Productive Matters:
**The DIY Architecture Manuals of Ant Farm
and Paolo Soleri**

Catherine D. Smith

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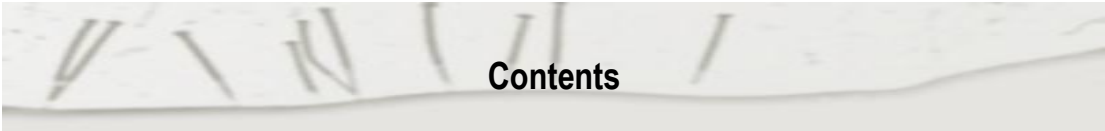
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Abstract

Productive Matters: The DIY Architecture Manuals of Ant Farm and Paolo Soleri

This thesis develops a theoretical account of DIY (Do It Yourself) architecture, specific to the DIY architecture manuals of the art/architecture collective Ant Farm, and the architect Paolo Soleri. This account will draw upon the countercultural discourse on the 'artisanal' as distilled from the North American discourse on DIY, and; the philosophical notion of the *artisanal* as developed by French philosopher Gilles Deleuze and his collaborator, psychoanalyst Félix Guattari. The DIY phenomenon emerged as an identifiable movement in post-war North America, and yet it remains significantly under-theorised and ill-defined, particularly in connection with architecture. However, although the association of DIY with architecture and the 'artisanal' is uncommon, it can be charted in the post-war discourse related to the North American counterculture, including Ant Farm's and Soleri's DIY architecture manuals. Ant Farm's and Soleri's DIY manuals are primarily based on their experimental works of the 1960s and 1970s in North America. Within the countercultural movement, DIY architecture manuals functioned as educational platforms for disseminating a DIY sensibility to the countercultural audience; thus the manual was crucial to the DIY mode of operation.

In the post-war discourse on DIY in North America, the term 'DIY' has been both positively and negatively associated with the term and notion of the 'artisanal.' On the one hand, DIY is seen to contribute to the loss of artisanal skills and techniques; on the other hand, it extends the practices of craft and making to a broader and otherwise unskilled audience. To investigate this initially superficial connection between DIY architecture and the notion of the 'artisanal' further, the thesis turns to the philosophical notion of the *artisanal,* primarily distilled from the writings of Deleuze and Guattari. Deleuze and Guattari define the *artisanal* according to a set of procedures and operations that are not tied to particular materials, technologies, skill sets or expertise. Their notion is explored as a possible productive theoretical framework for 'DIY architecture,' a practice that also challenges conventional distinctions between the roles and practices of 'expert' architect, professional builder and 'layperson' building occupant.

For Deleuze and Guattari, the *artisanal* mode of operation involves discovering and responding to problems and opportunities as they are directly encountered in real-life. It will be argued that the DIY mode of operation invoked in Ant Farm's and Soleri's manuals involves an attendance to the nuances of material phenomena within project sites, in a manner that resonates with Deleuze and Guattari's notion of the *artisanal*. Deleuze and Guattari also suggest that the *artisanal* mode interacts with other modes of operation, including those modes which advocate an indirect and detached account of material

phenomena. One of the key problems identified in the DIY manuals relates to the divergent ways materials and techniques are described: as simultaneously site-specific and somewhat unpredictable, and as generalisable and predictable. By theorising DIY architecture through Deleuze and Guattari's notion of the *artisanal*, the thesis suggests that the manuals involve a play between: actual, particular materials directly encountered in project contexts; generalised materials as represented in words, drawings and imagery; and potential materials, actions and transformations yet to come. Importantly, this DIY mode of operation invokes comprehensive transformations in all aspects of a project, including transformations in thought, identities and bodies. These transformations are seen to occur through a productive struggle with matter's self-organisational capacities. The thesis's significance lies in its contribution to a critical, material-focused thinking between the disciplines of architecture and philosophy, and to the under-theorised area of DIY architecture.

Contents

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Cover

Manipulated image of acupuncture doll by the author

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Introduction

Chapter 1: Introduction

1.0 Introduction

This thesis develops a theoretical account of DIY (Do It Yourself) architecture through an exploration of the DIY architecture manuals of Ant Farm and Paolo Soleri, the countercultural discourse on the 'artisanal' and the philosophical notion of the *artisanal*.[1] Although the association of architecture with DIY and the 'artisanal' is uncommon, it can be charted in the discourse of post-war North America, including Ant Farm and Soleri's manuals. Based on their experimental work of the 1960s and 1970s in North America, their manuals function as instantiations of a particular DIY mode of operation in architecture.

There is minimal scholarly discourse on DIY as a practice, nor explication of what constitutes DIY in relation to architecture. Much of the discourse on DIY stems from post-war North America, which is where DIY emerged as an identifiable phenomenon in the 1950s. In this discourse, DIY is generally used as an ill-defined umbrella term associated with diverse and divergent social and cultural issues. DIY is also discussed in relation to an 'artisanal' approach to materials in a manner that (at least superficially) resonates with Gilles Deleuze and Félix Guattari's philosophical notion of the *artisanal*.

To understand the connection between DIY and the 'artisanal' with more depth and clarity, there is a detailed exploration and theorisation of Ant Farm and Soleri's DIY manuals using the discourse and notion of the artisanal—countercultural and philosophical. The philosophical notion is distilled primarily from Deleuze and Guattari's writings. Deleuze and Guattari discuss the *artisanal* within their collaborative text, *A Thousand Plateaus: Capitalism and Schizophrenia*.[2] Their *artisanal* mode of operation is characterised by an attendance to the dynamic, self-organisational capacities of materials. Importantly, this philosophical notion is not tied to a particular material, technology or skill set and is therefore potentially useful for exploring DIY as a mode of operation which is also focused on material processes, rather than the hierarchical distinctions between the expert and the amateur. Deleuze and Guattari also draw attention to potential problems associated with the *artisanal* mode, and the inevitable interactions between this mode and other operative models and procedures. In the present thesis, reference will also be made to other writings on matter, form, action and transformation drawn from philosophy, cultural and architectural theory. These writings also discuss the dynamic nature of materials and *artisanal* operations, and connect transformations involving matter to broader transformations and flows in life.

The exploration of Ant Farm and Soleri's manuals in the present thesis reveals divergent approaches to materials and techniques. On the one hand, the manuals convey a sense that all material phenomena are specific to a site, time and project context. Accordingly, the DIY manuals suggest that the readers must develop their own DIY projects specific to their circumstances. On the other hand, the manuals also generalise and predict material behaviours and project opportunities, to encourage and incite readers into a DIY mode of action. This play between the particular and the generalisable establishes tensions in all three of Ant Farm and Soleri's manuals. By using the philosophical notion of the *artisanal* to theorise the manuals, it will be argued that the manuals capture something of the productive tensions and complexities invoked in Deleuze and Guattari's own writings.

The theorisation of artisanal, DIY architecture emerging in this thesis draws attention to a DIY mode of operation in architecture involving different engagements with 'matter' to that of conventional architectural practice. These engagements with matter involve a play between; actual, particular materials encountered in real-life; materials as generalised and represented in drawings, words and photographs, and; potential materials (and actions) to come. It will be argued that this DIY mode of operation facilitates a following of materials and their experimental potentialities in architectural project sites, in a manner which is relatively uninhibited by the conventions of architectural representation: conventions that otherwise bind the potentialities of materials to preconceived forms and spatial qualities imagined in advance to the occupation of sites. The comprehensive approach of DIY architecture advocated in the manuals is also seen to invoke transformations in all aspects of a project: thus materials, tools, architectures, thoughts, identities, communities and bodies enfold into a continuum.

1.1 Scope

The scope of this thesis is limited to: the DIY discourse associated with a specific time period and geographic location; the DIY architecture manuals of Ant Farm and Soleri, and; the specific philosophical notions of the *artisanal*. In relation to the discourse on DIY, the focus is on the discourse that emerges in post-war North America, where DIY was recognised as an identifiable phenomenon. This post-war discourse is organised into two discursive streams associated with different time periods: the early discourse on DIY in the 1940s and 1950s, and; the discourse on DIY associated with the counterculture of the 1960s and 1970s. The movement between the discourse streams establishes a 'historical' context for this study. In the present thesis, reference will be made to journals and texts associated with DIY and published during the periods in question. Reference will also be made to contemporary and critical accounts of the DIY phenomenon. In response to the nebulous and ill-defined nature of DIY as a general practice—and as a practice associated with architecture—the intention is to develop a very particular exploration of DIY architecture. Specific focus will be on the DIY architecture

manuals created by two architectural practices associated with the counterculture: the art/architecture collective Ant Farm, and; the architect Paolo Soleri. While the term 'DIY architecture' occasionally appears in contemporary architectural discourse, it is unclear what constitutes DIY as a practice or sensibility in architecture, and how DIY architecture differs from DIY generally.[3] By focusing on the post-war discourse on DIY in North America, and the DIY manuals of Ant Farm and Soleri, the thesis develops an account of DIY architecture related to a specific discursive framework and particular architectural practices.

As will be elaborated in chapters 2 and 3 of this thesis, the DIY manual is crucial to the DIY mode of operation within the North America counterculture of the 1960s and 1970s. While it is recognised that a DIY manual isn't the same as constructed buildings, artefacts and the processes associated with their creation, it will nevertheless be argued that the manual is integral to the DIY mode of operation. In the case of one countercultural manual, the *Whole Earth Catalog* or *WEC*, it has been argued that the manual itself can be considered a form of architecture.[4] This thesis focuses on three DIY architecture manuals created by Ant Farm and Soleri: Ant Farm's *Inflatocookbook* (1970 and 1973),[5] and its video companion, the 'Inflatables Illustrated' (1971),[6] and; Soleri and Scott M. Davis' *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction* (1984),[7] which was primarily based on Soleri's work of the 1960s and 1970s. Although Ant Farm and Soleri's manuals are different in format and content, they collectively broaden a sense of the complexities and nuances of 'DIY architecture,' whilst maintaining the thesis' specific focus on post-war North American discourse. It is also important to note that 'Inflatables Illustrated' is the video companion to the *Inflatocookbook* hard copy manual, and as such, there is some similarity in content and focus. Importantly, both Ant Farm and Soleri's architecture and manuals have been associated with the 'artisanal' and DIY, with respect to projects and production processes that have a discernible focus on materials and making.[8]

In relation to the philosophical notion of the *artisanal*, the philosophical discourse referred to in the present thesis is distilled primarily from French continental philosophy, and theorists drawing from this particular field of philosophy. There is a concentration on philosophical notions distilled from the writings of Deleuze and Guattari. On the surface, Deleuze and Guattari's notion of the *artisanal* also exhibits a strong similarity to the discussion of the 'artisanal' within select countercultural texts. It is worth noting that Deleuze and Guattari's writings can be connected to the particular countercultural period from which Ant Farm and Soleri's DIY manuals emerged.[9] Deleuze and Guattari produced four key collaborative texts:[10] first, *Anti-Oedipus*: *Capitalism and Schizophrenia* (1972), and its follow on; *A Thousand Plateaus*: *Capitalism and Schizophrenia* (1980); third, *Kafka: Toward A Minor Literature* (1975), and finally; *What is Philosophy*? (1991). The focus in the present thesis is on Deleuze and Guattari's text *A Thousand Plateaus*, and specific sections of the chapter or plateau titled '1227: Treatise on Nomadology—The War Machine.' *A Thousand Plateaus* has been described as "a toolbox

for 'nomadic thought'."[11] Beyond this superficial allusion to the DIY sensibility of a 'toolbox,' it will be argued that their notion of the *artisanal* provides a productive framework for exploring the DIY architecture of Ant Farm and Soleri.

For the purposes of this study, there is a deliberate conjunction of Deleuze and Guattari's philosophical notions and the DIY discourse. The intention is not to produce a general theory or model of DIY architecture, but is instead to create a specific exploration of *artisanal*, DIY architecture particular to Ant Farm and Soleri's DIY manuals. While the thesis refers to discourse relating to the 'history' and emergence of the DIY phenomenon in post-war North America, the intention is not to make a specifically historical argument nor provide a complete overview of the DIY phenomenon. Other issues could have been brought to the fore in the present thesis—for example, exploring and positioning DIY architecture in relation to craft as a social practice.[12] However, the scope was intentionally limited to the notion of the 'artisanal,' which emerged as a specific issue in relation to the DIY discourse of post-war North America, and; involves an attendance to materials and processes in the manner that appears to resonate with Deleuze and Guattari's philosophical writings on the *artisanal*.

1.2   Significance

There are four key reasons the present thesis is significant: first, through its contribution to research on the undertheorised areas of 'DIY' and 'DIY architecture;' second, through its contribution to the scholarly research on Ant Farm and Paolo Soleri, and their DIY architecture; third, through its articulation of a material-focused DIY mode of operation within post-war North America, and; fourth, through its demonstration of a way to theorise architecture, by using the philosophical discourse to explore specific examples of architectural practice.

First, this thesis is a response to the undertheorisation of both 'DIY' and 'DIY architecture.' Even though there is minimal scholarly discourse on DIY, the thesis identifies and charts a discourse on DIY architecture which is associated with 'artisanal' methodologies. A detailed examination of the post-war North American discourse suggests that both forms of DIY are associated with an artisanal attendance to materials and operations within project sites, although this association is under-developed. The conspicuous under-theorisation, and frequently ambiguous accounts, of DIY and DIY architecture reinforce the need for a specific theoretical examination.

Second, even though the work of Ant Farm and Soleri is important—both having received professional awards and citations—neither have been consistently included in significant historical accounts of the discipline.[13] In spite of this lack of disciplinary recognition, architectural historian Felicity Scott argues that Ant Farm's countercultural practices reveal the discipline's potential "to forge an ongoing political

(and aesthetic) practice, a contestatory practice."[14] This 'contestatory practice' is evident within Ant Farm and Soleri's DIY architecture manuals which act as a challenge to a range of hierarchical distinctions typical of conventional architectural practice, including the distinctions between: the expert architect and amateur; between the different phases of designing, making and occupying architecture, and; between planned architectural projects and spontaneous, experimental constructions in actual project sites.

Third, the present thesis is significant because it contributes to contemporary architectural discourses that problematise the relations between materials and form in architecture.[15] The thesis distils, articulates and troubles a DIY mode of operation within Ant Farm and Soleri's DIY manuals which is action-focused, and plays out the interactions between actual, represented and potential material transformations. Due to the focus on materials and their self-organisational capacities and processes, this thesis contributes to the broader and expanding architectural discourse on material-focused architectural practices,[16] including architectural discourses referring to the philosophy of Deleuze and Guattari.[17] In the emerging field of contemporary, material-focused architectural discourse, several edited texts concentrate on experimental design and production approaches, including: Robert Sheil's 2005 *Design Through Making;*[18] Kolarevic and Klinger's 2008 *Manufacturing Material Effects: Rethinking Designing and Making in Architecture,* [19] and; Gail Peter Borden and Michael Meredith's 2012 *Matter: Material Processes in Architectural Production*.[20] These texts are specific to the architectural discipline and building production contexts, and have a significant focus on digital production techniques. The aforementioned texts make no specific reference to the philosophical discourse dealing with matter and form; focusing instead on contemporary design and production methodologies that more closely link architectural representations of form and materials to their fabrication techniques, including digital visualisation and CNC fabrication. Even though there appears to be an awareness of material self-organisational capacities, these texts do not generally explicate a philosophical or conceptual understanding of materials. For example, Borden and Meredith's comprehensive text *Matter* is explicitly concerned with a conception of materials as distilled from specifically architectural practices and discourses.[21] Accordingly, there is minimal explicit examination of how contemporary fabrication techniques in themselves challenge or problematise established conceptions of the matter-form relation. Architectural theorist Katie Lloyd Thomas argues that unless the conception of materials and their formations in architecture is explicitly addressed within architectural discourse, production methodologies may simply extend and replicate traditional assumptions about matter and form, particularly form's conceptual dominance over matter.[22]

Finally, this thesis is significant because it demonstrates a way to theorise architecture. The thesis particularises the philosophical discourse through reference to processes and procedures evident in specific examples of architectural practice. It is important to acknowledge that there is a difference

between philosophy—as a discipline concerned with the creation of concepts[23]—and architecture—as a discipline generally focused on the creation and actualisation of buildings and environments. Noting this difference, the present thesis focuses on philosophical writings that refer to "real-life operation[s]"[24] and procedures, including construction and architecture. The present thesis does not attempt to distil or articulate new philosophical concepts and notions from the discourse on DIY architecture; however it does situate the philosophical notions in relation to actual examples of DIY architecture.

1.3   Method

This thesis has arisen from a sense that there is a strong correspondence between the philosophical notion of the *artisanal*, and the discourse on DIY architecture. Although the thesis is specific to the domain of architectural theory, it introduces notions drawn from other disciplinary discourses into architectural theory, in order to think and problematise theories of architectural practice. The thesis adopts an interdisciplinary position drawing from history, cultural theory, philosophy and architectural theory. Accordingly, the discourse associated with architectural practice is problematised by opening it to other ways of thinking. In light of the minimal scholarly discourse on DIY architecture, it was important to articulate and explore DIY architecture using key discourses currently outside of the core 'opus' of architectural history and theory. This thesis raises questions concerning matter, materials and the form-matter relation in DIY architecture and its attendant practices.

A key assumption of the present thesis is that there is a value in developing a theoretical account of architecture, particularly because the different ways we think about, articulate and practice architecture are interconnected. As recognised by architectural theorist Andrew Ballantyne, architectural practice cannot be disassociated from theory because: "[w]e have had theory of a sort for as long as we have had architecture."[25] Deleuze makes the following significant point about the relation between theory and practice: "practice is a set of relays from one theoretical point to another, and theory is a relay from one practice to another. No theory can develop without eventually encountering a wall, and practice is necessary for piercing this wall."[26] In the present thesis, the philosophical notion of the *artisanal* is explored and used[27] in order to 'pierce' and interrogate the postwar practices of DIY and DIY architecture, and attendant discourses.

