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Reproducing Reality and the Psychological Origin of the Technological Visualisation of Space: Comments on the Theme of Visioning Technologies

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Title: Reproducing Reality and the Psychological Origin of the Technological Visualisation of Space: Comments on the Theme of Visioning Technologies

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The concept of "visioning technologies", and the argument that such technologies, understood to encompass everything from perspective drawing to telescopes, photography, film, video and computer-generated forms and representations thereof, interact with architectural conceptualization and production, builds on the work of the past twenty years in which I have investigated and published on architecture as a phenomenon integral to our understanding of twentieth-century visual culture. Specifically, the volume's concerns originate in this particular approach to examining this architectural–visual culture interplay and the work done for a forthcoming book, *Visioning Technologies: The Architectures of Sight*.[1] It is an approach in which the tropes of the technologies through which we see and represent the world around us, and thus the architecture we conceive and build, is interrogated as a factor informing the nature of human vision at any given time. By extension, these "technological tropes" are seen as then manifesting themselves – through modifications to sight – in architectural discourse and production. It is an approach I have defined as neo-formalist.

Within the conceptual frameworks laid out by this neo-formalist approach, any consideration of how technologies of sight can be said to have influenced architecture over time runs parallel to the argument that certain patterns of technological motivation and evolution repeat themselves with the emergence of every new technology of sight. In this case the pattern identified is that visual technologies tend, in their early years of development, to advance on the basis of attempted mimicry. What they tend to mimic is what the eye perceives in all its optical fidelity. Hence, perspective sought spatial realism optically, photography reproduced the eye's imagery visually, and film recreated forms and spaces realistically, in not only visual but also temporal modalities.

Following this line of argumentation, technologies of sight pass through a developmental phase of "optical echoing" in which the potential of their

technological capacitates visually are subsumed by an obsession with the perfection of imitation. It is only once the visually reproductive challenge has been met and superseded that the artistic and technological potentials of the medium fully open up. At this point the images they produce are free to explore a new visual and optical terrain and the possibilities of them shaping other human vision and artistic form emerges.

This understanding of a form of Hegelian dialectic in the advancement of visual technological representation was key to my previous works and which I expressed, with reference to film, in the 2013 book *The Architecture of the Screen: Essays in Cinematographic Space* thus:

> Film then, is nothing more than the most recent stepping stone in the long evolutionary line of "technological sight". Today, we contemplate the completely digitised visual world appearing on the horizon from the vantage point it offers. In its privileged position of near distance, film is perhaps the most important precedent we have today for what this fully digital world will bring. Completely understanding this precedent and its influence on architecture, and on society at large, may never be possible, in particular when considered as a cross disciplinary phenomenon. Nevertheless, it is still worth reminding ourselves of the radical potential it was once seen to have.
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> Key to its early radicalism was its new visual language and its mechanical capacity for "realistic representation". However, it was also a medium with its own optical and cinematic vocabulary and an ability to represent the world in motion. It would be these characteristics that would allow it to reconfigure what it captured in its lens. It was this that made it able to present the world in totally new on-screen compositions. Central to film's impact on architecture then, was its optical syntax. This, we suggest, may be much more significant than anything it actually represented on screen – whether a room, a building, or a city.
>
> This dualistic ability to "recreate reality" on the one hand, and "create the incredible and the impossible" on the other, also characterised photography and perspective drawing before it. It most certainly characterises the visioning technologies developed in recent years. As with film, both perspective and photography moved beyond their mere technical ability to "reproduce reality" almost instantly. Both mastered perceptual representation and immediately entered the realm of "perceptual creation". In the case of perspective drawing it would manifest itself in the illusionism of the Baroque, whilst in photography it would be seen in the fragmentary and dynamic spatial compositions of the 1920's New Objectivity.
>
> This is perhaps key to understanding the path current developing technologies will follow. Just as painting moved beyond its literal representation of the optical world, when an improved reproductive technology emerged, so too in turn, did photography. It this instance, it was film that played the role of usurper. In each case, the fascination with realism was mastered, absorbed and eventually morphed. It emerged as an interest in the use of visual technologies

to "create" – to fabricate what could not be seen or experienced by the naked eye. In this regard, the history of art gives us a clear example of a Hegelian evolutionary process. Reproduction is followed by deliberate distortion.

