Systems of Logic and Belief:
An investigation of some conceptual art strategies

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Declaration

The work in this exegesis is my own except where otherwise stated.

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Abstract

Conceptual art came to prominence in the 1960s under the rubric of dematerialising the object of art, foregrounding art as idea. It was in part reaction to the preoccupation with medium-specificity that had prevailed in previous decades. This exegesis describes the programme and outcomes of practice-led research into how some of the strategies that were deployed by conceptual artists may or may not translate into present day practices and technologies. The main focus is on strategies of systematic process; on word and sign; and on matters of authorship and appropriation.

The outcomes are represented by two main bodies of work. The first consists in series of advertising signs, with an emphasis on the nature of photography and its semiotic interpretations, the process of appropriation, and the place of the everyday in conceptual art. The second body of work is the outcome of an exploration of the systematic drawings and prints of Sol LeWitt, how computer technology may intervene, and how that intervention may affect the work’s reception. Issues arise around matters of authorship, control, art versus craft, and the normalising influence of the art market.
# Contents

Abstract vii

1 Introduction 1
  1.1 Conceptual art 2
  1.2 Research framework 4
  1.3 Structure and outline 7

2 Adventures 9
  2.1 Another Note on the Index 11
  2.2 The Photographic Process 12
  2.3 Oscillations: Logic and Belief 20
  2.4 Index Librorum 22
  2.5 Self-Titled 25

3 Word and Sign 31
  3.1 Signs of Robert MacPherson 35
  3.2 Signs of Walker Evans 40
  3.3 Signs of Common Place 43
  3.4 Signs of Keith Arnatt 49

4 Sol LeWitt and his Mechanics 59
  4.1 From Idea to Machine 61
  4.2 What is to be Done? 64
  4.3 Under Instruction 77
  4.4 Precious Objects 87
  4.5 Reflections 88

5 Conclusion 91
CONTENTS

A Code Samples 99
  A.1 Bands of Colour in Four Directions and All Combinations 99
  A.2 Broken Bands in Four Directions 105
    A.2.1 Horizontal Bands 105
    A.2.2 Diagonal Bands 109

B A Photographic Model 115
  B.1 Photographs 115
  B.2 A Model of Reality 117
  B.3 Subverting the Index 118
  B.4 Extending the Index 119

Notes 123

Bibliography 143

Other References 152
Chapter 1

Introduction

I recall a bumper sticker in the 1970s imploring us to SUBVERT THE DOMINANT PARADIGM. The broad sweep of this rallying call—any dominant paradigm will do—reflected the general social and political ferment of the 1960s and 1970s: Prague Spring, Paris uprising, Vietnam, Kent State massacre, Women’s Liberation... Received wisdom was viewed with suspicion by my generation, because we knew better. In the art world at that time, one such dominant paradigm was Abstract Expressionism, and the Modernist critics who propped it up were fighting a rear guard action against what Lucy Lippard later described as a “general rebellion against the Greenbergian aesthetic dictatorship that was becoming obsolete in New York by the mid 1960s.”

A disparate group of young artists working in the 1960s and 1970s (and well beyond in many cases) were eventually drawn together under the rubric of conceptual art where, in very broad terms, the idea behind the work was paramount while the materialising form was de-emphasised if not repudiated. Lucy Lippard famously described this as “dematerialising” the art object.

That Clement Greenberg personified the dominant paradigm that was in the cross-hairs of many of these young artists is borne out by some of their writings and art works. For instance, one of the many text paintings produced by John Baldessari in 1966–68 was titled Clement Greenberg, a canvas simply containing a Greenberg quote. During a recent radio interview, Joseph Kosuth was asked how he reacted to Greenberg dismissively referring to conceptual art as “novelty art” decades ago. Kosuth responded that his text Art After Philosophy was an attack on Greenberg and his point of view: “Greenberg really was an extremely reactionary force in the sense of trying to maintain the status quo.
CHAPTER 1. INTRODUCTION

In very traditional terms. The work that he supported hasn’t continued to be relevant, really, beyond a very limited [use] by academics. It was a battle that—Duchamp and I won that one.”\(^5\) In fact the backlash against these attempts to corral and constrain artists began well before the 1960s. In a letter to Betty Parsons in 1948, Clyfford Still wrote, “My contempt for the intelligence of the scribblers I have read is so complete that I cannot tolerate their imbecilites, particularly when they attempt to deal with my canvases. Men like ... Greenberg ... are to be categorically rejected.”\(^6\) Of course, such robust reactions only go to confirm the central role of Greenberg’s contribution to the development and theorising of modern art, at that time and since. The prolific writings, polemics and debates among Clement Greenberg, Michael Fried, Donald Judd, Robert Morris, Rosalind Krauss and others surely drove the most vigorous and productive period of art criticism in the 20th century, perhaps overshadowing the work of the artists themselves. According to T.J. Clark, the critics were “not just interpreters [but] collaborators” and Michael Fried claimed that criticism which “shares the basic premise of modernist painting finds itself compelled to play a role in its development closely akin to, and potentially only somewhat less important than, that of the new paintings themselves.”\(^7\) In Writing Back to Modern Art, Jonathan Harris offers a detailed retrospective of the positions and interactions of Greenberg, Fried and Clark.\(^8\)

1.1 Conceptual art

As John Roberts describes it in The Impossible Document, “what conceptual art set out to reclaim was the identity of the artist as a conceptual thinker, as someone whose judgement on art and culture was not to be governed by unexamined notions of ‘good taste’ and aesthetic sensitivity.”\(^9\) More recently Diarmuid Costello has argued that it is indeed “taste” rather than “aesthetics” at work in Greenberg’s criticisms.\(^10\) Greenberg’s agenda was aesthetic autonomy through medium specificity: to make explicit “that which was unique and irreducible ... in each particular art.” While such an ontological project may have merit, it was manifest as a narrowing: to seek the “irreducible” is necessarily a reductive activity. Greenberg invokes Immanuel Kant to shore up this agenda: “Kant used logic to establish the limits of logic, and while he withdrew much from its old jurisdiction, logic itself was left in all the more secure possession of what remained to it.”\(^11\) While Kant’s Critique of Pure Reason (1781) is undoubtedly one of the great landmark works in philosophical logic, I think most modern logicians would baulk at Greenberg’s summary claims. The amazing developments in logic through the 20th
1.1. CONCEPTUAL ART

century, due to Gottlob Frege, David Hilbert, Bertrand Russell, Kurt Gödel and many others, and which reverberate through all of modern mathematics, have been achieved by the deployment of new tools and ideas from other fields, rather than the reductive and insular approach Greenberg advocates.

Criticisms were often constituted of constraints and denials: the defence and celebration of one kind of art—American abstract expressionism in particular—was made at the expense of the derogation and demonisation of others. Greenberg and Fried negatively described artworks not to their taste as “kitsch,” “theatrical” or “vulgar.” In 1980 Clement Greenberg presented the William Dobell lecture. By this time his influence had waned, at least in America, but I think it still offers some examples of the “unexamined notions of good taste” that John Roberts is referring to. From the beginning the tone is negative, with his “embracing and perdurable” definition of Modernism, “that it consists in the continuing endeavour to stem the decline of aesthetic standards threatened by the relative democratisation of culture under industrialisation.” He then proposes an idiosyncratic definition of postmodernism in the guise of an unattributed quote from “a friend”: postmodern art is art that is “no longer self-critical.” Dismissing those “who talk ‘post-modern’” as disunited, he reveals his hubris with “anyhow, there’s nobody among them whose eye I trust” and “underneath it all lies the defective taste of the people concerned, their bad eye for visual art.”

Conceptual art is a slippery notion. At the historical end we could pick out a small number of young New York artists working between 1966 and 1972 on dematerialising art. At the hysterical end lies Julian Spalding’s vituperative attack on Damien Hirst, Tracey Emin, and anyone who conceivably could have been influenced by that lying bisexual, Marcel Duchamp, with the very droll contraction of Conceptual Art to Con Art. “Cold, mechanical, conceptual bullshit,” was the assessment of the 2002 Turner Prize show made by Kim Howells, then British minister for culture. Especially in Great Britain, contemporary art had become synonymous with conceptual art and, in the minds of many people, conceptual art is questionable art. If we take the extent of an art movement to end when it has either been accepted as an established practice or when it has been superseded, then perhaps 1966 to 1972 is a fair assessment of conceptual art. But that would be to ignore the important influences and effects set in motion in that period, and therein lies my interest and the subject of my research project. Some of the chief protagonists have kept working in the same vein for decades since, and are at least as relevant now. Jeff Wall’s remarkable essay Marks of Indifference lays outs some of the ways that photography was of fundamental importance to the successes of
CHAPTER 1. INTRODUCTION

conceptual art, but also how the favour was returned, with interest, by conceptual art’s emancipation of photography.\textsuperscript{17}

One of the more significant developments set in train by the conceptual art movement was the Pictures Generation, who can arguably be thought of as the intellectual progeny of the conceptualists, many having been taught by them.\textsuperscript{18} Douglas Eklund places this movement at 1974 to 1984, but the “Pictures Generation” epithet did not arise until after Douglas Crimp’s important show \textit{Pictures} in 1977, and his subsequent writings.\textsuperscript{19} These young artists were knowing descendants: they didn’t so much reject conceptual art as internalise it. For instance, here is a statement by Paul McMahon in 1974: “The work shown in \textit{Indian Summer} represents a new sensibility—beyond Conceptual Art. As students, four of the artists studied under Conceptual Artists and each has an a priori understanding of Conceptual Art against which he is reacting. Although the work is strongly idea-oriented, the visual image is much more important than in Conceptual Art. The pieces also have emotional and mysterious qualities which most Conceptual Art lacks. The works are more objects to be seen and experienced than vehicles for specific ideas.”\textsuperscript{20} The clear message is one of assimilation rather than repudiation of their teachers’ approaches.

1.2 Research framework

The headline theme of my project is \textit{Systems of Logic and Belief}, each of those words being interpreted broadly but of course influenced by my personal biases and experiences. Let me pick this apart a little. First, I prefer the relativity of ‘belief’ to the more absolute ‘truth.’ It is in our nature to buy into little deceits—Coleridge’s “suspension of disbelief”—and photography is the medium par excellence for this tantalising oscillation between what we know and what our eyes tell us. On the other hand, ‘belief’ can be a loaded term, implying some sense where faith overcomes a shortage of evidence. That is generally not the sense I have in mind. Second, a \textit{systematic} approach to art-making was a signal theme among conceptual artists, perhaps best summarised by Sol LeWitt’s well-known description, “all the planning and decisions are made beforehand.”\textsuperscript{21} LeWitt’s \textit{Wall Drawings}, executed by others according to his instructions, are a prime example of this approach and became an important component of my project. Several conceptual artists worked with apparently systematic but irrational photo-documentary self-assignments, such as Ed Ruscha and his \textit{Imperial Road Test}, and Douglas Huebler’s \textit{Duration} and \textit{Location Pieces}.\textsuperscript{22} Finally, I distinguish between \textit{logic} and \textit{rationality}. For
1.2. RESEARCH FRAMEWORK

me (as a working mathematician) logic is a purely formal system, concerned only with form and structure, and distinct from content. By contrast, rational choices (or decisions, or conclusions) are subjective and content-driven. Once again I defer to Sol LeWitt: “Conceptual artists are mystics rather than rationalists. They leap to conclusions that logic cannot reach. . . . Irrational thoughts should be followed absolutely and logically.”

My decades-long background as a research and teaching academic in mathematics and computer science is not immediately relevant to this project, and it is with some trepidation that I reveal it: my experience is that it invites unflattering stereotypes about ‘thinking differently.’ On the other hand that background is relevant to how I think about this research: my experience comes with a body of knowledge, a framework against which other stuff, in this case art and especially photography, can be tested and understood. Through the 20th century the mission of ‘pure’ mathematics has been one of generalisation, abstraction and axiomatisation of the structures and commonalities of the vast collection of mathematical ideas: mathematics became about mathematics. Such self-consciousness and reflexivity would seem to qualify within a general notion of modernism. That being so, there are now well-understood mathematical theories and tools (universal algebra and category theory for instance) that may be applied to various situations. Some of those tools are at my disposal and will occasionally arise in this document, for instance in Section 2.1 I outline my own particular understanding of the nature of indexical signs, a theme of fundamental importance to the theory and criticism of photography since the 1970s at least.

While ‘systems of logic and belief’ provides an organising principle for the content of my work, the subject of my research is how the strategies deployed by conceptual artists, as initiated in the period 1966–1972, or reinterpreted by the pictures generation or other artists since, may or may not translate into present day practices and technologies. My working modes (media if you prefer that term) are photography, and computer-assisted or other electronic techniques and materials. Peter Osborne has suggested a loose typology of six kinds—what I call strategies—of conceptual art. While we might quibble over what does or does not make it onto Osborne’s list and the way he has grouped them, at least it gives us a reasonable starting point.

1. Instruction, performance, documentation
2. Process, systems, series
3. Word and sign
4. Appropriation, intervention, the everyday  
5. Politics and ideology  
6. Institutional critique

All of those categories are interesting and fruitful in their own right, but my research here concentrates on the second, third and fourth of these strategies. Process, systems and series is illustrated by the examples of Sol LeWitt and “anti-photographers” such as Ed Ruscha and Douglas Huebler mentioned above.\(^{27}\) Within the word and sign strategy my principal interest lies with semiotic manipulations and the use of text as a pictorial element, of which Ed Ruscha is once again a leading light. This is distinct from the idea of text as art in and of itself, exemplified by the analytical Art & Language group.

Regarding the strategy of appropriation, intervention and the everyday, there is a sense in which photography is always appropriation. As Barthes clearly describes in Camera Lucida, a photograph “. . . is never distinguished from its referent . . . , or at least it is not immediately or generally distinguished from its referent (as is the case for every other image, encumbered—from the start, and because of its status—by the way in which the object is simulated).”\(^{28}\) Walker Evans, in his later years, would go on scavenger hunts, “lifting” all kinds of signs from their rightful places. He went on to exhibit some of these signs noting that, “This lifting is, in the raw, exactly what the photographer is doing with his machine, the camera, anyway, always.”\(^{29}\) The work discussed in Chapter 3 puts this attitude to photography front and centre.

While my research aim is to investigate the translation of those conceptual strategies into contemporary art practice—an institution now dominated by information technology and photography in their many and varied forms—it is clear that they were already part of the milieux in the 1960s. That photography was undoubtedly one of the fundamental enabling technologies for conceptual art has been well-documented, and the rise of information processing systems and devices was at least being considered in an art context. This is borne out by such shows as Cybernetic Serendipity in 1968, and The Machine as Seen at the End of the Mechanical Age in 1968 and 1969.\(^{30}\) These exhibitions remain a touchstone and reference point for software art and new media criticism and theorising even today.

Particularly influential—at least with the benefit of four decades of hindsight—was Judith Burnham’s Software exhibition at New York’s Jewish Museum in 1970, explicitly placing the work of conceptual artists alongside ‘cybernetic’ works.\(^{31}\) Jack Burnham’s catalogue essay also reveals his conceptual sensibilities: “Software makes no distinction
1.3. STRUCTURE AND OUTLINE

between art and non-art” and “most of Software is aniconic.”32 Burnham was perhaps prescient, certainly provocative, with his declaration that computers “will be instrumental in redefining the entire area of aesthetic awareness.” The technical adviser to Software, Theodor H. Nelson brilliantly generalised the notion of software beyond any specific association with computers to: “plans and procedures for action, as distinct from the equipment that carries the action out.” Among the examples he offered was “our bodies are hardware, our behaviours software.”33 By that definition, Sol LeWitt’s wall drawing instructions must surely qualify as software. In that case, my work discussed in Chapter 4 has the job of taking LeWitt’s ‘general’ software and bringing it back into the more narrowly defined sense of computer software.

1.3 Structure and outline

This is a practice-led research project. Partly as a personal tendency, and partly as a reflection of the potentially enormous scope of this project, there have been many experiments, some successes and some failures along the way. Chapter 2 describes and assesses a few of those adventures. The nature of a university course of study is that it must be finite, so the experiments had to stop sometime. I narrowed my attention to two bodies of work that I had found rich with possibilities of sustained interest, to me at least.

The first focuses on collections of everyday advertising signs at various locations around Wollongong, and is explored in Chapter 3. There my theoretical interest is in the nature of photography (especially its semiotic interpretations), the process of appropriation, and the place of the everyday in conceptual art, in photography, and in my art practice.

The second body of work is discussed in Chapter 4. There I explore the systematic drawings and prints of Sol LeWitt, how computer technology may intervene, and what that intervention may mean. Some of the interesting questions that arise include matters of authorship, control, art versus craft, and the normalising influence of the art market. LeWitt’s practice underwent major evolution in the forty years that followed his well-worn 1966 declarations that “the idea becomes a machine that makes the art” and “the execution becomes a perfunctory affair.” Nobody can be held to something they said that long ago.
Chapter 2

Adventures

Any new research project begins with stumbling, groping explorations. This chapter describes a few of my experiments, in the hope of providing a context for the bodies of work I will discuss in more detail in the two following chapters.\textsuperscript{34}

Before commencing this study, one of my more recent projects was based on methodically photographing objects, personal and prosaic, and then reconstructing three-dimensional models of those objects. Most were to scale but some were monumental, such as *Domestic Mementos* for the Domain Temporary Public Art Project in 2005 (Figure 2.1). One of my primary motivations was to explore the idea of emphasising the photographic index by extending it—to crank up the reality quotient, as it were—to retrieve some of the reality lost through photographic distance. Indexicality and other semiotic ideas have long been the bedrock of my practice and they remain so today: they guide and inspire me, and are fundamental to this research project. Charles Sanders Peirce’s ‘indexical sign’ and a (grossly simplified) version of his semiotics are now entrenched in the critical discourse around photography. Rosalind Krauss has remained one of the most influential and sustained writers on this subject, beginning with her attempt to find some unifying characterisation of “70’s art,” focusing in particular on *Rooms*, the inaugural exhibition at PS1 (now MoMA PS1) in 1976.\textsuperscript{35}

While Peirce’s writings on semiotics are extensive and varied (and complex), his simplest taxonomy of signs, based around three categories of relations between signifier and signified, remains influential. *Symbolic* signs are those where the relation between signifier and signified is fundamentally arbitrary and conventional, and so must be learned. Languages in general are a good example of this relation, as are traffic lights and na-
tional flags. In the **iconic** mode, the signifier is perceived as resembling the signified in some sense, for example portraits or cartoons, onomatopoeia, and metaphors. **Indexical** signs are not arbitrary, but rather the signifier has a physical or causal link to the signified, such as a footprint, smoke or a photograph. These three modes are not mutually exclusive; indeed, it is reasonable to expect that each sign carries aspects of every mode. In particular Peirce notes that a photograph is not only iconic but also indexical: "photographs, especially instantaneous photographs, are very instructive, because we know that in certain respects they are exactly like the objects they represent. But this resemblance is due to the photographs having been produced under such circumstances that they were physically forced to correspond point by point to nature. In that aspect, then, they belong to . . . class of signs . . . by physical connection [the indexical class]."³⁶ Roland Barthes’s magisterial writings on the photographic sign are far more accessible and better known in art and photography circles than Peirce’s work but he did not use the same taxonomical terms.³⁷ Barthes’s starting point was Ferdinand de Saussure’s linguistically focused semiotics, which offered no typology of signs, a problem that Barthes returned to again and again in his writings on photography.³⁸

It is not coincidental that this preoccupation with semiotics and indexicality mirrors
my long-term research interests in the semantics of formal languages, such as programming languages and logics. In that arena we are generally focused on some symbolic structure—for instance, the text of a program or the terms of a logic—and its relation to a corresponding mathematical model. Such relations are not arbitrary but effectively causal in the same sense as Peirce’s indexical signs: the ‘signature’ of a language will always implicitly reflect the mathematical system it models.39

2.1 Another Note on the Index

The following passage from The Photographic Message, where Barthes is attempting to unfold the indexical component of the photographic sign, has fascinated and troubled me since I first read it: “What is the content of the photographic message? . . . By definition, the scene itself, the literal reality. From the object to its image there is of course a reduction—in proportion, perspective, colour—but at no time is the reduction a transformation (in the mathematical sense of the term).”40 I was particularly struck by Barthes’s claim that the reduction was not a mathematical transformation, for surely the conversion of the three-dimensional object before the lens into the two-dimensionality of the image plane is explicable in mathematical terms of simple projective geometry. Barthes was either unaware of Peirce’s work or chose not to use his terminology, instead exploring the notion of “a message without a code.” Emanuele Martino has claimed that photographs are not indexical, in part because there is a transformation “because cameras incorporate certain geometric principles acting as codes,” but I understand Barthes to mean cultural codes rather than some physical principle.41

How are we to understand Barthes’s description of these mathematical, geometric operations as not being transformations? I have reconciled this matter by observing that the ‘reduction’ that Barthes is discussing is a faithful transformation; that is, one that does not betray the original (as cultural codes are bound to do, even with the best of intentions). In mathematical terms, such a faithful transformation is a homomorphism, a mapping from one object (formally, an algebra) to another, such that it respects the relations and behaviours of the original object.42 For instance, if $x$ and $y$ have a certain relation in the source algebra, there is a corresponding relation which applies to the values that $x$ and $y$ are mapped to in the target algebra. For the most part homomorphisms can be understood as abstractions, the mapping reducing something to particular features of interest, but in a way that is faithful to the original. The transformation of an object to a photographic image is just such a reduction: the projection onto two di-
dimensions maintains the relative positions of points from the original three dimensions; a black and white image reduces colours to grey tones in a faithful and formulaic manner. I believe this also neatly captures the necessary causal relation from the referent to the signifier.

Typically we think of signs having a ‘direction’ from the signifier to the referent: notice this is the opposite direction to the homomorphism that determines the signifier. Among the examples Peirce lists to motivate his indexical sign class are a variety of measuring instruments, such as weathervanes and thermometers. The temperature at its location determines the status of the thermometer, whether it be a column of mercury or coloured alcohol, or a digital readout. When we look at the column of mercury (the signifier) we interpret it as telling us how hot or cold it is at that location (the referent). It is interesting to observe that to do so, we need to have a separate appreciation of the causal relation in the first place: we need to be trained to interpret the thermometer’s status and what it indicates, so there is a conventional understanding always in the background. If a thermometer indicates 27°C we have a general apprehension of what that means, what it feels like, irrespective of the particular location. Stretching the mathematical account a little further (perhaps too far!), we can explain the signifier-to-referent direction of the connection as mapping the indicated temperature to the equivalence class of all possible situations where that is indeed the temperature. Once we have experienced enough of those situations we are able to generalise, and dress accordingly.

2.2 The Photographic Process

In the 1977 MoMA photography exhibition *Mirrors and Windows*, John Szarkowski included works by artists such as Ed Ruscha, Andy Warhol and Robert Rauschenberg which was, as Abigail Solomon-Godeau described it, like “the proverbial foxes in the hen house” specifically because their respective uses of photography were explicit challenges to the “brand of modernism enshrined in MoMA’s Department of Photography.” In fact Ruscha has said as much himself, “Above all the photographs I use are in no way ‘arty’ in any sense of the word. I think photography is dead as a fine art; its only place is in the commercial world, for technical or information purposes.” Likewise Nancy Foote observed in *The Anti-Photographers* that, “the strength of photographs lies in their unique ability to gather, preserve and present outside information, not to ‘make art.’” Thus the contents of a photograph are inherently extra-photographic; a fact which, while not profitably reconcilable with modernism, offers considerable potential of its
It was that potential so many conceptual artists and those who followed sought to exploit.

There is an obvious sense in which photography is always process based: the photographer releases the shutter and an image is captured by chemical or electronic means. John Berger has described photographs as “weak in intentionality” because unlike paintings, novels or other means of communication, a photograph is the product of “a single constitutive choice: the choice of the instant to be photographed” and as a result photographs bear an “innate ambiguity.” Berger went on to suggest that this innate ambiguity, “if recognised and accepted as such . . . could offer to photography a unique means of expression.” To condense photography to a “single constitutive choice” seems unrealistically reductive and I doubt Berger means it quite so literally. Rather, his tactic is to de-emphasise other aspects of the process to keep the focus on matters that bear directly on his argument: such inventions are common in analytical studies. For instance Roger Scruton’s argument that photography is not a mode of representation relies on a constructed notion of “ideal photography” that he admits is “a logical fiction, designed merely to capture what is distinctive in the photographic relation and in our interest in it.” It is noteworthy that, like Berger, Scruton’s central argument also identifies intentionality as the heart of the problem: (ideal) photography is not intentional—a potentially more radical position than Berger’s—whereas (ideal) painting is intentional, and therefore photography is not representational while painting is.