The present thesis does not aim to demonstrate a unified theory or architectural model. This thesis instead is concerned with a particular problematisation of the modes of operation and thinking through encounters with materials (and their dynamic capacities) within DIY architecture. Similarly, this thesis is not concerned with interpretative validity and proof, and as such there is no attempt to interpret meaning and reveal underlying ontological structures. The approach of this thesis is one of problematisation in the interdisciplinary manner which is described by philosopher Elizabeth Grosz.[28] This thesis concerns

itself with two key methodological issues suggested by Grosz: the rigor of an interdisciplinary position, and; the speculation involved in a problematisation of one discipline through another. The interdisciplinary perspective within the present study challenges theoretical assumptions about materials and form within a particular artisanal, DIY mode of operation in architecture; and in doing so, problematises singular disciplinary perspectives. There are two reasons the thesis seeks to problematise architecture and its discourses and practices. The first reason is to address the complexity of the form-matter relation in DIY practices. The second reason is to uncover patterns of thought and processes relating to materials and form in architectural practice and theory. One of the key problems identified in the post-war discourse on DIY relates to the poorly articulated and often divergent accounts of DIY and DIY architecture. To address this problem, the present thesis draws attention to the somewhat implicit thinking about materials and processes within particular DIY discourses, and consequently; exposes these discourses to the broader critical thinking which is afforded by an interdisciplinary framework. In Grosz's terms, opening architecture to its outside (philosophy) is productive because it facilitates unique insights and can draw forth "unspoken conditions."[29] In the case of the present study, the 'conditions' are concerns with the relations between matter, form and action in DIY architecture.

As noted by Grosz in her text *Architecture From the Outside,* there may be a potential danger in theorising architecture using philosophy (and vice versa), particularly if "one discipline would submit the other to its internal needs and constraints, reducing it to its subordinated other."[30] Grosz reinforces the need for a 'third space' in which both disciplines can be explored "as equivalent and interconnected discourses and practices."[31] Thus the present thesis both differentiates between philosophy and architecture, whilst acknowledging their 'interconnection.' It is also important to note that the focus of this thesis is on the "relays"[32] and potential resonances or connections between the DIY architecture manuals and discourse, and the philosophical notions.[33] Both architecture and philosophy are distinct disciplines with particular foci, nuances and concerns; as such, the present thesis acknowledges the differences between the disciplines of architecture and philosophy, and the complexities invoked in their relation. This is a position consistent with Deleuze and Guattari who differentiate between architecture and philosophy (with architecture being "the first of the arts"[34]) and also refer to their "perpetual interbreeding."[35]

One of the key concerns of the present thesis relates to the complexities of Deleuze and Guattari's own theories; specifically, the proliferation of binaries and dualisms throughout their writings which complicate any singular reading of their work. Deleuze and Guattari argue that: "we invoke one dualism in order to challenge another."[36] Their approach, in turn, complicates any simple reading of the resonances between the DIY discourse and their philosophical notions. However, this complexity is seen as productive because it 'opens' the architectural discourse to new insights and understandings:

particularly the different engagements with materials evident within the manuals. This thesis operates in a manner related to a key intention of Deleuze and Guattari's writings: that is, to trouble and disrupt habits of thought in order create alternative modes of thought.[37] The complex relays between, and within, the DIY discourses and the philosophical notions invoke the complexities of an *artisanal,* DIY mode of operation in architecture.

1.4   Chapter Structure

There are six chapters in the present thesis. This chapter, 'Introduction,' is a summary of the thesis, including its significance, method and key terms. Chapter 2, 'The discourse on DIY in post-war America 1940s-1970s,' provides an overview of the relevant discourse on DIY. Chapter 2 establishes a historical context for the study. Chapter 3, 'Ant Farm, Soleri and their DIY architecture manuals,' focuses on the discourse surrounding the two architectural practices. Both Ant Farm and Soleri have been associated with North American counterculture, with DIY and with the 'artisanal.' Chapter 3 provides an overview of Ant Farm and Soleri's own DIY architecture manuals, which are the focus of the present thesis. A provisional account of 'DIY architecture' is distilled from key issues identified within Ant Farm and Soleri's manuals—albeit an account contingent upon the manuals. Chapter 4, 'The notion of the artisanal,' outlines the theorisation of the artisanal which will be used to explore the DIY manuals. The focus is on the philosophical notion of the *artisanal* as it relates to the associated conceptions of: flow and following; the matter-form relation, and; action, matter and transforming bodies. In the fifth chapter, 'Explorations of the artisanal in Ant Farm's and Soleri's DIY architecture manuals,' the aforementioned philosophical notions will be explored in, and through, the 'DIY architecture' that is instantiated within the manuals. This exploration draws attention to an artisanal, DIY mode of operation which is focused on matter and its potentialities. Chapter 6, 'Concluding Chapter,' is the concluding chapter which summarises the work and outcomes of this thesis. Chapter 6 is followed by the 'Bibliography.'

1.5   Key terms and protagonists

The following section outlines key terms and figures that are referred to throughout the present thesis. To differentiate between the different types of discourse, reference will be made to 'philosophical notions' (including the philosophical notion of the *artisanal*), and to 'DIY discourse' (including the countercultural notion of the 'artisanal'). This differentiation is not to suggest that there is no conceptual or philosophical content within the DIY discourse: nor to suggest that there is no practical aspect to the philosophical notions.[38] The intention is, rather, to clarify and articulate the different foci of the texts. The countercultural discourse on the 'artisanal' and the philosophical notion of the *artisanal* will be differentiated when they are discussed in close proximity: reference to the countercultural discourse on

the 'artisanal' refers to the DIY discourse, and; reference to the philosophical notion of the *artisanal* refers to philosophy.

DIY Architecture

There is no specific, scholarly definition of 'DIY architecture' as a sensibility, practice or theory. It is nevertheless possible to chart the association of the terms 'DIY' and 'architecture' in post-war discourse, and to contextualise DIY architecture in relation to the DIY phenomenon of the North American counterculture. In the present thesis, the term 'DIY' or 'do-it-yourself' is initially engaged as a general umbrella term referring to a mode of self-production in which an individual is simultaneously the designer, maker and user or occupant of the production. Indeed, one outcome of this thesis is to articulate the term 'DIY' with greater clarity, without diminishing any of the associated complexities. In this thesis, the term 'architecture' refers to the practice of creating buildings and environments; although the environments in question may not necessarily be directly designed and constructed by professional architects. For example, the specific examples of 'DIY architecture' discussed in this thesis can be created by a 'non-architect' referring to, or inspired by, a DIY manual written by an architect. Thus within a DIY mode of operation in architecture, the architectural outcome is not dependent on the architect being the author/designer/maker of a specific project. According to this definition, 'DIY architecture' may be enacted by unqualified individuals.

The DIY manual was pivotal in the counterculture as an educational platform for disseminating how-to knowledge, techniques and attendant countercultural ideologies. Several DIY architecture manuals were created within the North American counterculture, including those published by Ant Farm and Soleri. The present thesis distills a specific account of DIY architecture from their three published DIY architecture manuals; Ant Farm's *Inflatocookbook*[39] and its video companion 'Inflatables Illustrated;'[40] and Soleri and Davis' *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction.*[41] In the present thesis, the DIY architecture manuals are understood as particular instantiations of a DIY mode of operation in architecture.
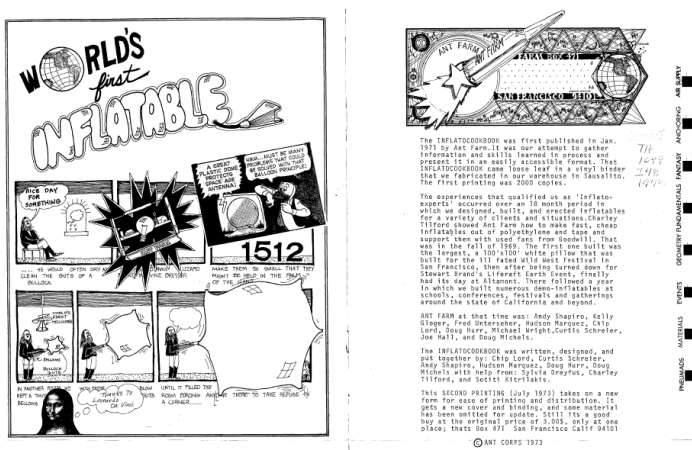
Figure 1.1: Two pages from the 1973 A4-bound and un-paginated edition of Ant Farm's *Inflatocookbook;* a DIY manual for creating inflatable architectures.

Figure 1.2: Video still from Ant Farm's 'Inflatables illustrated,' the video companion to the hard-copy
Inflatocookbook.
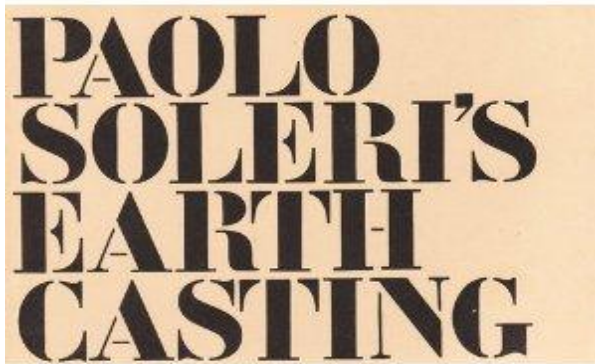
Figure 1.3: Image of the front cover of Paolo Soleri and Scott M. Davis' 1984 DIY manual, *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction*.

Counterculture and countercultural

In the present thesis, the terms 'counterculture' and the 'countercultural' are used to invoke a specific period in North American history, with a focus on the 1960s and 1970s; a period associated with a DIY sensibility and the production of many DIY manuals and publications. As a general term, the counterculture refers to "oppositional cultures"[42] that challenge dominant, popular and mainstream ideas and lifestyles. The 'counterculture' is often associated with a specific post-war milieu and movement within North America involving "radical social and political movements of the 1950s and '60's"[43] of the West Coast of North America, particularly San Francisco. Although the present focus is on the counterculture of the 1960s and 1970s North America, the American counterculture may be thought of as extending more broadly from the mid-1940s through to the 1970s.[44]

Artisan and the artisanal

In this thesis, the term artisanal is associated with: historical and countercultural discourse; with architectural discourse, and; with philosophy. These different discourses position the artisanal as a particular way of encountering and working with materials during their various transformations and incarnations. In the historical, countercultural and architectural discourses on DIY in post-war North America, the artisanal is also associated with traditional hand-craft, although the relation between the terms DIY and the artisanal is not precisely defined. In the countercultural discourse, the 'artisanal' is

associated with a DIY sensibility in which there is no explicit distinction between amateurs and experts. As noted earlier, and to differentiate the use of the term 'artisanal' within the countercultural discourse from its specific use in philosophical discourse, reference will be made to the countercultural discourse on the 'artisanal' and to the philosophical notion of the *artisanal.*

The artisanal is associated with DIY within both the early and later countercultural discourse on DIY in post-war North America.[45] This association is evident in DIY publications of the time, and in contemporary accounts of DIY. While the term artisanal is not precisely defined, it tends to be associated with traditional craft techniques and material-focused processes.[46] In the early post-war discourse, DIY is discussed both positively and negatively in relation to the artisanal. DIY kit products and techniques are seen to both contribute to the erosion of traditional artisanal skills, whilst simultaneously extending the reach of craft and skills to a wider amateur audience. In the countercultural discourse associated with DIY, 'artisanal' techniques and methodologies are encouraged without establishing a sense of duality between the do-it-yourselfer as an amateur and the artisan as building expert. 'Artisanal' techniques and methodologies are promoted within countercultural DIY architecture manuals and texts of the period, including *Shelter*[47] and *Craftsmen of Necessity.*[48] Importantly, Ant Farm and Soleri have been linked to this countercultural milieu and its attendant sensibilities. The architecture of both Ant Farm and Soleri is also associated with the 'artisanal' and DIY: specifically in relation to projects that were both designed and built by the architects.

In relation to the philosophical notion of the *artisanal*, this thesis focuses on two key sections of a chapter or 'plateau'[49] of *A Thousand Plateaus: Capitalism and Schizophrenia*—the collaborative text by Deleuze and Guattari.[50] The plateau is titled '1227 Treatise on Nomadology—The War Machine.'[51] In this plateau, Deleuze and Guattari define the *artisanal* in relation to the working of materials according to the self-organisational capacities of those same materials.[52] There are, of course, other philosophies and theories of the artisanal that could be explored, particularly in relation to craftspeople, skill and expertise.[53] However, the focus in these latter discourses is often the agency of the human subject, rather than matter's capacities and dynamic processes. Importantly, the countercultural discourse on the 'artisanal' and DIY also brings an interest in processes, materials and tools to the fore, rather than a focus on 'expertise' per se: in a manner that appears to resonate with Deleuze and Guattari's definition of the *artisanal.*

Deleuze and Guattari provide a specific definition of an artisan "as one who is determined in such a way as to follow a flow of matter."[54] Artisans are distinguished by this characterisation of following and attending to materials during the processes involved in their transformations—rather than according to the artisan's social status, skill level or expertise per se. Deleuze and Guattari's definition of the artisan would appear not to be tied to a particular material or skill set, and as such, will be used to explore a

DIY mode of operation in architecture which also eschews a differentiation on the basis of professional expertise or hierarchy. In *A Thousand Plateaus*, the *artisanal* is associated with the idea that materials are encountered in a dynamic state of transformation and flow during *artisanal* procedures; the associated notion of matter-flows will be discussed further below.

Matter: matter-flows, the matter-form relation, and action, matter and transforming bodies
Throughout the present thesis, the term 'matter' will generally be used when making specific reference to the philosophical discourse on the *artisanal* and its conceptions: the term 'materials' will generally be used in relation to the discourse on DIY and DIY architecture, and with respect to very specific examples of certain 'types' of materials, such as concrete, timber and plastic. The present thesis also refers to the philosophical idea that matter exists in a state of flow and dynamism when encountered within an *artisanal* mode of operation.[55] For the purposes of this thesis, there are two key points related to a conception of matter and the matter-form relation which are distilled from the philosophical discourse. The first key point refers to matter's self-organising capacities. When matter is understood to possess self-organisational capacities, it is also understood to have its own form and the capacity to transform; accordingly, it is difficult to establish a hierarchy between matter and form in their relation. The second key point is that artisans encounter and engage materials in a state of dynamic transformation during *artisanal* procedures. To reinforce a sense of the conceptual and physical dynamism associated with materials transforming from one state to another, reference will also be made to 'transforming matter' and 'transforming materials.'

In *A Thousand Plateaus*, Deleuze and Guattari relate their notion of the *artisanal* to the notion of matter-flows: because artisans assume that matter is encountered in a dynamic state of change and movement, it has to be 'followed' during the processes involved in matter's various formations and transformations. Each encounter with a material is also specific and uniquely nuanced. Deleuze and Guattari provide the example of a woodworker encountering and following the particular grain of a piece of timber.[56] This example of the *artisanal* woodworker is elaborated by Brian Massumi, theorist and translator of *A Thousand Plateaus*.[57] Reference will be made to Massumi's discussion of "the wood-tool encounter" in his text *A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*.[58] Importantly, even though the *artisanal* is discussed through the examples of woodworking and metallurgy, Deleuze and Guattari's definition of the artisan is related to an attendance to matter, procedures and processes, rather than a particular technique or a specific material.

The present thesis will also make reference to the philosophical notion of hylomorphism, also known as the hylomorphic model of the form-matter relation. This model has been prevalent in Western philosophy since Plato and Aristotle. According to this model, matter is passive and incapable of self-organisation. In a prelude to their discussion of the artisan in *A Thousand Plateaus*, Deleuze and

Guattari highlight the limitations of the hylomorphic model in accounting for matter's dynamic capacities.[59] French philosopher Gilbert Simondon (to whom Deleuze and Guattari refer) specifically points out that the hylomorphic model conceals matter's capacities to form and transform. For Simondon, and other philosophers and theorists, the obfuscation of matter's self-organisational capacities is associated with a conceptual sense of hierarchy.[60]

Deleuze and Guattari's notion of the *artisanal* is focused on action and productivity in association with matter.[61] Grosz's recent text on matter and 'action in life' is a final key philosophical reference in relation to a notion of action and matter.[62] Importantly, Grosz associates action with transformations in matter and bodies—both actual and becoming. Her focus is on how action can be understood to transform current circumstances and thus prompt a sense of freedom that involves: "the projection onto materiality of the possibility of a choice, a decision whose outcome is not given in advance."[63] Grosz argues that actions involve some level of indeterminacy as the possibility of any action can only be confirmed once it has already happened and thus has actual material presence.[64] There is, for Grosz, a sense of freedom associated with the indeterminacy of potential actions yet to come, because there is always the potentiality of further transformations and becomings. Grosz's notion of 'action in life' will be used to explore Ant Farm and Soleri's DIY architecture manuals. These manuals are also based on action, transformation and the capacity to act in, and through, bodily encounters with materials.

In order to establish precedents for problematising the matter-form relation in architectural practice, reference is made to three key texts drawn from contemporary architectural theory. The first is Lloyd Thomas' essay 'Introduction; Architecture and Material Practice' (2007).[65] The second text is her thesis *Building Materials: Conceptualising Materials Via the Architectural Specification* (2010).[66] The third text is the *Atlas of Novel Tectonics* (2006) by architects Jesse Reiser and Nanako Umemoto.[67] These three texts bring to the fore a philosophical or conceptual understanding of the matter-form relation specific to architecture. Drawing from the writings of Simondon, as well as contemporary architectural case studies, Lloyd Thomas argues that materials need to be conceived as existing in dynamic relation to other "extra-physical"[68] processes associated with their production. These 'extra-physical' processes include fabrication contexts, commissioning processes, and so forth.[69] Importantly, all these processes and their interactions are seen to contribute to architectural 'form,' such that any form cannot be disassociated from the materials and production processes inflecting its creation. Reiser and Umemoto also refer to the matter-form relation in architecture within their text *Atlas of Novel Tectonics*, drawing directly from Deleuze and Guattari's writings.[70] Reiser and Umemoto's specific interest is in how a conception of material flows and forces can be considered to influence not only constructional logic but, in their words: "other levels of organization and program"[71] in architecture.

