of architectural information. If it is not, visual communication is bound to continue along the procession of simulacra towards a pre-scripted hyper-reality, at which point, the discipline of architecture itself will need to be re-evaluated.