Barthes also participated in this strategy of idealisation: “This purely denotative status of the photograph, the perfection and plenitude of its analogy, in short its ‘objectivity,’ has every chance of being mythical.” Sabine Kriebel describes this as an ‘Edenic’ state:

Barthes insists that the photograph has an Edenic state, in which it is cleared, in a utopian fashion, of all connotations, becoming a “non-coded iconic message”; it is innocent, by virtue of what he declares to be its “absolute analogical nature.” In this utopian state the photographic message is what Barthes calls “a message without a code.” However, as soon as the photograph leaves Eden, so to speak, and enters into circulation, it becomes culturally coded, transforming the image and putting it into the realm of connotation. Barthes maintains that this connotation is not, strictly speaking, part of the analogic photographic structure, but dependent on a context, often an ideological one.
The “utopian” qualification is important here. Since any human interaction with a photograph requires it be in circulation—and thus it has left Eden and is tainted with cultural codes—we cannot experience its pure state. The fact of the unencoded message can only be the conclusion of a gedankenexperiment. In other words, while we cannot experience this state (hence Kriebel’s ‘Edenic’ epithet) we can at least imagine or hypothesise it, giving a base from which to understand and theorise photography.

The history of photography is crowded with attempts to control or even deny this innate ambiguity to which Berger refers. In his essay Pictorial Photography Alfred Stieglitz deemphasised the mechanical aspects of photography in favour of what comes after operating the shutter, arguing that the skill involved in producing prints gives “almost absolute control of tonality, atmosphere, and the like . . . to the photographer, on whose knowledge and taste depends the picture’s final artistic claim.” Walter Benn Michaels summarised Stieglitz’s attitude as “the photograph’s artistic claim is linked to the photographer’s painterly skills.” An opposing critical position was that of ‘straight’ photography with an emphasis on what comes before operating the shutter, summed up by Edward Weston’s claim that “the finished print must be created in full before the film is exposed. Until the photographer has learned to visualise his final result in advance, and to predetermine the procedures necessary to carry out that visualisation, his finished work (if it be photography at all) will present a series of lucky—or unlucky—mechanical accidents.” In more direct opposition to Stieglitz, Weston also suggested that, “People who wouldn’t think of taking a sieve to the well to draw water fail to see the folly in taking a camera to make a painting.” In Marks of Indifference Jeff Wall offers a rather poetic description of the intentionality that is missing from photography in comparison to painting: “The master picture-maker prepares everything in advance, yet trusts that all the planning in the world will lead only to something fresh, mobile, light and fascinating. The soft body of the brush, the way it constantly changes shape as it is used, was the primary means by which the genius of composition was placed at risk each moment, and recovered, transcendent, in the shimmering surfaces of magical feats of figuration.” Wall then proceeds through conceptual art to propose an historical foundation for a style of painterly photographs that includes his own, but that is another story.

In the 1960s, some artists—likely classified among Nancy Foote’s ‘anti-photographers’—rather than attempting to diminish the instrumental basis of photography chose to emphasise it, in some cases by incorporating the operator as part of the mechanism by setting a predetermined, extraneous and apparently arbitrary assignment for documentation. John Baldessari’s various Choosing series is a fine example of this kind of
2.2. THE PHOTOGRAPHIC PROCESS

approach, as is his *The Backs of All Trucks Passed While Driving from Los Angeles to Santa Barbara, California, Sunday 20 January, 1963* (Figure 2.2). No selection or aesthetic judgement could be involved if he kept to his preset plan.

Some of Edward Ruscha’s books can be seen in this light, particularly *Royal Road Test*. In 1967 Ruscha with friends Mason Williams and Patrick Blackwell threw a Royal (Model ‘X’) Typewriter out the window of a car travelling at 90mph along a Nevada highway. They then forensically documented the outcomes of the ‘test’ with photographs, matter-of-fact text and captions: mere “technical data” as Ruscha puts it (Figure 2.3). The apparent arbitrariness of this absurd assignment only served to emphasise its mechanical nature.

**Disingenuous Assignments?** Douglas Huebler in particular emphasised the evacuation of intent by setting himself what can best be described as parodies of photojournalistic assignments, but to take his pointless missions at face value may be a little naïve. In his numerous *Duration* and *Location Pieces* Huebler goes to lengths to set out the system that is the basis of each of those works: the text of its own specification becomes...
a part of the work. The text accompanying *Duration Piece #7, Rome* (Figure 2.4) from March, 1973 reads in part as follows:

Fourteen photographs were made, at exact 30 second intervals, in order to document specific changes in the relationship between two aspects of the water falling from the rocks in one area at the base of the Fountain of Trevi.

I have long been suspicious of Huebler’s true objective with this work. One of the photographs is an irresistible image of a man standing to pose on a bollard above Trevi Fountain, shown in Figure 2.4. The framing makes the falling water seem incidental, as it does in other photographs in this sequence: the centre of attention is unequivocally on the tourist. At the very least could Huebler really have resisted firing the shutter if this opportunity emerged at 20 seconds instead of 30?

An even more convincing example is *Variable Piece # 105, London, 1972* where Huebler claims, “Eighteen mannequins were photographed at two minute intervals through the windows of clothing stores on Oxford Street. Immediately after each photograph was made the artist turned and photographed the next person that he saw who was the same sex as the previous mannequin.” In his methodical analysis, Gordon Hughes rightly suggests that “given the resemblance . . . between most of the mannequins and their living counterparts, credibility . . . is stretched well beyond breaking point.” It is difficult to disagree when confronted with some of the paired images (Figure 2.5).

**Every Building on Wentworth Street.** In 2007 I began regularly visiting Wollongong, a city I had previously only passed through; I now live in the region. Wollongong is aged, decaying and patched, accumulating industrial detritus that is so uncommon in
2.2. THE PHOTOGRAPHIC PROCESS

Canberra where I had lived for the preceding twenty years. Wollongong’s settlement history goes back two centuries, tracking through grazing, coal mining and heavy industry. Remnants endure as the city renews itself for new economic circumstances. Wollongong also has a long, spectacular and beautiful coastline, enough to inspire and horrify D. H. Lawrence writing his semi-autobiographical novel, Kangaroo. After so many years in relatively sterile (but differently wonderful) Canberra this was an invigorating change. Having inadvertently discovered the fascinating and once-notorious Wentworth Street, the main street of Port Kembla in the south of Wollongong, I decided it would be an interesting exercise to emulate Ed Ruscha’s Every Building on the Sunset Strip, as a way into my project, to commence my research. With fewer ships coming to the port and shorter stays, Wentworth Street became largely deserted and decrepit, drained by nearby shopping malls, save a couple of pubs. There is still a significant presence of sex workers. Adding to the interest are the incongruously lavish renovations that had recently been carried out: new decorative paving, stylish street lights, palm trees in planters and so on, at the behest of the then Deputy Mayor whose ward covered this area, and who was later recommended for prosecution by the ICAC inquiry into planning irregularities at
CHAPTER 2. ADVENTURES

the Wollongong City Council. I visited at quiet times on Sundays to minimise parked cars and pedestrians. I wanted it empty of life, as Ruscha’s works so often are. My process was to photograph each building directly straight-on from the opposite footpath with a standard lens length, and the same exposure. The street runs North-South so I photographed one side in the morning, the other in the afternoon. It’s a swooping hill (home to the recently reborn Redpoint Artists Port Kembla Billy Cart Derby) and I planned on stitching together the images to reflect the terrain. This is still a work in progress, but one of the buildings became a touchstone for a later consideration of text in images (Figure 2.6). I will have more to say in Chapter 3.

Figure 2.6: Universal Daydream.

I made other attempts at this process, empty of intent other than choice of location, including at City Beach in Wollongong. There, after the renovations of Wollongong’s new Blue Mile public precinct, remain about a dozen mysterious heavy steel cylinders, rusting and off-kilter, disrupting the new landscape and paving to hint at what is not quite hidden below. In each case I set my camera on a short fixed tripod, always at the edge of the kerb (Figure 2.7).

Supply. At about the same time I was preparing for a group show Suburban Zeitgeist as part of the Vivid photography festival in 2008. The theme seemed suited to the kind of work I was already doing, but I loosened the process I applied for the Blue Mile
barrels into something as arbitrary as ‘things sticking out of the ground’—there is so much mysterious and fascinating stuff in Wollongong. Eventually I narrowed my range down to pipes, taps and meters: the city’s essential delivery system. The culmination was five framed prints grouped under the title Supply, descriptive of the photographic content, and a suggestive interpretation of the images (Figure 2.8). Any remnants of a strict pre-determined process had devolved into a general activity of merely looking and selecting. My choice of things to photograph had become simply a “look at that!” judgement. ‘Street photography’ carries a formalist pictorial load so I am hesitant to use the term, but I was looking for curiosities (why is that green pipe sticking out of the lawn?) and visual puns (the black pipe across Fairy Lagoon is labelled Water). The style is a flat, horizontal, deadpan illustration of everyday suburban spaces that are at once poignant but indomitable.

In the 1960s Ruscha and Huebler had an explicit agenda that made sense at that moment in history as part of conceptual art’s push back against a narrowing modernism of the time. In that case it is difficult to see how my strictly adopting a pre-determined process and producing perfunctory photographs today could be more than pastiche. With hindsight, even my original choice of Wentworth Street was made on the basis of visual and documentary interest. No doubt Sunset Strip would also hold interest but that was not Ruscha’s point. In the end Supply is undeniably about the photographs and the content of those photographs. It is not the product of feigned assignment and to say there was a pre-determined process would be insincere. I had gone looking for visually interesting photographs that illustrated or at least fit the theme of the exhibition. The
final group of photographs also aim to be interesting as individual images. They may be
deadpan, but not compared to Ruscha’s and Huebler’s careful elision of any appearance
of intention.\textsuperscript{58}

\section*{2.3 Oscillations: Logic and Belief}

As previously mentioned, I have been a teaching and research academic in mathematics
and computer science since the 1980s. While that involves a particular skill set, I initially
resisted putting it to use in my art practice: principally, art had been a diversion from my
daily routine. I have also found it difficult to engage with the idea of ‘code art’ because
I most naturally approach it thinking about the program as an artefact rather than a
means to an end. A digital arts colleague routinely reminds me that I once dismissed any
of my attempts at screen-based works as “just another screen-saver.” Having set students
more graphics-oriented programming exercises that I care to recall, for me the creative
focus is on the program (the \textit{how}) rather than the outcome (the \textit{what}). Nevertheless I
eventually decided, with some outside encouragement, that I could no longer ignore this
obvious area of investigation and opportunity.

In 2007 I was fortunate to be selected for the reSkin Emerging Technology Lab run by the Australian Network for Art and Technology in conjunction with Craft Australia. Spending three weeks closely involved with a group of artists using a variety of technologies for vastly different purposes gave me a different perspective, convincing me there were fruitful opportunities in this field. Later that year I produced *Vigil* for the Domain 2007 Temporary Public Art Project in Canberra city (Figure 2.9). Technically the implementation involved a camera, computer, microcontrollers, and servo motors, controlled by custom software. For the viewer, *Vigil* was five coconut shell ‘heads’ roughly at eye level, which turned to follow as people walked by the shop window where it was installed. One of the heads was separately coded to be more easily distracted, looking around if there wasn’t enough action.

Figure 2.9: *Vigil.*

One of my primary conceptual concerns was the gap between what we (as viewers) know to be true, and what our eyes tell us. I intentionally did not try to hide the camera or computer hardware: I wanted people to be in no doubt this was all quite rational and that I had no intention of pretending otherwise. Most important to me was the oscillation between coconut-ness and face-ness that the viewer experienced. We know they are coconuts, but everyone recognises the suggestive features, the iconic sign as it were. Now when the coconuts are animated by making them turn to ‘watch,’ they are
brought to life in a way that makes them more face-like: our eyes are more convinced, but our base certainty that these are just coconut shells remains unshaken. There is a kind of knowing flip-flop between “it’s a coconut” and “it’s a face.” Of course, this is very much a similar concern to my three-dimensional photographic reconstructions mentioned at the beginning of this chapter.

There is a widely reported apocryphal story from the early days of cinema that when the Lumière brothers showed _L’Arrivée d’un train en gare de la Ciotat_ at the Salon Indien of the Grand Café in 1895, their first show where admission was charged, spectators were so taken with the reality of the moving image of the train that they ran from the auditorium. This would suggest that the new medium of film was seen as transparent, or immediate: that there was simple belief rather than suspension of disbelief. On the other hand, Tom Gunning has convincingly argued that this is mythology, that the audience were not “gullible country bumpkins” but “sophisticated urban pleasure seekers,” familiar with illusion as entertainment and not so naïve as to have their common sense overwhelmed by what they saw. What shocked them was precisely that gap between belief and incredulity. Even Georges Méliès, a leading illusionist and magic theatre proprietor at the time was unnerved: “a horse pulling a wagon began to walk towards us, followed by other vehicles and then pedestrians, in short all the animation of the street. Before this spectacle we sat with gaping mouths, struck with amazement, astonished beyond all expression.”

As a first foray into employing digital means to generate an artwork I found _Vigil_ a mixed success. In retrospect _Vigil_ seemed after all to be preoccupied with emphasising the technology as a mysterious means and verged on gimmickry, that contemptible characteristic of so much in the digital arts, thereby backgrounding the intent—my intent—for the work. Nevertheless, a good deal of my work since then, at least for this research project, uses software I have written but perhaps of a quieter, more discrete nature.

### 2.4 Index Librorum

One such modest software based work was _Congregation of the Index_, consisting of three prints: _All the Words in the New Testament in Alphabetical Order_, _All the Words in the New Testament in Frequency Order_ and _All the Words in the New Testament in Occurrence Order_. I wrote three programs to scan the raw text of the King James version,
readily available on-line. One program extracted an alphabetical list of all the distinct words, the second produced a list of the words in order from most to least frequently used. The lists were then typeset into a 60cm square format. In the third version only the first occurrence of each word survives with all later repetitions being replaced by a 1-pica space.\textsuperscript{63} (Figures 2.10, 2.11). As always, the motivations and inspirations for a new work are legion and often vague, and Congregation is no exception. In part it arose from a recent engagement with the nature of religion through the polemics of Richard Dawkins and Christopher Hitchens, but also some fascinating historical accounts of the Melanesian Cargo Cults and the John Frum Society, where belief and structures of worship apparently arise from simple happenstance.\textsuperscript{64} I was also influenced by my colleague Brendan McKay’s impressive work in the debunking of ‘Bible Codes.’

Figure 2.10: All the Words in the New Testament in Alphabetical Order.

Some texts—the New Testament, Quran, Torah, Mao’s Little Red Book and so on—are fetishised to a level that transcends their content, so the object itself becomes a talisman, a surrogate at least as important as the content. In The Bible Code, Michael Drosnin took this kind of obsession full circle, claiming to find mystical coded messages in the text of the Torah. In response, mathematician Brendan McKay and others brought to bear
CHAPTER 2. ADVENTURES

The repetitive power of automated computation to find equally impressive predictions coded in older, less fetishised texts. Clear predictions of the demise of Princess Diana can just as easily be found coded in *Moby Dick*, as can predictions of the World Trade Centre attacks in the lyrics of Vanilla Ice.  

At its most basic, the three projections that make up *Congregation of the Index* reinforce the notion that the original text is just text, that the ideas have no physical substance. The title is directly self-referential but also has a cultural, religious allusion. Beginning in the 16th century through to the 1960s, the Catholic Church maintained a list of books deemed heretical, anti-clerical or lascivious, and which were therefore banned: the *Index Librorum Prohibitum*. The group of cardinals charged with maintaining this list were known as the *Congregation of the Index*. Among books that were banned at some time were numerous works in astronomy, and Immanuel Kant’s *Critique of Pure Reason*. Presumably one of the chief reasons for prohibiting Kant’s work was his refutation of various proofs of the existence of God.  

Putting aside the choice of the original text, this work is unequivocally and primarily about the indexical sign: the signifier as a homomorphic abstraction of the referent. The three works together naturally form a congregation of indices: the central focus on the index serves to diminish the coincidental conventional cultural component of the sign, and its role as fetish. As such, the work was a natural fit for its first showing in *photo / not photo*, an exhibition motivated by curator Tim Thomas’s “interest in the photographic...
2.5. SELF-TITLED

beyond photography.” The original call for contributions included, “if we consider a photograph to be ... an index, ... a sign without a code, ... then perhaps a camera recording an optical image is not the only way to make a photograph.” I also wrote an essay *A Photographic Model* for the *photo / not photo* catalogue, a consideration of the indexical sign as it may occur in photography. The essay is reproduced in Appendix B. For me, the semiotic aspect of this work is absolutely central. Each of these images indicates the New Testament: they are indexical signifiers, but they operate in quite a different way to photographic signifiers. In fact each is a relatively weak index because not much information is given. It might be possible—with some study and knowledge of the Bible—to infer the relation but as with all indexical signs, understanding the nature of that relation is a necessary component to its interpretation. But after that there is a determinism: the referent and the relation fix the signifier.

2.5 Self-Titled

Usually, conversations with colleagues and supervisors about a new work eventually come around to the question of where to take it next. *Congregation* already looked like a closed chapter to me, and common suggestions to apply the same transformations to other texts, especially religious texts, seemed to shift the emphasis too far towards some kind of polemic or faux comparative religious study. On the other hand I have a small collection of Maoist posters and books—his writings extend far beyond the *Little Red Book*. I played with converting the poster images to coloured text, replacing pixels with letters from his writings, such as *The Three Main Rules of Discipline* and *The Eight Points for Attention*. A detail of one such image is shown in Figure 2.12.

At about the same time a regular stream of lowbrow magazines began finding their way into my home: *Who Weekly, NW, Famous, OK!* The covers are busy jumbles of paparazzi photographs of ‘stars’ or ‘celebrities’ each plastered with a screaming caption about the ‘story’ inside. I was fascinated that over time the same faces and bodies kept appearing but the short cycle of stories—overweight, dangerously thin, suffering a relationship crisis—endlessly repeat. Also curious was the disconnect between the photograph and the caption: the photograph merely identified the subject, it did not necessarily illustrate the story. I was reminded of a truism I had once read: “photographs don’t lie, people lie.”

For a show at Gorman House Canberra Contemporary Art Space in 2011–12, I applied
the same process of replacing pixels with text to some of these images, choosing my own story for the substitute text. For an image and caption about Jessica Simpson losing 10kg in 20 days, I chose an extract from Naomi Wolf’s *Beauty Myth*, and for “Fiance or Freeloader” about the same Jess, I used a passage from *Taming of the Shrew*.\(^6\) Adolf Loos’s famous 1908 essay *Ornament and Crime* seemed appropriate for an image-story about Victoria (Posh) Beckham’s reaction to husband David’s rumoured affair with a call-girl: “The modern man who tattoos himself is either a criminal or degenerate. There are prisons where eighty percent of the inmates show tattoos. The tattooed who are not in prison are latent criminals or degenerate aristocrats. If someone who is tattooed dies at liberty, it means he has died a few years before committing murder.”\(^7\) And so on. I intentionally introduced banding and glitches to emphasise the low-rent nature of the subjects.

As part of the same show I developed my one and only screen-based computational work for exhibition (so far), based on Britney Spears and using the lyrics of two of here smutty songs, *1-2-3* and *Sinner*. For the most part the words of the songs are in a jittery, aimless wandering, but from time to time, coalesce to form a portrait of Britney, or the word ‘SINNER,’ or readable lines of text. (Figures 2.14.) Much to my disappointment, this work drew more interest than the static prints on the wall.
Generative Art and Computers. When I first began engaging in a computer-based art practice I determined to work within my prejudices—outlined at the beginning of Section 2.3—and not be seduced by the endless possibilities of technological titillation. Works that look like a gimmick or a technological demonstration do not fit my criteria, and I set that bar high. I find so-called ‘generative art’ to be particularly problematic but that may say more about me than the field in general, tracing back to my previous experience of always looking ‘under the hood’: I have set many assignments based on cellular automata, fractals, chaos and so on. Figure 2.15 is an illustration of the kind of image that can be produced from a simple cellular automaton. This example was produced for the first assignment in my introductory programming course in 2008 by Adam Zegelin—admittedly an outstanding student. The point is that the ‘emergent behaviour’ of such systems makes it surprisingly easy to produce something that looks good: a ‘complex,’ unpredictable result from some rather simple code, which is always a great motivation for novices.

When a stranger at the Art School saw part of Congregation of the Index (Figure 2.10) and approvingly classified it as ‘generative art,’ I responded (perhaps a little brusquely) that it was not generative. In truth I felt uncomfortable that I was not sure that I was right, or how I could justify such a claim. I think I can now do so. In his article What is Generative Art? Philip Galanter correctly observes that if generative art included “art
produced by any kind of generating idea, then generative art would include all art, and it would lose its utility as a distinct term.”

He then proposes this definition:

Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set in motion with some degree of autonomy contributing to or resulting in a completed work of art.

Therefore “the key element in generative art is then the system to which the artist cedes partial or total subsequent control.” A recent article by Jon McCormack et al. narrows the focus to generative computer art, but their definition is similar:

All generative art focuses on the process by which an artwork is made, and this process is required to have a degree of autonomy and independence from the artist who defines it.

The key word in both cases is “autonomy” and that troubles me. Natural language rules are likely to be incomplete, imprecise and ambiguous; that is the nature of human communication. If those rules are being interpreted by other humans, then those humans may—almost certainly will—interpret the rules differently from the artist’s intention, perhaps in good faith, perhaps to be contrarian. In that case the autonomy lies with
the humans involved. Narrowing our attention to generative computer art, where can the autonomy reside when a program is a complete, precise and unambiguous specification of the computer’s behaviour, put in place by the programmer? A programmer may inadvertently make an error so the code does not accurately represent their intentions, but that is not ceding autonomy to the system. Suggestions that self-modifying and adaptive programs “can learn and so initiate new and potentially creative behaviours” are similarly misguided. Any such self-modification takes place according to the program itself: it only happens in an entirely controlled, predictable manner. Everything a program does is entirely predictable, at least theoretically if not practically.

It seems to me that what they really mean by ‘autonomous’ is in some sense ‘unpredictable’ to an observer. In fact McCormack et al. touch on (but slightly overstate) the impracticality of humans predicting the outcome of programs: it is “impossible for the programmer . . . to predict the outcome of all but the most trivial programs.” For example, cellular automata are generally determined by some simple specification of the behaviours and interactions of families of ‘cells’ and it is usually not too difficult for a human to follow the process, working by hand, for a few steps. But typically, if the automaton is at all ‘interesting’ there is some kind of exponential explosion so that working by hand is unfeasible, beyond human endurance or capacity to visualise the final outcome.

Among other examples, Galanter suggests that much of Sol LeWitt’s work is generative,
focusing on the systematic nature of his work and pointing out the obviously relevant quote, “the idea becomes a machine that makes the art.” However, if we follow through with my suggestion that it is the unpredictability of the outcome that is the defining characteristic of generative art, then I would argue that LeWitt’s works are not of this category because it is not too difficult to imagine the final outcome from his instructions. In that case, I think I was right to object to the classification of my *Congregation of the Index* as generative art. While the collection of an alphabetical list of words from the New Testament by hand would be tedious and require significant perseverance it would not be beyond the range of human endurance, and we can easily have a fairly clear idea of how the final outcome will look without actually doing so.

It is not my intention here to dismiss or attack generative art but rather to seek a better understanding. Whether or not I am right that a defining characteristic of generative art is a sense of the unpredictability of results, it seems to be at a similar distance from painting as photography is—the “genius of composition” being “placed at risk each moment” as Jeff Wall has described it. I am drawn once again (as I was at the beginning of this chapter) to John Berger’s understanding of photography as being “weak in intentionality,” as the product of “a single constitutive choice” with the rest of the process left to the mechanism. Is it not the case that generative artworks begin with a single constitutive choice of parameters, and the rest of the process is left to the automaton? As Nancy Foote and John Berger propose for photography, this may be an opportunity rather than a constraint. To paraphrase Berger, if recognised and accepted as such, perhaps this aspect could offer to generative art a unique means of expression.

77

78

79
Chapter 3

Word and Sign

In 2012 I visited an exhibition at the Museum of Modern Art in New York: *Ecstatic Alphabets / Heaps of Language*. The premise was a sample of modern and contemporary artists concentrating on the material, visual qualities of language: using “language as a medium” was how curator Laura Hoptman described it. Hoptman traced the history of this “medium” back to at least the beginnings of modernism but it seems the use of
language in or as art reached an apotheosis around the 1960s, especially in conceptual art. While the idea of written text as art in and of itself—exemplified by the *Art & Language* group—was of central importance, my main interest lies with the use of text as a pictorial element, of which Ed Ruscha was, and still is, a key proponent (Figure 3.3). An important influence for many artists, Ruscha included, was Jasper Johns: in an interview with Howard Pindell, Ruscha said that Johns was “the person who actually got me working as an artist,” and explained his influence as “the fact that his paintings did not look like paintings.” The significance of Jasper Johns’s work for me can be illustrated by considering his encaustic painting, *Figure 5*, 1960 (Figure 3.2).