Most importantly, the aforementioned architectural texts refer to philosophical texts that are of interest to the present thesis, including writings by Deleuze and Guattari, and Simondon. In all three texts, there appears to be a focus on how materials can be "used"[72] and conceived for specific architectural purposes. This concern with architectural materials might be seen to reinforce, rather than challenge, a traditional focus on the usefulness of materials in architectural form-making—as distinct from a focus on material capacities in their own right. The intention in this present thesis is not to distinguish architectural materials from other materials per se. Thus the key point distilled from Lloyd Thomas' and Reiser and Umemoto's texts is the importance of problematising and unpacking assumptions about matter and form within architectural discourse and practice.

In the next chapter, this thesis turns to the discourse on DIY in post-war North America, in order to establish the historical context for an exploration of 'DIY architecture.'

Notes

[1] Throughout the present thesis, the countercultural discourse on the 'artisanal' will be differentiated from the philosophical notion of the *artisanal* when the terms are discussed in close proximity: the term 'artisanal' will be placed in inverted commas when used with respect to the counterculture, and; the term *artisanal* will be italicised when associated when used with respect to philosophy.

[2] The artisan is discussed within the chapter or plateau '1227; Treatise on Nomadology—The War Machine,' in Gilles Deleuze and Félix Guattari *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brain Massumi (London: Continuum, 2004).

[3] Three recent texts specifically focus on, and refer to, 'DIY architecture;' although the term is arguably under-developed. The first text is Brian Scott's *Architecture vs. Punk Rock: A distillation of the DIY ethic across different media*, Master's dissertation (Montreal: McGill School of Architecture, 2003). The second text is an article by Fernando Ayala Zapata, '21st Century D.I.Y Architecture,' in *Virtual Conference on Sustainable Architectural Design and Urban Planning*, (AsiaSustainabilityNet,upc.edu, 15 September, 2007), accessed 22 February 2010, http://www.reciclarq.org/pdf/21st_century_DIY_architecture.pdf. The third text is Catherine Smith's *germinant design practice: a do-it-yourself narrative*, Master of Applied Science (Research) dissertation (Brisbane: Queensland University of Technology, 2008). All these texts refer to general DIY culture and building, and do not differentiate between 'DIY' and 'DIY architecture' as a mode of practice identifiable in architectural discourse. A recent publication from Princeton Architectural Press explores the expanding Indie DIY culture in North America, but there is no specific reference to architecture; see Faythe Levine and Cortney Heimerl, *Handmade Nation: The Rise of DIY, Art, Craft and Design* (New York: Princeton Architectural Press, 2008). In the recently published *Digital Fabrications: Architectural and Material Techniques*, architect and academic Lisa Iwamoto also refers to "work designed and built by emerging and newly defined practices that, with a do-it-yourself attitude, regularly pioneer techniques and experiment with fabrication processes on a small scale." Lisa Iwamoto, *Digital Fabrications: Architectural and Material Techniques* (New York: Princeton Architectural Press, 2009), 4. In this text—and as was the case with the other aforementioned texts—there is no explicit definition of what constitutes the 'do-it-yourself attitude' in architecture.

[4] This particular point was argued by architectural theorist Simon Sadler, who suggest that the seminal *Whole Earth Catalog* or *WEC* manual could be considered a form of architecture in itself, through its comprehensive promotion of a particular design approach—that of "whole design." Sadler suggests that *WEC* was: "a sort of architecture, a colloquium connecting its participants to design and to the world at large." Simon Sadler, 'An Architecture of the Whole,' *Journal of Architectural Education*, 61, 4 (2008): 108.

[5] Ant Farm, *Inflatocookbook* (San Francisco: Ant Farm Inc., November10-December 10 1970 and Second Edition, July 1973). As will be discussed in chapter 2, the present thesis refers to the first edition as being published in 1970, which is what is stated in the manual itself: however, the second edition suggests that the first edition was published in 1971, rather than 1970. For consistency, this thesis refers to the 1970 publication date as noted in the first edition itself.

[6] Ant Farm, 'Inflatables Illustrated,' in *Ant Farm Video*, original produced by Allan Rucker and Curtis Schreier, ed. Chip Lord (Ant Farm: 1971, Ant Farm: 2003), colour and B&W NTSC DVD, 23 min.

[7] Paolo Soleri and Scott M. Davis, *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction (*Salt Lake City: Peregrine Smith Books / Gibbs M. Smith, Inc., 1984). Note that the full title of this text will be shortened to *Earth Casting* throughout this thesis.

[8] The projects by Ant Farm and Soleri that have been described as 'artisanal' can also be directly connected to their DIY manuals. Ant Farm's The House of the Century project has been described as both "do-it-yourself" and "artisanal:" see Constance M. Lewallen and Steve Seid, ed., *Ant Farm 1968-1978* (Berkeley: University of California Press, ltd., 2004), 112. Even though The House of the Century doesn't directly feature in the *Inflatocookbook* or 'Inflatables Illustrated,' it was intended for publication in the unpublished follow-up DIY manual: *From Bubbles to Stone*. According to Felicity Scott, *From Bubbles to Stone* linked the evolution of *The House of the Century* to the inflatables as featured in *Inflatocookbook.* Felicity D. Scott, *Living Archive 7: Ant Farm Allegorical Time Warp: The Media Fallout of July 21, 1969* (Barcelona: Actar, 2008), 139. Ant Farm member Chip Lord makes the observation that: "The House of the Century freezes the bubble in ferro-cement. I don't think we did any inflatables after that." As quoted in Constance M. Lewallen with Chip Lord, Doug Michels, and Curtis Schreier, 'Interview with Ant Farm,' in *Ant Farm 1968-197,* ed. Constance M. Lewallen and Steve Seid (Berkeley: University of California Press, Ltd., 2004), 49. In relation to the connection between Soleri and the 'artisanal,' Soleri was awarded the American Institute of Architects Craftsmanship Medal, based on his work at Cosanti (upon which the *Earth Casting* manual is based). Soleri and Davis make reference to the Craftsmanship medal, its connection to the Cosanti projects and to artisans within the *Earth Casting* manual. See Soleri and Davis, *Earth Casting*, x; 14; rear cover.

[9] It is important to note that while it may appear that Deleuze and Guattari operate in a European rather than post-war North American milieu, they do make reference to the work by Marshall McLuhan; an influential figure in the North American countercultural scene. Reference is made to McLuhan's notions of language in Deleuze and Guattari's *Anti-Oedipus: Capitalism and Schizophrenia*: Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*, Robert Hurley, Mark Seem, and Helen R. Lane, trans. (Minneapolis: University of Minnesota Press, 2008), 240-241. Reference is also made to McLuhan's notion of a "new tribal society" in Deleuze and Guattari, *A Thousand Plateaus*, 397. The latter reference occurs in the same 'plateau' as the discussion of matter-flow as it relates to the artisan. It is important to note that McLuhan refers to the notion of tribalism in the 1967 *The Medium is the Message: An Inventory of Effects*. McLuhan refers to electronic media generating "primordial feeling, tribal emotions" (63): and "[t]he new electronic interdependence recreates the world in the image of a global village" (67). This book title is the same as an early chapter in his 1964 text *Understanding Media: The Extensions of Man*: however, there is variation between the texts. See Marshall McLuhan, *The Medium is the Message: An Inventory of Effects* (Middlesex: Penguin Books Ltd., 1967): and *Understanding Media: The Extensions of Man* (London: Routledge & Kegan Paul Ltd.), 1967, 7-21. Deleuze and Guattari's deployment of the notion of 'plateaus' in *A Thousand Plateaus* was influenced by the work of anthropologist, linguist and cyberneticist Gregory Bateson. Bateson was also influential in the North American countercultural scene particularly through his association with Stewart Brand and the *Whole Earth Catalog*. In the 'Introduction: Rhizome' plateau in *A Thousand Plateaus*, Deleuze and Guattari refer to Bateson's use of the term 'plateau' as a way of "avoiding any orientation toward a culmination point or external end;" Deleuze and Guattari, *A Thousand Plateaus*, 24. Although there is no direct connection between the writings of Deleuze and Guattari and Paolo Soleri, Soleri does make reference to the writings of French philosopher Henri Bergson: also a key influence on

Deleuze and Guattari's own writings. Soleri makes reference to Bergson in an epigraph within his text on the notion of 'becoming': see Paolo Soleri, What if? Quaderno 10: Becoming / Being, (Mayer: Soleri Book Initiatives / Cosanti Foundation, 2005), 2. Soleri does not elaborate specifically on how Bergson has informed particular thoughts and issues discussed in his writings, yet the connection is worth noting. Deleuze and Guattari make reference to Bergson throughout A Thousand Plateaus, and specifically in relation to notion of "following the flow of matter"—a key issue in relation to the artisanal mode of operation; see Deleuze and Guattari, A Thousand Plateaus, 412-413.

[10] These texts have been published subsequently in English: the publication dates listed here refer to the original French publication date.

[11] This description appears on the rear cover of the 2004 Continuum edition of *A Thousand Plateaus* referred to in the present thesis. In conversation with Michael Foucault, Deleuze himself made the point about theory being ""exactly like a box of tools. It has nothing to do with the signifier, It must be useful." See Michel Foucault and Gilles Deleuze, 'Intellectuals and Power: A Conversation between Michel Foucault and Gilles Deleuze,' in *Language, Counter-Memory, Practice: Selected Essays and Interviews* by Michel Foucault, ed. Donald F. Bouchard, trans. Donald F. Bouchard and Sherry Simon (Ithaca, New York: Cornell University Press, 1977), 208.

[12] See, for example, Richard Sennett's recent text on craft and 'craftsmen:' Richard Sennett, *The Craftsman (*London: Allen Lane / Penguin Books, 2008).

[13] Ant Farm and Soleri are not mentioned in significant historical texts such as Kenneth Frampton's *Modern Architecture: A Critical History*. In a chapter titled *Place, Production, Architecture: towards a critical theory of building*, Frampton makes reference to the (unsuccessful) utopian social aspirations of the "architectural avante garde of the 1960s" (286), referring to Superstudio (286), Fuller (p. 282) and Archigram (281-282): there is no reference to Ant Farm or Soleri. Frampton refers specifically to Fuller and Archigram's "Armageddon overtones of survival technology", see Kenneth Frampton, *Modern Architecture: a critical history* (London: Thames and Hudson Ltd., 1980), 281.

[14] Felicity D. Scott, *Architecture or Techno-Utopia: Politics After Modernism (*Cambridge: The MIT Press, 2007), 245.

[15] Three key, contemporary architectural texts that specifically address the problem of the form-matter relation in architecture are referred to in this thesis. The first text is Jesse Reiser and Nanako Umemoto's *Atlas of Novel Tectonics* (New York, Princeton Architectural Press, 2006). In his introduction to their text, Sanford Kwinter describes Reiser and Umemoto's approach as "new materialism," reinforcing their interest in materials in architecture. See Sanford Kwinter 'The Judo of Cold combustion', in Jesse Reiser & Nanako Umemoto, *Atlas of Novel Tectonics (*New York, Princeton Architectural Press, 2006),12-15. The second text is Katie Lloyd Thomas' 'Introduction; Architecture and Material Practice', in *Material Matters: Architecture and Material Practice* (London: Routledge, 2007), 1-12. The final text is Lloyd Thomas' dissertation *Building Materials: Conceptualising Materials Via the Architectural Specification,* Doctor of Philosophy (Middlesex: Middlesex University, Centre for Research in Modern European Philosophy, May 2010).

[16] Within architectural theory, there are an increasing number of publications about material-focused design practices. These references include: Robert Sheil, ed., *Design Through Making* (Chichester: Wiley-Academy, 2005); Branko Kolarevic and Kevin Klinger, ed., *Manufacturing Material Effects: Rethinking Designing and Making in Architecture* (New York: Routledge, 2008), and; Gail Peter Borden and Michael Meredith, ed., *Matter: Material*

Processes in Architectural Production (London: Routledge, 2012). These material-focused texts generally focus on the connection between design and making facilitated by contemporary digital production techniques in order to bridge the "gap" between architectural representations of form and materials, and the production of form. There is little explicit discussion about the conceptual problems attached to the form-matter divide in architecture. Instead of suggesting new and alternative modes for generating form which uncover and problematise the form-matter relation, production-focused discourses may simply extend and maintain the hylomorphic model. The latter is a key concern expressed by Katie Lloyd Thomas' discussion of matter, form and architecture in her introduction to the collection of essays in *Material Matters: Architecture and Material Practice*. See Katie Lloyd Thomas, 'Introduction,' 1-12.

[17] Texts and publications about Deleuze and Guattari and architecture include: Andrew Ballantyne, *Deleuze and Guattari for Architects*, Thinkers for Architects series edited by Adam Sharr (Abingdon: Routledge, 2007); Hélène Frichot, '"An Ethico-Aesthetics for Wet Architecture", *Ideology of the Imaginary for the 21st Century (*Experimental Arts Foundation, Adelaide, conference 1-2 March 2007); Hélène Frichot, 'The Onanist's Escape from Architectural Captivity', *Queer Spaces: Centres and Peripheries* (Sydney: UTS, 2007): 1-5; Chris Smith and Andrew Ballantyne, guest ed., *Architectural Theory Review Flows* (special edition*)*, 13,3 (December 2008), and their recent follow-on edited book, *Architecture in the Space of Flows*, see Andrew Ballantyne and Chris L. Smith, 'Fluxions,' in *Architecture in the Space of Flows*, ed. Andrew Ballantyne and Chris L. Smith (New York: Routledge, 2011), 1-39. Architectural historian and historian of the counterculture, Felicity Scott, makes some reference to Deleuze and Guattari throughout her text *Architecture or Techno-Utopia: Politics After Modernism* (Cambridge: The MIT Press, 2007), 2; 53; 56: note Scott also refers to Ant Farm within this text. Although not an architect, John Rajchman also writes about architecture and Deleuze and Guattari in *Constructions*, Writing Architecture series, Anyone Corporation (Cambridge: The MIT Press, 2000).

[18] Robert Sheil, *Design Through Making.*

[19] Kolarevic and Klinger, *Manufacturing Material Effects.*

[20] Borden and Meredith, *Matter.*

[21] Borden and Meredith, *Matter,* 2-3.

[22] Lloyd Thomas, 'Introduction,' 7-8; see also the discussions about materials and their production contexts in Lloyd Thomas, *Building Materials,* 9.

[23] Deleuze and Guattari make the point that philosophy is specifically concerned with "the creation of concepts." See Gilles Deleuze and Félix Guattari *What Is Philosophy,* trans. Hugh Tomlinson and Graham Burchell (New York: Colombia University Press, 1994), 40.

[24] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[25] This point was made in a 'Letter to the editor' section within the journal *ARQ*. Ballantyne's letter is a response to a previously published *ARQ* article by Michael Speaks—titled 'Theory was interesting…but now we have work'—in which Speaks questions the value of theory (and specifically, Deleuzian theory) for architecture. See Andrew Ballantyne, '…and theory is changing,' in *Architectural Research Quarterly (ARQ),* 'Letters' section, 6, 4 (2002): 295. See also Michael Speaks, 'Theory was interesting…but now we have work,' in *Architectural Research Quarterly (ARQ),* 6, 3 (2002): 209-212.

[26] Deleuze made this point in conversation with French philosopher Michel Foucault. Michel Foucault and Gilles Deleuze, 'Intellectuals and Power: A Conversation between Michel Foucault and Gilles Deleuze,' in *Language,*

Counter-Memory, Practice: Selected Essays and Interviews by Michel Foucault, ed. Donald F. Bouchard, trans. Donald F. Bouchard and Sherry Simon (Ithaca, New York: Cornell University Press, 1977), 208.

[27] As previously noted, Deleuze argues that theory: "must be useful. It must function. And not for itself." Foucault and Deleuze, 'Intellectuals and Power,' 208.

[28] Elizabeth Grosz, *Architecture from the Outside: Essays on Virtual and Real Space* (Cambridge: The MIT Press, 2001), xvi.

[29] Grosz, *Architecture from the Outside*, xviii.

[30] According to Grosz, this is particularly the case when a disciplinary framework is simplistically 'applied' to another, without recognising their implicit differences. Grosz thus notes that: "[t]o explore architecture philosophically would entail submitting architectural design, construction, and theory to the requirements and exigencies of philosophical discourse, the rigor of philosophical argument, and the abstraction of philosophical speculation. And to examine philosophy architecturally would require using philosophical concepts and propositions, wrenched from their own theoretical context and transformed, perhaps mutilated, for architectural purposes […] It is only by submitting both to a third term, to a position or place outside of both, that they can be explored beside each other, as equivalent and interconnected discourses and practices." Grosz, *Architecture from the Outside*, xvi.

[31] Grosz, *Architecture from the Outside*, xvi.

[32] Foucault and Deleuze, 'Intellectuals and Power,' 206

[33] The present thesis does not suggest that there is a direct match or coherence between the philosophical notions and architectural discourse and practice. Rather, the thesis asserts potential relays and resonances between the discourse and notions: resonances that then draw attention to particular issues. Deleuze and Guattari themselves problematise the notion that there are 'coherences' between different philosophical concepts generated by correspondences. They suggest that while concepts are related, they "all resonate rather than cohere or correspond with each other." See Deleuze and Guattari *What Is Philosophy,* 23. The present thesis also draws attention to potential connections, similarities and differences in approach between philosophy and architecture, even though the intention is establish 'relays' rather than direct matches per se.

[34] Deleuze and Guattari, *What Is Philosophy,* 186.

[35] Deleuze and Guattari *What Is Philosophy,* 24.

[36] Deleuze and Guattari, *A Thousand Plateaus,* 22.

[37] Within the first plateau of *A Thousand Plateaus*—'Introduction: Rhizome'—Deleuze and Guattari affirm that they want to challenge dualisms in order to disrupt conventions of thought. They note that they are attempting to "employ a dualism of models only in order to arrive at a process that challenges all models. Each time, mental correctives are necessary to undo the dualisms we had no wish to construct but through which we pass. Arrive at the magic formula we all seek—PLURAMISM = MONISM—via all the dualisms that are the enemy, an entirely necessary enemy, the furniture we are forever rearranging." Deleuze and Guattari, *A Thousand Plateaus,* 22-23.

[38] For instance, Deleuze makes the point that theory is a form of practice: "theory does not express, translate or serve to apply practice: it is a practice." Foucault and Deleuze, 'Intellectuals and Power,' 208.

[39] Ant Farm, *Inflatocookbook* (1970 and 1973).