It may not be a phenomenon restricted to the arts however. If we consider the realm of robotics; the initial goal set by science is the reproduction of the human form and the capacities of the human body. Similarly, artificial intelligence represents a scientific endeavour based, in the first instance, on the mimicry of the human mind and its processing functions. Virtual reality is another example. Here, the "reproductive" aims of the technology in question are directly referenced in its terminology. Reality is to be recreated, only not quite. Taking the metaphor to its extreme, we find in these realistic reproductions the human tendency to play God; for "man" to reproduce "man" in his own image. Where such things will lead once genetics achieves its own particular "reproductive" ends, remains to be seen. Here too however, some see the same characteristics in play.[2]

Emerging from an examination of the filmic medium, the evolutionary dialectic of optical mimicry ceding to the emergence of a new visual language expressed here was a key idea from the outset of this volume. Indeed, in setting out the terrain of this volume to individual contributors as one upon which we explore and document the multifarious ways in which technologies of sight have informed architectural thought, conception and representation through time, I was explicit. It was put to the author of each essay in the following terms:

The premise of the volume is that "visioning technologies" have tended, in their incipient moments, to repeat one aim – the reproduction of reality. Perspective froze space visually, photography captured it momentarily, film presented it in time, and virtual reality immerses us in it holistically. Even parametricism can be said to reproduce a "reality" on screen – it allows us to watch the real time process of form formation (what we previously called design).

However, more than just reproducing reality, these technologies influence architectural design, theory, and intellectual/spatial conceptualisations in a way that evolves over time. In the case of perspective drawing, the influence of the "new mechanical drawing technique" would manifest itself in the single point perspective images of Brunelleschi, feed into the focal point perspective spatial compositions of the Renaissance, and evoke a concomitant reconsideration of our place in the world. Eventually, it would be used to transform spatial perception specifically – through the illusionism of the Baroque and related notions of advanced humanism.

In the context of photography, the reproductive potential of the image was, for Reyner Banham, what made the International Style, *international*. However, by the end of the 1920s the angled imagery of New Objectivity Photography was deliberately *over*-emphasising the compositional dynamism of the early Modern Movement – an approach that can be argued led to the

promotion of an ever more spatially complex *modern* architecture, and a mechanised conceptualisation of the contemporary human psyche.

In both cases, we have technologies that in their first iterations "reproduced what the eye could see", and it was this ability that made them "revolutionary" in their day. However, both technologies quickly moved beyond their mere technical ability to "reproduce reality" – they mastered their own forms of perceptual representation and immediately entered the realm of "perceptual and architectural creation". In doing so, they often recalibrated standard intellectual understandings of both space and "the human". This volume was initiated in the belief that we may be able to trace out how this dynamic has repeated itself with the emergence of almost every new "technology of sight", and how it may be repeating itself today, in the age of digital imaging.

Documenting the historical influence of "technologies of sight" and applying its template of analysis to contemporary technologies – and the design tropes that stem out of them – this volume participates in the "construction" of a history for a current generation of architects. This generation of architects is "reproducing and visualising realities" through digital visualisations, virtual reality environments, and the real-time digital formation of parametricism. Responding to the fact that they are embracing the radical potential of the latest visualising techniques of the digital age without a fully explored historical background within which to see their work, this volume and the arguments I lay out here with regard to it, seek to identify the outlines of this history and trace out a thread of architectural theory that has yet to be fully explored and exposed, but which is of direct contemporary relevance.[3]

In building on this provocation as their starting point, the contributors to this volume have taken their own particular interpretative line of analysis. It has led them to consider a multifarious array of social, representative and productive consequences of their own particular technology of study, its acceptance and subsequent application in the architectural context. For some, the issue at play is precisely this tendency for technologies to mimic optical reality that is of importance whilst, for others, it is their introduction of new visual tropes to the architectural lexicon. By contrast, some authors have developed this provocation into a consideration of the direct formal influence the visual language of their particular technology of study has had on architectural form. Others look at these formal effects from a broader social perspective, considering the public perception of architecture resulting from the advanced influence of technologies. All, in one way or another, identify that the representation, conception, design or perception of architecture have been altered by different visual technologies over time.

Thus, this special issue publication dedicated to "*visioning technologies*" is a collection of texts from theorists and practitioners that examine how architecture has been, and is, reframed and restructured by the visual and theoretical frameworks introduced by different "technologies of sight". It follows four issues that respond to approximate historical periods but, more specifically,

four visioning technologies: perspective, photography, film and digital media. In each issue, authors deal with their own area and historical period of expertise with the intention of, together, contributing to the marking out and analysing of the historical and contemporary territories in which architecture has been transformed by technologically induced shifts in human perception from the fifteenth century until today.

In commissioning and placing the work of these experts in a historical timeline, albeit a loose one, I am attempting to instigate with this volume a formalizing and framing of our understanding of the varied ways in which "technologies of sight" have influenced architecture over time. It is a particularly important moment to do this as, in the current age of digital visualization and architectural production, the technologies being employed are often defined as "new". What this volume attempts to do is suggest that certain underlying trends, motivations and patterns of thought and production are simply being repeated in this "new" age. In doing this, the volume clearly risks, indeed embraces, the possibility of being defined as an "operative history".