Max Kozloff observed that “Jasper Johns ... cast doubt on the allusive nature of paint on canvas ... he could not be considered as either representational or an abstract painter. Being itself a prime image, a number [sic] or map could no more be ‘depicted’ than a painting whose icon is a number could be judged non-figurative. The eminent neatness and efficiency with which the artist de-categorised the perception of his work seemed at
the same time profoundly irrational. There was about it an uncompromising perversity, a ridiculous pragmatism." Normally I would not fuss, but in this context there is an important distinction: Kozloff really means to say that a numeral is itself a prime image. A numeral is a symbol, a signifier, an image. A number is an abstract concept. For example, the cardinality of the set of fingers on my left hand is the number signified by the arabic numeral ‘5’. So numbers are routinely depicted (including by numerals) but numerals are unavoidably prime images in themselves. Figure 5 may satisfy the Greenbergian preoccupation with surface, but it is disconcertingly both representational and non-representational: this is a painting of the numeral 5, but it also is the numeral 5. The former sense is of an iconic sign relation; in the latter sense the painting and the thing are one and the same: there is no representation, no code, involved. Added to this is that the numeral 5 is an entirely conventional (coded) signifier for the relatively abstract concept of the number 5, so to describe this as “a painting of 5” is selling it short. Likewise for Ruscha, the meaning or interpretation of the words or phrases he painted was not really the point: “Isn’t it curious that those little squiggles . . . go to make up that funny word? If you isolate a word for just a moment and repeat it ten, fifteen times, you can easily drive the meaning from the word and from the sound of the word. I do that a lot with the printed word.” All this leads to the conclusion that these paintings of words, numerals, flags and other emblems are not about those emblems—more specifically, not about the signification of those emblems—but rather they essentially serve to provide the artist something to paint.

![Figure 3.3: OOF and Texas Hairspray, Ed Ruscha, 1962 and 1992.](image)

To bring the discussion begun with Johns’s Figure 5 around to photography, here is a
thought experiment based on Magritte’s well-known painting *The Treachery of Images* (1929), being of a pipe with the phrase *Ceci n’est pas une pipe* (this is not a pipe) included on the canvas. Seeing this for the first time there is usually a moment of hesitation, for surely this *is* a painting of a pipe. Then of course Magritte’s point is quickly recognised: it is not a pipe but a representation of a pipe. Indeed it may be non-specific: not a particular pipe but rather some general idea of a pipe: we have an iconic sign. Now suppose instead we are confronted with a photograph of a pipe, with the same caption written on the photograph. The point is not so obvious: yes, it is a photograph of a pipe and not an actual pipe, but a photograph is an indexical sign so the referent *is* a real pipe, indeed a particular one. In that case we may be more circumspect about the veracity of the caption. If, as Barthes reminds us, the referent is never distinguished from the photographic signifier, there is a sense where the pipe is present and the truth-value of the caption is not so evident. Finally, suppose we make a small sign, *Ceci n’est pas une pipe*, and place it in the frame with the pipe as the photograph is taken. The caption can no longer refer to the photograph itself: its pre-existence with the pipe means it must refer directly and only to the pipe and in that case, surely the caption is incorrect.

My research and the resultant body of work that is the central preoccupation of this chapter can superficially be described as photographs of signs: utilitarian text in public places. At its beginning this was an intuitive, open-ended exploration (as were some of
the exercises visited in the previous chapter) but as I persevered and dug deeper, the work of three particular artists helped me to develop a clearer, more refined understanding of my motivations and expectations. Those three are Australian artist Robert MacPherson, American photographer Walker Evans, and British photographer/artist Keith Arnatt. Certain aspects of the work of MacPherson, Evans and Arnatt will be discussed in turn, with the hope of providing reference points and laying some foundations against which my own work can be contextualised.

3.1 Signs of Robert MacPherson

The work of Australian artist Robert MacPherson has been an important background inspiration and influence for my own work. His extensive *Mayfair* series of sign paintings has been particularly helpful to developing and articulating my own series of photographs of signs. MacPherson was born in 1937 and grew up in Nambour, then a rural centre about two hours drive north of Brisbane: a small country town near a big country town. Having left school at thirteen, the leaving age in Queensland at the time, he worked at a variety of unskilled jobs. Many were seasonal and allowed him to spend several months at a time in Brisbane reading to educate himself, much of the time at the Queensland Public Library reading about art history, modern art and philosophy. The debates around modernist painting, at their most vigorous in the 1950s and 1960s, were particularly formative in MacPherson’s development. MacPherson’s earliest exhibited works were series of black or white canvases, their dimensions determined by the artists reach: about 7’ by 5’6”. This structuring principle of a ‘container’ the scale of which was determined by his body or his tools, has been a consistent feature of his prolific output, for instance producing series of 12” square canvases, those dimensions conditioned by requiring three strokes of a 4” household brush, his usual tool of choice.

That MacPherson had engaged in an essentially solitary study of the debates happening on the other side of the world, particularly those in New York, seems to be a key factor in his work. From his Brisbane vantage point MacPherson could draw from different perspectives on contemporary art without necessarily committing to any of them. This may be how MacPherson came to a distinctly literal interpretation of Greenberg’s definition of the “limiting conditions with which a marked-up surface must comply in order to be experienced as a picture.” Rather than spurning Modernism as dogma, as many conceptual artists claimed to do, MacPherson turned the spotlight—and his microscope—on those rules and constraints, testing the limits of the framework and
hence of painting itself: MacPherson described himself as “a formalist, but satirical.” Likewise, according to Trevor Smith, MacPherson has referred to Greenberg’s theories as “a wet paper bag that he remains inside, constantly poking his finger through without wanting to tear his way out.” MacPherson began turning to text works and installations, reminiscent of some kind of Duchampian nominalism, largely moving away from the activity of painting. In response to Greenberg’s suggestion that “a stretched or tacked-up canvas already exists as a picture,” MacPherson offers a text piece, *I See a Can of Paint as a Painting Unpainted*, 1982 (Figure 3.5).

And MacPherson’s brush is already a painting: in *Three Paintings* (1982) three paintbrushes are mounted on the wall, each with accompanying text:

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WHEN I DIP THE BRUSH IN PAINT THE BRISTLES BECOME COATED WITH PAINT ANY MOVE BEYOND THIS POINT IS SUPERFLUOUS.

WHEN I PURCHASE THE BRUSH THE HANDLE HAS BEEN COVERED WITH PAINT BY THE MANUFACTURER ANY MOVE BEYOND THIS POINT IS SUPERFLUOUS.

DURING THE MANUFACTURE OF THE BRUSH THE HANDLE IS COATED WITH PAINT ANY MOVE BEYOND THIS POINT IS SUPERFLUOUS.
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True to his word, MacPherson’s *218 Paintings* (1977–1990) consists simply of a list of 218 names of paintbrushes: “there was no need to collect the brushes—they were already exhibited in hardware shops.” In contrast to Ruscha’s deadpan word images, MacPherson is vitally interested in *language*, particularly in what he sees as the poetic in vernacular and dialect, especially as it disappears in this homogenising world; his work is in part an attempt to valorise that language. Nevertheless, his text/language works maintain a strong visual presence—almost concrete poetry—such as *Little Pictures for the Poor* (1983), with its red typewritten text on pink tissue (Figure 3.6).
3.1. SIGNS OF ROBERT MACPHERSON

MacPherson began his return to painting in 1993 with his *Mayfair* series. Many of the works are based on the kind of roadside signage common in the Nambour and Brisbane regions and all over rural Australia a few decades ago, but which are now incompatible with the multi-lane highways that bypass so many regional centres. These works continue to develop the themes of the *Frog Poems*, expanding his presentation of the vernacular, continuing to elevate non-art materials, objects, and language into “high art.” His emphasis on locality is clear through the choice of colloquial language and subject matter. *Mayfair: (Swamp Rats) Ninety-Seven Signs for C.P., J.P., B.W., G.W. & R.W.* 1994–1995 (Figure 3.7) refers to the language of the wetlands around Cribb Island on the northern outskirts of Brisbane where MacPherson lived when his family

Figure 3.6: *Little Pictures for the Poor*, Robert MacPherson, 1983.
moved from Nambour—an area since reclaimed for airport extensions. The ninety-seven signs advertise all manner of equipment, bait, and other paraphernalia and services for fishing, a popular activity in this location at the time. Many of the sign subjects are generic enough to be familiar anywhere in Australia where the fishing is good. Those better acquainted with this area may pick out specific regional references in some of the signs, such as Cunjevoi and the local speciality, Cribb Island worms. The text is cramped in to fill the panels and maximise the impact, often with little concern for word breaks: “CRIB|B.IS.W|ORMS.” In other cases a combination of limited space and lack of forethought when the brush first hit the board is evident, as in “BUTT|ERWO|RTH-RO|DS” where the text progressively shrinks as the bottom of the panel looms closer, leaving the final “ds” trailing off to a quarter the size of the first line. Another sign for an Amoco agent, “AMO|CO-A|GENT” a well-known oil company that disappeared in the 1980s when subsumed by BP, helps fix the era.

Of course MacPherson has meticulously and intentionally achieved this appearance, just as he has overpainted parts of panels as though they have been re-used, recycled or corrected. In The Sign Pieces: Some Thoughts, a ‘primer’ written in 1993 for the Mayfair series, MacPherson makes this reference explicit:

...AS LONG AS I CAN REMEMBER I’VE BEEN AWARE OF AND FOUND ROAD SIDE SIGN AGE, COUNTRY FRESH GROWN PRODUCE SIGNS, ROADSIDE GAS, FOOD ETC
3.1. SIGNS OF ROBERT MACPHERSON


MacPherson’s ‘container’ again comes to the fore, this time the dimensions determined by his use of shop-standard sizes of Masonite and hardboard panels. The physical limit of the container is the germ of what MacPherson finds beautiful, “where the writer/painter has run out of board and started below” or the repainting/refilling of the signs/containers to produce a “beautiful scumbling of line and paint surface.” On reflection there can be no doubt the signs were all painted by the same hand and, it would seem, with the same pot of acrylic, undermining any opportunity to see this work as presenting a genuine collection of signs found in the landscape.

Figure 3.8: Thirty Five Paintings, Thirty Five Signs in Memory of G.W. and Reno Castelli, Robert MacPherson, 1993–94.

Another of MacPherson’s Mayfair works is Thirty Five Paintings, Thirty Five Signs in Memory of G.W. and Reno Castelli (1993–1994), ostensibly presented as a series of stencilled advertisements for Holden spare parts, in the truncated shorthand of Holden aficionados (Figure 3.8). In 1994 MacPherson sent a note to his Sydney dealer Kerry Crowley about these paintings:
In this case I’ve drawn on the cult of the Holden and its specialised language, beyond the overt Australian imagery and my polemical barrow, it again comes back to formal principles: colour modifying colour, colour modifying colour modifying scale, colour modifying form/structure, colour modifying form/structure modifying scale, surface modifying colour, surface modifying colour modifying scale, image/colour/density modifying scale, some of the same old tricks of informed ‘colour field’ theory less the studied pain of maintaining ‘two dimensionality,’ of ‘holding the plane,’ of never subverting flatness. Phew!

Through all this, while clearly informed by conceptual and minimalist ideas—exemplified by *I See a Can of Paint as a Painting Unpainted*—MacPherson has remained resolutely aligned to his Modernist concerns, his structuring principles, and his roots.

![Figure 3.9: Mayfair: Sweet and Tasty, for E.W. (Who smiled, rolled her eyes and looked in wonder), Robert MacPherson, 1995–98.](image)

### 3.2 Signs of Walker Evans

Walker Evans (1903–1975) remains one of America’s most famous photographers, establishing the documentary style and his reputation with the recording of the plight of Depression-era share-croppers in the southern United States for the Farm Security Administration. It is well-known and unsurprising that in his “street photography” oeuvre,
3.2. SIGNS OF WALKER EVANS

signs and advertising hoardings are common elements—often primary elements—of his images (Figure 3.10, the serendipitous Figure 3.11, and many other examples.)

![Figure 3.10: Storefront and Signs, Beaufort, South Carolina, Walker Evans, 1936.](image)

Perhaps less well-known is that towards the end of his career (and his life) Evans collected, photographed and exhibited all manner of signs, from advertisements to signposts to NO TRESPASSING notices. Here the signs were no longer just components of his photographs, surrounded by some informing context: they were the entire image or even the objects themselves, cut loose from their moorings. Evans even decorated his home with some of the same signs (Figure 3.12). A few years ago I came across a striking statement from Evans that I eventually discovered referred to an exhibition of signs, and photographs of signs, that he mounted at Yale in 1971: “This lifting is, in the raw, exactly what the photographer does with his machine, anyway, always.”

The word “lift” intrigued me for a number of reasons, particularly that it was not clear to me what Evans had actually meant. In most cases Evans took the signs without consent: according to his biographer, “by the 1970s he was packing a can of Liquid Wrench and a couple of pairs of pliers in the trunk of his car as a matter of routine.” If that was the case then perhaps he meant lifting in the colloquial sense of stealing, which was indeed the source of his signs. We can eliminate the material sense of lift as elevating to a higher position: that may apply to the act of hanging the signs on a gallery wall,
but it’s not what a camera does. On the other hand, lifting in the immaterial sense, to raise in estimation and value, has some traction. Walker Evans’s act of selecting these signs and thereby nominating them as works of art, lifts them from their functional context to collectible objects. But there is a personal reason this quote resonates: lifting is a mathematical notion that has long been part of my toolkit, part of my daily life. Informally, the idea is to lift some frame of reference into a richer context, so for example we can lift numbers and arithmetic into a context where the process of computation is explicit (for instance, we may or may not get an answer). So \( \text{lift} + \) is the computation of addition while \(+\) is just the pure function. Correspondingly, \( \text{lift} \ 42 \) becomes more than just the number, it is now a unit of computation.

The signs Evans selected all had some original purpose: to persuade, inform, warn or direct. But lifting them into an art context supersedes or augments that utility. The viewer’s attention is drawn beyond original function and they are challenged to see these signs—these readymades—as art objects, as differently significant.\(^{100}\) Meanwhile, photographing something will always, anyway, lift it into a richer context of semiotic relation as referent to a newly created signifier, the photograph. As Barthes explained, a photograph is never “immediately or generally distinguished from its referent.”\(^ {101}\) But it also establishes “a new space-time category: spatial immediacy and temporal anteriority,” for in every photograph “there is always the stupefying evidence of \textit{this is how it was}, giving us, by a precious miracle, a reality from which we are sheltered.”\(^ {102}\)
3.3 Signs of Common Place

One of my early research exercises, mentioned in Section 2.2, was *Every Building on Wentworth Street*, in deference to Ed Ruscha’s *Every Building on the Sunset Strip*. One photograph stands out as a trigger and inspiration for work that has followed (Figure 2.6 and repeated here in Figure 3.13). What was this universal daydream, which surely now has passed? Other than the bas relief title, the other text in the image is de-structured—vaguely reminiscent of some of Rosalie Gascoigne’s work—but we can probably decipher “furniture,” helped by the reasonable observation that this had indeed been a furniture store. On the other hand, the scale seems wrong in relation to the building so perhaps the sign panels were brought in from elsewhere to obstruct the only view in. This text is purely a part of the image—there is no content to the linguistic message.

But here is an even more important realisation from this single photograph: the close cropping clears the image of extraneous information, and the direct straight-on shot with the facade parallel to the picture plane gives the photograph a flatness that deactivates the surface: there are no lines of perspective to draw the eye on an excursion around the plane; there is only the thing itself, and there is nowhere to look other than away. The upshot is an insistence on the index: it is what it is, dislocated from any context.

This was the spark for a deliberate concern with text in images (eventually including...
Congregation of the Index discussed earlier in Section 2.4) and with observing and photographing the signs and labels that pervade our environment. In retrospect I realise that text had already played a part in much of my practice without it being consciously so: just as Walker Evans had done years ago, many of my photographs contained, intentional or unintentional, nucleus or periphery, signs—text—as pictorial elements. My first experiment was directly inspired by Universal Daydream. I sought out buildings around Wollongong that were named for exotic locations: California, Tijuana, Mykonos, Toledo Gardens—anywhere but here—using the same point-blank style. I then stumbled into cemeteries and advertising, and a particular fascination with the kinds of signs that have a short lifetime: for fresh produce, Easter, Xmas, and for the work of those artisans, the signwriters.

The nearby shopping village in Bulli was a generous resource, with the time-warp Black Diamond Bakery and the now-defunct Modern Butcher and Pie Shop. This far-from-modern butcher shop was festooned inside and out, on the walls, windows and footpaths with all manner of professionally painted signs or scrawled blackboards, announcing the nutritional analysis of their sausages, or advertising their 25 varieties of pies, or seasonal Xmas Cakes and Hams, Hams. I continue to harbour a nagging discomfort with some of these photographs. I would take them back to show in Canberra, often to the bemusement and amusement of friends and colleagues. I have an affection for
Figure 3.14: California

Wollongong but it seemed to me that these images could be presenting the region as some Exotic Other for the titillation of a more ‘sophisticated’ audience. If I showed them in Wollongong, perhaps to people who may routinely drive past these signs, what would be their reaction? Also, was I simply collecting and cataloguing these signs? If so, what was the criterion for inclusion or rejection?

Another location provided material for sustained attention: Leisure Coast Fruit and Deli is a busy greengrocer, delicatessen and nursery. The ongoing succession of hoardings that advertise their daily specials are visually striking, interesting for their content but also for their heritage and authorship (Figure 3.16). Early each morning the day-glo promotional signs are tied to the row of palm trees that line the verge of the busy main road running past, through the whimsically titled semi-industrial suburb of Fairy Meadow. The signs are recycled and repainted as the bargains come and go. Brought in and packed away at the end of trading each day, reinstated each morning, the corners slowly chip away and the 1200mm square panels of 12mm plywood warp in the sun and rain, occasionally—but rarely—being replaced for a fresh new look.

Aiming to minimise the semiotic distance between my images and the actual signs, I followed my standard approach: point-blank, straight-on photographs in direct light, close-cropped to cut them adrift from any diverting context. Like the signs in Evans’s
Yale exhibition, my aim was to lift them from their original settings, to see them as differently significant. Each of the boards has a length of rope threaded through holes drilled near the middle of the panel so they may be tied in place for their daily assignment. Other than the texture of the plywood and overpainted layers, that rope is all there is to disrupt the rigid plane of the photographs.

Each sign is of a standardised style: a bright central round surrounded by a contrasting fluorescent colour. The price is naturally the principal feature, and there are enough details about the product to inform the cognoscenti. The text is always black and apparently always in the same hand. Looking closely we see the drips and dribbles, the surface build-up from frequent overpainting, the palimpsest of previous layers, partly visible as edge textures or tone changes caused by an inadequate over-layer: here is MacPherson’s “beautiful scumbling of line and paint surface” in an entirely utilitarian circumstance. Yet these signs are different to the kinds that Robert MacPherson refers to as inspiring his *Mayfair* series: they are—or appear to be, for that is MacPherson’s explicit intention—more professionally executed than MacPherson’s faux signs and that
3.3. SIGNS OF COMMON PLACE

Figure 3.16: Leisure Coast Fruit & Deli.

is because this signwriter is an artisan, unlike MacPherson’s imagined vernacular painters with other preoccupations and less skill. The Leisure Coast’s signwriter’s palette is limited to available off-the-shelf colours and then further constrained, either by choice or at the client’s instruction, to a fluorescent subset. Work by the same signwriter at other venues are identifiably by the same hand but in a different style (Figure 3.17). Looking back at the Mayfair series MacPherson also works within a limited colour range (Figure 3.8 for example). That may be partly in response to the real signs that are his inspiration, but it is surely motivated at least as much by a modernist preoccupation with colour theory, as expressed in his letter to Kerry Crowley (page 40).

The four photographs in Figure 3.16 were shown at the 2011 Pingyao International Photography Festival. I was asked to provide a brief artist’s statement but since this was an unfamiliar exhibition in a country I had never visited—and explicitly a photography
exhibition—I sought advice from Denise Ferris, mentor and leader of the ANU delegation. Based on our discussions, here is what we produced:

*Roadside hoardings do more than simply announce the price and availability of fruit and vegetables. The tradition of rowdy marketplace vernacular is that the loudness of the shout is paramount—the words are secondary. These signs are designed more to attract and distract than to inform.*

All true, but this is quite a distance from what I was focusing on for my research regarding these pictures. There, my preoccupation is with conceptual strategies: appropriation, text, the question of craft, the hand of the artist, the everyday, photography as documentation and so on—matters outlined above. In contrast, the Pingyao statement is almost entirely aiming at the content of the photograph. It’s about the thing in the pic-
3.4 SIGNS OF KEITH ARNATT

There also appears to be a correlation with the way of looking that is at the forefront of Rosalind Krauss’s argument in *A Note of Photography and the Simulacral*. Her motivating example is a 1983 French television program, *Une minute pour une image* where a single photograph was broadcast for one minute, accompanied by a voice-over commentary. Krauss’s article is more than a nod to Pierre Bourdieu’s brilliant sociological study of photography, *Un Art moyen*, from two decades earlier. The background of the narrators varied enormously but Krauss detected an undeniable uniformity in the kinds of reaction the photographs elicited: “what is striking [in the commentaries] is that they remain in the transparent, behind-the-surface space of ‘it’s an x or a y’.” This is hardly surprising, reflecting as it does the common instrumental view of the photographic medium as a neutral means of representing reality. My Pingyao statement fits this mould: the content of the image is the focus of attention, coming to the fore despite my best efforts to minimise what is behind those surfaces. Perhaps my attempts to lift these signs, eliding their context, paradoxically turns the spotlight on the viewer’s need to construct just such a context.

3.4 Signs of Keith Arnatt

One more artist who has been an important ally for this part of my research is British artist/photographer Keith Arnatt (1930–2008). Through the 1960s into the 1970s Arnatt established his reputation as a conceptual artist, exhibiting at the Tate in London and the groundbreaking 1970 *Information* at the Museum of Modern Art in New York, as well as Lucy Lippard’s ‘numbers’ shows in Vancouver and Seattle among others. However, just as Robert MacPherson described himself a satirical Modernist, Arnatt took a satirical approach to conceptualism, or as he saw it, the “reductive stance” of the “post-minimalist debate.” Among his most well-known works is *Self-Burial* (1969) where Arnatt is photographed nine times as he apparently but implausibly sinks, feet first and stony faced, into the earth (Figure 3.18). This work clearly plays on the gap between photographic veracity and deceit: there is a stop-frame animation look to the work—nine slivers of time—reinforced by the juxtaposition of the images. *Self Burial* is ostensibly presented as performance documentation but front and centre is the oscillation between what we know or believe to be true and what our eyes tell us, between the horror...
and the ruse.\textsuperscript{110} This work also appeared as \textit{Self Burial (Television Interference Project)} in 1969 where for two seconds at 8:15pm and 9:15pm each night for eight nights a German television channel showed one of the images of Arnatt’s progression into the earth, in sequence, unannounced, unexplained and uncredited.

In common with many other conceptual artists, Arnatt used photography extensively, motivated by its documentary potential: “Originally I thought of the work as being the ‘object’ photographed—not the photographs themselves—their function I simply regarded as ‘evidence.’ However, they \textit{were} taken with the idea of showing what was photographed ... [many of the works] would otherwise pose difficulties for a viewer.”\textsuperscript{111} Like one of Nancy Foote’s anti-photographers, Arnatt came to see the potential of the medium as an end in itself: “Of course, the photographs, more often than not, did
not make clear at all what was photographed, but rather, presented the viewer of the photograph with precisely the same difficulty, i.e. that of making sense of the photograph! I suppose I was beginning to become aware of the unreliability of photographic evidence and began to play with that feature.”

Despite the evident humour of Self Burial, Arnatt was making a serious point about contemporary art at that time: “If my work has connection with the post-minimalist debate it would be because of my focus on its seemingly reductive stance. The logic of that stance seemed to call for an escalating negativity—no material form, no content and ultimately no artist. It all seemed like a scenario for a Beckett play.” Arnatt’s approach was satirical, combining “gentle humour and self-deprecation” to express his ambivalence: “I did [Self-Burial] because a writer/critic made the suggestion—in connection with the dematerialisation of the art object, that if the art object disappeared then it followed that the artist would disappear.”

What is clear about Self Burial is its reliance on the medium of photography: first for the “spacial immediacy and temporal anteriority” that allows us to mentally animate the sequence of photographs, and second for their “stupefying evidence of this is how it was,” so that we may buy into the deceit.