[40] Ant Farm, 'Inflatables Illustrated.'

[41] Soleri and Davis, *Earth Casting*.

[42] Christopher Gair, *The American Counterculture* (Edinburgh: Edinburgh University Press, 2007), 3. As pointed out by theorist Christopher Gair, it may also be difficult to distinguish between the 'mainstream' and the 'countercultural' because: "there is often "a slippery and often uneasy relationship between the 'mainstream' and the 'marginal'." Gair, *The American Counterculture*, 3. Gair's observation reflects similar concerns to that expressed in 1969 by Theodore Roszac in his seminal 1969 countercultural text *The Making of a Counterculture: Reflections on the Technocratic Society and Its Youthful Opposition*. Roszac suggests that it is difficult to make definitive cultural categories: thus "the counter culture with which this book deals possesses all the liabilities which a decent sense of intellectual caution would persuade one to avoid like the plague." Theodore Roszak, *The Making of a Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition* (New York: Doubleday & Company, Inc., 1969), xi. Regardless of this difficulty of developing a precise definition of the counterculture, Roszak reinforces the idea that the countercultural movement involves "radical opposition within […] societies," particularly amongst the younger generation. Roszak, *The Making of a Counter Culture,* 2.

[43] Gair, *The American Counterculture*, 1.

[44] For example, Gair's text *The American Counterculture* refers to the period of the American counterculture from the post-war period from 1945 onwards. Gair cites the novelist and poet Jack Kerouac's 1947 road journey across America as a seminal countercultural moment, because the road trip was to prove influential on his subsequent writings. Gair, *The American Counterculture*, 1.

[45] This association of DIY with the artisan and the artisanal will be discussed in more detail within chapter 2. One example in relation to the early DIY discourse can be seen in theorist Albert Roland's association of DIY with "artisanal production." Albert Roland, 'Do-It-Yourself: A Walden for the Millions?', *American Quarterly*, 10, 2, Part 1 (Summer 1958), 162. Another example within countercultural discourse is Christopher William's discussion of artisans, as published within the *Shelter* DIY manual. See Lloyd Kahn, ed., *Shelter* (Bolinas, California: Shelter Publications, Inc., 1973), 78-79. See also the original publication, Christopher Williams, *Craftsmen of Necessity* (New York: Vintage Books, 1974).

[46] As will be elaborated in chapter 2 through specific reference to countercultural discourse, the artisanal invokes an attendance to materials during the processes involved in working with and transforming materials. This is best expressed by Williams who refers to the artisan working wood: "a conversation is conducted between worker and material. The wood argues in knots and agrees in smooth grain." Williams, *Craftsmen of Necessity*, 166. As noted earlier, part of this text also appears in another countercultural publication, the *Shelter* DIY manual. Lloyd Kahn, ed., *Shelter (*Bolinas, California: Shelter Publications, Inc., 1973), 79.

[47] Kahn, *Shelter.*

[48] Christopher Williams, *Craftsmen of Necessity* (New York: Vintage Books, 1974).

[49] In *A Thousand Plateaus*, Deleuze and Guattari use the term "plateau," instead of chapter. This is to reinforce the point that the sections can read in multiple, non-sequential manner. See Deleuze and Guattari, *A Thousand Plateaus,* 24-25.

[50] Deleuze and Guattari, *A Thousand Plateaus*. It is important to note that this dissertation refers to the English translation of this text.

[51] 1227: Treatise on Nomadology—The War Machine' is concerned with war, life and different scientific models. Deleuze and Guattari, *A Thousand Plateaus,* 451-452, 454.

[52] Deleuze and Guattari, *A Thousand Plateaus,* 452.

[53] For example, sociologist Richard Sennett's *The Craftsman* explores the artisan as craftsperson: this phenomenologically-nuanced text brings to the fore issues of the artisan as subject and the role of materials and making in the transformation of the human subject. Richard Sennett, *The Craftsman (*London: Allen Lane / Penguin Books, 2008).

[54] Deleuze and Guattari, *A Thousand Plateaus,* 452.

[55] As noted by Deleuze and Guattari, an artisan follows "a flow of matter." Deleuze and Guattari, *A Thousand Plateaus,* 452.

[56] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[57] The present thesis refers to the 2004 Continuum edition of Masumi's translation of *A Thousand Plateaus.*

[58] Brian Massumi, *A Users Guide to Capitalism and Schizophrenia* (Cambridge: A Swerve Edition / The MIT Press, 1992, 15.

[59] Deleuze and Guattari, *A Thousand Plateaus,* 450-451.

[60] Gilbert Simondon specifically associates hylomorphism with a sense of "social hierarchy," which he argues characterises Western thought. Gilbert Simondon, *The Individual and Its Physico-Biological Genesis*, Section 1, Chapter 1, Taylor Adkins, trans. (Paris: Presses Universitaires de France, 1964: WordPress.com, 2007), accessed 5/12/008, (http://fractalontology.wordpress.com/2007/10/19/translation-simondon-completion-of-section-i-chapter-1-the-individual-and-its-physico-biological-genesis/, 10.

[61] As will be elaborated in chapter 4, Deleuze and Guattari refer explicitly to the operations associated with the *artisanal* mode as invoking a sense of "action:" see Deleuze and Guattari, *A Thousand Plateaus,* 452. They also invoke the "active" character of materials themselves: Deleuze and Guattari, *A Thousand Plateaus,* 450.

[62] Elizabeth Grosz, 'Feminism, Materialism and Freedom,' in Diana Coole and Samantha Frost (ed.s), *New Materialisms: Ontology, Agency, and Politics*, Durham NC: Duke University Press, 2010, 139-157.

[63] Grosz, 'Feminism, Materialism and Freedom,' 149.

[64] Grosz, 'Feminism, Materialism and Freedom,' 149.

[65] Lloyd Thomas, 'Introduction,' 1-12.

[66] Lloyd Thomas, *Building Materials*.

[67] Reiser and Umemo, *Atlas of Novel Tectonics*.

[68] Lloyd Thomas, *Building Materials,* 180.

[69] Lloyd Thomas raises a specific question about materials and their relation to form: "[h]ow are materials described without recourse to their relationship to form?" Lloyd Thomas, *Building Materials,* 6. It is important to note that the assumption in this thesis is that materials already have a form and a capacity to form, hence, it is difficult to disassociate materials from their forms.

[70] Reiser and Umemoto refer to Gilles Deleuze's account of chess in *Atlas of Novel Tectonics*, see Reiser and Umemoto, *Atlas of Novel Tectonics*, 40. They also refer to Deleuze and Guattari's discussion of matter-flow and Royal science in *A Thousand Plateaus*: see Reiser and Umemoto, *Atlas of Novel Tectonics*, 78.

[71] Reiser and Umemoto refer to a specific building example: the concrete waffle slab structure used in engineer Pier Luigi Nervi's 1951 Gatti Wool Mill in Rome. According to Reiser and Umemoto, this project is an example of structure expressing 'the matter-force relationship.' Reiser and Umemoto make the point that creating a form that accounts for material optimisation and force 'flow' (in this case, the structural forces effecting a concrete waffle floor slab) is not in itself an approach acknowledging and working with a notion of matter-forces. This is because

"putting material where the theoretical force lines lie [...] is a self-fulfilling prophesy, as forces flow where the matter goes." Their criticism centres on the failure of Nervi to "influence other levels of organisation and program," which they argue will better account for the relations between matter, forces and flows in buildings. Reiser and Umemoto, *Atlas of Novel Tectonics*, 90.

[72] Lloyd Thomas, *Building Materials,* 6. Lloyd Thomas also proposes that the processes and workings involved in the creation of buildings and materials "can themselves alter concepts, or produce new concepts." Lloyd Thomas, *Building Materials,* 215. In contrast, this present thesis does not seek to distil new philosophical concepts through reading the DIY manuals per se; the focus is on the exploration of the philosophical notions in, and through, the manuals.

DIY Architecture

Chapter 2: The discourse on DIY in post-war North America 1940s-1970s

2.0 Introduction

This chapter examines the discourse on the DIY phenomenon in post-war North America, focusing on a specific time period: the 1940s to the 1970s. It establishes the context and historical framework for the present thesis, and outlines conventional understandings of DIY and the attendant practices and habits of this particular post-war period. DIY in its contemporary form first emerged as a distinct cultural movement in North America, following World War II, and much of the discourse on DIY stems from this milieu. The discourse on the North American counterculture of the 1960s and 1970s also associates DIY with architecture—the focus and interest of the present thesis. Reference will be made to theories and discussions about the DIY phenomenon, as well as DIY publications and manuals of the time.

There has been minimal scholarly discourse on DIY, with theorists generally focused on the social and cultural aspects of the DIY phenomenon. There has also been specific concentration on the target audience for DIY activities and the potential motivations of this audience for engaging in DIY practices. The present chapter begins with a summary of the DIY phenomenon as described in the post-war discourse. Two distinct DIY discursive 'streams' associated with two sequential post-war periods are then identified. The different foci of these discursive streams indicate the shifting role of DIY as a social and cultural phenomenon over a thirty year period. The first discursive stream relates to the discourse on DIY in the 1940s and 1950s, when DIY was associated with the nuclear family and the home workshop. The second discursive stream relates to DIY in the North American counterculture in 1960s and 1970s, when DIY emerged as a sensibility which, in theory, circumvented a reliance on capitalist commissioning systems.[1] In both discursive streams, the term 'DIY' is used as a broad, ill-defined umbrella term describing an array of ideologies, motivations and nebulous practices. Closer examination of both streams, however, reveals a subtle and more nuanced discussion relating DIY to craft and the artisanal, that is, when DIY is discussed in relation to the artisanal, it is positioned as a mode of operation associated with a broad set of practices focused on attending to and working materials. The concluding sections of the present chapter will focus on this more nuanced discussion of DIY as a practice associated with the artisanal.
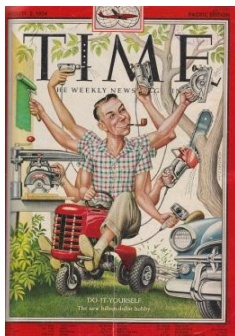
Figure 2.1: The front cover of a 1954 edition of the North American *Time* magazine, featuring a cover story on DIY.

2.1 The emergence of the 'Do-It-Yourself' phenomenon in post-war North America

In 1954, the *Time* magazine proclaimed that DIY or do-it-yourself was "[t]he new billion-dollar hobby"[2] in North America. Retail sales associated with DIY products and services had spawned a "booming $6 billion-a-year business."[3] Although the *Time* article was one of the first significant publications to recognise and name DIY as a phenomenon, the term had appeared earlier. According to historian Steven Gelber, the first use of the term "Do-It-Yourself" may have been in Garrett Winslow's 1912 article in the *Suburban Life* magazine, entitled 'Practical Decoration for the Home Interior.'[4] The article encouraged home owners to paint their houses themselves rather than hire professional painters. It is, however, arguable that an interest in hands-on home improvement and manual skills had begun much earlier in the late 1800s in America, encouraged by the expanding mass publication market for how-to publications.[5] This point is reinforced by Gelber who also identifies a significant interest in craft and making in the 1800s, particularly amongst women.[6] According to both Gelber[7] and historian Carolyn Goldstein—author of a text devoted to North American DIY[8]—the Arts and Crafts movement encouraged an interest in making and craft at the turn of the twentieth century. Goldstein notes that the how-to publications of this time advocated simple, easy-to-make furniture and homes, targeted at the inexperienced 'amateur.'[9] Goldstein also argues that the DIY phenomenon as we know it today rapidly expanded in post-war North America, an era she describes as "[t]he Age of Do-It-Yourself."[10]

In the discourse on DIY in post-war America, there is minimal explanation of what constitutes DIY, nor a specific theorisation of DIY as a practice. This is particularly curious, considering the popularity of DIY in North America. A broad definition of DIY is suggested by Gelber, who describes DIY through an analysis of the phenomenon of hobbies in 1950s America. According to Gelber, DIY was defined "quite literally as anything that people did for themselves."[11] In contemporary Western society, one might argue that such a label is necessary because production has become a specialised service activity, and, as such, self-production for certain items (housing and so forth) is atypical of mainstream society. A chapter in Gelber's text *Hobbies: Leisure and the Culture of Work in America*[12] is dedicated to do-it-yourself. In this chapter, DIY is positioned in relation to hobbies[13] that involve "productive leisure."[14] Gelber also argues that the DIY phenomenon was growing prior to the 1950s, such that "[b]y the 1930s, do-it-yourself had become a category embracing all household jobs requiring the use of tools."[15] However, most of the discourse specifically referring to DIY stems from the 1950s.

The discourse referring to DIY as a movement and phenomenon generally focuses on the audience for DIY products and activities, and speculates on the social and psychological reasons for the popularity of the movement in North America. A focus on the target audience of these manuals reveals social, political and cultural shifts associated with the phenomenon over a three-decade post-war period.[16] In early post-war North America, the audience for the DIY manual was the home 'handyman;' however, in the late

1960s, an alternative countercultural audience emerged for these DIY manuals. Of particular interest to this thesis, then, is the emergence of a critical mode of DIY operation in the 1960s and 1970s, which is associated with a countercultural audience and ideologies, and with architects. One DIY manual associated with the North American counterculture is the *Whole Earth Catalog* or *WEC*, developed by countercultural identity Stewart Brand. The *WEC* contains information pertaining to architecture, and to architects who were also associated with the countercultural milieu—including the architects Ant Farm and Paolo Soleri.[17] This shift in focus from handyman audience to countercultural audience points to the evolution of DIY as a critical mode of operation which was later deployed by, and associated with, architectural practices, including that of Ant Farm and Soleri. This will be discussed further in chapter 3, which focuses on Ant Farm's and Soleri's DIY manuals.
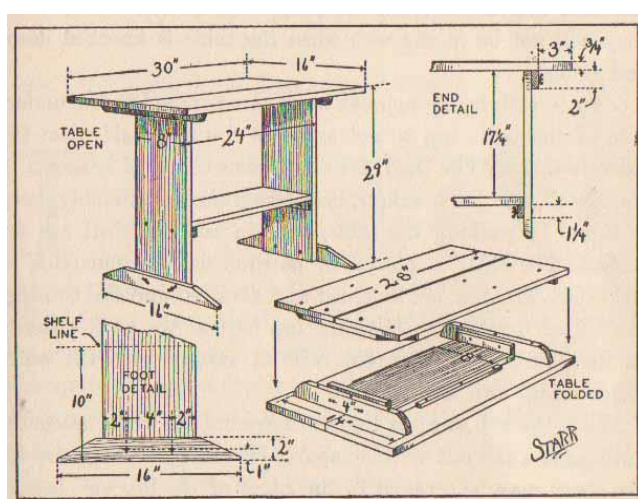
Figure 2.2: A DIY 'Military Table,' as featured in the 1941 *Fifty Things to Make for the Home*.

2.2   The discourse on the DIY phenomenon in the 1940s and 1950s post-war North America

Fifty Things to Make for the Home (1941) by Julian Starr is a pre-WWII North American how-to manual. [18] While the text is not described as DIY as such, an examination of this text and its target audience establishes the context for the then-emerging DIY phenomenon and its associated discourse. *Fifty Things to Make for the Home* is a how-to manual published as a follow-on to the book *Make It Yourself*; also the title of a weekly newspaper column which spawned the texts.[19] *Fifty Things to Make for the Home* is specifically aimed at an audience of home-based 'craftsmen' and homeowners. The text includes instructions for making 50 items for the home, with items categorised according to the following: 'Kitchen Accessories and Improvements;' 'Household Conveniences;' 'Furniture;' 'Outdoor Accessories;' 'Toys and Play Equipment;' and 'Novelties.'[20] An additional section titled 'The Workshop' outlines pragmatic information about setting up a home workshop, as well as associating the home workshop with individual well-being.[21] For Starr, this how-to book is a practically-orientated text that encourages craft skills and experience amongst its target audience, the "average homeowner."[22] Starr indicates that one of his intentions for the manual is to encourage budding craftsmen. He refers to letters from readers

of his newspaper column, which he cites as evidence that his book, and the newspaper columns that spawned it, have "stimulated the imagination of some craftsmen."[23] A key intent for *Fifty Things for Make in the Home* was to instruct and guide inexperienced makers:

> The genesis of this book, *Fifty Things to Make for the Home*, and its predecessor, *Make It Yourself*, can be attributed to the thousands of craftsmen who wanted to make things that were too expensive to buy or were not for sale. Most of them were dubs, possessing a few hand tools and a little more than a desire in the way of experience.[24]

There is a consistent format throughout the text; each DIY item has a number and title, with an often quirky byline below. For example, item 54 in the 'Novelties' section is titled 'Individual Guest Trays: Save Table Tops and Guests' Feelings with These Little Trays.'[25] The main text then describes how guest trays can save guests from potential drink-spill embarrassments. Aside from this observation, the descriptive text that follows is focused on materials and techniques that are interspersed with personal advice, such as: "[m]y preference is for walnut, given a light stain."[26] An unusual item in the 'Furniture' section is the 'Military Field Table,' which is described as "[a] Compact Folding Table for Campers and Soldiers,"[27] and is perhaps to be expected in the interwar years. Another interesting item is the reinforced and extremely large 'Portable Icebox for the Beach.'[28] A final unique example involves the reconfiguration of a salad bowl into a "Three Legged Knitting Bowl."[29] Starr gives the following advice for starting this repurposing project, and, in doing so, highlights the importance of sourcing a suitable material appropriate for the project:

> The formula for making the knitting bowl shown in the accompanying illustration should begin like the time-honored recipe for rabbit stew—"First you catch the rabbit." The rabbit in this case is a good salad bowl, at least 14 inches in diameter, which has been turned from a well-seasoned hardwood butt, and which is clear of imperfections that might cause it to split.[30]

The audience for *Fifty Things to Make for the Home* was budding craftspeople and home owners. A few years later, an article in *House Beautiful* suggests that the DIY audience was less budding 'craftsperson' and more aspiring 'homeowners.' When *House Beautiful* magazine published the text titled 'What not to do yourself' in July 1954, it also signalled the increasing popularity of this post-war movement in North America. This pragmatic article both recognises the popularity of DIY, whilst warning potential do-it-yourselfers of the "dangers in doing it yourself."[31] The article also praises the lifestyle advantages of a DIY approach:

> For millions of homeowners, do-it-yourself has proved to be a wonderful new way of life. It results in getting done what they want when they want—and just the way they want it done. There's nothing so beautiful as something you've made yourself.[32]

The article then outlines the dangers associated with DIY that may afflict poorly skilled homeowners with limited skills and expertise.[33] It concludes on a positive note stating "[o]nly you can decide whether or not do-it-yourself makes good sense for you. If it does, you have a marvelous new servant at your command—and the joy and pride of the creative hand work opens to you."[34]

On August 2 1954, *Time* magazine published the afore-mentioned cover story on DIY.[35] In the article, DIY is presented as a part-time, suburban "hobby"[36] associated with the family unit, with DIY positioned simultaneously as both fun and work. The article notes that the "indispensable handyman […] has been replaced by millions of amateur hobbyists who do all his work—and much more—and find it wonderful fun."[37] In the *Time* article, do-it-yourself is also described as a "craze" and a "cult,"[38] reinforcing the popularity of the phenomenon and its socio-cultural positioning. The increasing popularity of DIY is associated with a range of factors including postwar lifestyle ambitions and increased leisure/hobby time; remnant skills from the war era; and an increasing array of DIY products in the domestic market. It is important to note that the article appears in the 'Business' section based on it being "a booming $6 billion-a-year business."[39] At no point in the article is the term DIY clearly defined, although DIY is obviously associated with the nuclear family, the homeowner and/or the home handyman. Significantly, the divergent positioning of DIY as a "business," a "hobby," and a "cult" arguably contributes to the nebulous and ill-defined nature of the term. This confusion is compounded by unsubstantiated accounts about the motivations for individual do-it-yourselfers. A case in point involves a reference to American do-it-yourselfer 'Wesley Ashland' who apparently "cured himself of a nervous breakdown by building his own home."[40]

2.3   Theories relating to DIY in 1950s post-war North America

The social, cultural and political dimensions of DIY in post-war North America have been explored by historians and theorists including Gelber, Carolyn Goldstein, Penny Sparke and Albert Roland. They associate DIY with various issues including consumerism, the nuclear family and social status in post-war North America. In a brief paragraph within her text *An Introduction to Design and Culture: 1900 to the Present*, Sparke refers to DIY as a movement in post-war North America which was later imported to Britain. She draws attention to the popularity of DIY in the 1950s era:

> The do-it-yourself movement was imported to Britain from the USA in these years, offering people the opportunity to modernize their own interiors economically. The consumer-

orientated *Do-It-Yourself* magazine succeeded the much more technically orientated *Popular Mechanics* of the pre-war era, its front covers showing couples working together to build cupboards and strip walls.[41]

It is important to note that an emphasis on the nuclear family cannot be disassociated from gender roles in the home. This has led Gelber to associate the DIY phenomenon with a sense of American masculinity. Gelber illustrates the gendering of DIY with reference to the establishment of a wood-working workshop in New York's Museum of Modern Art (MOMA) in 1952. Gelber argues that the MOMA workshop provided 'bonding' opportunities for urban fathers and sons, stating that: "apartment-dwelling fathers and sons could experience the same intergenerational male bonding as their suburban counterparts."[42] For Gelber, DIY also operates through the extension of masculinity into a traditionally female domestic sphere. Gelber notes that "[b]y ceding men [a] space for a workshop and proprietary interest in the house, women helped perpetuate a male domestic sphere."[43] This later point may give the impression that women are responsible for a loss of female domestic space, and that DIY has a significant role in this female oppression. However, there are examples of feminised DIY evidenced by DIY literature and products which were targeted at women, particularly in the 1970s and 1980s.[44]

Sparke also associates DIY with masculinity as it relates to the nuclear family. Referring to 1950s images of wives supporting their husband's 'handyman' activities, Sparke offers two reasons for the popularity of DIY publications and how-to knowledge within post-war North America. First, she argues that the DIY phenomenon encouraged a "myth of 'togetherness […] helping to confirm the importance of the close-knit, post-war nuclear family."[45] This point reinforces the association of DIY with the nuclear family unit and its residence. Second, Sparke argues that the DIY phenomenon helped to counteract the isolation of family units and community within the post-war, individualist society. She argues that DIY promoted "self-identification" and "social status"[46] through consumerist participation. Consumerist participation was seen to happen via the purchasing of DIY products and involvement in DIY activities. Goldstein also associates DIY with gender, particularly in terms of product marketing and the popular media. Like Gelber and Sparke, Goldstein suggests that in the early to mid-1900s, DIY was targeted at men,[47] regardless of capabilities and skills.[48]

In 1958, Albert Roland of the United States Information Agency[49] published an essay on DIY. In this essay, DIY was associated with the artisan, creativity and material things, as well as psychological well-being and social status. Gelber describes Roland as "the only academic analyst of do-it-yourself in the 1950s."[50] Roland's text is important to the present thesis in terms of understanding the use of the term DIY in post-war discourse, including its association with the artisanal and craft.[51] (This will be further elaborated in section 2.5 of the present chapter.) Roland also refers to the 1954 *Time* article. Similarly to that article, Roland makes largely unsubstantiated references to individual do-it-yourselfers such as

"Mr. T" who has a "responsible managerial position" and a "basement workshop."[52] In this sense, Roland's account of DIY reinforces the general association of DIY with the social and cultural aspects of everyday family life in early post-war North America. However, Roland also attempts to explain the popularity of the DIY phenomenon by establishing what he describes as a "relation of do-it-yourself to society as a whole."[53] He argues that there are different forms of DIY depending on what he describes as the "motivation"[54] of the do-it-yourselfer, as well as the techniques and skills involved in DIY. Significantly, and somewhat ironically, Roland points out the problems of attempting to theorise DIY based on individual motivations because "if you try to understand the motivations behind do-it-yourself, it begins to appear as if it were many things to many people."[55] Nevertheless, he continues to argue that there are significant psychological and practical differences between traditional craft-based DIY and contemporary DIY involving kits and products. Roland notes that DIY products and tools, and how-to magazines, "eliminate the need for long practice and the learning of complicated skills."[56] The latter form of fast-track DIY is, for Roland, motivated by outcome rather than a desire to acquire and hone artisanal skills:

> For the oldtime craftsman [...] the greatest source of satisfaction is in doing. In *Time's* words, it stems "from the fine table, chair or cabinet taking shape under his own hands". But for today's average craftsman-hobbyist, the main object seems to be to have done. Kit assembly is the extreme example of this.[57]

For the purposes of the present thesis, Roland's account of DIY is of interest because he attempts a theoretical and somewhat philosophical account of DIY. In his article, he also presents differently nuanced accounts of the broader impact of DIY on life, including the DIY workshop as 'refuge,' DIY as a mechanism for social interconnection, and DIY as a mechanism for facilitating individual identity. First, Roland refers to the writings of the American writer Henry Thoreau, associating Thoreau's withdrawal from society with the same sense of refuge from everyday life which is afforded within the home-garage DIY workshop. Roland's reference to the workshop as a refuge recalls an earlier point made in 1941 by Starr that "[a]s one progresses in the use of tools, the basement workshop will become a place of refuge, a source of rejuvenation for a spirit bewildered or worn by the vicissitudes of ordinary existence."[58] Roland makes a similar point, drawing parallels between the workshop as a refuge and Thoreau's retreat into the American wilderness. He notes that men could withdraw "to their basement and garage workshops to find there a temporary *Walden.*"[59] According to Roland's argument, a withdrawal into a simpler world of nails and timber offers a retreat from everyday work pressures, thus providing do-it-yourselfers with a "touchstone for evaluating life around them—and their own."[60]

Second, Roland also makes the somewhat contradictory point that for some individuals, DIY facilitates social interconnection—rather than social retreat—when it connects individuals to a broader social

setting or group of like-minded do-it-yourselfers. The specific example cited is "Men's Garden Clubs,' which, according to Roland, enable the "trading of connoisseurship"[61] and shared values. Finally, Roland makes a reference to the potential contribution of DIY to a sense of individual identity. He argues that the action-focus of do-it-yourselfers within the domestic sphere facilitates a freedom to act outside of the confines of the everyday workplace, which in turn contributes to the do-it-yourselfer's sense of individual self. In Roland's own words, DIY is: "active, it is specific, it equips each of them to feel individually more competent and thus helps assert personal identity."[62] According to Roland, the do-it-yourselfer can develop a sense of freedom and identity via self-production, although it is important to note that this freedom occurs within the context of one's own DIY workshop. This theorisation of DIY as a mode of action and freedom is quite different from other social and cultural accounts of DIY (including Roland's own accounts), because one's actions are not discussed as being limited by a set of DIY instructions or kits, peer-social aspirations, or intentions to acquire a specific skill set.

In summary, the discourse on early post-war North American DIY associates the DIY phenomenon with a residential audience and market. Different theorists focus on different target audiences for DIY, including aspiring home craftsmen, homeowners and consumers. DIY is described through loose association with certain practices like homemaking, and the maintenance and improvement of the nuclear family residence. Often this association is based on speculations about the motivations for 'doing' DIY, and thus there is minimal scholarly research defining what constitutes DIY as a specific practice in this milieu. In the next section of the present chapter, an examination of DIY in the 1960s and 1970s North American counterculture reveals a very different audience with divergent intentions to those of the average 1950s North American homeowner. There is both critical and historical research on the countercultural movement, and its associated DIY sensibility. While the discourse on the counterculture is more critically and theoretically focused than the discourse on DIY in the 1950s, DIY is still used as a general umbrella term defined by association with a critical discourse, rather than a specifically defined mode or practice. In countercultural discourse, DIY is not specifically associated with homemaking, but is positioned as a sensibility that (theoretically) facilitates the circumvention of capitalist commissioning and production systems. In theory, DIY enabled counterculturalists to live and produce for themselves. Even so, some critics have variously questioned the true success of the countercultural 'off-the-grid,' DIY lifestyles. Regardless of the success of the DIY ethos in practical terms, however, exploring the countercultural discourse on DIY clarifies the use of the term within this milieu.
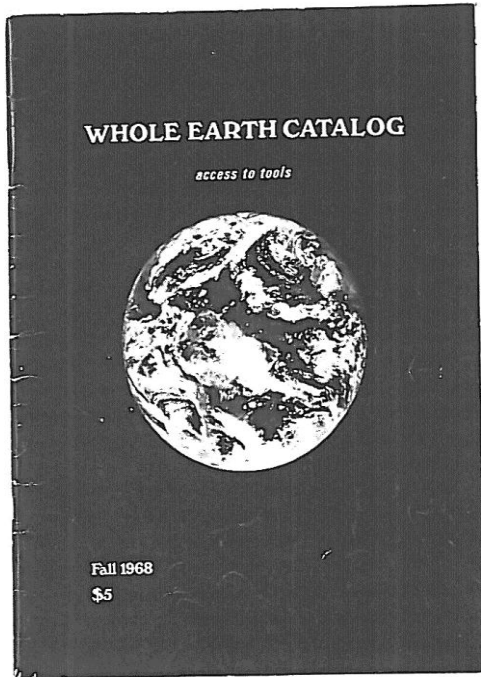
Figure 2.3: The front cover of the first edition of the *Whole Earth Catalog* or *WEC*, Fall 1968.

2.4   The discourse on DIY in the 1960s and 1970s counterculture in post-war North America

Goldstein makes a direct connection between DIY and the North American counterculture. She argues that the 1960s counterculture movement was to express itself later in an interest in craft in the 1970s, encouraged by publications such as the *WEC*.[63] *WEC* was first published in 1968 by Stewart Brand as a North American compendium of information and products advocating alternative lifestyles and self-build techniques.[64] Goldstein argues that as young adults during the 1960s, many members of this generation questioned the consumerist focus of modern life, and turned to an interest in DIY self-production.[65] In this section of the present chapter, particular attention will be paid to the popularity of the countercultural DIY manual as a mechanism for spreading how-to knowledge and philosophy to the countercultural audience, including those inhabiting communes. While DIY in 1950s post-war North America has been associated with nuclear families and social status, the DIY sensibilities embodied in the *WEC* and other countercultural DIY manuals is associated with critical and revolutionary intentions. This connection has been made by both the creators of the manuals and by countercultural theorists such as Andrew Kirk and Simon Sadler, as will be elaborated below.

Within the North American counterculture of the 1960s and 1970s, the DIY manual became an important platform for connecting dispersed members of its audience and promoting the "radical social and political movements of the 1950s and '60s."[66] The countercultural audience could be characterised as both locally-focused and globally-orientated. On the one hand, there was a desire by countercultural individuals, particularly those living in communes, to lead self-sufficient lifestyles and bypass capitalist

systems. This required practical information of the kind promoted in DIY manuals. Ironically, many of the countercultural communalists failed to achieve economic self-sufficiency and relied on the good-will of family 'patrons.'[67] Regardless of the true success of countercultural self-sufficiency, however, the how-to book remained a primary method for disseminating DIY knowledge and information to these communities. On the other hand, communalists often saw themselves as part of a broader world community, connected by publications such as the *WEC*. The cover of the first *WEC* edition of the Fall1968 featured a signature photographic image of planet earth taken from space,[68] this image of the earth invoking a sense of global community and interconnectedness. Editor of the *The Millenium Whole Earth Catalog*, Howard Rheingold, referred to the readers of the *WEC* as a "network of experts" and a "coevolved worldwide community of hunters and gatherers."[69] Rheingold highlighted the connections between individual and collective action as invoked by the *WEC,* and the countercultural movement as a whole:

> If you want to maintain independence in the era of large institutions you are going to need
> good tools. Since 1968, *Whole Earth Catalogs* have transformed the world, one person at a
> time, by introducing world-changers to world-changing tools.[70]

The play between local individual circumstances and the larger global community is a key issue within the counterculture, and the DIY sensibility associated with that milieu. Thus, individuals inhabiting 'off-the-grid' rural communes could become conceptually and ideologically connected to broader countercultural communities, if provided with sufficient knowledge and tools. The DIY manuals of that time, then, functioned as educational platforms for disseminating and promoting philosophical approaches, alternative lifestyles and associated practical knowledge. These manuals also acted as mechanisms for providing cultural legitimacy for certain technologies that could be deployed and, if necessary, repurposed in support of countercultural lifestyles. Whereas the DIY literature of the 1950s has been associated with cohering the traditional nuclear family, consumerism and masculinity,[71] the DIY manuals of the countercultural moment supported alternative and somewhat radicalised communities in their *escape* from the social conventions of the nuclear family and consumerism.

To explore the nature and role of DIY in the countercultural movement, it is useful to examine the *WEC*, arguably one of the most significant how-to manuals of the counterculture. Countercultural historian Kirk argues that the *WEC* emerged from a new publishing culture in the 1960s and 1970s[72] which had a DIY ethos at its core and was geared to a "do-it-yourself-obsessed generation."[73] According to Brand, *WEC's* format was modelled on another North American retail catalogue, that of L.L. Bean, with *WEC* appropriating the catalogue format of this commercial retailer and redeploying it for critical, rather than purely commercial, intent. Thus, Brand conceived *WEC* to be a "catalog of goods that owed nothing to the suppliers and everything to the users."[74] While *WEC's* success meant that Brand was conscious of

its profit-making potential, his focus was on ensuring the sustainability and continuity of the manual, rather than financial gain alone. *WEC's* income also generated funds that were channelled into other like-minded countercultural ventures.[75]

The intention behind the *WEC* publication was to spread ideas and practical know-how to counterculturalists, to support their quest for independent living and self-production, and, as Kirk expressed it, encourage "autodidactic models for architecture and design."[76] The emphasis was on both individual and collective action within the social setting, particularly in relation to everyday practical action and commerce. In *WEC*, this can be seen in Stewart Brand's manifesto-like introduction to the 1968 first edition of *WEC*, highlighting its emphasis on practical tools and knowledge:[77]

> We are as gods and might as well get used to it […] In response to this dilemma and to
> these gains a realm of intimate, personal power is developing power of the individual to
> conduct his own education, find his own inspiration, shape his own environment, and share
> his adventure with whoever is interested. Tools that aid this process are sought and
> promoted by the WHOLE EARTH CATALOG.[78]

WEC influenced many culturally significant thinkers of the time. According to Apple Macintosh founder Steve Jobs, the *WEC Epilog* edition appeared as a forerunner to the Google internet search engine. For Jobs, *WEC* was "like Google in paperback form."[79] For Kirk, the countercultural shelter movement, along with Stewart Brand's *WEC*, left a lasting imprint on American residential design in terms of the general uptake of the DIY phenomenon and alternative technologies (AT), in mainstream America in the 1990s:

> Starting in the 1950s, the do-it-yourself movement grew into a billion-dollar industry and, by the
> 1990s, more money was spent by amateur builders than professionals. Thus, the ability to move
> AT into the world of the American home was of critical importance in the 1960s and remains so
> in the first half of the twenty-first century.[80]

It has been argued that *WEC's* format was preceded and inspired by another DIY manual, Steve Baer's 1968 *Dome Cookbook*.[81] Brand directly cites an earlier publication as inspiration for *WEC's* format: Denis Diderot's *Encyclopédie* (1751-1776), which he describes as "the leading tool of the Enlightenment"[82] because it spread knowledge to people across France. Brand was similarly interested in spreading knowledge, in his case, to a countercultural audience. For Kirk, *WEC's* popularity and extensive readership were bound up in its "enlightened pragmatic individualism."[83] It is important to note that even though *WEC* contained practical information, this information was intended to be deployed as part of a revolutionary philosophical agenda. According to Brand, *WEC* was founded on an ambition to revolutionise civilisation, and this ambition was also to be disseminated to, and encouraged within, its readership. He specifically notes that "[a] theory of civilization is inherent in the *Whole Earth Catalog*."[84]

For Brand, the revolutionising process also formed the philosophical basis of many of the North American communes, otherwise known as intentional communities. Commune inhabitants or communalists were a key audience for the *WEC*. One such audience was the inhabitants of the rural Drop City commune, also known as "Droppers."[85] While Brand notes that most of the countercultural communes "failed"[86] in a practical sense, he also reinforces their conceptual and moral legacy in terms of advocating issues of community and ecology, and the "personal-computer revolution."[87]