Both the historical categorizations and the technological classifications used to guide the volume's structure can be seen as reductive – erasing the inevitable cross-overs and nuances that exist in the history of intellectual and practical evolution of any discipline or line of enquiry. Accepting this as almost inevitable the volume's structure is seen as a useful, if not necessary, framework that facilitates an understanding of the history of architecture's relationship with technologies of vision. A volume resulting from these heuristic categorizations has its limitations and may be more safely defined as a first step in our presentation of this history than a definitive history of architecture's visioning technologies. However, it has its utility which, one hopes, will be acknowledged.

The history hinted at here, then, has served as the calibrating device for the inclusion of authors from different disciplines in this volume. They are theorists and practitioners whose work has been brought together in four issues. The first issue deals with the drawing techniques of the fifteenth–eighteenth centuries with particular emphasis on perspective drawing as a graphic technique, premised on what I previously defined as "the visual reproduction of reality". What Caroline Fowler discusses in issue 1 of this volume is how developments in the science of optics changed how artists and architects theorized the representation of space and the simulated illusion of perspective, suggesting that their "technological" influence on the representation and design of architecture throughout the Renaissance shifted in the eighteenth century as optics transformed into a study of light. In this reading the purely technological aspect took three centuries to be superseded, not in this case by a new technology, but rather advances in science itself. No longer a technology of vision, she argues, "the art of geometry became reduced to non-theoretical rudimentary forms for beginning draftsmen".

Revealing one of the ways in which drawing techniques, and particularly perspective, informed architecture directly, and nuanced that informing

process as they themselves evolved in response to conceptual and technical advancements, the first issue sets the starting point of the volume's timeline and also lays out the volume's most obvious historical foundations. Having taken us to the eighteenth century, drawing techniques make way for what can be considered the next major development in visual representation technologies: the photographic image in the nineteenth century. Picking up the story of photography's influence on architectural production in a late phase of its engagement Mike Christenson considers various technical and social uses of photography around a very particular context, the work of Mies van der Rohe and the theoretical arguments ignited around it. Identifying that, by the end of the twentieth century, photography was no longer only influencing design through obliging architects to consider how their buildings would appear in the press – an issue taken up in the 1990s by Martin Pawley amongst others – he identifies how it informs how the public perceives and engages with architecture.

In the third issue we move on to a technology of vision born at the very end of the nineteenth century and whose influence on architecture, and artistic and popular culture more generally, would be fundamental throughout the twentieth century. Michael Tawa looks at the medium of film and, starting at a point beyond the syntax of its visual constructs, cuts, long takes and tracking shots etc., suggests that these characteristics of its technology are now employed in the the creation of something that goes beyond optical reality – they produce atmosphere, ambience and mood andgive architecture a template to follow in a new "non-technical" way. Using the term "consilient discrepancy", he argues that cinema now no longer simply produces a reality of the type we are used to associating with the spatial realm of architectural settings, but rather creates its own reality that architecture can, and perhaps should, seek to mimic.

In quite a different register Mitchell Schwarzer suggests that the digital imagery that characterizes today's engagement with architecture is vast and takes on many forms. Not only evident in the "literal" architectural uses of parametricism of the photo-realistic visual representation, or the "temporarily realistic" fly-through, he looks at how digitization has affected the application of the existing technology of photography in the twenty-first century and, from there, suggests it interacts with our conceptualization of architectural forms and urban spaces in potentially direct ways. In this reading, the ways in which contemporary technologies impact on the way we see, and interact with what we see, are not limited to buildings or building design, but have to be conceptualized in an even broader social context.

The final issue of this volume then, suggests that the technologies at our disposal for the visualization, design and analysis of architecture are evolving. These "newer" technologies are, through hyper-real vsiualizations and virtual realities, repeating the tendency described in the statements made above. However, they are seen as capable of much more – of mimicking more than the visual form of the spaces we seek to design and inhabit. As a result, the

implications they have go beyond the development of a new visual vocabulary and its social dissemination and appropriation.

In this conceptualization of our current situation, contemporary digital technologies are seen as being capable of altering the course of architectural thought and production in ways not conceivable to previous technologies of sight which were more limited to the "purely visual". Whether these hypotheses prove to be true, and whether the visual culture many of our technological developments over two millennia have thus far been based upon and formed is actually usurped, is far from clear at this historical juncture. However, the texts collated here demonstrate that our technologies of vision thus far have repeatedly overlaid a new optical lexicon on the established visual vocabulary of the world we inhabit. The fact that this informs the way we see spaces, the way we look at buildings, the way we represent cities or the way we design and create the places we inhabit, is not surprising. Our technologies of vision inevitably form both our architecture and our sight.

Notes

1 Cairns, Graham. 2017. *Visioning technologies: the architectures of sight*. Routledge, London.
2 Cairns, Graham. 2013. *The architecture of the screen: essays in cinematographic space*. Intellect Book, Bristol. pp 305–306.
3 Cairns, *The architecture of the screen*, 305–306.