The reliance on photography by conceptual artists was explored as early as 1976 by Nancy Foote, including the presentation of multiple photographs as a single work: the “use of several pictures ... immediately alters the sort of content possible within the overall work.” Arnatt’s Self-Burial relies on the contiguity and ordering of the nine photographs to animate his internment. Much of Douglas Huebler’s work relies on the association of photographs by juxtaposition (Figure 2.5 for example), and Robert Smithson’s ‘displacements,’ such as Incidents of Mirror-Travel in the Yucatan (1969) can only exist as collocated photographs because that is the only way they may be experienced:
the rationale of the work being that each incident occurred at a different time and place (Figure 3.19). An example of one of my own works to take advantage of this photographic opportunity is a series of nine images (three are shown in Figure 3.20). Stretched out over several kilometres of the South Coast highway on most summer weekends are numerous advertisements for a roadside fruit stall. The interplay of collected photographs collapses into a single encounter as the gaps in time and distance are edited out.

Another of Arnatt’s most recognised works is the 1972 photograph showing him wearing a sandwich-board proclaiming I’M A REAL ARTIST (Figure 3.21). The rather odd title Trouser-Word Piece begins to make sense with the knowledge that the work pairs this photograph with an extract from the deliciously titled Sense and Sensibility by John Austin. J. L. Austin was a British philosopher with a particular interest in language and its use. The associated extract begins:

It is usually thought, and dare I say usually rightly thought, that what one might call the affirmative use of a term is basic—that, to understand ‘x,’ we need to know what it is to be x, or to be an x, and that knowing this apprises us of what it is not to be x, not to be an x. But with ‘real’ ... it is the negative use that wears the trousers. That is, a definite sense attaches to the assertion that something is real, a real such-and-such, only in the light of a specific way in which it might be, or might have been, not real. ‘A real duck’ differs from the simple ‘a duck’ only in that is used to exclude various ways of being not a real duck—but a dummy, a toy, a picture, a decoy &c.;
and moreover I don’t know just how to take the assertion that it’s a real
duck unless I know just what, on that particular occasion, the speaker had
in mind to exclude. . . 

So the sense in the title is that ‘trouser’ is not merely in conjunction with ‘word.’ Rather,
‘trouser’ is being used to qualify ‘word,’ and ‘real’ is the trouser-word. Arnatt’s claim
that he is a real artist must entail some sense of excluding being not a real artist,
which immediately begs the question. The statement sows the seeds of its own doubt: who or what is not a real artist? Also notice the made-for-photography aspect of this
work. It relies on coincidental presentation with the accompanying text if we are to
decipher the artist’s intention: the photograph is much more than simple evidentiary
documentation.

Figure 3.21: Trouser-Word Piece, Keith Arnatt, 1972.

Are the signs MacPherson paints for his Mayfair series real signs? According to Austin
and Arnatt any answer, positive or negative, must be predicated on setting a framework for the conversation to determine what might qualify as not a real sign. Like
MacPherson, Arnatt was vitally interested in language, but where MacPherson was
drawn to vernacular and the poetry of how it looks and sounds, Arnatt was more in-
clined towards philosophy and the limits to understanding: what can be expressed and
communicated.\textsuperscript{117} \textit{Trouser-Word Piece} is a prime example but he also produced a num-
ber of text works or essays such as \textit{I have decided to go to the Tate Gallery next Friday}
(1971) and \textit{Is it possible for me to do nothing as my contribution to this exhibition?}
(1970) where the immediate challenge arises that the act of ‘doing nothing’ is surely
doing something.\textsuperscript{118}

Arnatt’s turn to photography was set in train in 1973, when Magnum photographer
David Hurn arrived at Newport Art College where Arnatt was teaching, to set up a new
course in documentary photography. Hurn’s inaugural lecture introduced Arnatt for the
first time to the work of Walker Evans, August Sander and Diane Arbus.\textsuperscript{119} The two
became good friends, Hurn continuing to acquaint him with the techniques and history
of photography, and Arnatt eventually moved from sculpture and fine art to join Hurn’s
department. Arnatt had been a conceptual artist but he became a photographer. More
precisely, he turned his artistic attention fully to photography, and henceforth resolutely
and consistently referred to himself as a photographer. This is not to suggest that he
no longer considered himself an artist, but rather that he saw the distinction as invalid,
an argument he laid out in 1982 in \textit{Sausages and Food}, a critique of the Tate Gallery’s
policy toward photography and its collection at that time. Alan Bowness, then director
of the Tate had said “you have to be an artist and not only a photographer to have
your work in the Tate.” Arnatt’s response was that “Making a distinction between, or
opposing, artists and photographers is, it strikes me like making a distinction between,
or opposing, sausages and food—surely odd.”\textsuperscript{120}

One of Arnatt’s later series of photographs is particularly relevant to my own sign work.
\textit{Notes From Jo} (1991–1994) consists of eighteen large, straightforward photographs of
notes that Arnatt’s wife Jo left for him over those years (Figure 3.22, Figure 3.23). Ac-

According to Hurn, Arnatt told him that he “wanted to photograph the notes simply
because he thought they were wonderful, he wanted a record, and that if he didn’t
photograph them they would disappear.”\textsuperscript{121} At that level the work is a modest act of
preservation mediated through photography. However it was surely also a very personal
and affectionate act, made all the more poignant by the fact that Jo was struck down
by a brain tumour soon after, Arnatt nursing her until her death in 1996.

There are clear echoes of Walker Evans’s and my own photographs of signs in this
work. Arnatt places the notes flat and forensic on his copy-stand against a vacant ground, thereby lifting them, stripping them of context, time and space; for Martin Parr they become surreal. Once again the photographic index becomes a near-transparent channel between signifier and referent: any richness in the semiotic load is carried by the note itself. If the Leisure Coast Fruit and Deli signs and Robert MacPherson’s *Mayfair* paintings have containers dictated by shop-standard board sizes, then Jo’s containers are determined by whatever scraps of paper or used envelopes come to hand. And while MacPherson’s and my signs show the “beautiful scumbling” of re-use, wear and over-painting, the corresponding character of these notes is in their repurposing, with joins, folds, tears, text bleeding through from the reverse, or stains and grime from the kitchen or retrieval from the bin.

About a decade later (2001) Arnatt produced *Notices*, this time a series of photographs of simple market-stall signs he had collected locally (Figure 3.24). The style is once again forensic, but without the personal tenderness of *Notes From Jo*. There is an affinity

![Figure 3.22: Notes From Jo, Keith Arnatt, 1991–94.](image)
with MacPherson’s *Mayfair* and with my own sign photographs, but they evoke the small trader atmosphere of markets in some of Britain’s less privileged provinces, rather than the “rowdy marketplace vernacular” of Leisure Coast Fruit and Deli.  

**Conclusion**

I began this chapter suggesting a focus on the material, visual properties of language and its potential as a pictorial element. The motivating examples by Jasper Johns and Ed Ruscha were closely linked, and perhaps entirely justified by, the contemporary debates around art, Modernism, painting and representation at the time. The three artists I chose to contextualise and guide my research all worked with language, but their concerns were different to Johns and Ruscha, not least because two of them were photographers. MacPherson was—and remains—closely aligned with those debates, describing himself as “a formalist, but satirical,” but he is also deeply interested in language itself, for its
poetry and its levels of meaning in communication: a working class hero in love with vernacular.

It is uncertain what Evans's criteria were for selecting his signs to photograph or steal, but it may have been as straightforward as Ruscha’s simple interest in the way they look: “Isn’t it curious that those little squiggles . . . go to make up that funny word?” but that very act of seeing and choosing is fundamental to the artistic process. The ‘lifting’ statement that largely motivated my discussion of Evans’s sign work ends with the following declaration: “The photographer, the artist, ‘takes’ a picture: symbolically he lifts an object . . . and in so doing he makes a claim for that object . . . and a claim for his act of seeing in the first place.” This attitude accords remarkably with MacPherson’s 1982 text work I See a Can of Paint as a Painting Unpainted (Figure 3.5) which concludes with “I see the can unfilled as a painting who is the artist the paint the
my decision to photograph the Leisure Coast Fruit and Deli signs was fundamentally driven by me seeing those objects and making a claim for their art potential. A comment that Ed Ruscha made in a 1980 interview has stuck with me for years now and seems particularly apt at this point: “I like the idea of someone making a statement about something that you don’t make statements about — that really attracts me.”

In his Yale exhibition of signs, Evans dissembled and at the same time drew attention to the distinction between a photograph and its referent—that is between the photographs of signs and the signs themselves—by exhibiting them together. I sought a similar effect by cropping to elide the context, the streetscape, the milieu: only the sign remained and the medium was almost transparent. That same act of cropping also drew attention to the 1200mm square panels that were the signwriter’s ‘containers,’ echoing one of MacPherson’s most fundamental and enduring structuring devices.

Finally, my photographs are also an act of preservation of the signwriter’s paintings, breaking in to still the cycle of repaintings that follow the seasonal needs of the business. Keith Arnatt’s *Notes from Jo* are also explicitly an act of preservation: he “wanted to photograph the notes simply because he thought they were wonderful, he wanted a record, and that if he didn’t photograph them they would disappear.” Unlike my subjects he could have chosen to preserve the actual notes—perhaps he did—but there is a sense where photographs represent memories, and making large prints emphasises their place as monumental memorials to his late wife.

Coming back around to MacPherson one last time, his work too is at least in part an act of preservation, railing against the loss of language and the disappearing working class: “I’M EVER DISMAYED BY THE LOSS OF LANGUAGE, THE SAYINGS, THE TERMS I USED IN MY CHILDHOOD AND YOUNG ADULTHOOD, WHICH FOR THE MOST PART I TOOK AS A GIVEN . . . AND THE MYRIAD OF SOULS WHO MAKE UP THE DISAPPEARING AUSTRALIAN WORKING CLASS.” MacPherson is preserving an idea, a memory, rather than an object so by necessity (and no doubt by choice) he works with representations rather than physical things. Arnatt’s and my photographs are also from the everyday, the vernacular, conceivably from the working class, so perhaps we too are preserving ideas and memories as well as objects.
Chapter 4

Sol LeWitt and his Mechanics

The framework of this research project is the investigation of some conceptual art strategies: process, systems and series; word and sign; appropriation, intervention and the everyday, to be revisited in a contemporary context. The photographic work discussed in the previous chapter began with a process-driven approach and motivation, though the main focus fell on word and sign. Nevertheless, that work maintains its systematic and serial characteristic, and it also encompasses some obvious aspects of appropriation and the everyday, matters to be discussed further in Chapter 5. This chapter more directly addresses the issue of process and seriality, with particular attention to the work of Sol LeWitt. LeWitt was one of the pillars of the conceptual art movement from its beginnings, and is one of the best-known and consistent artists working with process. Here my research plan is to apply modern computer technology to revisit and reimagine some of his wall drawings and prints. Much of the current theorising of so-called software art seeks an historical precedent in conceptual art, process-oriented work in particular, so the outcomes of this practical research may provide some new perspectives.

The first Sol LeWitt work that fully captured my attention was his *Incomplete Open Cubes* begun in 1974. More precisely, it was the *Schematic Drawing for Incomplete Open Cubes* (Figure 4.1). I have seen some of the constructed versions: cold, slick, toothpaste-white powder-coated aluminium structures that are asking to be stroked yet at the same time strangely forbidding, but I am still much more engaged by the diagram of complete combinatorial enumeration, a trope that is a cornerstone of LeWitt’s practice. The simple elegance of the isometric projection of a cube, indistinguishable from a regular hexagon and its diagonals, repeatedly insists the viewer make the mental
effort to interpret each diagram as a three-dimensional representation rather than a plane figure. That is the nature of visual ambiguity, but I wonder would we so readily make that jump without the suggestive title or if we were presented with only one of the diagrams rather than a collection of accumulated hints.

Figure 4.1: Variations of Incomplete Open Cubes, Sol LeWitt, 1974.

Then there is the fun of discovering LeWitt’s game. To comply with his unspoken rules, to qualify for inclusion, an incomplete open cube first must occupy three dimensions: no “flat” reductions. It also must be connected: no floating edges. Finally, there must be no rotationally symmetric variants. This last requirement is the most challenging: has he got it right? Are none missing? Are there no repetitions? According to Veronica Roberts, former director of research for the Sol LeWitt catalogue raisonné, LeWitt struggled with this exercise and sought help and reassurance from mathematically more confident acquaintances (Figure 4.2). In the same lecture, Roberts mentions in pass-
ing that LeWitt did not have access to a computer. Of course, in 1974 very few people did have access to a computer and those that did were specialists, so this does not seem a particularly insightful remark, but it does hint at the direction I took with my own research.132

Figure 4.2: Sketches for Seven-edge Incomplete Open Cubes, Sol LeWitt.

4.1 From Idea to Machine

LeWitt’s most well known writings are from very early in his career and have over the years become near-canonical definitions of what constitutes conceptual art: Paragraphs on Conceptual Art (1967) and Sentences on Conceptual Art (1969). LeWitt’s most often quoted statement is surely this one from Paragraphs: “When an artist uses a conceptual form of art, it means that all of the planning and decisions are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the
Somewhat at odds with this sentiment in the first of his thirty-five Sentences: “Conceptual artists are mystics rather than rationalists. They leap to conclusions that logic cannot reach.” Taking this to heart, I leapt to a conclusion that logic cannot reach: why not really let the idea become a machine? If I represent the idea as a computer program, then plainly “all the planning and decisions are made beforehand” and the execution is truly a perfunctory affair. Passing the execution over to an inanimate automatic machine (a computer) is surely as disinterested as it can get. With hindsight I now realise this hazy proposition was somewhat naïve. I thought I was just dipping my toe in the water, but I feel like I’ve been swimming for shore ever since. In the back of my mind was the usual story that LeWitt provided instructions for the performance of his wall drawings, to be carried out by others to ‘realise’ the artwork. My rudimentary idea was to represent his instructions as computer programs so there was no subsequent need for human involvement, with all the judgements, biases and skills that would entail. On the other hand my plan has been to produce digital prints rather than wall drawings, but in principle it would ‘simply’ be an engineering matter to build an electro-mechanical wall drawing machine controlled by a similar program. To that end I focused my study on LeWitt’s prints rather than his wall drawings, in particular those prints based on some combinatorial process. Nevertheless, most of those prints correspond more or less closely to one of his wall drawings. During his career LeWitt produced over 1200 wall drawings while his prints catalogue raisonné has about 350 distinct entries. Concurrently I set about searching for the wall drawing instructions: no easy task as it turned out. That story, and a consideration of just how perfunctory their realisation is, or is not, I defer to later in this chapter. As my research has progressed I have discovered that LeWitt did not feel constrained to live by a statement he made decades earlier, despite its frequent repetition and elevation to iconic truth.

My first programming attempt was a colophon page from LeWitt’s artist’s book Four Basic Kinds of Lines & Colour, consisting of 15 squares of colour made up of yellow vertical lines, black horizontal lines, red upward diagonal lines and blue downward diagonal lines (Figure 4.3). The first 4 squares had one colour each, the next 6 had all combinations of 2 colours, followed by 4 squares with all combinations of 3 colours and the final square with all 4 colours: a simple sequential arrangement. I used the Processing system, in part as a structured way to explore a tool that had been garnering a lot of attention and positive reviews. I have since written programs for dozens of sets of LeWitt prints along with many related experiments and variations. For the most part the programs are very simple and unlikely to be of much interest to a computer.
scientist or software developer—my research here is about art, not computer science. Nevertheless, for completeness I have included some sample code in Appendix A.

My starting point for finding and coming to terms with the range and details of LeWitt’s prints was the catalogue of an exhibition at the Tate Gallery which I found in the ANU library. Soon after, I discovered the on-line catalogue raisonné of his prints which then became my primary point of reference. The catalogue raisonné gives the usual details of dimensions, date of publication, medium, print workshop and so on. There are also images of each print but they are small and low-resolution, which in many cases made it difficult to figure out the details of what was really going on. Fortunately, the National Gallery of Australia has a good collection of original LeWitt prints, so I also spent
many hours in their Collections Study Room poring over them, measuring, sketching and making copious notes to decipher and document LeWitt’s combinatorial rules. At present there is no equivalent wall drawing catalogue raisonné, but work is progressing with publication expected in 2015.\textsuperscript{141}

Even before knowing the fine details of the prints or analogous instructions, I could make progress on writing some useful code. After all, LeWitt returned again and again to the same elements: horizontal, vertical and diagonal lines, often in blocks of evenly spaced parallel lines; not-straight lines, broken lines, scribbles; arcs, circles, geometric figures; and so on, all in a limited variety of colours. Adding these code components to my toolkit meant that I could adjust parameters and plug them together as required. As a programming exercise this was all very straightforward but there were some unexpected discoveries ahead, some in the programming, others at the print production stage, and some in managing the images through the medium of a limited screen resolution.

\section*{4.2 What is to be Done?}

Another of my early attempts was LeWitt’s \textit{Arcs and Lines} from 1975.\textsuperscript{142} Figure 4.4 shows one of the three etchings that constitute LeWitt’s \textit{Arcs and Lines} and Figure 4.6 zooms in for a closer look.\textsuperscript{143}

Looking at the LeWitt print, we see occasional scratchy lines, ink spatters and smudges, and some of the general and unavoidable imprecision that we expect of a human controlling a ruler or other drawing implement. My coded version has none of that (Figures 4.5 and 4.7).\textsuperscript{144} From the very beginning there is friction between the idea—that is, LeWitt’s idea—as represented by my program and the output it mechanically produces, and the extant hand-crafted print. Of course I could extend my program to give an appearance of human imprecision, for example by setting the centre of a curve to be somewhere within a small range of the proper centre, or otherwise simulating an imperfect line, but it seems to me that would be missing the point: I am not trying to slavishly copy the prints and this is not an exercise in forgery; my proposal is to directly represent LeWitt’s idea in a way that eliminates the hand of the artisan. I could code in some variations, some noise, to mimic human error, but that would shift the emphasis to the print and the printer rather than the art and the artist. In an important sense the fact that I am using a computer to do this is the central consideration: the aim is not to copy the prints but to represent LeWitt’s ideas directly in code and leave the execution—the
4.2. WHAT IS TO BE DONE?

At least in the early days of his career, LeWitt accepted and embraced the expectation that there would be variations in the execution of his wall drawings. Here for example are some extracts from his 1971 manifesto Doing Wall Drawings:

There are decisions which the draftsman makes, within the plan, as part of the plan. Each individual being unique, given the same instructions would carry them out differently. He would understand them differently.

The artist must allow various interpretations of his plan. The draftsman perceives the artist’s plan, then reorders it to his own experience and understanding.

Each person draws a line differently and each person understands words differently.

‘crafting’—to inanimate machines.
No matter how carefully LeWitt lays out his plan, different drafters will bring their own thought processes and their own physical abilities. In fact, as we will see later in Section 4.3 the plans and instructions given with the wall drawing certificates are usually startlingly brief: as LeWitt’s career progressed other means for guiding the drafters and thus controlling the final realisations have developed. There is an important qualification to this acceptance of variability of outcomes, articulated by Charles Haxthausen: “Interpretation takes place not on the level of structure but of execution; ... the final form is decided not during the ‘performance’ but at the works conception, as is customary for classical compositions.”\textsuperscript{146} What is important then, is the permutations of the idea and the sequences of their occurrence: the true essence of LeWitt’s instructions.

LeWitt was a committed connoisseur and prodigious collector of classical music. Much has been made of this in relation to his art and LeWitt has often suggested that his instructions are like a musical score, he being the composer and the drafters the musicians performing the work.\textsuperscript{147} In 1971 LeWitt expanded on this analogy:
4.2. WHAT IS TO BE DONE?

“I try to make the plan specific enough that it comes out more or less as I want, but general enough that they have the freedom to interpret. It’s as though I were writing a piece of music and somebody else is going to play it on the piano. There’s plenty of opportunity to improvise within the limits of what’s written down. There’s a perverse quality in most people that makes them want to defeat expectations. I count on the rebelliousness that they have. As long as they stick to the plan, they can do anything they want, and I want them to express themselves.”

The composer-score-musician analogy is a good one, especially for the fact of reiteration of the ‘same’ drawing, but it only goes so far. Musical performers are routinely celebrated for their virtuosity: Zubin Mehta or the London Symphony Orchestra will fill a concert hall whether the programme is Beethoven or Mahler. By the early 1970s LeWitt had adopted a routine of acknowledging the artisans who perform his drawings, on the certificates and museum wall plaques, but they nevertheless remain relatively in the background.

Perhaps it is rebellious or perverse to choose to use a computer to make these drawings.
If so I am encouraged by LeWitt’s acceptance—moreover, his encouragement—to defeat his expectations so long as I remain true to the plan, but his plans have a distinctly light touch. On the other hand, my motivation apparently runs counter to this very same intention of LeWitt: by representing the plan—his instructions—as a computer program am I not eliminating those perverse human drafters? With them goes the variation and the rebelliousness: computers are nothing if not utterly compliant. But that was 1971. Forty years later the tension persists but in a different form, reflecting the revision and refinement of LeWitt’s modus operandi. In Jill Sykes’s review of the 2011 installation of LeWitt wall drawings at the Art Gallery of New South Wales she suggests, “When you see the meticulous LeWitt style of tracery of lines, it takes a moment to absorb their variation and realise the importance of his credo, as repeated by Sachi, not to make it look like wallpaper or computer-generated—not to make it too perfect.” By the end of his career LeWitt sought control of the outcome by control of the execution. By then his quest had become for a specific hand-drawn quality—rebels need not apply. The meticulous preparation of the surface was so the drawings could exploit the “orange peel” texture, to provide the shimmering, near-invisible irregularity of lines. If LeWitt has explicitly excluded or discounted a “computer-generated” look, that would seem to put at risk the premise for this part of my research project. On the other hand there is obviously a distance between his attitude in 1971 and an orthodoxy he came to some time later in his career. The framing of my overall research project is in terms of certain strategies of conceptual art and how they may or may not translate into present day practices and technologies. To that end, the transformation and refinement of LeWitt’s practice over his artistic career is a noteworthy case study which will be examined in this chapter. On the other hand, my desire is to base my practice on conceptual strategies as they existed around their time of inception. I want to bring those ideas and techniques into the present day, jumping over the forty years myself rather than reiterating what has happened in the career of others. Of course those developments are an important informing source and cannot be ignored, but as to my work representing LeWitt’s instructions and ideas as programs, I begin from the beginning, embracing his early statements, and his encouragement to defeat expectations.

Drawing

LeWitt’s sequence of etchings *Scribbles Printed in Four Directions Using Four Colours* (1971) is yet another work of all combinations of one, two, three and four primary
4.2. WHAT IS TO BE DONE?

colours, resulting in fifteen prints (Figure 4.8). A single etching plate is used, rotated a quarter turn for each of the colours. The scribble is a line (or lines—it’s impossible to tell) that covers the whole plate and is quite uniformly distributed.

From a programming perspective, producing a smooth scribble-like line that evenly fills a square space to a sufficient density is more challenging than the previous works I have discussed. A hand-drawn line is not just some random wandering: the stroke is smooth, and the drawer is constantly assessing the relative density of lines across the whole field to adjust their movements. The scribbler would follow curves and flow, occasionally change direction, avoid borders (just enough but not too much), observe areas of low density and trend towards them in a stochastic manner. All in all, it sounds like a challenging exercise in artificial intelligence, an area where I have little expertise, so I was looking for a different solution.

Quite separately from this research I had recently discovered Craig Reynolds’s steering algorithms and begun implementing a range of corresponding programs. These ideas are widely used in animation to simulate flocks of birds, herds of Wildebeest and so on where very simple individual behaviours interact and accumulate to produce realistic ‘emergent’ behaviour of multiple agents. So, taking something I already had in my toolkit, I chose to develop a steering algorithm to ‘wander’ in a limited way relative to the current direction, rather than some random skittering that would look more like Brownian motion. There’s an old saying: when all you have is a hammer, everything
looks like a nail. I coded in occasional changes of direction, a look-ahead to trend away from borders, and what I like to imagine is a slight left-handed bias to reflect my own orientation. On the other hand, I did not detect areas of low line density: a slight steering bias towards the centre of the square eventually gave good results and was much easier to code (Figure 4.9).

Still, it was not an entirely straightforward exercise—you need to get the parameters right (Figure 4.10).

Readers familiar with Reynolds’s steering algorithms may take issue with my earlier claim in Chapter 2 that I would avoid generative techniques, for surely that is exactly what I have used here. I accept the criticism, but maintain that while the details of the actual line are unpredictable, that is not the viewer’s focus: all we are interested in is that it is a scribble, not the scribble itself.