To "reinvent civilization,"[88] it was necessary to provide practical information to a mobile, dispersed and receptive countercultural generation. According to Kirk, *Whole Earth* was "book-driven"[89] and aimed at education and countercultural dissemination to like-minded people. *WEC's* early phases focused on the creation of a mobile lending library called the *Whole Earth Truck Store.* Brand and his wife Lois converted a 1963 Dodge Truck and took their mobile library on a road trip across North America—bringing knowledge to the people was a key issue for the *WEC.* In 1968, the *Whole Earth Truck Store* transformed to become a permanent storefront. Hence, *WEC* was part of a broader philosophical and educational intention, conceived as a mobile library and, later, published as a catalogue.[90] The *WEC* publication emerged from the creative and intellectual milieu of the San Francisco Bay area,[91] with its first 1000 copies printed from the Portola Institute, an alternative education centre established by Dirk Raymond in Menlo Park, California, in the fall of 1968.[92] According to Kirk, "[t]he Portola Institute was one of the best examples of how creative communities were coalescing around a loose set of shared social and cultural goals in an effort to create new means for achieving personal and community success."[93] Raymond was focused on education and information dissemination, and the Portola Institute (and associated Point Foundation) provided an ideal venue for Brand's catalog production.[94] The foundation also channelled money into appropriate technology (AT) and ecologically-orientated environmental design.[95]

WEC contains a mixture of practical, technical and philosophical topics. The *WEC* how-to ethos involved access to information on a range of topics, including design, building and architecture. *WEC* was loosely organised into seven sections described as tools, with titles such as 'Shelter and Land Use.' These categories were not 'fixed' or set in every edition. For example, a special edition issue of the *WEC—The Millenium Whole Earth Catalog*—featured new categories and resources, including eco-tourism.[96] The content varies from product and book advertisements, to philosophical and general essays. *WEC* also features sections with information on practical building techniques, as well as design philosophy, architects and architecture. For example, the 'Shelter' section of the *Last Whole Earth Catalog* contains information ranging from the 'Fundamentals of Carpentry' and 'Screw Appreciation,' to advertisements for architects, including the British architects Archigram,[97] and North American architects Soleri[98] and Ant Farm.[99]

WEC was defined by a particular relationship to technology that could encompass both low, vernacular technology and new or 'cutting-edge' technology of the time, including personal computers.[100] The *WEC* manual itself was produced using a combination of the low and high technologies then available. It was both digitally assembled on an IBM computer and cut-and-paste assembled in the Portola office on tables, and then locally printed on large folio sheets using newsprint papers which were "dramatically cheaper than other publication papers."[101] *WEC* became a guidebook for practical action in many of the 1960s and '70s American communes, particularly in relation to developing a self-sustaining lifestyle using small-scale and often experimental technologies. Though many of these communes were 'off the grid' (also referred to by Kirk as "outlaw communities"[102]), commune inhabitants needed to physically construct these off-grid worlds. Thus *WEC* advocated a practical, hands-on approach to environmental and social issues via its focus on tools—the use of tools and, importantly, where to access or buy tools.[103] As used in *WEC,* the term 'tools' variously refers to knowledge, techniques and instruments.

WEC's focus on education and knowledge dissemination was reflected in other DIY manuals of the time. *Domebook One* and *Domebook Two*—DIY manuals for constructing domes—were also associated with alternative pedagogy and the dissemination of the countercultural ideology.[104] Many of the domes featured in the *Domebooks* were made at Pacific High, an independent, non-mainstream school in the North American Santa Cruz Mountains, California. The students lived in domes that they built as part of their educational experience.[105] True to the countercultural holistic spirit, the *Domebook* manuals promoted the intermixing of education, ideology, practical action, experimental technologies and a DIY sensibility.[106]

The first DIY architecture manual for "alternative architecture"[107] was, according to Scott, the earlier *Dome Cookbook,[108]* which was named after the source of its publishing funds: the cookbook fund established by The Lama Foundation.[109] The *Farallones Scrapbook* was another DIY architecture manual produced in the California region and associated with the countercultural movement.[110] *Farallones Scrapbook* is a DIY manual for renovating and retrofitting schools as part of an alternative, child-focused pedagogy. Similar to other DIY manuals—including the earlier *Dome Cookbook[111]* and later, *Inflatocookbook—Farallones Scrapbook* was based on the author's (and other contributors') direct experiences of design-build.[112] It contains a mix of personal reflections, photographs of completed projects, step-by-step instructions for constructing playgrounds and internal structures to support classroom activity.[113] *Farallones Scrapbook* also features extracts from Ant Farm's *Inflatocookbook*.[114] *Farallones Scrapbook* has a specific environmental focus and promotes the reuse of materials for ecological and environmental reasons.[115] Aside from listing general actions people can take to reduce consumption,[116] it also lists the sources for potential recycled products.[117] In accordance with the countercultural ethos, *Farallones Scrapbook* reflected a collective spirit whereby individuals were always seen as part of a socio-cultural group.[118] In all the countercultural manuals examined for the purposes of

the present thesis, philosophical musings of life are intermixed with practical techniques, material qualities and project imagery to inspire a broader and, arguably, more critical readership.

Although the content of the *WEC* was not specific to architecture, it was highly influential in architectural circles. *WEC* was favourably reviewed by Archigram architect David Greene in the *Cosmorama* section of Issue 5 of the 1969 *Architectural Design,* or *AD.*[119] AD highlighted *WEC* as the "book of the month selection."[120] In the *AD* review of *WEC*, Archigram member Peter Cook hinted at the mobile lifestyle associated with countercultural audience, commenting that *WEC* was: "so great that it made me want to crawl away and belt up."[121] *WEC* also featured and promoted individual architects. For example, Ant Farm promoted their *Liferaft Earth* inflatable building in the January 1971 edition of *WEC*.[122] Aside from the influence of *WEC* on architects, it is also important to note the role of the DIY manual genre in countercultural architectural practice and its dissemination. In 1970, Ant Farm published their first edition of *Inflatocookbook*,[123] a DIY manual for inflatable architectures: followed by the 1971 video companion, *Inflatables Illustrated*.[124] In 1984, Paolo Soleri and Scott M. Davis published the DIY manual *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction.*[125] Although published in 1984, *Earth Casting* is based on Soleri's experimental design-build projects constructed in the 1960s and 1970s at *Cosanti* and *Arcosanti* in the Arizona desert. Ant Farm's and Soleri's manuals will be discussed in more detail in the following chapter.
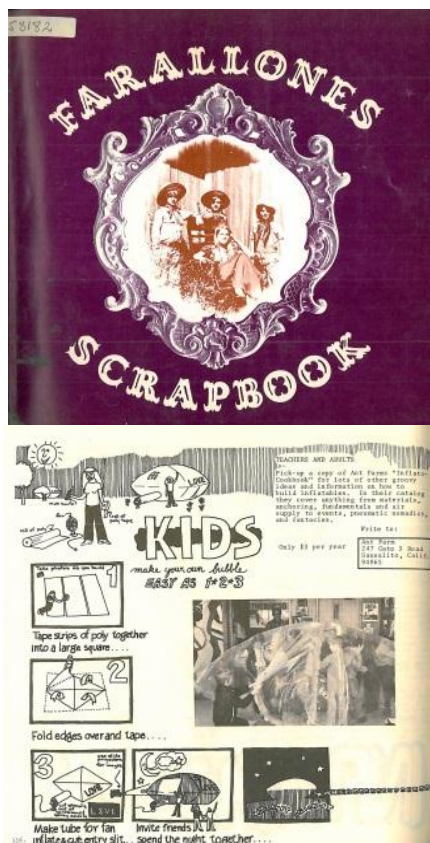
Figure 2.4: The 1971 *Farallones Scrapbook* featured a page on Ant Farm's inflatables, almost identical in content to a section ('Kids') within their own *Inflatocookbook.*

Drawing attention to the interconnections between *WEC* and architectural practice, architectural theorist Simon Sadler argues that the *WEC* was, in his terms: "a sort of architecture, a colloquium connecting its participants to design and to the world at large."[126] Sadler argues that, regardless of its success,[127] the "Catalog"[128] (as he calls it) functioned as the equivalent of the Bauhaus educational institution. Sadler argues that similar to the Bauhaus' promotion of the influential Bauhaus design approach, the *WEC* also advocated a particular design approach—that of "whole design."[129] For Sadler, the *WEC* was crucial in advocating a specific architectural approach and attendant ideology. As a publishing genre, then, the DIY manual was arguably an important educational platform for popularising information, techniques and ideologies amongst a countercultural audience.

In summary, the post-war discourse on DIY in the North American counterculture associates DIY with both practical action and an ideology of self-sufficiency. Significant DIY publications of the time such as *WEC* acted as educational platforms for the dissemination of knowledge and tools. However, in the countercultural discourse, DIY is never precisely defined as a specific movement, practice nor ideology. As with the earlier post-war discourse, DIY is associated with other cultural and social issues, and therefore becomes a term which loosely coheres an array of divergent practices, beliefs and publications associated with the counterculture.

2.5 The discourse on DIY and the artisanal in the 1940s-1950s, and in the 1960s and 1970s counterculture

The dissertation has thus far focused on two discursive streams associated with two distinctive time periods in post-war North America: the discourse on DIY in the 1940s and 1950s, and the discourse on DIY in the 1960s and 1970s counterculture. In both discursive streams, the texts and discourses referring to DIY focus largely on the audience for DIY and associated socio-economic and ideological aspects. As previously discussed, DIY is defined through association with these discourses rather than through a specific, critical examination of DIY as a mode of practice. One exception is Roland's speculation that DIY in the 1950s may be considered a mode of action promoting freedom and autonomy, although this point is not supported nor elaborated in depth. There is also, in both discursive streams, a subtle, though identifiable, connection established between DIY and the artisanal, even though both terms are poorly articulated in the discourse. In the post-war discourse on DIY and the artisanal, DIY is evaluated and discussed more specifically as a practice through comparison with traditional artisanal practices. The following sections of the present chapter return to both discursive streams to unpack references to DIY in connection with the artisanal, in order to better understand the use of the term 'DIY' in post-war discourse.

The terms 'DIY' and the 'artisanal' are associated in both DIY discursive streams, particularly when materials are discussed in relation to techniques. In the early post-war discourse, DIY and DIY products are criticised for encouraging a superficial level of skill and knowledge. While theorists including Roland and Gelber associate DIY with the erosion of traditional craft skills and knowledge in American society, they simultaneously assert the contradictory point that DIY extends the reach of craft to a wider and otherwise untrained audience.

An examination of Starr's *Fifty Things to Make for the Home* reveals the tensions between the skills and knowledge of amateur and craftsperson: tensions which arguably inflect the early post-war discourse connecting DIY with the artisanal and craft. For Starr, it is important to differentiate between amateurs—referred to as "dubs"[130]—and "craftsmen."[131] This is illustrated in the chapter 'The Value of a Home Workshop.' Starr makes the important point that practice and prolonged experience with materials develops skill and proficiency, suggesting that dubs may become craftsmen over time. Starr associates skill and proficiency with a craftsman, who is thus differentiated on the basis of these specific attributes, rather than social status or formal training per se.[132] To complicate matters, Starr refers inconsistently to amateurs who can be either craftsmen or 'dubs' depending on both skill and attitude. For example, he refers to letters he has received from amateur readers of his newspaper column, which he cites as evidence that his how-to publications have spawned "some craftsmen."[133] Starr also notes that the desire to make is "the first step in the development of a craftsman,"[134] which suggests that a particular attitude, combined with how-to knowledge, can enable the dub to develop into a craftsman. He refers to the specific example of an amateur honing his woodworking skills by working, nailing and sawing timber.[135] In praise of the novice maker and the how-to publication, Starr also counters criticism he has received from "more experienced craftsmen complaining of a lack of sophistication in certain details."[136] He argues that his readers are developing craftspeople who are unable to afford and purchase the tools necessary for complicated joints like dovetails, as is expected of traditional craftspeople. Instead of focusing on these complicated joints and professional machinery, Starr advocates ordinary "hand-tools"[137] and the adjustment or simplification of conventional "procedure[s]"[138] to suit inexperienced or novice makers. This latter point suggests that techniques and materials may be specifically tailored to suit the readership of the how-to publication. Starr's discussion about amateurs and craftspeople simultaneously highlights the importance of acquiring knowledge of materials and techniques through hands-on practice and experience, and the role of the how-to manual in facilitating this practice.

Gelber also associates DIY in the 1950s with craft, the artisan and the woodworker.[139] For Gelber, DIY is a practice involving the development of skills that resemble, and yet are different to, traditional craft. He notes that "[b]y using their hands, do-it-yourselfers evoked the image of the independent artisan who produced an object by himself from start to finish."[140] Gelber does not specifically define the artisan, although he uses the term in relation to traditional hand-crafting skills and knowledge of materials. For

Gelber, the association of DIY with the artisanal may be superficial, in the sense that many do-it-yourselfers rely on easy-to-assemble kits rather than traditional artisanal skills.[141] He then makes the (perhaps) contradictory point that these kits also enabled craft and hobbies to reach a wider amateur audience.[142]

In her discourse on the emergence of the DIY phenomenon in post-war North America, Goldstein positively associates DIY with "artisanal craft."[143] She notes that the how-to publications of the early post-war period advocated simple, easy-to-make furniture and homes that could be created by amateurs.[144] Similar to Gelber's aforementioned observation, Goldstein associates DIY manuals with extending artisanal practices to a wider, amateur audience. Yet, in other discourse on DIY in the 1940s and 1950s, a somewhat negative association of DIY with the artisanal persists due to its association with the erosion—rather than extension—of artisanal approaches and sensibilities. In addition to Gelber's criticism of DIY kits, Roland criticises do-it-yourselfers who are motivated by social status rather than the acquisition of artisanal skills. Roland categorises DIY as either consumerist-orientated or production-orientated,[145] depending on individual motivation. For Roland, consumerist-orientated DIY involves DIY products and assembly in which "[t]he attention has shifted from materials and techniques to the finished product."[146] For example, individuals who want to upscale their homes to impress their neighbours or peer groups would be classified as consumerist-orientated do-it-yourselfers. Roland adopts an anarchistic view of this form of DIY, which he argues is merely "a mechanism of distribution of goods and of "canned" services in the home."[147]

It is unclear how Roland differentiates or determines individual motivations for engaging in DIY activities, peer-focused or otherwise: there is no specific scholarly support or basis for these speculative assumptions within his essay.[148] Roland himself points out the difficulties of pinpointing precise individual motivations for DIY.[149] A key point for this thesis is that Roland draws attention to an alternative, artisanal and production-orientated DIY practice which is focused on the relations between maker and materials.[150] Roland makes a direct reference to the artisan towards the conclusion of his essay on DIY, directly associating DIY with "artisan production."[151] Although Roland doesn't define the term artisan, it is used as synonymous with experience and technical skills. Again, it appears as if both DIY and the artisanal are used as general umbrella terms to categorise and loosely theorise aspects of a general phenomenon, rather than provide a particularised or clear definition of DIY.

In the second discursive stream relating to DIY in the counterculture, DIY has also been discussed in relation to craft and the artisanal. As previously discussed, Goldstein argues that the "craftsman ideal" of the turn of the 19th century resurfaced in the 1970s, encouraged by publications such as the *WEC*.[152] For Goldstein, DIY facilitated a connection to craft within the counterculture, but this connection was part of a

broader rejection of a reliance on consumerism and an embrace of self-production methodologies, rather than part of a nostalgic yearning for traditional craft skills per se.

Figure 2.5: A page about Ant Farm in the 1973 edition of the DIY manual *Shelter.*

A discussion of the 'artisanal' can be charted in countercultural DIY publications of the time referring to architecture and building, including Lloyd Kahn's 1973 *Shelter* publication—the follow-on to the *Domebook* manuals. *Shelter* is a well-known countercultural manual which has been described as "a classic of do-it-yourself and hand-built homes from around the world."[153] *Shelter* is infused with words and imagery describing hand-made houses in communes, alongside the techniques used to create and build them. The earlier sections of *Shelter* are also dedicated to technical skills and knowledge. In these sections, there is a particular focus on traditional techniques for working concrete and timber which can be easily deployed with minimal resources and labour.[154] Ant Farm member Schreier argues that *Shelter* moved away from a focus on the dome typology to an interest in indigenous building techniques, due to the complications associated with building domes.[155] An explicit discussion about the artisanal appears on pages 78-79 of *Shelter*, where extracts of the-then yet to be published 1974 book *Craftsmen of Necessity* by Christopher and Charlotte Williams[156] are quoted in relation to the lives and poetic ways of blacksmiths and woodworkers. *Shelter* introduces *Craftsmen of Necessity* by stating that it documents the Williams' "15 month trip in a VW bus, studying architecture, crafts, and the utilitarian arts of indigenous societies in North Africa, Syria, Turkey, Bulgaria and Romania."[157] *Shelter* recommends the forthcoming publication as an "excellent book;"[158] further endorsed by the full two-pages devoted to it. While DIY has been associated with the artisan in post-war discourse, it has never been specifically defined. *Craftsmen of Necessity* is of particular interest within the present thesis because it presents a

detailed account of the 'artisanal'[159] which has been referenced within a well-known DIY manual.[160] While *Craftsmen of Necessity* does not explicitly define what an artisan is,[161] it does provide a specific account of what constitutes an 'artisanal' way of encountering and working materials. Thus this text will be examined in more detail—both in the present chapter and later in Chapter 4—to revisit and reinterrogate the association between DIY and the 'artisanal' within the countercultural discourse.
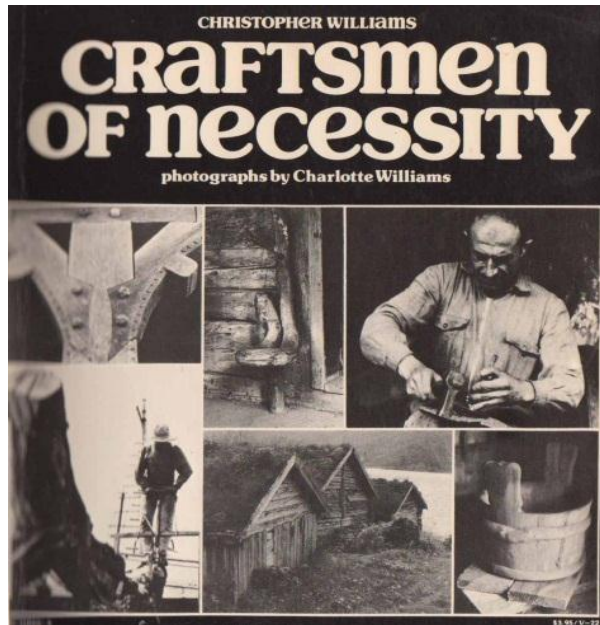
Figure 2.6: The front cover of the 1974 *Craftsmen of Necessity.* Note that this text was previewed and advertised in the *Shelter* manual published in 1973.

Craftsmen of Necessity makes specific reference to the "following"[162] of material qualities, and to encounters between makers, tools and materials. The different 'artisanal' ways of the blacksmith and the woodworker are compared (this account is also reproduced in *Shelter*). The blacksmith is described as "urgent and aggressive," whereas the "woodworker must be more methodological and sympathetic, quiet and alone."[163] The following quote occurs in both *Shelter* and the original *Craftsmen of Necessity*, and illustrates the 'artisanal' focus on action and encounters with materials occurring throughout both texts:

> By following the edges and flutes of a tool with thumb and eye the wood cutter can
> determine the character of the finished piece by choice of his tool shape. His tools lie
> before him as a vocabulary, each one possessing a subtle inflection of meaning. With this
> language of tools and the motions by which he uses them a conversation is conducted
> between worker and material. The wood argues in knots and agrees in smooth grain.[164]

As invoked within the countercultural text *Craftsmen of Necessity* (and by association in the *Shelter* DIY manual), the 'artisanal' involves a focus on processes, production and the working of particular materials. The processes involved in the working of wood are described as an encounter between wood, wood tool and woodworker. In the case of the woodworker-artisan, he is involved in 'following' the qualities of materials as encountered with, and through, his tools. In *Craftsmen of Necessity*, the artisan

is associated with traditional and indigenous modes of making and living.[165] The examples photographed and discussed throughout the text vary from Egyptian village potters[166] and Sicilian blacksmiths[167] to a Finnish farmer creating tools from spruce and birch timber.[168]

Craftsmen of Necessity refers to 'artisanal' technology as invoking "a way, not a device, a philosophy to govern the methods of selecting action."[169] For Williams, the artisanal also involves a 'way' that expresses a "total involvement of mind and body."[170] For example, an artisan's feet can become a temporary vice for holding wood, and arms and legs are also used as "measuring devices" during activities like pottery.[171] Significantly, Williams makes a statement about artisans following the logic of materials and suggests that materials have 'forms' of their own. This important point will be elaborated further in chapter 4 of this thesis, and is therefore quoted in full below:

> Each kind of material has its own form. Artisans come to know their materials and just which forms they assume comfortably. The photographs on these pages show a Syrian coppersmith surrounded by his work. The indigenous artisans would certainly not be able to give a description of their material with any approximation of scientific terms, and possibly might not be able to assemble the words to describe it. But it is certain that they know the materials well; they have developed an intimacy and an intuitive knowledge that goes beyond spoken language.[172]

William's conception of the 'artisanal' exhibits an astonishing resonance with aspects of Deleuze and Guattari's notion of the *artisanal* as described in their collaborative text *A Thousand Plateaus*. There are also differences between their respective notions of the artisanal, and these will be discussed further in chapter 4. For the moment, it is important to note that the discussion of the 'artisanal' within *Craftsmen of Necessity* is similar to the discussion of craft in the early post-war discourse on DIY in the 1940s and 1950s. This similarity occurs via a focus on detail and materials, which in the early DIY discourse is associated with hand-craft. The focus in this early post-war discourse is on hand-crafted outcomes and approaches highlighting divisions between the skills and attitudes of the more qualified craftsperson, and those of the amateur do-it-yourselfer using DIY kits and tools. However, in the countercultural discourse associated with DIY, the tensions between the artisan and the amateur appear to disappear, such that there are no hierarchies or divisions to speak of.

Within the counterculture, a lack of conceptual, social or ideological hierarchy inflects many aspects of countercultural life, including the simultaneous embrace of low and high technologies evident in the *WEC*, and the intermixing of philosophy, ideology and practical information evident in the countercultural manuals of the time. In these countercultural manuals, tools and knowledge are also associated with an alternative mode of living that operates outside of mainstream culture and

consumerism. Consistent with this view, *Craftsmen of Necessity* advocates a particular view of the 'artisanal' operating outside of consumerist-focused American society. However—and unlike publications such as *WEC* and *Shelter—Craftsmen of Necessity* is critical of high-end mechanised technologies, advocating instead for low-end, hand-tool-based technologies (couched in environmental and ideological terms).[173] In the concluding chapter of *Craftsmen of Necessity*, a statement is made indicating that machine-based technologies interfere with holistic, artisanal lifestyles.[174] This preference for certain technologies may give the impression that high-end technology is inappropriate within an 'artisanal' mode of operation. This impression was atypical of other countercultural publications, which arguably favoured small-scale technologies that could be easily deployed by individuals and communities, but did not disavow mechanised technologies per se.[175] *WEC* and *Shelter* also featured many indigenous and vernacular forms of housing, and discussions of craft appear in association with these projects. However, in both *WEC* and in *Shelter,* high and low technologies and production systems are blended to suit specific circumstances, as evidenced by the following comment about craft, tools and technology in the 'Technology Review' section of *Shelter*: "[w]e're not against technology, mechanization, innovation, or plastics. We're against their misuse."[176] Interestingly, *Shelter* also features a section on Ant Farm's experimental residential construction, The House of the Century (1971-1973), made by using ferro-cement technology. The important point for this present thesis is that traditional 'artisanal' methodologies, and their attendant focus on maker/tool/material encounters, were associated with the DIY sensibilities of countercultural manuals such as *Shelter.*

2.6   Summary: DIY and the artisanal in post-war North America

The overall focus of the present thesis is to develop a theorisation of DIY architecture, and, to do this, it is first necessary to examine the discourse on 'DIY.' The focus thus far has been on the general DIY discourse of post-war North America, and conventional understandings of DIY practices of this time. One of the most significant and interesting challenges in the present thesis relates to defining and articulating the term 'DIY.' As highlighted throughout the present chapter, DIY has been used as a broad and nebulous term associated with an array of social, cultural and theoretical issues and practices in post-war North America. Considering the popularity of DIY as a movement, it is surprising that the DIY phenomenon has received little scholarly attention. Its popularity, however, is attested to by the vast array of DIY products and materials available since World War II. The few theoretical accounts of DIY are based on its association with social and cultural issues of the time, including speculative, unsupported accounts of the individual motivations of do-it-yourselfers. In all these accounts, DIY remains significantly under-theorised.

The present chapter began with an identification of two DIY discursive streams associated with different time periods in post-war North America. The first discursive stream relates to the emergence of DIY as

a phenomenon in the 1940s and 1950s. This discourse includes accounts of DIY published at the height of the 1950s DIY 'boom,' as well as historical accounts of the DIY phenomenon. In this early post-war discourse, DIY is generally associated with the nuclear family and the home workshop. In 1958, Roland of the United States Information Agency provided what is, according to the historian Gelber, the only academic account of DIY at the time.[177] Roland suggests different conceptions of DIY, including speculations on possible social and psychological motivations for engaging in DIY. However, Roland also points to an alternative conception of DIY based on action, production and self-identity, although this theory is relatively underdeveloped.

The second discursive stream relates to DIY in the North American counterculture during the 1960s and 1970s. As this discursive stream associates DIY with a countercultural ideology, it is more critically and theoretically focused than the earlier discourse describing DIY as a general phenomenon. Having said this, DIY is still used as a general umbrella term for an array of practices and approaches within the counterculture, including the intermixing of traditional and new experimental technologies. In the counterculture, DIY was associated with a revolutionary agenda in which counterculturalists could, in theory, operate and self-produce outside of the dominant capitalist culture of post-war North America. Thus, while DIY was originally associated with mainstream America and the nuclear family, DIY in the counterculture transformed into a sensibility for undermining a reliance on mainstream America and its production systems. DIY manuals such as the *WEC* and *Shelter* functioned as educational platforms for disseminating practical information and philosophical ideologies to the dispersed countercultural communities in North America, and beyond. Equipped with ideology, knowledge and practical skills, countercultural do-it-yourselfers could (in theory) make, produce and operate largely outside of capitalist structures. Yet, even within this more critically-focused discourse on countercultural DIY, there is no specific elaboration of what constitutes DIY as a practice.

To address the ill-defined nature of DIY as a term and practice in both discursive streams, the thesis turned to more nuanced discussions about DIY, craft and the artisanal in the 1950s to the 1970s. When DIY is associated with craft and the artisanal in the post-war discourse, the focus is on how materials are engaged and worked. A focus on encounters with materials arguably counters the specific problems associated with unproven speculations about the social, cultural and psychological motivations for DIY: problems troubling the aforementioned theoretical accounts of early post-war discourse. Nevertheless, the association of DIY with the artisanal is complicated, and sometimes contradictory. For example, in the early post-war discourse, there is a suggestion that DIY products contribute to the loss of traditional artisanal skills, whilst simultaneously there is a suggestion that the reach of these skills be extended to a wider, amateur audience. In the countercultural discourse, DIY is also discussed in relation to artisanal skills and techniques. The text *Craftsmen of Necessity* is a significant reference for the present thesis because it provides a link between the DIY sensibilities of

the counterculture and an artisanal approach. *Craftsmen of Necessity* positions the 'artisanal' as a way of working and attending to materials and their capacities.

The association of DIY with the artisanal within the post-war discourse suggests an initially superficial correspondence between both terms, created by the shared focus on the self-organisational capacities of materials. In the aforementioned countercultural discourse, there is no detailed, scholarly examination of what specifically constitutes DIY as a practice associated with architecture. Given this, the thesis will now concentrate on a more detailed examination of the association of DIY with architecture and the 'artisanal' in post-war North America, with a specific focus on the countercultural milieu of the 1960s and 1970s. Chapter 3 thus focuses on the discourse surrounding two architectural practices associated with DIY, the 'artisanal' and the counterculture: the art/architecture collective Ant Farm, and the architect Paolo Soleri.

Notes

[1] As expressed by countercultural theorist Andrew Kirk, one of the intentions of the countercultural publications and discourse of the time was to promote "autodidactic models for architecture and design" which could operate outside of the usual capitalist commissioning systems. See Andrew Kirk, *Counterculture Green: The* Whole Earth Catalog *and American Environmentalism*, (Lawrence: University of Kansas Press, 2007)*,* 84.

[2] 'Do-It-Yourself: The new billion-dollar hobby,' *Time,* Pacific edition, Business: Modern Living (August 2, 1954): 46.

[3] 'Do-It-Yourself,' 46.

[4] Steven Gelber, 'Do-It-Yourself: Constructing, Repairing and Maintaining Domestic Masculinity', American Quarterly, Vol. 49, No. 1 (March 1997): 66-112. Gelber refers to an article by Garrett Winslow titled 'Practical Decoration for the Home Interior', *Suburban Life*, 15 (Oct. 1912).

[5] According to both Gelber and Goldstein, this interest in making arose in the late 1800s. See Carolyn Goldstein *Do It Yourself: Home Improvement in 20th--Century America* (Washington and New York: National Building Museum, Washington and Princeton Architectural Press, 1998), 16-17, and; Gelber, 'Do-It-Yourself', 67.

[6] Steven M. Gelber, *Hobbies: Leisure and the Culture of Work in America (*New York: Columbia University Press, 1999), 157.

[7] Gelber, *Hobbies, 195.*

[8] Goldstein, *Do It Yourself.*

[9] Goldstein, *Do It Yourself,* 17.

[10] The title of the second chapter in Goldstein's book *Do It Yourself*, 31.

[11] This comment is made in reference to a March 1953 DIY exposition in New York, which Gelber notes was "the first of its kind do-it-yourself trade exposition in Manhattan". Gelber, *Hobbies*, 283.

[12] Gelber's text explores the relation between leisure and work through hobbies (DIY is also considered a type of 'hobby,' according to this definition). Gelber argues that the simultaneous integration of leisure and work activities in the home was "a way to integrate the isolated home with the ideology of the workplace." Gelber, *Hobbies,* 20.

[13] Gelber argues that DIY: "satisfies all the standard expectations of a hobby. It could be done alone in spare time; it replicated and reinforced work values, which gave the hobbyist a sense of psychological fulfillment, and had the added benefit of being useful." Gelber, *Hobbies,* 269.

[14] Gelber, *Hobbies,* 6. Gelber also makes the point that home repair and maintenance was positioned as both practical and leisurely in the 1930s, particularly in the "home care manual[s]" that were targeted at husbands. Gelber, 'Do-It-Yourself,' 89.

[15] Gelber, 'Do-It-Yourself,' 89. Gelber argues that there was a DIY "boomlet" in In 1920s North America: with an increase in tools and home workshops owned, in particular, by the "wealthy and highly motivated hobbyist." Gelber, 'Do-It-Yourself', 88.

[16] The intention of DIY manuals is generally to induct readers into a new project type, skill, material and/or technique. However, an examination of the DIY discourse and manuals referred to in this present thesis reveals interesting assumptions about the target audiences and their associated cultural, social and political aspirations and, significantly, shifts in these assumptions over the three decades studied.

17 For example, *The Last Whole Earth Catalog* features an advertisement for Ant Farm's *Inflatocookbook*, and; information about Paolo Soleri's texts *Sketchbooks of Paolo Soleri* and *Arcology. The Last Whole Earth Catalog*: *Access to Tools* (San Francisco, Harmondsworth: Portola Institute, Penguin Books Ltd.,1971), 107, 83.

18 Julian Jr. Starr, *Fifty Things to Make for the Home* (New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1941).

19 Starr, *Fifty Things to Make for the Home,* v1.

20 Starr, *Fifty Things to Make for the Home,* vii-ix.

21 In 'The Workshop' category of Starr's *Fifty Things to Make for the Home*, there are five sections, including; 'The Value of a Workshop'; 'Common Hand Tools'; The Care of Common Hand Tools'; 'A Workbench', and; 'Power Tools'. See the 'Contents' page in Starr, *Fifty Things to Make for the Home,* vii.

22 Starr, *Fifty Things to Make for the Home,* v.

23 Starr, *Fifty Things to Make for the Home,* v1.

24 Starr, *Fifty Things to Make for the Home,* v.

25 Starr, *Fifty Things to Make for the Home*, 195.

26 Starr, *Fifty Things to Make for the Home*, 197.

27 Starr, *Fifty Things to Make for the Home,* 114.

28 The DIY icebox measures 10 ½ by 16 ½ by 4 ½ inches, with 2 inch thick walls of galvanised iron, plywood, and insulation. It is difficult to imagine this satisfied the "[s]pecifications for a good, portable icebox [including being] light weight;" see Starr, *Fifty Things to Make for the Home,* 182.

29 The full project title is "Three Legged Knitting Bowl: The Uses of This Attractive Project Are Not Confined to Knitting," although Starr does not elaborate on what these other uses might be. Starr, *Fifty Things to Make for the Home,* 205.

30 Starr, *Fifty Things to Make for the Home,* 205.

31 'What <u>not</u> to do yourself', *House Beautiful*, 96 (July 1954): 54.

32 'What <u>not</u> to do yourself', 54.

33 The article refers specifically to "four pitfalls: enthusiasm that exceeds ability, inadequate preparation, inaccurate measuring and abuse of equipment." 'What <u>not</u> to do yourself', 54.

34 'What <u>not</u> to do yourself', 108.

35 'Do-It-Yourself, 46.

36 Do-It-Yourself', 46.

37 'Do-It-Yourself', 46.

38 Do-It-Yourself',46.

39 'Do-It-Yourself',46.

40 'Do-It-Yourself',48.

41 Penny Sparke, *An Introduction to Design and Culture: 1900 to the Present*, Second edition (London: Routledge, 2004), 120.

42 Gelber, *Hobbies,* 290.

43 Gelber, *Hobbies,* 294.

44 Nevertheless, Goldstein reinforces that a "feminine how-to genre" emerged in the 1970s, in reaction to the ""handyman" myth," and as evidenced by "new kinds of instruction manuals." See Goldstein, *Do It Yourself*, 79.

Florence Adam's 1973 manual *I took a Hammer in My Hand; The Woman's Build-It and Fix-It Handbook* positioned "women no longer as the helper but the doer." Adams as quoted in Goldstein, *Do It Yourself*, 79. Goldstein argues that feminised DIY was a reaction to "women's disappointment that few men lived up to their expectations as repairmen." Goldstein, *Do It Yourself*, 81. Tools and DIY materials—a significant influence on the popularity of DIY—were marketed specifically at women in response to this perception.

[45] Sparke, *An Introduction to Design and Culture,* 120.

[46] Sparke, *An Introduction to Design and Culture,* 120.

[47] Goldstein notes that "Advertisements and Instructional Literature often classified building as outside the realm of women's responsibility. *Better Homes and Gardens* published separate home-improvement manuals for men and women." Goldstein, *Do It Yourself,* 72.

[48] Goldstein argues that the technical skills women obtained in the war era contributed to an interest in making and DIY. Goldstein, *Do It Yourself,* 32; 78.

[49] The United States Information Agency existed from the 1950s to 1999, and promoted national issues.

[50] Gelber, *Hobbies,* 292.

[51] See Albert Roland, 'Do-It-Yourself: A Walden for the Millions?,' *American Quarterly*, 10, 2, Part 1 (Summer 1958): 154-164. Roland states that the "business of dealing with things, of creating something, is obviously a very important aspect of craftsmanship, and of the do-it-yourself trend as a whole." Roland, 'Do-It-Yourself,' 158.

[52] Roland, 'Do-It-Yourself,' 156.

[53] Roland, 'Do-It-Yourself,' 163.

[54] Roland, 'Do-It-Yourself,' 157.

[55] Roland, 'Do-It-Yourself,' 155.

[56] Roland, 'Do-It-Yourself,' 159.

[57] Roland, 'Do-It-Yourself,' 159. Roland is referring to the article on DIY in *Time*, August 2, 1954, 63.