In a similar vein, I have so far glossed over most of the coding techniques in the Arches and Lines prints above. There too I used an algorithm which would normally be categorised as generative, to produce the not-straight lines. Perlin Noise produces a smooth, ‘naturally ordered’ sequence of pseudo-random numbers. Simple randomness would not give us the kind of smooth result that might appear hand drawn (Figure 4.11). Again I justify this approach by noting that while the details of the actual line are difficult to predict, that is not of interest: all we care about is that it is not straight. In any case, what is the alternative?
4.2. **WHAT IS TO BE DONE?**

My idea for this project was to work forward from LeWitt’s instructions to my corresponding programs, but the instructions are not the meticulous plans I had been led to expect. What I have described so far has been more an exercise in reverse engineering code to represent his ideas, working from images and their prosaic but accurately descriptive titles. For instance, if the lines in the prints were $\frac{1}{8}$ “ or $\frac{1}{16}$ “ apart then that is what I chose for my programs. But is that LeWitt’s explicit intention or a manifestation of the skill of the printmaker and limitation of the medium? Likewise, while I was comfortable that my process for producing the prints has a conceptual creative justification, I was troubled that the final outcome did not seem to stand alone. If all you see looks like copies of LeWitt prints there seems to be something missing from the purely visual encounter. I struggled with this for a long time, feeling I needed to give an uninitiated viewer some way into the background idea. There were suggestions, which I rejected, of perhaps displaying the code as well as the images.\textsuperscript{154} My way through this impasse

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**Figure 4.10:** Whoops.

**Figure 4.11:** Perlin Noise vs. Pseudo-Random Number Generator.

**Exploiting the Tool**
was based on an observation I made earlier that the fact of using a computer is the central consideration here. In that case, if my prints look unequivocally digital—beyond human capacity, for example—then the point is made. If by using a computer and a digital printer I can draw much finer lines with much smaller gaps while still maintaining enough accuracy, that is a new option. The choice once again confronts the question of a derivative copy of an art object versus the use of a different process, different tools and different technology to execute LeWitt’s ideas.

A demonstration of this approach is my encoding of one of LeWitt’s most beautiful sets of etchings, *Bands of Colour in Four Directions & All Combinations* (1971). Once again the starting point is four colours giving four prints of single colours, six prints of two colours, four prints of three colours and one of all four colours. Curious and unconventional is that this set includes a sixteenth print also consisting of all four colours but in a different configuration (Figure 4.12).

Figure 4.12: *Bands of Colour in Four Directions*, Sol LeWitt, 1971.

In my prints the line weight is about 0.2mm on 0.7mm separation. The individual lines are clearly distinguishable but from a distance the bands look like panels of perfect pas-
4.2. WHAT IS TO BE DONE?

tels. There is no doubting their digital birthright: instead of a beautifully hand-crafted etching we have a mechanically produced—and differently beautiful—digital print. The object itself has its own distinctive look: the pristine cleanliness and ineluctable flatness of an inkjet print. In 2012 I extended this exercise for an exhibition showcasing experimental inkjet and digital works, Assisted Reproduction: Out in the Light, by scaling up to 44” square prints with the same fine line weight and separation. At that size, there is no hesitation in recognising the work as computer generated.

In a similar vein, I developed a version of Scribbles in Four Directions where, rather than overlaying a scribble of one colour with rotated identical scribbles of other colours, the different colours were drawn at the same time. The upshot is that while the scribbles are identical but rotated, the lines mingle so that in some places blue appears on top of red, in other places red on top of blue and so on. While still true to the idea I cannot conceive of this being possible other than through digital techniques.

Here is a comparable variation of LeWitt’s composer-score-musician analogy. By the late 1970s digital music synthesisers were commercially available and with that the composition of electronic music became a realistic prospect. In that case the composer writes the score and programs their synthesiser which performs the piece: the musicians are displaced. Just as I have attempted to eliminate the requirement of artisans to produce the image, electronic music eliminates the requirement for musicians. Just as some of my programs produce images that are likely beyond the capacity of humans using traditional technologies, electronic composers need not consider the limitations of musicians. Frank Zappa often wrote music that may have significantly challenged his band members, but on his famous album Jazz From Hell (1986) produced almost entirely on his Synclavier, there were no such limitations. Zappa conjectured that at least one of the tracks, G-Spot Tornado, would be impossible for humans to play but of course that is to ignore the “perverse quality in most people that makes them want to defeat expectations.” I have three ‘human’ recordings of G-Spot Tornado, one by French jazz band Struber Z’Tett (live, 2006), another by German chamber ensemble Ensemble Modern (1993), and the third by Finnish chamber musicians Ensemble Ambrosius (2000), perversely playing baroque instruments. A web search reveals many others.

Encoding Intuition

One last print I wish to discuss is the 2005 linocut Broken Color Bands in Four Directions, with a particular focus on my activity of developing the code (Figure 4.13).
CHAPTER 4. SOL LEWITT AND HIS MECHANICS

Figure 4.13: Broken Colour Bands in Four Directions, Sol LeWitt, 2005.

Having now worked through the process, I claim there is a precision required for coding that goes beyond what is required for a verbal or written description. For instance there are some ‘obvious’ choices a human would make of their own volition that need explicit and careful coding. Furthermore, some limitations that may be easy to state are in fact rather difficult to code. Here I outline the process—including stumbles and missteps—I went through to build the final programs for this work. As usual there is a significant element of reverse engineering involved.

The title gives us some information, especially if we are familiar with LeWitt’s oeuvre. In fact if we have the date (2005) and are very familiar with his work, we may confidently predict what those colours are. Looking at an image we see four square panels. In the horizontal and vertical panels there are 16 bands; in the diagonal panels the bands are the same width so there are 23 bands ($16\sqrt{2}$). The constant, unanswerable question of whether these observations and these numbers are significant always remains. The blocks of colour in each band seem to be of random length within some minimum to maximum range. We may ask how the lengths are distributed: linear, normal or some other distribution and, once again, does it matter? I chose a linear distribution, the simplest option because the built-in random number generator also has a linear distribution. In any case, for such a small sample (the number of bands) the distribution would generally be indistinguishable. Already there is discomfort: presumably a human would use their ‘aesthetic’ judgement here.

It is plain that consecutive blocks in the same band are different colours, otherwise our observations about block lengths are lost. Only after my first test run did I notice something that is completely obvious in hindsight: blocks on adjacent bands are also of different colours. Across the whole print no contiguous blocks are of the same colour. Hence my code needed to be modified to check each new block against a wider context. In the case of this particular image, we can generate new blocks one by one, left to
right, top to bottom, and include a relatively simply check of the colour of each new block against a few adjacent blocks in the previous row, plus the preceding block in the current band. Because of the limited range of block lengths, each block will be contiguous with at most three in the previous band. However, some of the variants of this work, such as Wall Drawing 1152, Whirls and Twirls (Met.) (2005), are fraught with more coding difficulties to achieve this requirement (Figure 4.14). Apparently, the painters realising this wall drawing also face difficulties. During the installation at MASS MoCA (Massachusetts Museum of Contemporary Art), “to ensure that no two bands of the same color touch, the draftsmen color-coded the bands with post-it notes before applying paint to the wall. Despite the color-coding, a few squares of the same color ended up touching and had to be painted over.”

For instance, where there are several arrangements of bands that may intersect, it is possible that the block our algorithm is trying to add to the arrangement will be adjacent to six or more other blocks, all of different colours. In that case no colour is possible for that block for there are only six colours available, so others may need to be changed to proceed: not impossible of course, but more difficult.

Figure 4.14: Wall Drawing 1152, Whirls and Twirls (Met.), Sol LeWitt, 2005.

One more unexpected lesson was to come. My program randomly chooses the length of
the next block between some minimum and maximum, but I had not made any special consideration of what happens when the end of the band is reached. The effect was to truncate it, making it possible that the length of the last block was much less than the minimum we wish to allow, perhaps only a sliver of colour. It is remarkable how obviously ‘wrong’—how jarring—is the look of this effect. In response, I changed the code so that if a block ends closer to the border than the minimum block length, the algorithm chooses another constrained random length until it either crosses the border or is short enough to allow another block of acceptable length to fit in. Once again I contend that someone painting or planning this by hand would make such a decision intuitively—an aesthetic decision.

Imperfect Vision

Issues with the production of prints—the aspect I was supposedly diminishing—came to light at the *Assisted Reproduction* exhibition mentioned above. Under lights in the gallery the bands of fine horizontal lines appeared to have a regular undulation of high and low density, like a sine wave with a period of a few inches. This effect had not been visible on screen during development nor in smaller (A4, A3) test prints, and I had not noticed it as the final prints came off the printer. Some colleagues thought it was an optical effect, a diffraction-like appearance caused by the gallery lights, but I was unconvinced. Possible causes were print-head misalignment and the to-and-fro action of the Epson on high-speed setting. Both possible, but—mea culpa—I had mistakenly worked at 300 dpi instead of my standard 360 dpi. With such fine lines and separations it turns out to be important to work at a factor of the printer’s operating resolution of 1440 dpi, otherwise the printer driver must interpolate and approximate, so the ink may not end up quite where it was originally intended.

Even the difference in size and resolution of the working screen and final print can cause difficulties: the software rendering the image to the screen has to work with a relatively coarse and small grid of pixels which can cause disconcerting artefacts such as in Figure 4.15.

A last example of this kind of development issue arises when printing blocks of closely spaced, roughly parallel non-straight lines. In fact each not-straight line is constructed from a sequence of short straight segments, end to end, short enough to be indistinguishable without magnification. My original approach was that each of those segments were of the same length, so consequently all the join points between corresponding segments
in a panel of not-straight lines are aligned. That is not noticeable on screen but is obvious and grating in the final print as a ladder-like effect. The fix was easy: have the lengths of the segments randomly vary within some range so they no longer align. All in all, the job of representing LeWitt’s ideas in code turned out to be much more than a simple translation: the unwritten, unspoken parts had to be made explicit.

A few things became clear early in this part of my project. First, it is wrong to take LeWitt’s “perfunctory” assertion at its dismissive face value: the quality of the print or the wall drawing is far from a peripheral consideration. Second, my premise was to eliminate the non-idea part of LeWitt’s art by representing his “planning and decisions”—his idea—as a computer program that mechanically produces digital images which are then also mechanically printed, so the only human involvement is supervision of the equipment. But there is no escape. Reliance on the printer’s skill may diminish, but only by enlisting another artisan: the programmer. The ‘craftwork’ has not disappeared but rather shifted to a different stage in the production of the art object from the art idea.

4.3 Under Instruction

Having seen quite a few of LeWitt’s wall drawings what is most striking is the uniformity of technique: line weight and spacing, colours, surface and so on appear consistent
across different wall drawings. I am drawn to only two possible conclusions: either the
instructions provided by LeWitt are meticulously detailed (and meticulously followed)
or there is some significant control and guidance of the drafters during the performance.
The second of these possibilities runs counter to the orthodox story, but the first seems
unlikely based on the sheer weight of rigour it would require, a discovery borne out by
my attempts to formalise them as programs. There may be a middle-ground alternative:
that with decades of practice and repetition a precise style has arisen more or less
organically. Which is it to be?

Tracking down wall drawing instructions proved to be more difficult that I had antici-
pated: digging around libraries and on-line sources I found only references to instruc-
tions, not the instructions themselves. As it turns out, this failure reflected on my
expectations rather than on reality. I had found the instructions, but they were not
what I expected. In everything I read, the inference was that the instructions were in-
deed meticulous—the nap of the rollers used to prepare the walls, specific Swiss brushes,
the brand of pencil leads, etcetera—and the performances were apparently carefully
choreographed. The same names kept appearing: Anthony Sansotta, Sachi Cho, Jo
Watanabe, John Hogan, Takashi Araki and others.

With the donation of the John Kaldor Family Collection to the Art Gallery of New
South Wales and the opening of its first exhibition in the new contemporary galleries
in 2011, which included four LeWitt wall drawings, I saw an opportunity to learn more
of the installation process and organisational factors and hopefully track down some
instructions. The Gallery gave me access to the certificates for the wall drawings John
Kaldor had donated. The certificates and associated documentation were fascinating but
not the solution to my quest; more accurately, they were not the answer I was expecting.
Each certificate is a standard form with the drawing number, a brief description of the
drawing, and a schematic diagram on a separate page. Taking Wall Drawing 337 as
an example, the general layout of the drawing is clearly stated but details such as line
spacing and weight are not given, nor is any information about materials, preparation
and techniques (Figure 4.16). If this is all there is to go on, how is it that there is
such absolute uniformity in the various realisations? My naïve expectation was that this
would work something like Joseph Kosuth’s One and Three Chairs (1965) where the
only constants are a copy of a dictionary definition of “chair” and Kosuth’s instructions
to find a chair, photograph it, and arrange the three elements just so. That work is
immediately recognisable in its different incarnations, but never identical because of the
open choice of some particular chair. My search continued.
Chris Cobb was one of the team of artists engaged to put together the enormous Sol LeWitt Wall Drawing Retrospective at Massachusetts MoCA. One of the works he was tasked with was Wall Drawing 343 and Cobb later published an essay describing the experience (Figure 4.17). Here was more hard evidence. According to Cobb, “The exact instructions, in their entirety, are as follows:

343. On a black wall, nine geometric figures (including right triangle, cross, X) in squares. The backgrounds are filled in solid white.”

It doesn’t even specify all the figures! Nonetheless, with sufficient knowledge and familiarity with LeWitt’s work they might be inferred: sets of six geometric figures (circle, square, triangle, rectangle, parallelogram, trapezoid) were a repeated motif in his work. The instructions for Wall Drawing 343 assume those six and specify the three additional figures. Here is more “backstory” from the MASS MoCA website:

By 1971 [LeWitt] had introduced smudge-free Caran d’Arche crayon. The temperature of the new medium became an important consideration for the
CHAPTER 4. SOL LEWITT AND HIS MECHANICS

draftsmen. When cold, the crayons became brittle, producing a flaky line. Draftsmen at MASS MoCA combated this by warming the crayon in their hands before application. This makes the wax easier to distribute, allowing enough crayon so that the surface looks white from a distance without compromising the texture of the wall. If the wax becomes too warm, the crayon smothers the orange peel-like surface of the wall. In the event of a build-up, the draftsmen use razor blades to scrape off the excess wax.\textsuperscript{163}

That’s a lot of unspoken additional information about materials and process. Cobb also quotes Anthony Sansotta, who has worked for LeWitt since 1980 and was supervising the MASS MoCA installation, as telling him, “Remember to draw, not colour in,” and he was “instructed on the proper way to scribble—always in large, random strokes, never little intense strokes. Little intense strokes make an area too dark and too dense too fast.” Anthony Sansotta is an artist who worked for Sol LeWitt from 1980 onward, becoming one of his most committed assistants.

In comparison, some instructions from LeWitt’s earliest works are more explicit in terms of both materials and execution. They appear in correspondence between LeWitt and Lucy Lippard for the ‘numbers’ shows she was curating that year: 557,087 in Seattle.
and 955,000 in Vancouver. Lippard sent a form letter to each participant explaining her framework and asking for a specification of the proposed works (Figure 4.18). The materials are specific: 1 × 3 lumber and Masonite, white flat enamel and 10H graphite sticks, and the instructions are relatively detailed: 10H pencil, on White wall. Lines very light very close together (\(1/16\)). A wooden right triangle would have to be made, also a track for it to run along would have to be used. This may suggest LeWitt was originally managing a greater level of control, or perhaps it is the insecurity of a young artist feeling his way. As an interesting aside, in 2009 Lippard gave a lecture for the Tate where she briefly discusses these works, pointing out that the Seattle work was dropped: “The LeWitt did not get executed in Seattle because of bad carpentry . . . In Vancouver, the LeWitt was expertly executed by artist Glenn Lewis.” In the same essay, Lippard also gave a telling example of the possible consequences of losing control of the execution of a piece if the instructions are at all ambiguous: “We tried to construct each work according to the artist’s instructions. Sometimes we succeeded. . . . [Carl] Andre was not so lucky. His instructions were simply ‘Timber Piece, 28 units c. 1’ × 1’ × 3’’ and a little drawing. I pictured ‘timber’ as raw logs, where he meant finished lumber.
It looked great, but he always insisted that it was my piece, not his.” LeWitt seems to have endorsed Andre’s point of view, at least in the early years: “Neither lines nor words are ideas, they are the means by which ideas are conveyed. The wall drawing is the artist’s art, as long as the plan is not violated. If it is, then the draftsman becomes the artist and the drawing would be his work of art, but art that is a parody of the original concept.”

John Kaldor is one of Australia’s most important contemporary art collectors and philanthropists, having donated his estimated $35 million collection to the Art Gallery of New South Wales in 2011. John is a long-term collector and supporter of Sol LeWitt and the two were close personal friends since the 1970s. Early in 2014 John kindly agreed to spend some time with me, discussing LeWitt’s work, his process, and organisational aspects of the performance of the wall drawings. We met in the new and stylish offices of Kaldor Public Art Projects, housed at the beautiful Sydney College of Arts campus. They were still in the process of moving in: a large Thomas Demand photograph stood propped against a wall and various works by Baldessari, Koons and others I could not process, were hither and thither. Through John Kaldor, I later made e-mail contact with Sol’s daughter Sofia LeWitt who has oversight of the LeWitt studio and estate. She too was most helpful and forthcoming.

I asked John about the works in the Art Gallery of New South Wales and the involvement of Sachi Cho, who took charge of the 2011 installation. He explained that the drawings are made to very precise instructions and that “a number of people who are trained by Sol and who specialise in certain wall drawings have to be used to execute the wall drawings . . . you can’t just do it. You have to work with Sol, or now that he is dead, with the estate, to get specialists who travel all around the world to execute his drawings. There are also technicians who specialise in one kind of drawing or another. Like Sachi, who you mentioned, is not so good on the coloured ink works so the estate suggested these other people come out to do it.” Here I had confirmation that LeWitt, his studio, and now his estate, maintain and exercise utmost control over the realisation of the drawings. It is quality control focused on the execution, well beyond the idea of the work. John admitted that he didn’t know the exact instructions, referring to the information and diagram on the certificates as being rather more simple than what is truly involved in their performance. As a demonstration of the level of control exercised by the LeWitt studio, Kaldor singled out a structure made of cinder blocks, “It looks pretty simple, but the estate insisted that we work with somebody in the States who gave instructions how to do it, so they are very, very meticulous in keeping up the standard.”
Sofia LeWitt later told me that the works are always “installed by his trained assistants under the direction of his Studio/Estate. Ownership of the works is held by the collector, documented by the work’s accompanying certificate and diagram.” As an indication of how large this enterprise has become and how the team of assistants are managed, Sofia continued, “We currently have about ten full-time draftsmen, three in Europe and seven in the US and when we install a single work we normally send one draftsman and pick up a local crew (either students, museum preparators or artists). For a large exhibition, we will send more than one chief draftsman and pick up a larger local crew. Oftentimes, a local crew member eventually became a chief draftsman.” As John Kaldor observed, “If you look at the scribble, or if you look at the india ink work, they’re so professionally executed. Unless people have done that many times before, you couldn’t possible do it that well.”

Certification

Among the documents held at the Art Gallery of New South Wales Store was a curious ‘temporary certificate’ in the form of a personal letter from LeWitt to Kaldor (Figure 4.19). When I showed this to John he was surprised by the stated requirement that “the project must first be realised before it is certified,” and “If it is not realised it does not exist.” He pointed out that the scribble drawing that had recently been installed for the first time at the Art Gallery of New South Wales was purchased about eight years ago, so he had a certificate for it well before it was ever realised. LeWitt’s process—of certification, at least—had changed over the decades of his career.

Sofia confirmed the unsurprising fact that “ownership of the works is held by the collector, documented by the work’s accompanying certificate and diagram.” What I was not prepared for was the suggestion that LeWitt took the notion that “if it is not realised it does not exist” even further, namely that a work’s existence resides entirely with the certificate. John Kaldor recalled that years ago he was interested in buying one of LeWitt’s early Structures from Sotheby’s and had discussed with LeWitt about how it may be restored. But the work was withdrawn before the sale at LeWitt’s instigation because the owner could not find the certificate. “So even though Sol was aware of the work, we discussed how to restore it, without a certificate it doesn’t exist.” A similar missing certificate case was reported in ARTnews in 2012. A collector who had “consigned the ‘artwork’—the certificate of authenticity and a diagrammatic description of what it would look like” to a Chicago gallery was suing the gallery owner because
Chapter 4. Sol LeWitt and His Mechanics

Figure 4.19: Temporary Certificate for Wall Drawing, Sol LeWitt, 1979.

they had lost the certificate. Probably the most interesting aspect of this story is that the gallery’s insurance company had refused to cover the loss. According to the lawsuit paperwork, this is Wall Drawing 448; it will be interesting to see if it appears in the catalogue raisonné when published.

Accommodating the Future

Here is a final, fascinating example of the control and ongoing management of the wall drawings by LeWitt’s studio, and by Sol in particular. Sofia explained that re-siting one of the works to a new wall could be a significant undertaking: “In the past, if a client was interested in acquiring an existing WD and provided a very different wall than the original one, Sol would create a new ‘part’ to the wall drawing (for example, a client was interested in buying WD 471, but the wall was too large, so Sol created a new drawing WD 471A that would be sited specifically for the new wall).” Sofia provided the two examples in Figure 4.20 to demonstrate the difference. I believe the images are proofs
from the forthcoming Wall Drawing catalogue raisonné. Of course, that begs the question of how works have been re-sited since Sol’s death and how that will be managed into the future. According to Sofia, “Sol . . . named one of his most trusted assistants, Anthony Sansotta, as the person in charge of re-siting work. Of course, Anthony uses much less creative licence than Sol would have when adapting a WD to a new wall.”

For a time I thought there may be a tantalising consequence of the tight control of the wall drawings by LeWitt and his team of technicians: LeWitt’s passing, eventually and inevitably followed by his anointed assistants, would mean that collectors and museums might be left with only the existing wall drawings as objects with all the conservation and curatorial conventions that may entail, surely running counter to the fundamental intention of the impermanence of the realisations and their separation from the work as idea. Alternatively, we could be left with only the certificates and other evidence, documentary and photographic, of the prior existence of the drawings: a fascinating return to the old story of “dematerialising the art object.”173 But no, the future has been planned. I leave it to the words of Sofia LeWitt to explain:174

Figure 4.20: Wall Drawing 471 and 471A, Sol LeWitt, 1986 and 2006.
During his lifetime, Sol also considered future generations and installations hundreds of years from now. He made plans for a Wall Drawing Center at Yale University and we have sent one of Sol’s longtime assistants, John Hogan, to New Haven to head this project. This center will eventually house all of the WD archives (photos, diagrams, plans that Sol made for resiting works, etc) and provide training for future assistants to install Sol’s works. Once this center is really up and running, it would operate similarly to how the LeWitt studio works now, every institution or collector would contact them to arrange for a WD installation.

In addition to an upcoming WD catalogue raisonné, we are also working on a comprehensive ‘cook book’ with Sol’s longtime assistants, starting from WD 1, it will include the materials needed, steps to create each WD, parameters for resiting works in the future and other useful information relevant to installing Sol’s work. This would be a private document that would be housed at the Yale Center and, ideally, future generations (after having been trained with the various wall drawing techniques) could install and resite the works easily.

So it seems the transition from Sol LeWitt the artist, the man, to LeWitt the institution is advancing apace: the authorial baton has been passed. The possibility that re-siting a wall drawing will require some level of re-design surely must be a sensitive issue. While the person in charge of re-siting work—presently Anthony Sansotta—will use “much less creative licence than Sol would have when adapting a WD to a new wall,” perhaps the adaptation might better be qualified as ‘after’ or ‘in the style of’ Sol LeWitt. Otherwise there is no issue with the survival of Sol’s ‘ideas,’ but the ‘machine’ must continue to be reinvented. Drafters training drafters is already their well-established modus operandi but will the “cook book” really be able to provide all the meticulous details that are presently, in a sense, corporate knowledge, or in some cases have gone forever with Sol’s passing?175

Another inevitable point of tension the Wall Drawing Centre will need to manage is the evolution and disappearance of specific materials. As Jill Sykes reported recently, “The passage of time since LeWitt began his wall drawings is marked by an unexpected factor: the phasing out of production of the pencil leads that he used. They now need to be ordered in bulk amounts to keep the company interested in making them.”176 In 2009 Emily Smith observed the re-installation of Wall Drawing 541 at the Virginia Museum
of Fine Arts. The same work had been previously installed at the same gallery a year after its purchase in 1999 (Figure 4.21). According to Smith, “When Wall Drawing 541 was installed in 2000, color was applied with ink wash. In the years following, the specific brand of ink chosen by LeWitt was discontinued and ultimately, bottled liquid colored ink became obsolete (as architects switched from drafting to CAD). LeWitt and his teams eventually created a similar wash out of acrylic paint.” I cannot confirm Smith’s claim and it seems odd to suggest that bottled ink is ‘obsolete’—I still use a fountain pen! Furthermore, the recently installed wall drawing 604H at the Art Gallery of New South Wales was made with ink wash. Nevertheless, Smith’s article makes for a striking side-by-side comparison of the 2000 and 2009 realisations.

4.4 Precious Objects

A year after Sol’s death, family friend and Walker Arts Director Martin Friedman visited the LeWitt house in Praiano, one of those improbable villages wedged in the cliffs of the Amalfi coastline. Sol’s wife Carol had inherited the house from her grandmother and they had renovated and decorated it with wall drawings. The performance of the drawings was overseen by Anthony Sansotta, knowing that Sol would never see them: Sol died in New York in 2007, a day after the drawings were finished.

Friedman’s article ends with an anecdote about being caught in a rainstorm in the Praiano township and his growing concern that he may have left doors or windows open, threatening the drawings: “I was seized by anxiety about what the driving rain might
do to the drawings in the house.” As the downpour continued, Friedman “fantasised about a hurricane moving through the house and washing away drawing after drawing.” Eventually the housekeeper collected Friedman and his wife, assuring them that the house was fine and no rain had come near any of the drawings. The anecdote ends with his expression of relief, “The rain stopped, the sun came out, my anxiety vanished. Sol’s drawings were safe.”

What is fascinating about this story and Friedman’s apoplectic reaction is underscored by that last sentence. Despite LeWitt’s decades-long practice, Friedman cannot resist lifting these particular drawings—these realisations—to the status of revered, irreplaceable art objects. In reality, if they had been damaged it would have been inconvenient (and likely embarrassing for Friedman) but the drawings could have been repaired or repeated without diminishing LeWitt’s authorship or involvement. The point is that they can be made again. Channelling Walter Benjamin for a moment, like photographs the drawings are not originals, but it is equally difficult to argue that they are copies.179

Of course Friedman is not alone in this urge to valorise what is in front of us—the object—and the human endeavour that brought it to us: we like what we see. Writing about the wall drawings at the Art Gallery of New South Wales, Simon Ives was effusive: “Mistakes are made and corrected, but the work still has a visibly handmade quality, which, though not obvious is nevertheless perceivable, and intentionally so. Indeed it is this quality which turns what would otherwise be a monotonous and mechanistically uniform exercise into a compelling drama of human achievement.”180 Surely Sol’s certificates are unlikely to evoke such a reaction. I hesitate at Ives’s rhetorical flourish, but are not my programs—plus the vast and astonishing enterprise behind that technology—also a drama of human achievement?

4.5 Reflections

Just as the photographs of signs that I made are unavoidably depictions, carrying the pictorial load of their selection, presentation, and all of the myriad technical and aesthetic decisions that obtain in the process of printing, the LeWitt prints I made are, in the end, just that: prints, albeit obviously digitally produced prints. Finally seeing them on the gallery wall, the gap between the final product—what is presented to the viewer—and my research concerns, their provenance as computer programs, is wider than I hoped. The exhibited prints reveal little of the specificity of their authorship.
Like my photographs, what the prints present to us is the result of the printing process with all the choices and constraints that involves, and that stack of decisions clouds the prints’ origins. Earlier in this chapter I all too glibly suggested that choosing to produce wall drawings instead of prints would have been merely an engineering issue; the point I was trying to emphasise was that the programs themselves were my primary artistic contribution. But even the process of producing digital inkjet prints brings into play an array of formal and computational considerations and constraints beyond any programmatic matters. As well as material concerns such as specific surface and media qualities, the printing process and equipment comes with multiple issues of colour gamuts and ICC profiles, as well as print resolution and size. In particular, my drawing programs—following drawing in general—are a vector activity producing vector file representations, yet my a priori decision to use an inkjet printer predetermined that the images would be rasterised at some point, before being piped to the printer. In the same sense that building a wall drawing machine would obviously change the process and hence the outcomes, had I chosen a workflow that was completely vector-based, such a pen plotter or computer-controlled etching tool, the implications of computational drawing, particularly its materiality, may have been more clearly seen as a central theme.

Earlier in this chapter under the heading of *Exploiting the Tool* I explained that I struggled for a long time with the issue that the final outcome—a print on the wall—did not seem to satisfactorily carry the conceptual creative justification: that is, that the process of producing the prints was fundamentally based on an explicit recoding of LeWitt’s instructions in the form of a computer program. At that point it seemed one way out of the cul-de-sac was indeed to exploit the tool, to make prints that were unequivocally digital, beyond human capacity. But in the final analysis, once the show was hung, the prints alone were not able to lead the viewer to recognise their explicitly computational code basis, let alone accept that as the central concern of the work.

At a time when I was deeply immersed with this work, I discovered some prior art: in 2004 the Whitney Museum had commissioned Casey Reas, one of the instigators and central developers of Processing, with a project for Whitney Artpor181. The catalyst for his project was LeWitt’s wall drawings, beginning with the simple question, “Is the history of conceptual art relevant to the idea of software as art?” While Reas reported writing programs roughly corresponding to three of the wall drawings, his main focus was on “software structures,” a general idea he described as “an annotated written description without reference to a computational implementation,” and which he suggests
was inspired by LeWitt’s wall drawings’ instructions and their separation from an artisan’s execution. The main thrust of the project is built around three such software structures, quite unrelated to any specific wall drawings, but openly inviting the kind of programmatic possibilities of animation and interaction that are now commonplace. Reas enlisted three programmers (artisans) to each interpret his software structures emphasising three different aspects: interpretation, material, and process. It is in the comparison of the significantly different outcomes that Reas situates his results. Fundamentally, Reas is applying LeWitt’s working process to software development rather than the opposite effect, which is where my primary interest lies.

Domenico Quaranta flips Reas’s motivating question: “Is the idea of software art relevant to the history of conceptual art?” and answers in the affirmative, observing that “Software art brings immateriality back to conceptual art; the prevalence of the idea over the product, of the process over the result, of the code over the output. By turning the executor into a machine, any doubt about the artistic nature of the finished product is removed. And must be sought elsewhere, or rather in the ‘code’ that is the modern reincarnation of the ‘concept.’”\(^\text{182}\) In many respects the theorising of software art seems to be a search for some way of placing it in an historical context, to justify it as art. Quaranta is up-front about this: “It is interesting to note how in software art theory, the formulation of a definition continually interweaves with this retrospective investigation. Besides, this is only natural: the hypothesis to be proven is that software—namely an encoded sequence of formal instructions—can be art; and what better than a precedent could save us from a lot of useless complications.”\(^\text{183}\) But software art is process-based by default, not as a response to some precedent of conceptual artists like LeWitt. Software is immaterial in a similar sense to literature: a book or a poem needs to be read to produce its effect in the reader, just as software needs to be run to produce an effect in the viewer. My final prints as displayed on the gallery wall reveal only the resultant effect; the software and the process that brought these prints into being is not so evident. They obscure the conceptual essence of their coded provenance. It occurs to me that software art’s natural home is not the gallery wall, but in the now ubiquitous social space of the computing machine on every desk and in everyone’s pocket.
Chapter 5

Conclusion

In Chapter 1 I set out my project as an investigation of how conceptual art strategies may or may not translate into current day practices and technologies, with a focus on a subset of the typology suggested by Peter Osborne, namely: process, systems and series; word and sign; appropriation, intervention and the everyday. My initial understanding of these ideas turned out to be rather shallow, coloured by the kinds of art school textbook presentation that offers a clear and settled, if diverse, delineation of the period: the kind of view that can only be invented with hindsight, with all of the blood scrubbed off, so to speak. In contrast, John Roberts offers a franker assessment: “The problem with writing about conceptual art . . . is that the moves it made, the strategies it adopted—across a range of artistic positions—were contingent and messy responses to shifting and sometimes unfocused questions and issues,” also pointing to the fact that “the artists who were involved were young—sometimes very young—and were mostly winging it.”

In the context of a time-constrained and structured higher-degree research project, it is impossible to do justice to the broad sweep of the movement so my work has necessarily fallen within a more narrow scope.

A systematic and process-driven approach has been a consistent thread through this project, beginning from the photographic series based on predetermined rules the actor was expected to follow. That developed into the predominant theme of my LeWitt research in particular: LeWitt’s actors are his teams of drafters following his instructions; my actors are computers following the instructions of my programs. The word and sign strategy is also a consistent feature of this research, leading up to the photographic series at Leisure Coast Fruit and Deli, where ‘sign’ coincidentally comes to be taken quite
literally. Of course, Osborne intends it to be interpreted more broadly, particularly in its semiotic sense. The indexical component of the sign relation is a signal motivating force in my art practice, and it has informed and influenced all of my work in this research. I have attempted to structure my photographs, in both style and content, to minimise the distance from their referent. *Index Librorum* was the most obvious foregrounding of the word and sign structure, but even the LeWitt prints fall within this indexical category—as Sol himself has said, “obviously, a drawing of a person is not a real person but a drawing of a line is a real line.”

The third class of strategies, appropriation, intervention and the everyday, exists in part in the prosaic objects to which I turned my camera lens. Ed Ruscha likes to make “statements about things that you don’t make statements about;” my photographs of advertising signs, pipes and facades draw attention to things that you don’t normally draw attention to. At the same time I am making a claim for those objects, and a claim for seeing them in the first place, echoing the late work of Walker Evans. However, a moment’s reflection by the reader may confirm an important absence from the discussion so far: appropriation has been mentioned rarely, and then only in passing. Superficially my LeWitt work seems to be an obvious appropriation, and with my photographs of signs I am apparently helping myself to the art and craft of others, one signwriter in particular. The central role of appropriation in conceptual art, brought to an apogee by the pictures generation, suggests this is an omission that must be redressed. Appropriation has infiltrated all of my work discussed in the preceding chapters so it has seemed appropriate to delay its examination to a point where I can treat it in a consistent and united manner.

In 1980, Sherrie Levine obtained some posters published by the Witkin Gallery, illustrated with some of the photographs Edward Weston made of his son Neil in 1925. Levine simply re-photographed the illustrations and exhibited them as her own: *Untitled, After Edward Weston* (Figure 5.1). It feels strangely uncomfortable attributing this reproduction (that is, the one on this page) to Levine: the transitivity of the ‘after’ qualifier surely collapses. To add to the difficulty, the prints exhibited at Witkin were made by George Tice well after Weston’s death, at the instruction of Weston’s estate, making the links even more tenuous. Beyond claiming equal authorship, Levine’s appropriation also challenged any claims of Weston’s originality. As Douglas Crimp saw it, “we might just as well give them to Praxiteles, for if it is the *image* that can be owned, then surely these belong to classical sculpture, which would put them in the public domain” (Figure 5.2).
For the most part Levine’s appropriated photographs were seen purely as critical and theoretical propositions about authorship, patriarchy, the art establishment and the conferral of value: “from the frames out” was how Howard Singerman described it. But, according to Singerman, Levine in fact wanted people to look at the images themselves. Her later work consisted of watercolours and drawings, made after Egon Schiele, Piet Mondrian and others, copied from books and illustrations. But these copy-drawings and paintings seem to be of a fundamentally different category precisely because they are not photographs; they are not mechanically lifted but laboriously copied, a product of her talent and effort. The focus slips away from the transgressive act—it is diluted by the viewer’s acknowledgement of the appropriator’s skill and personal investment, a matter much less at issue with a photograph. In terms of the relationship with the original image and the original artist, the viewer can engage with the composition, representation and concept. But the craft belongs to the forger, distracting from the central point of the appropriation. Sherrie Levine made these pictures—at least as objects if not images—a credit we feel less inclined to bestow on her re-photographs. Levine’s point blank appropriation of Weston’s photographs by rephotographing them, and then presenting them as her own work, reveals—or at least relies on—our trust in photographs as indexical signs. The fact that they were well-known in contemporary art circles made the appropriation obvious, so the focus of her work, in the mind of both the artist and the viewer, was precisely that act of appropriation.
Some writers and critics—most notably and consistently Howard Singerman—have argued that Levine’s work goes far beyond a single critical proposition: indeed, how else are we to justify the trajectory of her career after 1980? Jeff Wall has interpreted her presentation of Walker Evans’s pictures as an entreaty to “Study the masters; do not presume to reinvent photography; photography is bigger and richer than you think it is, in your youthful pride and conceit.” Before discovering Singerman’s writings I considered this to be no more than an idiosyncratic and counter-intuitive interpretation, coloured by Wall’s own historically based approach. In any case, how such an interpretation might extend to her later non-photographic works is not clear. David Rimanelli offers a less generous view of Levine’s later work in his review of her 1994 exhibition built around copies of a Brancusi sculpture: “It seems that Levine’s work, having begun with a potentially transgressive gesture with respect to masculine prerogative, originality and authorship, has devolved into an almost rote recreation of familiar modern masterpieces. Where does she locate that critical dimension today? Sherrie Levine is the Franklin Mint of Modernism.”

So the question arises: is my work on LeWitt an act of appropriation, and if so, in what sense? Is there a specific “critical dimension” as Rimanelli asks of Sherrie Levine? In any case, should that be a requirement at all? Like most good questions, there is no simple answer. In fact the issue of appropriation was at the front of my mind when I began the
LeWitt project—it was a primary motivation for that research. What, if anything, am I appropriating? Not the work of the drafters, for I made a conscious decision to make my prints look ‘digital’ with a purity of finish that cannot be achieved by hand. I could have written my programs to simulate the kinds of ‘errors’ and unevenness of a human drafter, but I consciously chose not to do so: this was never an exercise in forgery. I have not appropriated LeWitt’s instructions—that is, I have not appropriated the ‘certified’ instructions—for they remain LeWitt’s instructions and I have tried to follow them unchanged. Nor have I appropriated the ‘secret’ instructions, those details that exist in the collective memories of the inner circle of his drafters, and that are presently being codified into a “cookbook” by his studio at the Yale Wall Drawing Centre. I have not been privy to those secrets.

Early in his career, when he imposed less control over outcomes, LeWitt contended that, “The wall drawing is the artist’s art, as long as the plan is not violated. If it is, then the draftsman becomes the artist and the drawing would be his work of art, but art that is a parody of the original concept.” By that measure, assuming the instructions I have had access to are complete, then perhaps LeWitt would claim my prints as his own: “the artist’s art.” I am unwilling to completely cede to such a claim, for it evacuates any recognition of my contribution of concept or expertise. On the other hand I have apparently defied his credo “not to make it look like wallpaper or computer-generated—not to make it too perfect.” Does that release me, or is it my undoing? Would the tacit assumption contained in that credo—that the works be hand-drawn—provide a sufficient violation for LeWitt to reject my prints as parodies? In the course of his career LeWitt reshaped his strategies of separating means from ends, and of simple seriality, from their beginnings in the 1960s to what we see today. In part he did so by situating an ever greater control and emphasis on execution, to the point of valorising the crafter’s hand, perhaps allowing the “retinal” to trump the generating idea. In contrast, my work returned to his beginnings to take a different path that bypasses LeWitt’s own developments, in favour of a straight reinterpretation of his original ideas and declaration of intent.

What are the outcomes of this research? Most prominent of course is the works I have made and exhibited, for surely that is the fundamental nature of practice-led research. But where practice leads, research follows; questions arise and avenues of enquiry open as a consequence of doing and making, leading down historical, critical and theoretical paths. The transition of photography from the 1960s to the present is a relatively settled matter. Photography was deployed by conceptual artists for its documentary
and utilitarian purposes, not for its art value. Indeed, it became important for its amateur characteristic as a challenge to the formalist, medium-specific attitude of ‘art photography’ that prevailed at the time. Photography is where it is today through the emancipatory efforts of conceptual artists, as Jeff Wall has so eloquently explained for the American context. The outcome was similar in Europe but the trajectory was different, deeply influenced by the social and political consequences of World War II and its aftermath. I do not believe I could have taken and exhibited my photographs of signs, had this path not been prefigured by conceptual artists.

My sign photograph series began with a basis of a pre-determined performance before the emphasis shifted, slowly and in part, to semiotic issues of word and sign, foregrounding the indexical core of photography. There is a subtle interplay here that recalls Jasper Johns’s Figure 5 (Figure 3.2) where his painting is both a depiction of the numeral 5 and at the same time a prime image: it is the numeral 5. Adding to the tension is the fact that the numeral is at the same time a conventional signifier of the abstract concept of the number 5. Text in photographs can alternately emphasise and compromise the photographic index, by the (conventional) linguistic message in the photograph distracting from the photographic sign. If we believe that signs may be transitive, my photographs compose the photographic index with linguistic message, but without conflating them: we are easily able to distinguish my message from that of the signwriter.

Inevitably, photographs are intimately involved with a subject matter that is in some sense extra-photographic. It is unsurprising that the commentators in Rosalind Krauss’s *A Note on Photography and the Simulacral* naturally and unanimously look into the picture to the “transparent behind-the-surface space of ‘it’s an x or a y.’” Photographs are inescapably a depiction, as Jeff Wall rightly noted. Equally inevitably then, my choices of subjects to photograph, and the subsequent editing and sequencing, were in large part made from a visual rationale after the founding process decisions were settled. My attention to the materiality of the original signs—the scumbling, the signwriter’s hand, the colour palette, the shadows and rope disturbing the surface—was about the picture, the tableau, and much less about the photographic object. Even the cropping has a certain pictorial effect, compressed into the narrow band of background around the edge of each frame. I am reminded of Robert MacPherson’s words, “no matter what the way in, the things that influence or excite you to paint are the real, things seen.” Nevertheless it seems to me that indexicality—or more precisely, the explicit foregrounding of indexicality—is a strategy that remains transgressive in a way that is consistent with the original intentions of the conceptual artists using photography: a
commitment to the “nothing to say.”

The administrative structure of practice-led higher degree research at the Australian National University School of Art requires that the exegesis be completed and submitted well before the final exhibition and examination is scheduled. In many cases, mine included, that means the work being reporting on in the exegesis is not entirely complete so a focused discussion of final outcomes is compromised: it must be partly based on conjecture. In the context of a practice-led project, a crucial part of that practice must be the final exhibition. The opportunity to reflect on what the ultimate outcome of the project, the work shown in the final exhibition and what supervisors insist is the research, is surely an important part of the process. Fortunately I have been able to review and revise this document after the fact: an opportunity to include some analysis and assessments that were not so possible in my proto-exegesis.

When my show was finally hung the LeWitt prints fell short of my expectations. It was not that they were poor prints or uninteresting; they were visually arresting and held the audience attention with their pristine lines and fluctuation between the macro and micro views. My disappointment was that they did not explicitly reveal their provenance as computer programs, beyond their unmistakable digital heritage. My own preoccupation was with situating programming as a tool with artistic potential, but I had inadvertently wandered into the contested territory of software art and so-called new media. This difficulty of placing software front and centre in the art experience is well-recognised by some. In his influential article Concepts, Notations, Software, Art, Florian Cramer forcefully makes the point: “The history of the digital and computer-aided arts could be told as a history of ignorance against programming and programmers. Computer programs get locked into black boxes, and programmers are frequently considered to be mere factota, coding slaves who execute other artist’s concepts.” I have personally experienced this attitude from artist colleagues asking me (and at least one of my computer science PhD students) to code something for them, they maintained complete artistic authorship by laying sole claim to ‘the concept.’ At best we are offered an acknowledgement of ‘coding and circuitry by . . . ’ Cramer elaborates his point to bring in the awful ‘new media’ term: “The digital arts themselves participate in this accomplicity when they call themselves [new] ‘media art.’ There’s nothing older than ‘new media’, a term which is little more than a superficial justification for lumping together a bunch of largely unrelated technologies, such as analog video and computing, just because they were “new” at a particular time.” It seems to me—and I would claim my experience in this project bears it out—that software, and information and computer technology in
general, is an enabling technology, not a medium. What mediates between the viewer and the artist may have been built with code but it is the visual (or aural, or haptic) experience that passes the message. Interactive or dynamic works such as my *Sinner* (Figure 2.14) surveyed in Chapter 2 may have an obvious code basis but even then that fact remains incidental to the viewers experience. Perhaps this is one more symptom of a post-medium condition.

The social upheavals that defined the 1960s and 1970s—the subversion of dominant paradigms—may have been revolutionary then, but are now part of the civil fabric; they have been normalised. This project has not been merely a reprisal of strategies from the past, for those strategies are still current: they too have been normalised—or have been evolved—into the canon of contemporary art. We see them differently, as less revolutionary, but they are still valid tactics. Within my own practice, this research has reinvigorated some of the contested territory of authorship, craft, medium, and the very idea of art that was put under the spotlight by conceptual artists. Whatever else it may be, conceptual art is first and foremost an art of challenges and questions. Rather than seeking answers my research has been oriented to confirming the ongoing validity of the questions raised by conceptual art. I prefer to think of my works as demonstrations of possibilities rather than proofs or disproofs of assertions.
Appendix A

Code Samples

I have include some brief examples of the programs I wrote to represent Sol LeWitt’s ideas and instructions. They are not necessarily meant to be read or taken as exemplars, but it is possible that some readers may have never seen a program and I want to make it clear that I am not using some painting or drawing tool. Newcomers have also expressed visual interest in an editor’s syntax highlighting.

All the code is straightforward and therefore relatively uninteresting at that level. The programs are in no way polished or ‘elegant’ in the sense that a programmer would assess; on the other hand, they do bear the signs of my personal hand, and the scars of modifications and refactoring: the history of their development.

A.1 Bands of Colour in Four Directions and All Combinations

// LeWitt "Bands of Color in Four Directions & All Combinations" 1971

// Clem Baker-Finch, Feb 2012

// *** Refactored and upgraded to final print status Sep 2012 ***

/* Sol LeWitt Catalogue Raisonne

   http://www.sollewittprints.org/sol-lewitt-catalogue-raisonne-intro

   Catalogue Raisonne #:
   1971.04
   Title: Bands of Color in Four Directions & All Combinations
   Medium: Set of sixteen etchings
   Date: 

99
1971
Plate Size:
12 5/8 x 12 3/4 inches (32.1 x 32.4 cm)
Paper Size:
21 1/8 x 21 1/4 inches (53.7 x 54.0 cm)
Type of Paper:
Rives BFK
Edition Size:
Edition of 25, numbered 1-25; 3 TP, numbered TP 1-3; 7 AP + PP, lettered A-G.
Signature:
Signed lower right, numbered lower left on each sheet
Publisher:
Printer:
Kathan Brown at Crown Point Press, Berkeley, California
Additional Info:
Previously catalogued as E-02


*/

// Dimensions
// ----------
int inch = 360; // A factor of 1440dpi optimal for Epson 9880

// lineSpaceDiag is an int approximation to lineSpace/sqrt(2). The
// number pairs here are close approximations. See discussion in
// OutInTheLight/Straight/Straight.pde
int lineSpace = 10; // 7 14 17
int lineSpaceDiag = 7; // 5 10 12

// Adjust corresponding to lineSpace
int lineWeight = 3; // 4 2

int paperSize = inch * 85/4;
int plateSize = inch * 51/4 - lineWeight; // fine tuning for borders?

int border = (paperSize - plateSize) / 2;

// Bands have width = 1/3 plate
int bandwidth = plateSize/3;

// Colours
// ------
color red;
color yellow;
color blue;
color black;
color white; // background and borders

// parameterise alpha channel for fun and profit
int alpha = 80; // 100
A.1. BANDS OF COLOUR IN FOUR DIRECTIONS AND ALL COMBINATIONS

```cpp
void setup() {
    size(paperSize, paperSize);

    // White background
    background(255);

    // Set up colours
    colorMode(RGB, 255, 255, 255, 100);
    red = color(255, 0, 0, alpha);
    yellow = color(255, 255, 0, alpha);
    blue = color(0, 0, 255, alpha);
    black = color(0, 0, 0, alpha);
    white = color(255);

    strokeWeight(lineWeight);
    strokeCap(SQUARE);
    smooth();
    noLoop();
}

// Bands
// -----

// Black horizontal
void horizontal() {
    horizontal(black);
}

// Yellow vertical
void vertical() {
    vertical(yellow);
}

// Red up diagonal
void upDiagonal() {
    upDiagonal(red);
}

// Blue down diagonal
void downDiagonal() {
    downDiagonal(blue);
}

// Parameterised on colour because 16th print is a rogue - different
// arrangement of all 4 bands.
void horizontal(color c) {
    stroke(c);
    // starting x at 0 cuts half of the first line at the border (eg 1
    // pixel weight rather than 2). Starting x at lineWeight/2 is the
    // "right" solution but that doesn't consider where the last line
    // falls (perhaps well inside the border). By eye, for space = 7
```
// and weight = 2, this looks okay:
// for (int x = lineWeight; x < plateSize; x += lineSpace) {

// For space = 10 and weight 3, this is better:
for (int x = lineWeight/2; x < plateSize; x += lineSpace) {
    line(x+border, bandwidth+border, x+border, bandwidth*2+border);
}
}

void vertical(color c) {
    stroke(c);
    // ditto comment above
    // for (int y = lineWeight; y < plateSize; y += lineSpace) {

    // ditto above
    for (int y = lineWeight/2; y < plateSize; y += lineSpace) {
        line(bandwidth+border, y+border, bandwidth*2+border, y+border);
    }
}

void upDiagonal(color c) {
    stroke(c);
    int bandwidthDiag = (int)(bandwidth/sqrt(2));
    int x = -bandwidthDiag;
    int y = plateSize;
    while (x <= plateSize + bandwidthDiag) {
        line(x+border, y+border, x+border+bandwidthDiag, y+border+bandwidthDiag);
        x += lineSpaceDiag;
        y -= lineSpaceDiag;
    }
}

void downDiagonal(color c) {
    stroke(c);
    int bandwidthDiag = (int)(bandwidth/sqrt(2));
    int x = -bandwidthDiag;
    int y = 0;
    while (x <= plateSize + bandwidthDiag) {
        line(x+border, y+border, x+border+bandwidthDiag, y+border-bandwidthDiag);
        x += lineSpaceDiag;
        y += lineSpaceDiag;
    }
}

// Draw the white border as 4 rectangles
void borders() {
    noStroke();
    fill(white);
    // left
    rect(0, 0, border, paperSize);
    // top
    rect(0, 0, paperSize, border);
    // right
    rect(paperSize-border, 0, border, paperSize);
    // bottom
rect(0, paperSize-border, paperSize, border);
}

// Codec for directions
void mark(int dir) {
    switch (dir) {
    case 2: horizontal();
            break;
    case 0: vertical();
            break;
    case 1: upDiagonal();
            break;
    case 3: downDiagonal();
    }
}

String name(int dir) {
    switch (dir) {
    case 0: return "K";
    case 1: return "Y";
    case 2: return "R";
    }
    return "B"; // case 3
}

void draw() {
    boolean TEST = false; // true

    // ------------
    // Test harness
    // ------------

    if (TEST) {
            vertical();
            upDiagonal();
            downDiagonal();
            borders();

            save("TESTS/TestVUD_80A.tif");
            exit();
    }

    // -----------------------------------
    // Production run. Set TEST to false.
    // -----------------------------------

    // One band
    for (int dir = 0; dir < 4; dir++) {
            background(white);
            mark(dir);
            borders();
        }
APPENDIX A. CODE SAMPLES

```c
save("Alpha" + alpha + "/1" + name(dir) + ".tif");
}

// Two bands
for (int dir1 = 0; dir1 < 4; dir1++) {
    for (int dir2 = dir1+1; dir2 < 4; dir2++) {
        background(white);
        mark(dir1);
        mark(dir2);
        borders();
        save("Alpha" + alpha + "/2" + name(dir1) + name(dir2) + ".tif");
    }
}

// Three bands
for (int dir1 = 0; dir1 < 4; dir1++) {
    for (int dir2 = dir1+1; dir2 < 4; dir2++) {
        for (int dir3 = dir2+1; dir3 < 4; dir3++) {
            background(white);
            mark(dir1);
            mark(dir2);
            mark(dir3);
            borders();
            save("Alpha" + alpha + "/3" + name(dir1) + name(dir2) + name(dir3) + ".tif");
        }
    }
}

// Four bands standard
background(white);
vertical();
upDiagonal();
horizontal();
downDiagonal();
// horizontal();
// vertical();
// upDiagonal();
// downDiagonal();
borders();
save("Alpha" + alpha + "/4KYRB.tif");

// Four bands non-standard
background(white);
vertical(blue);
upDiagonal(black);
horizontal(red);
downDiagonal(yellow);
// horizontal(yellow);
// vertical(blue);
// upDiagonal(black);
// downDiagonal(yellow);
borders();
save("Alpha" + alpha + "/4RBKY.tif");
```
A.2 Broken Bands in Four Directions

The full title of the work is *Broken Colour Bands in Four Directions, Broken Gray Bands in Four Directions*.

There are separate programs for each direction. Only the horizontal and downward diagonal code is shown here. The vertical and upward diagonal code is similar.

### A.2.1 Horizontal Bands

// "Broken Color Bands in Four Directions, Broken Gray Bands in Four Directions."
(2005)

// Clem Baker-Finch Feb 2012

/* From Catalogue Raisonne:

2005.04
Broken Color Bands in Four Directions, Broken Gray Bands in Four Directions
Medium:
Set of two linocuts
Date:
2005
Image Size:
9 x 34 inches (22.9 x 87.6 cm)
Paper Size:
18 x 43 inches (45.7 x 110.5 cm)
Type of Paper:
Somerset Velvet White, 300 Gram
Edition Size:
Edition of 50, 10 AP, 3 PP, 1 BAT, 1 NB, 1 WALKER, 2 TP
Signature:
Signed and numbered lower right on each sheet
Publisher:
Pace Editions, Inc., New York, New York
Printer:
Keigo Takahashi, assisted by Gabriel Hurier, Watanabe Studio, Ltd., Brooklyn, New York
Additional Info:
Previously catalogued as M-38
*/

// SEE COMMENTARY AND CODE IN ../Wall1114/V114/V114.pde
// ==============================================================
// Mostly copied from there.
// Dimensions
int inch = 300;

// How big?
// This should be easy to scale by changing canvas size.
// Define other values relative to that.

// I'm only doing the bands here - too much mucking around otherwise.
// Combine images and add borders later (e.g. Photoshop).
int frame = 2704;  // a mupltiple of 16, approx equal to 9*inch;

// Number of rows for horizontal and vertical versions
int rows = 16;

// row height
int rowHeight = frame / rows;  // = 375

// Block lengths
float minLength = rowHeight*3/2;  // 5/4;  // 3/2
float maxLength = rowHeight*7/2;  // 13/4;  // 7/2 3 4

// Colours
color green;
color yellow;
color blue;
color purple;
color orange;
color red;

color black;
color dkGrey;
color midDkGrey;
color midLtGrey;
color ltGrey;
color white;

// Record break points in previous row and current row
ArrayList prevBreaks, currBreaks;

void setup() {

    size(frame,frame);

    // "Better" colours?
    green = color(55, 160, 65);
yellow = color(235, 205, 10);
blue = color(50, 120, 195);
purple = color(95, 80, 160);
red = color(205, 40, 45);
orange = color(235, 85, 10);
// Greys
black = color(0);
dkGrey = color(51);
midDkGrey = color(102);
midLtGrey = color(153);
ltGrey = color(204);
white = color(255);

noStroke();
smooth();
noLoop();

// Randomly select a colour
color pick() {
    switch (int (random(0.0,5.999999))) {
    case 0: return green;
    case 1: return yellow;
    case 2: return blue;
    case 3: return purple;
    case 4: return orange; // brown
    }
    return red;
}

// Randomly select a grey
color pickGrey() {
    switch(int(random(0.0,5.999999))) {
    case 0: return black;
    case 1: return dkGrey;
    case 2: return midDkGrey;
    case 3: return midLtGrey;
    case 4: return ltGrey;
    }
    return white;
}

// Check break point sufficiently different to previous row
boolean breakOK(int end) {
    for (int i = 0; i < prevBreaks.size(); i++) {
        if (abs(end - (Integer)prevBreaks.get(i)) < minLength/3) {
            return false;
        }
    }
    return true;
}

// Check adjacent to different colours in previous row
// Only called if there is a previous row (i.e. y > 0)
boolean diffColor(color c, int from, int to, int y) {
    // minLength/3 is the minimum overlap so sufficient for iteration step
for (int x = from; x < to; x += minLength/3) {
    if (get(x, y-rowHeight/2) == c) {
        return false;
    }
}
return true;

void draw() {
    // coordinates of next block (pixels)
    int x;
    int y;
    // length of next block (pixels)
    int length;
    // Current and previous colours
    color current, previous;
    // No breaks so far
    currBreaks = new ArrayList();

    for (y = 0; y < frame; y+=rowHeight) {
        // next row, so:
        prevBreaks = currBreaks;
        currBreaks = new ArrayList();
        x = 0;
        // No previous colour for first block so set to white
        previous = color(255);
        while (x < frame) {
            length = int(random(minLength, maxLength)); // good enough to truncate
            // Will this take us too close to the end?
            // I.e. will the next block be too small (less than minLength/2, say)?
            // Alternatively, proceed if it's long enough the be the last block.
            if (frame - (x+length) > minLength || x+length > frame ) {
                // // pick a colour
                // current = pick();
                // or pick a grey
                current = pickGrey();
                // Must be different to previous colour
                if (current != previous) {
                    // Break point must be sufficiently different to previous row
                    if (breakOK(x+length)) {
                        // Must not be adjacent to same colour in previous row
                        // Only if there is a previous row
                        if (y == 0 || diffColor(current, x, x+length, y)) {
                            fill(current);
                            previous = current;
                            rect(x, y, length, rowHeight);
                            x += length;
                            // record for checking next row
                        }
                    }
                }
            }
        }
    }
}
A.2. BROKEN BANDS IN FOUR DIRECTIONS

```
currBreaks.add(x);
}
}
// Otherwise try again.
}

// save("HorizBB.tif");
save("HorizBBGrey.tif");
exit();
```

A.2.2 Diagonal Bands

// "Broken Color Bands in Four Directions, Broken Gray Bands in Four Directions."
(2005)

// Clem Baker-Finch Feb 2012
/* From Catalogue Raisonne:

2005.04
Broken Color Bands in Four Directions, Broken Gray Bands in Four Directions
Medium:
Set of two linocuts
Date:
2005
Image Size:
9 x 34 inches (22.9 x 87.6 cm)
Paper Size:
18 x 43 inches (45.7 x 110.5 cm)
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Keigo Takahashi, assisted by Gabriel Hurier, Watanabe Studio, Ltd., Brooklyn, New York
Additional Info:
Previously catalogued as M-38
*/

// SEE COMMENTARY AND CODE IN ../../Wall1114/V114/V114.pde
// ==============================================================
// Mostly copied from there.
// Dimensions
int inch = 300;

// How big?
// This should be easy to scale by changing canvas size.
// Define other values relative to that.

// I'm only doing the bands here - too much mucking around otherwise.
// Combine images and add borders later (e.g. Photoshop).
int frame = 2704; // a multiple of 16, approx equal to 9*inch;

// Number of rows for horizontal and vertical versions
int rows = 16;
// For switching from widening to narrowing diagonal rows
int midRow = 12; // ~ rows/rt2
int lastRow = 24; // ~ rows*rt2 actually slightly magical number

// row height
float rowHeight = frame / rows; // = 375

// Block lengths
float minLength = rowHeight*3/2; // 5/4; // 3/2
float maxLength = rowHeight*7/2; // 13/4; // 7/2 3 4

// Colours
color green;
color yellow;
color blue;
color purple;
color orange;
color red;

// Greys
color black;
color dkGrey;
color midDkGrey;
color midLtGrey;
color ltGrey;
color white;

// Record break points in previous row and current row
ArrayList prevBreaks, currBreaks;

// Record sequence of colours in previous row and current row
ArrayList prevColours, currColours;

// Calculate this once
float rt2 = sqrt(2);

void setup() {
    size(frame,frame);
A.2. BROKEN BANDS IN FOUR DIRECTIONS

// "Better" colours?
green = color(55, 160, 65);
yellow = color(235, 205, 10);
blue = color(50, 120, 195);
purple = color(95, 80, 160);
red = color(205, 40, 45);
orange = color(235, 85, 10);

// Greys
black = color(0);
dkGrey = color(51);
midDkGrey = color(102);
midLtGrey = color(153);
ltGrey = color(204);
white = color(255);

noStroke();
smooth();
noLoop();

} // Randomly select a colour
color pick() {
  switch (int(random(0.0, 5.999999))) {
    case 0: return green;
    case 1: return yellow;
    case 2: return blue;
    case 3: return purple; // brown
    case 4: return orange; // brown
  }
  return red;
}

} // Randomly select a grey
color pickGrey() {
  switch (int(random(0.0, 5.999999))) {
    case 0: return black;
    case 1: return dkGrey;
    case 2: return midDkGrey;
    case 3: return midLtGrey;
    case 4: return ltGrey;
  }
  return white;
}

} // Check break point sufficiently different to previous row
boolean breakOK(float end) {
  for (int i = 0; i < prevBreaks.size(); i++) {
    if (abs(end - (Float)prevBreaks.get(i)) < minLength/3) {
      return false;
    }
  }
APPENDIX A. CODE SAMPLES

void draw() {
    translate(frame-5,0);
    rotate(PI/2);
    // coordinates of next block (pixels)
    float x;
    float y;
    // length of next block (pixels)
    float length;
    // Keep count of rows
    float rowNum = 0;
    // End point of first row
    float rowEnd = rowHeight;
    // Start point of first row
    x = -rowHeight;
    // Current and previous colours
    color current, previous;
    // No breaks so far
    currBreaks = new ArrayList();
    // No colours so far
    currColours = new ArrayList();
A.2. BROKEN BANDS IN FOUR DIRECTIONS

// Upper limit big enough to cover canvas after rotation
for (y = 0; y < frame*rt2; y+=rowHeight) {
    // next row, so:
    prevBreaks = currBreaks;
    currBreaks = new ArrayList();
    prevColours = currColours;
    currColours = new ArrayList();

    rowNum++;
    // Start point decreases for half of canvas, then increases again
    if (rowNum <= midRow) {
        rowEnd = rowNum * rowHeight;
        // start x stepped to left
        x = -rowNum * rowHeight;
    } else {
        rowEnd = (lastRow-rowNum) * rowHeight;
        x = -(lastRow-rowNum) * rowHeight;
    }

    // No previous colour for first block so set to white,
    // different from any generated colour
    previous = color(255);
    while (x < rowEnd) {
        length = int(random(minLength, maxLength)); // good enough to truncate
        // Will this take us too close to the end?
        // I.e. will the next block be too small?
        // Alternatively, proceed if it’s long enough the be the last block.
        if (rowEnd - (x+length) > minLength*3/2 || x+length > rowEnd) {
            // // pick a colour
            // current = pick();
            // or pick a grey
            current = pickGrey();
            // Must be different to previous colour
            if (current != previous &&
                // Break point must be sufficiently different to previous row
                breakOK(x+length) &&
                // Must not be adjacent to same colour in previous row
                // Only if there is a previous row
                (y == 0 || colourOK(current, x, x+length))) {
                fill(current);
                previous = current;

                // -50 fine adjustment by eye ...
                quad(x/rt2 + y/rt2, y/rt2 = x/rt2 -50,
                    (x+length)/rt2 + y/rt2 +2,
                    y/rt2 - (x+length)/rt2 -50,
                    (x+length)/rt2 + (y+rowHeight)/rt2 +2,
                    (y+rowHeight)/rt2 - (x+length)/rt2,
                    (x+length)/rt2 + (y+rowHeight)/rt2 -50,
                    (y+rowHeight)/rt2 - x/rt2 +2 -50)
            }
        } else {  // Record for checking next row
            currBreaks.add(x);
            currColours.add(current);
            x += length;
        }
    }
}


} 

// Otherwise try again.

} 

// save("DownDiBB.tif"); 
save("DownDiBBGrey.tif"); 

exit(); 
}
Appendix B

A Photographic Model

This is an edited version of a catalogue essay for the photo / not photo exhibition in 2008.

"[Images taken by cameras] are able to usurp reality because first of all a photograph is not only an image (as a painting is an image), an interpretation of the real; it is also a trace, something directly stencilled off the real, like a footprint or a death mask. While a painting, even one that meets photographic standards of resemblance, is never more than the stating of an interpretation, a photograph is never less than the registering of an emanation (light waves reflected by objects)—a material vestige of its subject in a way that no painting can be." (Susan Sontag)

B.1 Photographs

The contention of this essay is to begin with a careful consideration of the “reality” that the passage above and so many other critical studies of photography invoke. Such a perspective may help to illuminate what is special and intrinsic to photography and, perhaps, other mechanical imaging techniques.

The ambiguous relation between photographs and reality is an important and ongoing theme in the study and criticism of photography, and is fundamental to the theme of this exhibition. The insightful writings of Roland Barthes are often cited in this context but there is no doubt he was exploring a path prefigured by others. The common phrase “the indexical nature of photography” traces back, logically if not literally, to American logician Charles S. Peirce’s foundational work in semiotics. While Peirce’s writings are extensive and varied on the subject, his taxonomy of signs, based around three categories of relations between signifier and signified, remains particularly influential. Symbolic signs are those where the relation between signifier and signified is fundamen-
tally arbitrary and conventional, and so must be learned. Languages in general are a
good example of this relation, as are traffic lights and national flags. In the *iconic* mode,
the signifier is perceived as resembling the signified in some sense, for example portraits
or cartoons, onomatopoeia, and metaphors. *Indexical* signs are not arbitrary, but rather
the signifier has a physical or causal link to the signified, such as a footprint, smoke or, in-
deed, a photograph. “Psychologically, the action of indices depends upon association by
contiguity, and not upon association by resemblance or upon intellectual operations.”
These modes are not mutually exclusive. In particular Peirce notes that a photograph is
not only iconic but also indexical: “photographs, especially instantaneous photographs,
are very instructive, because we know that in certain respects they are exactly like the
objects they represent. But this resemblance is due to the photographs having been
produced under such circumstances that they were physically forced to correspond point
by point to nature. In that aspect, then, they belong to … class of signs… by physical
connection [the indexical class].”

In the mid-1960s, Roland Barthes distinguished three semiotic aspects of photographs
which he identified as *linguistic, connoted* and *denoted* messages. The essential feature
distinguishing photographs from other images is the denoted message: “What is the
content of the photographic message? … By definition, the scene itself, the literal
reality. From the object to its image there is of course a reduction … but at no time is the
reduction a transformation (in the mathematical sense of the term).” So according to
Barthes a photograph is an *abstraction* of the reality it portrays. “Certainly the image is
not the reality but at least its perfect analogon and it is exactly this analogical perfection
which, to common sense, defines the photograph. Thus can be seen the special status of
the photographic image: *it is a message without a code.*”

Barthes’s notion of connotation falls into Peirce’s iconic and symbolic categories: the
connoted message is a “coded iconic message,” a “cultural message.” His denoted
message corresponds to Peirce’s indexical mode. Barthes’s interest is to explore the
interaction—the “paradox”—of the two messages, for it is the existence of a denoted
message that lends extra conviction to the connoted message of photographs. Our in-
terest here is to focus only on the denotation, the index.

At about the same time that Barthes was developing these ideas, Oxford mathematician
Christopher Strachey was working to develop what he coincidentally described as a denotational semantics
of computer programming languages. Strachey and Barthes may have had quite different motivations but there are some interesting parallels. Strachey’s fundamental insight was that the essence of each and every computer program
is the mathematical function it calculates. In Strachey’s denotational approach, the
meaning of a program is that mathematical function. There is no intervening process
of conversion or translation—a striking correspondence to Barthes’s observation of the
“non-transformational” relation between a photograph and the scene depicted. Just as
a photograph is a pure abstraction of the reality it portrays, a program is a pure ab-
straction of the function it computes. A scientist like Strachey would likely accept a
description of his work as developing a model of computer programs—that is, a “repre-
sentation of the essential aspects of a system which presents knowledge of that system in a useable form.” The process of modelling natural phenomena generally follows a familiar path and deploys familiar tools, but modelling man-made phenomena, such as photographs and programming languages, can be much more interesting.

B.2 A Model of Reality

If we accept that photographs hold such a fundamental relation to reality, then a model of that reality may be a fruitful place to begin to develop a (denotational) model of photographs. This “reality” we inhabit is a limit point between the past and the future; it is the present, a period of time of zero length, impossible to detain. What is reality now is immediately gone. How do we perceive this reality? Visually, through a simple stereoscopic projection: some aspect of this three-dimensional world is projected onto a pair of two-dimensional planes (our retinas), from which our brain has learned to reconstruct something of the $z$-axis (depth) from those images. Already our perception filters reality, as do photographs. Photographs capture an element of reality, a moment in time which then persists until that photograph is destroyed, so in some sense they are more real than that moment itself. Looking out the window, the leaves move, the sky changes colour. Meanwhile a photograph taken out the same window fixes the leaves forever. We can look at it for as long and as often as we wish. Putting aside stereoscopic technologies, in general since photographs are a projection of reality on to the $xy$ plane, they offer a diminished representation of depth, relying on the viewer’s perceptions of perspective, and learned inferences from lighting.

The arguments shift slightly if we take a more modern scientific approach, treating time as a fourth dimension with an equal status to height, breadth and depth. In this four dimensional model, all of the past and all of the future is represented. However, in life we travel through this infinite hypercube on a finite continuous path in time and space. At least theoretically we can move anywhere in three-dimensional space, but the time component of this path is a monotonic linear path of fixed gradient for us all—it is not, and cannot be, within our control. In this framework an ordinary still photograph can be considered as a projection of four dimensions onto two, by fixing a point on the $z$-axis (the film or CCD plane) and the $t$-axis (the moment of firing the shutter). Add to that some more data defining the framing, elevation and azimuth of the camera and we have a detailed model of the reality denoted by a photograph. So long as the image survives we have at hand an element, evidence of that reality. In the same sense that a computer program is an abstraction of its function, a photograph is an abstraction of some point in history. More precisely, it is a particular two-dimensional projection of that point in history.

This proposed model is purely visual—if we were present, all our other senses would be involved in the experience. But denotationally a photo is purely visual so we abstract out those other sensory aspects, up front. The image may offer coded messages regarding
other senses but that is not our immediate interest.

**B.3 Subverting the Index**

*The type of consciousness the photograph involves is indeed truly unprecedented, since it establishes not a consciousness of the being-there of the thing (which any copy could provoke) but an awareness of its having-been-there. What we have is a new space-time category: spatial immediacy and temporal anteriority, the photograph being an illogical conjunction between the here-now and the there-then.* (Roland Barthes)

To be useful, a model must be fit for its purpose—that is, it should be sufficiently accurate and manageably convenient to apply. For example, Newtonian mechanics is a relatively straightforward (but ultimately imprecise) model of the physical universe, but it is good enough for building bridges, roads and houses. Einstein’s relativistic models are more precise physical models but they are also much more complex, so scientists and engineers only deploy them when necessary, such as in the design of global positioning systems or nuclear weapons.

To gain confidence in our model of photography, we may test its robustness: does it hold together when we move away from the most pedestrian conception of a photograph? For example, these days even the most basic digital cameras time-stamp the images they create, thereby creating a three-dimensional projection. With GPS technology (and some cameras already have that built in) it is possible to collect most or all the other so-called metadata that defines an instance in our model, placing the accompanying photographic image precisely at a time and place. There are examples, such as Viewfinder, of systems which extrapolate from a collection of such metadata, to produce an immersive, navigable space, although as yet—and quite reasonably so—little attention is paid to the time axis.

In terms of our model, a standard photograph is a two-dimensional abstraction (a projection) of some place and time. This may be the usual consensus of a photograph but now that we have a model to explore it is reasonable to propose more controversial possibilities. Consider, for instance, Sascha Pohflepp’s blind camera. There is no lens, no aperture. The only interface is a shutter button and a liquid crystal display on the back, just like a regular digital camera. In fact the blind camera is a networked device, taking advantage of internet sources. When the “shutter” is fired, the time is recorded and, using wireless technology a request containing that time is sent to the Flickr photo sharing servers, to begin a search. Some time later, when it finds a photograph with the same time-stamp has been uploaded, that image is sent back to the blind camera and displayed on the LCD screen. What is being “photographed” by this machine? What is the indexical abstraction in this case? Unlike a regular camera that projects a visual reality onto an $xy$ plane, the blind camera projects solely onto the time axis—there is
B.4. EXTENDING THE INDEX

no denotation of place.\textsuperscript{222}

Figure B.1: Blind Camera

\textit{Mathematics \ldots{} does not undertake to ascertain any matter of fact whatever, but merely posits hypotheses, and traces out their consequences. It is observation insofar as it makes constructions in the imagination according to abstract precepts, and then observes these imaginary objects, finding in them relations of parts not specified in the precept on construction. (Charles Sanders Peirce)}\textsuperscript{223}

Having adopted a convincing model, a common research activity is to attempt to extend the model beyond the concrete phenomena that were the original motivation. An important constraint when extending a model is to not break what you already have—in other
words, we want what works in the basic model to also work smoothly in the extended model. An example from mathematics is the Bakhshali Manuscript which introduced negative values to what was already a perfectly good domain of cardinal numbers. The success of such an enterprise is to be judged on how smoothly the extensions interact with the original model. The important thing is to extend the behaviour of the model (such as, in the case of negative numbers, operations such as addition and multiplication) along with the extension of the domain in a sound and consistent way—hence the felicitous “choice” that the product of two negative numbers is positive, for example.

What does that have to do with photography? Suppose—just as a Gedankenexperiment, say—we wanted to explore the idea of extending our model of reality to include what some may call virtual objects—those that exist as data sets, say within a computer or some other storage device. Now any arguments about whether these things are (really) objects is not our immediate concern, just as the inventors of negative numbers were not so concerned with their factual existence. For now this is just a formal game—we are changing the rules by simply declaring virtual objects to be in the same domain as physical ones. The real/virtual distinction becomes merely a classification which may from time to time be useful. We are not embarking on a thorough exploration here. My ambition goes no further than to propose a model for exploration, a framework against which to pose questions that may be answered in a useful way. And questions do arise: do virtual objects exist in something like time and space? Should we place them in separate, constructed universes? A defensible case can be made that virtual objects are just conventional icons, but that does not preclude consideration of their potential indexicality.

In particular, what might we choose as constituting a photograph of these virtual objects? A screen shot corresponds to a two-dimensional projection—the familiar abstraction—but now other imaging possibilities arise. If we produce a three-dimensional rendering of the virtual object, say in an immersive virtual reality environment—or in a standard monitor for that matter—is that an image, or is it the object? Here we make no claims to answer these questions, only to propose a structure within which to discuss and test hypotheses—the fundamental scientific method.

We close with a cursory consideration of a particularly rich example of a constructed universe of virtual objects. Second Life is a world inhabited and created by millions of “Residents.” Particularly interesting from the perspective of this essay is the Second Life Marketplace and the idea that the Linden dollar—the “inworld” unit of currency—can be traded against the US dollar. The membrane separating the virtual and real worlds is leaking, it seems.

Other interactions across the virtual/real divide can also be found, such as Linda Kos-towski’s and Sascha Pohflepp’s Export to World system which, as the name suggests, allows virtual objects to be “exported” from Second Life to the real world. Using a range of software tools, the data sets of Second Life artefacts can be taken, manipulated into life-size cut-out papercraft models, then printed and used to construct correspond-
ing artefacts in the real world, such as the bubble gum machine below. In that case, which is the signifier and which is the signified? It appears incontrovertible that there is a photographic (indexical) relation but if so, in which direction? The original (virtual) bubble gum machine looks like an image of the constructed one but to return to an earlier quote from Peirce, the constructed machine was “forced to correspond point by point” to the virtual one.

![Figure B.2: Second Life and Real Life](image)

Returning again to the difficulty of distinguishing a virtual object from its image, perhaps a fundamental issue is that there is less sense of those objects existing in a history; They have no single point in time. Either they just are or they exist anew each time they are rendered or apprehended. If that is the case, it seems an essential difference between photographs and rendered images of virtual objects is that, to paraphrase Barthes, there is a temporal immediacy as well as a temporal anteriority. As well as a sense of having-been-there, we are also faced with an awareness of always-being-there.
Notes


2. Lucy Lippard, Six Years: The Dematerialisation of the Art Object from 1966 to 1972 (University of California Press, 1973). In Escape Attempts, her preface to the 1997 edition of Six Years, Lucy Lippard suggests that Sol LeWitt distinguished between Conceptual art “with a big C” where the idea is paramount and the material form is secondary or “dematerialised,” and conceptual art “with a small c” such as his own work, also generated by a paramount idea but where the material forms were often conventional. Lucy Lippard, “Escape Attempts,” in Reconsidering the Object of Art: 1965–1975 (1995). Lucy Lippard, Six Years: The Dematerialisation of the Art Object from 1966 to 1972, Originally published by Praeger in 1973 (University of California Press, 1997). For me to attempt to consistently differentiate seems like asking for trouble. Since I think my own work has more in common with the “small c” variety, I have consistently used that, deferring to the reader to make a distinction if they feel it necessary. Where I am quoting another source, the original capitalisation has been maintained.

3. “Aesthetic judgements are given and contained in the immediate experience of art. They coincide with it; they are not arrived at afterwards through reflection or thought. Aesthetic judgements are also involuntary; you can no more choose whether or not to like a work of art than you can choose to have sugar taste sweet or lemons sour. (Whether or not aesthetic judgements are honestly reported is another matter.)” As was his usual practice, Baldessari hired a commercial signwriter to paint this canvas.


14. Julian Spalding, Con Art: Why You Should Sell Your Damien Hirsts While You Can (julianspalding.net, 2012). Spalding reserves his most sustained vitriol for Marcel Duchamp, who Spalding describes in passing as “probably bisexual” without justification or explanation of why that might be relevant to his polemic. He also claims that “the latest research...has now proven beyond any shadow of reasonable doubt that the urinal [Fountain]...[was submitted by] Baroness Elsa von Freytag-Lohringhoven.” Interesting, but the researcher he cites, Irene Gammel, is much more circumspect about drawing such a conclusion. Irene Gammel, Baroness Elsa: Gender, Dada, and Everyday Modernity – A Cultural Biography (MIT Press, 2002).

15. In High Art Lite, Julian Stallabrass has made a much more measured, though still critical, assessment of this aspect of contemporary British art. Julian Stallabrass, High Art Lite (Verso, 1999).

16. I have in mind Sol LeWitt and John Baldessari as particularly important examples.


Howard Singerman’s review of Eklund’s essay is critical of numerous aspects, including the choice of period 1974–1984. Singerman views the essay (but not necessarily the exhibition)
as more a popular history—"who knew or slept with or betrayed whom when"—than a theoretical assessment. Howard Singerman, “Language Games,” Artforum International 48, no. 1 (2009).


22. For example, the text accompanying Huebler’s Duration Piece No. 4 [1968] exposes the arbitrariness of the nevertheless rigidly structured idea: “Photographs of two children playing ‘jump-rope’ were made in the following order: I. Three photographs were made at 10 second intervals. II. Three photographs were made at 20 second intervals. III. Three photographs were made at 30 second intervals. The nine photographs have been scrambled out of sequence and join with this statement to constitute the form of this piece.”


33. Theodor H. Nelson, quoted in *ibid.*, 12.

34. The works discussed here are neither failures nor are they exhausted, nor did they necessarily strictly precede the works discussed in the following chapters. In the framework of any constrained research project, decisions about where the primary focus should lay are necessary, and inevitably fruitful lines of investigation are put aside, at least for the time being.


37. The “magisterial” epithet is Rosalind Krauss’s: “Barthes’s work cannot be ignored whether one is summoning Peirce or Benjamin. It remains magisterial and devoted to the index, to the ‘nothing to say.’” Rosalind Krauss, “Notes on the Obtuse,” in *Elkins, Photography Theory*, p. 342.


40. Barthes, “The Photographic Message.” To be sure I checked the original French passage but the translation is uncontroversial: “Quel est le contenu du message photographique ? Qu’est-ce que la photographie transmet ? Par définition, la scène elle-même, le réel littéral. De l’objet à son image, il y a certes une réduction : de proportion, de perspective et de couleur. Mais cette réduction n’est à aucun moment une transformation (au sens mathématique du terme).”


42. An algebra is just a collection of values and operations among them. It is nothing more than a way of modelling some situation which precisely specifies the aspects of that situation that we are presently interested in.


45. Foote, “The Anti-Photographers.”


56. In a May 1963 notebook entry, Ed Ruscha wrote that “Andy Warhol wondered how I was able to shoot pictures of gasoline stations with no cars or people around.” No answer is recorded. Ruscha, *Leave Any Information at the Signal: Writings, Interviews, Bits, Pages*, p. 389.


127
An interesting postscript is that some 30 years later Ruscha reprinted, after rephotographing if necessary, some of his book images at a scale large enough to be hung on the wall in an exhibition alongside the likes of Thomas Demand and Andreas Gursky. According to Stefan Gronert, this 1990s gesture was designed to once again “stress the purely reproductive moment of the medium.” Stefan Gronert, “Reality is not Totally Real: The Dubiousness of Reality in Contemporary Photography,” in Grosse Illusionen, Demand—Gursky—Ruscha (Kunstmuseum Bonn, 1999).


This is discussed in Jay David Bolter and Richard Grusin, Remediation: Understanding New Media (MIT Press, 1999), and elsewhere. In fact there are some suggestions that this film was not shown at the Grand Café, nor even made until the following year.


Gunning cites Goerges Sadoul, Histoire générale du cinéma. Tome 1: L’Invention du cinéma 1832–1897 (Denoël, 1948) as the source of this quote.

For the technically inquisitive, the extraction programs were written in Haskell and the typesetting was achieved with \LaTeX, as was this document.


Nevertheless, Kant mounted his own a priori argument for the existence of God in The One Possible Basis for a Demonstration of the Existence of God.

68. Michael Wolf, Chinese Propaganda Posters (Cologne: Taschen, 2003). The Three Main Rules of Discipline are as follows:
   1. Obey orders in all your actions.
   2. Don’t take a single needle or piece of thread from the masses.
   3. Turn in everything captured.

The Eight Points for Attention:
   1. Speak politely.
   3. Return everything you borrow.
   4. Pay for anything you damage.
   5. Do not hit or swear at people.
   6. Do not damage crops.
   7. Do not take liberties with women.
   8. Do not ill-treat captives.

69. In part, the Beauty Myth extract reads: “Thirty-three thousand American women told researchers that they would rather lose ten to fifteen pounds than achieve any other goal.”

The Taming of the Shrew passage is:
   Thy husband is thy lord, thy life, thy keeper,
   Thy head, thy sovereign; one that cares for thee,
   And for thy maintenance commits his body
   To painful labour both by sea and land,
   To watch the night in storms, the day in cold,
   Whilst thou liest warm at home, secure and safe;
   And craves no other tribute at thy hands
   But love, fair looks and true obedience;
   Too little payment for so great a debt.


74. ibid.
Even random number generators (more properly called pseudo-random number generators) are not truly random—whatever that might mean—but an entirely predictable and repeatable sequence.

The irony of the name has not escaped my attention.

LeWitt, “Paragraphs on Conceptual Art.”

Wall, “‘Marks of Indifference’: Aspects of Photography in, or as, Conceptual Art.”

Berger, “Appearances.”


Howardina Pindell, Words with Ed Ruscha, in Ruscha, Leave Any Information at the Signal: Writings, Interviews, Bits, Pages.


“The famous pipe. How people reproached me for it! And yet, could you stuff my pipe? No, it’s just a representation, is it not? So if I had written on my picture ‘This is a pipe,’ I’d have been lying!” Quoted in Harry Torczyner, Magritte: Ideas and Images (Harry N. Abrams, Inc., 1979), p.71.

Explicitly classifying Keith Arnatt as both photographer and artist goes against the grain but my reasons will become clear later in this chapter.


Greenberg, “Modernist Painting.”


MacPherson’s first exhibition of Frog Poems, an extensive an ongoing suite of works, was introduced with this revelation: OCT. 14 1982 THURSDAY. I REALIZED THIS MORNING WHILE CLEANING MY SHOES I WAS APPLYING COLOUR WITH A BRUSH (MY SHOES ARE PAINTINGS)!!
92. Greenberg goes on to qualify that such a ‘picture’ is “not necessarily a successful one.” Clement Greenberg, “After Abstract Expressionism,” Art International 6, no. 8 (October 1962).


95. ibid.


98. Quoted in Rathbone, Walker Evans: A Biography.

99. ibid. Belinda Rathbone goes on to catalogue a collection of the generally unwilling collaborators in these misappropriations (pp.288–91). Following Evans’s death, “Bill Christenberry, his fellow sign thief, was appointed honorary curator of the sign collection.”

100. I later found the complete artist’s statement that contained Evans’s lifting idea. I believe it supports my interpretation of Evans’s intention:

“The installation, here, of actual graphic ‘found objects’ may need little or no interpretation via the written word. Assuredly, these objects may be felt—experienced—in this gallery, by anyone, just as the photographer felt them in the field, on location. The direct, instinctive, bemused sensuality of the eye is what is in play—here, there, now, then.

“A distinct point, though, is made in the lifting of these objects from their original settings. The point is that this lifting is, in the raw, exactly what the photographer is doing with his machine, the camera, anyway, always. The photographer, the artist, ‘takes’ a picture: symbolically he lifts an object or a combination of objects, and in so doing he makes a claim for that object or that composition, and a claim for his act of seeing in the first place. The claim is that he has rendered his object in some way transcendent, and that in each instance his vision has penetrating validity.” Quoted in Thompson and Hill, Walker Evans at Work.


103. I mean ‘unintentional’ in the sense expressed so well by Lee Friedlander: “I only wanted Uncle Vern standing by his new car (a Hudson) on a clear day. I got him and the car. I also got a bit of Aunt Mary’s laundry, and Beau Jack, the dog, peeing on a fence, and a row of tuberous begonias on the porch and 78 trees and a million pebbles in the driveway and more. It is a generous medium, photography.” Lee Friedlander, “An Excess of Fact,” in *The Desert Seen* (New York: Distributed Art Publishers, 1996), 104, cited in Michael Fried, *Why Photography Matters as Art as Never Before* (Yale University Press, 2008).

104. In fact this discomfort is something I have felt and continue to feel with regard to almost all my photographs of Wollongong. Perhaps it is a reflection of my own predilections and the subjects I am attracted to.

105. A supervisor at Leisure Coast confirmed that the signwriter was from Kiama, her name was Gay and she was responsible for much of the short-term signage in the area, including at Bulli Fruit & Veg.


110. In a blog post about Arnatt’s final exhibition, *I’m a Real Photographer* (2007), a contributor claiming to be one of his students from the 1970s wrote, “If you look closely at the last frame of Self Burial you’ll see the hose from his wife’s washing machine poking up. He’s under there! Mad bugger. Bless him.” ([http://www.mexicanpictures.com/headingeast/2007/08/keith-arnatt.html](http://www.mexicanpictures.com/headingeast/2007/08/keith-arnatt.html)) Putting aside the gender stereotype subtext, this is interesting (and amusing) because it can’t be true—surely!—but nevertheless enlivens and adds to the photographic deceit being perpetrated.

111. A number of Arnatt’s early works involved mirrors and other *trompe-l’oeil* devices that assumed a specific viewpoint: putting a camera at that point was a solution to a problem. *ibid*.


113. Arnatt and Roberts, “An Interview with Keith Arnatt.”

115. Foote, “The Anti-Photographers.”


117. Arnatt studied Philosophy at the University of Oxford before attending the Royal Academy Schools of Art.

118. Keith Arnatt, “I have decided to go to the Tate Gallery next Friday,” *Studio International* (May 1971); Keith Arnatt, “Is it possible for me to do nothing as my contribution to this exhibition?,” *Interfunktionen* 5 (November 1970).

119. David Hurn, “Keith Arnatt, Photographer,” in *I’m a Real Photographer* (Chris Boot, 2007).


123. Newcastle upon Tyne’s Grainger Market and The Barras in Glasgow spring to mind.


126. My emphasis.


128. Hurn, “Keith Arnatt, Photographer.”


131. According to Roberts, when LeWitt “finally came up with a number of 122” variants, he “asked a physicist and mathematician at Columbia to please verify his result and also had a mathematics grad student he was friends with check as well.” The rather poor quality image of LeWitt’s working for the seven-edge variations in Figure 4.2 is a screen grab from a YouTube video of this lecture. As well as pencil and paper, Roberts claims his process included laboriously bending paper clips. See Veronica Roberts, Landmarks Talks: Veronica Roberts on Sol LeWitt, Landmarks is the public art program at the University of Texas at Austin, https://www.youtube.com/watch?v=WxwsndAiE1g, 2013.

132. Most likely, her comment was partly motivated as a recognition that she was speaking in the auditorium of the Bill and Linda Gates Computer Science Complex at the University of Texas at Austin. ibid.

133. LeWitt, “Paragraphs on Conceptual Art.”

134. LeWitt, “Sentences on Conceptual Art.”


More precisely, the National Gallery of Australia catalogues this etching as *(Squared grid structure in shape of a pyramid): from “Arcs and Lines.”*

These images are monochrome but the actual prints have a black grid with blue arcs and lines.

None that is clearly visible, in any case but of course real values will be limited to the accuracy of number representation in the computer, and the curves will be approximated with sequences of straight lines. In any case, the image is made up of discrete pixels. Perfection only exists in the imagination of the imaginer.

Sol LeWitt, “Doing Wall Drawings,” *ArtNow* 3, no. 2 (June 1971): n.p. Here is the full text, for reference:

> The artist conceives and plans the wall drawing. It is realised by draftsmen, (the artist can act as his own draftsmen), the plan (written, spoken or a drawing) is interpreted by the draftsmen.
>
> There are decisions which the draftsman makes, within the plan, as part of the plan. Each individual being unique, given the same instructions would carry them out differently. He would understand them differently.
>
> The artist must allow various interpretations of his plan. The draftsman perceives the artist’s plan, then reorders it to his own experience and understanding.
>
> The draftsman’s contributions are unforeseen by the artist, even if he, the artist, is the draftsman. Even if the same draftsman followed the same plan twice, there would be two different works of art. No one can do the same thing twice.
>
> The artist and the draftsman become collaborators in making the art.
>
> Each person draws a line differently and each person understands words differently.
>
> Neither lines nor words are ideas, they are the means by which ideas are conveyed. The wall drawing is the artist’s art, as long as the plan is not violated. If it is, then the draftsman becomes the artist and the drawing would be his work of art, but art that is a parody of the original concept.
>
> The draftsman may make errors in following the plan without compromising the plan. All wall drawings contain errors, they are part of the work.
>
> The plan exists as an idea but needs to be put into its optimum form. Ideas of wall drawings alone are contradictions of the idea of wall drawings.
>
> The explicit plan should accompany the finished wall drawing. They are of equal importance.


The premise for Haxthausen’s essay is to “explore the artist’s affinity with musical thought.” The title is a play on *The Well-Tempered Clavier* as those familiar with Bach’s body of work will recognise. Reader’s of Douglas Hofstadter’s *Gödel, Escher, Bach* will also no doubt be aware of this systematic collection of preludes and fugues. Douglas R.
Hofstadter, Gödel, Escher, Bach: An Eternal Golden Braid: A Metaphorical Fugue on Minds and Machines in the Spirit of Lewis Carroll (Penguin Books, 1979). The combinatorial nature of Bach’s composition is reminiscent of LeWitt’s work: even the full title has a LeWittian ring: The Well-Tempered Clavier, or preludes and fugues through all the tones and semi-tones.


The aspiration to be unlike wallpaper is interesting: according to Mel Bochner, LeWitt was deeply impressed by Andy Warhol’s Cow Wallpaper (1966) precisely for its decorative aspect and “actual flatness.” According to Christianna Bonin, Bochner made these remarks at the opening of Sol LeWitt: The Well-Tempered Grid. Christianna Bonin, “Between Wall and Paper: Rethinking LeWitt’s Wall Drawings,” in Haxthausen, Sol LeWitt: The Well-Tempered Grid. Bochner later published an article based on his address but there is no explicit reference to LeWitt’s reaction to Warhol’s work. Mel Bochner, “Why Would Anyone Want to Draw on the Wall?,” October 130 (Fall 2009): 135–140.


152. My unsubstantiated premise is that it is more comfortable and natural for a lefthander to draw curves towards the left, so that is what my wanderer has a slight tendency to do.


154. I have a strong resistance to this proposition: programming is a participatory activity.


156. Prints catalogue index #2005.04. In fact the print is paired in the catalogue with Broken Gray Bands in Four Directions. There is also a corresponding Wall Drawing #1144.

158. For example, three in the previous row, one in this row, and two in the triangle that the band ends on.

159. The Four-colour theorem guarantees that some colour arrangement will always exist for the overall image but the algorithm needs to be smart enough to achieve it.

160. This is difficult to demonstrate here because the very act of printing or displaying on screen will potentially introduce new artefacts.

161. The retrospective runs for 25 years from 2008 to 2033 and consists of 100 works. Their website has information about each of the drawings, including what I now realise is the complete (published) instructions as well as some background, including notes about their implementation. What is notable in the context of my research is that these are separate things. http://www.massmoca.org/lewitt/.


163. See http://www.massmoca.org/lewitt/walldrawing.php?id=343A,B,C,D,E,F.


165. In fact the line separation in the pencil-grid drawings is now routinely 6mm. That seems to have arisen as a matter of technique: three 3mm leads are taped together, the middle one as a spacer, so that two lines may be drawn at once, hence the points are 6mm apart.

166. See Lippard, “Curating by Numbers.”


169. During our conversation I showed John a copy of the certificate for Wall Drawing 303 which had been first installed in 1977 at his residence, by John’s daughter Bettina and Sol himself. According to John, “Sol made a terrible mess of it. We cleaned up afterwards. There was crayon marks everywhere.” Perhaps this is another reason LeWitt passed this aspect of the work over to others!

171. According to the Art Gallery of New South Wales catalogue this is *Wall Drawing 1274: Scribble Column (Horizontal)*. I’m not sure of the date but it is certainly one of the very last wall drawings LeWitt produced. Curiously, Charles Haxthausen seems to suggest there are only 1261 wall drawings: Haxthausen, “The Well-Tempered Grid: On Sol LeWitt and Music,” p.21. It is also interesting to think that this was never realised during his lifetime, further separating it from his authorship and control.


175. An example of this kind of loss, pointing to the necessary incompleteness of the cook book, came in an exchange during a Sansotta interview in 2010. An audience member who had been involved in an installation in 1981 told Sansotta that LeWitt had specified the brand and serial number of the paint that was to be used, to which Sansotta expressed surprise. Neither could they recall the kind of ink that had been used at that time. Sansotta later went on the say that “Sol wasn’t so much of a stickler as far as that goes. We sort of standardised things for him later on.” So who is the author? For a transcript of the interview see Anthony Sansotta, *Anthony Sansotta in Conversation with Sarah Robayo Sheridan*, A Mercer Union Legacy Project, [http://www.mercerunion.org/events/opening-talk-by-anthony-sansotta/](http://www.mercerunion.org/events/opening-talk-by-anthony-sansotta/), July 2010.


A colleague once described mathematics journal publications thus—for there certainly had been blood, and sweat. Unfortunately, what is missing in the polished final version is the really interesting part: an insight to the process of invention and understanding of the context and how the author found their way to the result.

Roberts, “Photography, Iconophobia and the Ruins of Conceptual Art,” p.44.


Thompson and Hill, Walker Evans at Work.

Baldessari’s Post-Studio classes at CalArts in the 1970s were often ‘structured’ around working with found photographs and collected media images. Baldessari and Knight, “A Situation Where Art Might Happen: John Baldessari on CalArts.”

Soon after, Levine also exhibited a re-photographed collection of Walker Evans’s Farm Security works. In part this was a response to copyright issues: Weston’s photographs were owned by his estate but Evans’s were in the public domain.


Jeff Wall and Michael Fried hold similar attitudes regarding the return of modernism to photography. Indeed it could be argued that is the fundamental premise of Fried, Why Photography Matters as Art as Never Before.


LeWitt, “Doing Wall Drawings.”

See Section 4.2. Sykes, “Keeping Sol LeWitt’s Work Alive.”
199. Marcel Duchamp rejected art that is only intended to please the eye with the pejorative “retinal.” His aim was “to put art back in the service of the mind.” Pierre Cabanne, *Dialogues with Marcel Duchamp*, Cited in Osborne, *Conceptual Art*. (Da Capo, n.d.), 77.

200. Wall, “‘Marks of Indifference’: Aspects of Photography in, or as, Conceptual Art.”


203. Wall, “‘Marks of Indifference’: Aspects of Photography in, or as, Conceptual Art.”

204. Quoted in Smith, “The World in my Paintbrush” from a 1975 interview with Denise Green in Brisbane. I should own up to a misappropriation: MacPherson is in fact using this observation to dismiss the critical opposition of abstraction against figuration as “an argument of fools” which is much more targeted than my use.


207. ibid.


210. Peirce, *Collected Papers of Charles Sanders Peirce* volume 2, page 306. References to Peirce’s writings are commonly given in terms of this collection, citing the volume and page number.

211. ibid., (2.281).

212. Barthes, “The Photographic Message,” Barthes, “Rhetoric of the Image.” Emanuele Martino takes issue with this position is particular, arguing that there is a projective geometric transformation taking place. While I believe a counter-argument can be mounted, this is not the place for an extended rejoinder. Martino, “A Set-theoretic Approach to Indication and Indexicality in Photography.”


217. The matter of *history* is central to Barthes’s investigation of the photographic paradox: “thanks to the code of connotation the reading of the photograph is thus always historical; it depends on the reader’s ‘knowledge’ just as though it were a matter of a real language, intelligible only if one has learned the signs.” Barthes, “Rhetoric of the Image.”

218. ibid.

219. The three dimensions being the $xy$ plane and the time axis.

220. *Viewfinder* is a collaboration between the Interactive Media Division and the Institute for Creative Technologies at the University of Southern California. [http://interactive.usc.edu/viewfinder/](http://interactive.usc.edu/viewfinder/)

221. The button is a beautiful example scavenged from an old Agfa camera.


224. To be clear, “virtual object” will be used here as an indivisible term to refer to this concept. In other words, we are not using “virtual” in its adjectival sense.

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