[58] Starr, *Fifty Things to Make for the Home,* 5.

[59] This is a quote from Roland's article in the 1958 *American Quarterly*; see Gelber, *Hobbies,* 292. The original comment by Roland appears in the opening paragraph of the *American Quarterly* journal; see Roland, 'Do-It-Yourself,' 154.

[60] Roland, 'Do-It-Yourself,' 155.

[61] Roland, 'Do-It-Yourself,' 159.

[62] Roland, 'Do-It-Yourself,' 164.

[63] Goldstein notes that "[a]s young adults during the 1960s counterculture movement, many members of this generation questioned the technocratic and consumerist focus of modern life. To varying degrees and in many different ways, they rejected the suburban ideal as artificial and inauthentic." Goldstein, *Do It Yourself,* 88.

[64] *WEC* was published regularly from 1968 – 1972, followed by intermittent issues: *WEC* is now accessible online.

[65] Goldstein, *Do It Yourself,* 88.

[66] Gair, *The American Counterculture*, 1.

[67] Stewart Brand, 'Front Matter: Foreword: Civilisation and Its Contents,' in *The Millenium Whole Earth Catalog*, ed. Howard Reinngold, (San Francisco: Harper San Francisco, 1994), 5. Fred Turner also criticises the disconnect between countercultural ambitions and the realities of everyday life. Fred Turner, *From*

Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and The Rise of Digital Utopianism (Chicago: The University of Chicago, 2006), 260.

[68] Kirk, *Counterculture Green,* 4.

[69] Howard Rheingold, ed., *The Millenium Whole Earth Catalog* (San Francisco: Harper San Francisco, 1994), cover inset.

[70] Rheingold, *The Millenium Whole Earth Catalog*, cover inset.

[71] Gelber, *Hobbies,* 294.

[72] Incidentally, one of the more well-known DIY retail publications was already published by this time. IKEA founder Ingvar Kamprad had already created his first DIY catalogue for IKEA. *IKEA News* was a mail order catalog which was first distributed with a local newspaper in Kamprad's local hometown in Sweden, 1949. See Elen Lewis, *Great Ikea: A Brand for All the People* (London: cyan Books, 2005), 52.

[73] Kirk, *Counterculture Green*, 5.

[74] Brand as quoted in Kirk, *Counterculture Green,* 1.

[75] Brand as quoted in Kirk, *Counterculture Green*, 1.

[76] Kirk, *Counterculture Green*, 84.

[77] In relation to the focus on practical tools and self-sufficiency, Rheingold notes that "[i]f you want to maintain independence in the era of large institutions, you are going to need good tools." Rheingold, *The Millenium Whole Earth Catalog*, 1.

[78] Brand, Stewart 'The Purpose of the Whole Earth Catalog,' *The Whole Earth Catalog* (Fall 1968), 3.

[79] Kirk, *Counterculture Green*, 163.

[80] Kirk *Counterculture Green*, 87-88. Kirk refers to one example of a DIY publication advocating AT, Peter Warshall's 1973 *Septic Tank Practices: A Guide to the Conservation and Re-Use of Household Wastes*. Peter Warshall was an editor of *WEC*.

[81] According to Lloyd Kahn, editor of *Domebook One* and *Domebook Two* (which featured the work of Ant Farm). See Lloyd Kahn, 'Lloyd Kahn on 20 Years of Whole Earth Catalog', in *Whole Earth Catalog: Access to Tools and Ideas* (Winter1998), accessed 17.09.2009, http://wholeearth.com/issue/1340/article/410/lloyd.kahn.on.20.years.of.whole.earth.catalog: 1-3.

[82] Brand, "Front Matter," 5.

[83] Kirk, *Counterculture Green*, xi.

[84] Brand "Front Matter," 5.

[85] See Bill Voyd, 'Funk Architecture,' *Shelter and Society*, ed. Paul Oliver (London: Barrie & Rockliff: The Crescent Press, 1969), 162.

[86] Brand, 'Front Matter,' 5.

[87] Brand, 'Front Matter,' 5.

[88] Brand, 'Front Matter,' 5.

[89] Kirk, *Counterculture Green*, 47.

[90] Kirk summarises the evolution of *WEC* from mobile library to publication. He notes that: "(t)he first phase of his project could not have been simpler: Physically assemble an alternative library and cart it around to the people who could benefit from such knowledge...The truck store was an abbreviated version of Brand's earlier hope to tour the country with educational fairs. The truck was a store but also a lending library and mobile microeducation

fair with Brand's emerging epistemology reified in piles of carefully selected books linked in ways that were becoming intuitive to Brand, though it must have seemed new and intriguing to the commune dwellers lucky enough to encounter the little red truck and its enthusiastic driver." Kirk, *Counterculture Green*, 47-48.

[91] For Kirk: "Whole Earth was birthed by the counterculture, but the catalog transcended the confines of that movement very early. It may always be remembered as the counterculture bible or, in the words of *Time* magazine, the "Boy Scout Handbook of the counterculture," but it was much more". Kirk, *Counterculture Green*, 57.

[92] Kirk, *Counterculture Green*, 43.

[93] Kirk, *Counterculture Green*, 43.

[94] Kirk, *Counterculture Green,* 44. From 1963, Raymond and other like-minded counterculture activists conducted meetings at the San Francisco Glide Methodist Church under the leadership of minister Cecil Williams: these meetings formed the basis of the Point Foundation. The office of the Point Foundation was created as a collaboration between Raymond and Brand (after Raymond established The Portola Institute where Brand first published *WEC*) and was located on top of the church. Kirk, *Counterculture Green*, 170.

[95] Kirk, *Counterculture Green*, 87.

[96] Reinngold, *The Millenium Whole Earth Catalog*, 1.

[97] *The Last Whole Earth Catalog: Access to Tools* (San Francisco, Harmondsworth: Portola Institute, Penguin Books Ltd.,1971*), 89.

[98] *The Last Whole Earth Catalog,* 83.

[99] *The Last Whole Earth Catalog,* 107.

[100] Kirk, *Counterculture Green*, 175. Aside from a focus on accessible low technologies, Brand also advocated for progressive and cutting-edge technologies of the time, such as personal computers. Thus Brand associated "[t]he personal-computer revolution" with the values of the counterculture communes." Brand, 'Front Matter,' 5.

[101] Kirk, *Counterculture Green*, 48.

[102] Kirk, *Counterculture Green*, 54. Kirk also referred to architect Sim Van der Ryn, who assisted in the creation of these communities using appropriate technologies, as an "Outlaw Designer." Kirk, *Counterculture Green*, 65. The March 1969 counterculture event *Alloy*, outside La Luz, New Mexico, was featured in *WEC* and, according to Kirk, was "the first programmatic gathering" of "outlaw designers" in America by appropriate technologists Steve Baer and Barry Hickman", Kirk, *Counterculture Green*, 74.

[103] According to Kirk, Brand was influenced by urban theorist Jane Jacobs, who perceived that commerce could be the key to making positive, sustainable environmental impacts. Kirk, *Counterculture Green*, 91.

[104] Although associated with inflatables, Ant Farm was published in the *Domebook One* and *Domebook Two* DIY manuals, which almost exclusively featured dome structures. Inflatable structures, like domes and zomes, involved experimental geometric engineering. In a conversation with Constance M. Lewallen, Ant Farmer Curtis Schreier states he was influenced by "Frei Otto, and engineer who wrote about tension structures and inflatables." Constance M. Lewallen with Chip Lord, Doug Michels, and Curtis Schreier, 'Interview with Ant Farm,' in *Ant Farm 1968-197,* ed. Constance M. Lewallen and Steve Seid (Berkeley: University of California Press, Ltd., 2004), 49.

[105] Lloyd Kahn, ed., *Domebook Two*, Volume Two (Bolinas, California: Shelter Publications, Inc., October 1972), 32-33.

106 A statement on the final page of the August 1971 edition of *Domebook Two* reinforces the connections between social networks, educational processes, and the DIY manuals proliferating in the countercultural movement: "[a]n unusual aspect of building a structure is that it takes such a long time to complete the physical manifestation of the one-time idea. By the time we write about what we've built and print the results, we're a long way from the ideas we started with. Thus we're in the middle of a *process*. A group of us found our paths intersecting in Big Sur, then at Pacific High School in 1969-71. We were all interested in exploring structure and found ourselves making communication an integral part of our cycle. Our first publication, *Domebook One*, was put together in two weeks with production equipment borrowed from the *Whole Earth Catalog*." Lloyd Kahn, ed., *Domebook Two* (Bolinas, CA: Shelter Publications, August 1971), 129.

107 Scott, *Living Archive 7,* 62. According to Kirk, "Baer is best known for his contributions to the architecture of Colorado's Drop City with the distinctive polyhedral zomes constructed with car doors that Baer modelled after a children's toy built by his wife Holly." Kirk, *Counterculture Green*, 150.

108 Steve Baer, *Dome Cookbook* (Coralles, New Mexico: Lama Foundation, 1967/68). The present thesis refers to a second printing of *Dome Cookbook*; a copy from the Montreal University of Montreal library cited as a 1967publication date—a slightly different publishing date to the 1968 edition referred to in *Living Archive 7*. See Scott, *Living Archive 7,* 62. Even though there is a reference to a 'second printing, the *Dome Cookbook* referred to in the present thesis does not state a year-date per se; thus reference will be made to the publishing date of 1967/1968.

109 The Lama Foundation describes itself as "one of the oldest Intentional Communities in America," founded in the same year as Baer's *Dome Cookbook* publication. See The Lama Foundation*, '*Welcome to Lama Foundation.org!' (New Mexico: The Lama Foundation, 2005), accessed 23 October 2009, http://www.lamafoundation.org/about_lama_general_overview.html.

110 The full title of the text was *Farallones Scrapbook: A Momento & Manual of Our Apprenticeship in Making Places and Changing Spaces in Schools At Home and Within Ourselves.* According to the text on the rear of the front cover of manual, Faralon is an area of rocks along the Pacific Coast near Point Reyes, California and "...on the clearest of days [w]e can see them from our ridge [a]t Point Reyes." Sim Van der Ryn, *Farallones Scrapbook* (Point Reyes Station: California, 1969), 1. Van der Ryn, who was a Berkeley professor at the time, was familiar with Ant Farm's work. He invited Ant Farm to participate in the alternative Freestone conference, March 20 to 22, 1970 in Freestone, California. Scott, *Living Archive 7*, 73.

111 Baer, *Dome Cookbook*.

112 According to the manual, "Farallones Scrapbook is a partial record of eighteen months together helping kids and teachers make a place for themselves in school." See Van der Ryn, *Farallones Scrapbook* 2.

113 For example, pages 72 to 79 contain a series of images, text, diagrams and a materials list for constructing a "Super Carrel"—a DIY replacement for conventional classroom desks and spatial arrangements. Van der Ryn, *Farallones Scrapbook*, 72.

114 Van der Ryn, *Farallones Scrapbook*, 116.

115 Van der Ryn, *Farallones Scrapbook*, 118-119.

116 Van der Ryn, *Farallones Scrapbook*, 122-123.

117 Van der Ryn, *Farallones Scrapbook*, 124 -129. The manual encourages an awareness of the embodied energy of a material and the associated impact on the natural environment. Van der Ryn makes the point that "natural

cycles have been interrupted by an economy based on a throw away mentality." Van der Ryn, *Farallones Scrapbook*, 120.

[118] *Farallones Scrapbook* is explicitly positioned as a collective effort on the second page of the manual. Van der Ryn, *Farallones Scrapbook*, 2. A sense of the collective and the social permeates the discourse of the counterculture, and this can be seen in Roszak's 1969 characterisation of counterculture and its cultural and political connections to the spirit of the tribe. Theodore Roszak, *The Making of a Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition* (New York: Doubleday & Company, Inc., 1969), 265.

[119] 'Whole Earth Catalog,' *Architectural Design*, Cosmorama section, Issue 5 (May /1969): 239. This edition was guest edited by members of the well-known *Archigram* architectural collective, who were also interested in experimental technologies and modes of living.

[120] Ant Farm's *Astro Daze* 1969 "non-conference" at Houston was also featured in the same *Cosmorama* issue, under the banner 'Exhibitions and Happenings.' 'Astro Daze', *Architectural Design,* Cosmorama section, Issue 5 (May/1969): 241. The Ant Farm project appeared alongside Archigram's and Yona Friedman's proposals for the '70 Osaka expo (Ant Farm's expo pavilion proposal was featured in the July 1969 edition).

[121] 'Whole Earth Catalog,' 239.

[122] Scott, *Living Archive 7*, 7.

[123] Ant Farm, *Inflatocookbook* (1970 and 1973).

[124] Ant Farm, 'Inflatables Illustrated.'

[125] Soleri and Davis, *Earth Casting.*

[126] Sadler, 'An Architecture of the Whole,' 108.

[127] It is important to note that in his journal article on *WEC*, Sadler raises concerns about the relevance of the *WEC* to architecture: his criticism relates to the singular and over-arching view of design presented in *WEC.* See Sadler, 'An Architecture of the Whole,' 8. Nevertheless, and throughout the article, Sadler reinforces the value of *WEC* in terms of promoting an expanded view of architecture, particularly in terms of issues of ecology and sustainability. His concluding remarks summarise his view of the *WEC* and its influential on architecture as a whole: "[t]he designer, jumping from one image to the next in the Whole Earth Catalog enjoyed a vastly expanded realm of nonexpertise, and experienced something of an ecology of the mind, ensuring that the problem of ecology could not be reduced to one building and its architect." Sadler, 'An Architecture of the Whole,' 127.

[128] Sadler, 'An Architecture of the Whole,' 8.

[129] Sadler, 'An Architecture of the Whole,' 112.

[130] Starr, *Fifty Things to Make for the Home,* v.

[131] Starr, *Fifty Things to Make for the Home,* v1.

[132] Starr, *Fifty Things to Make for the Home,* 5.

[133] Starr, *Fifty Things to Make for the Home,* v1.

[134] Starr, *Fifty Things to Make for the Home,* v.

[135] Starr notes that: "[s]kill in the use of tools is neither a mysterious learning nor a born knack. It is merely a child's pig bank of experience. A novice who drives ten nails knows how to drive the eleventh without bending or scarring the wood when he sends it home. When he has sawed ten boards he knows what twist he must give his saw to keep it on a straight line. That's all there is to skill. Proficiency in the use of this knowledge comes with experience, and the field, in this respect, is wide open." Starr, *Fifty Things to Make for the Home,* 5.

136 Starr states he has received occasional written complaints in letters from "more experienced craftsmen;" see Starr, *Fifty Things to Make for the Home,* v.

137 Starr, *Fifty Things to Make for the Home,* v.

138 Starr, *Fifty Things to Make for the Home,* vi.

139 Gelber, *Hobbies,* 281.

140 Gelber, *Hobbies,* 290.

141 Gelber points out that "the kit craze of the 1950s may have marked a low point in hobby crafting by reducing the productive process to the assembly of preformed parts." Gelber, *Hobbies,* 298.

142 Interestingly, Gelber makes the point that in post-war North America: "[m]ore serious crafters avoided kits, but the things they made covered the same spectrum of applications from the purely decorative to the eminently practical." Gelber, *Hobbies,* 268.

143 Goldstein, *Do It Yourself,* 17.

144 For Goldstein: "[m]agazines like *The Craftsman* celebrated artisanal craft and provided readers with instructions about how to construct simple built-in bookcases, desks, and dining nooks. The modern, less elaborate designs of the movement were relatively easy for an amateur to make." Goldstein, *Do It Yourself,* 17.

145 Roland, 'Do-It-Yourself,' 162.

146 Roland, 'Do-It-Yourself,' 159-160.

147 Roland, 'Do-It-Yourself,' 162. He also argues that customising and individualising "mass-produced components [...] seldom goes beyond seeking a variation within the accepted group standards." Roland, 'Do-It-Yourself,' 163.

148 Incidentally, Gelber makes reference to a 1958 survey of about 200 do-it-yourselfers from the Little Rock area in North America. Gelber states that this survey "confirmed the psychological benefits provided by the hobby." There is no elaboration of the survey instrument, other than the note that "the language of the questionnaire stressed the creative elements of do-it-yourself." Gelber, *Hobbies,* 270. In Roland's essay, there is no reference to surveys or similar in support of his arguments for the psychological motivations for, and benefits of, DIY.

149 Roland, 'Do-It-Yourself,' 155.

150 To reinforce his point about production-orientated DIY, Roland asserts that: "the mastery of the necessary skills, the competence required to achieve craftsmanlike results should have had a strong appeal for men whose paramount preoccupation was mastering their physical environment and molding raw materials into finished products." Roland, 'Do-It-Yourself,' 156.

151 Roland, 'Do-It-Yourself,' 162.

152 Goldstein, *Do It Yourself,* 88.

153 According to Kirk, *Counterculture Green*, 84. *Shelter* was a follow-on from the earlier *Domebook One* and *Two* manuals. According to a note in on the contents page of an undated reprint, *Shelter's* "purpose was to show a wide range of information on hand-built housing and the building crafts and to maintain a network of people interested in building and shelter, with subsequent publication of the best available information." Kahn, *Shelter,* 2. Lloyd Kahn was not an architect; nevertheless, the focus in the manual is on architecture and building, and thus it is an important reference within the present dissertation.

154 For example, the first section of *Shelter* is called "Caves, Huts, Tents' and covers traditional shelter typologies. Kahn, *Shelter,* 4-16. The 'Building' section includes words, sketches and photos relating to traditional timber-framed buildings. Kahn, *Shelter,* 40-42; 44-46.

[155] Lydia Kallipoliti with Curtis Schreier and Chip Lord (Ant Farm), 'Interview with Chip Lord and Curtis Schreier (Ant Farm),' in *Eco Redux; design remedies for a Dying Planet,* audio recording (San Francisco, September 7, 2007), accessed 18/09/2011, http://www.ecoredux.com/audio_chiplordandcurtisschreier2.html.

[156] Williams, *Craftsmen of Necessity*. *Shelter* refers to the book being by both Christopher and Charlotte Williams, although the book itself refers to Christopher being the author, with photographs by Charlotte.

[157] Kahn, *Shelter,* 78. This comment is replicated from the original text, where it appears on the last page of the book. Williams, *Craftsmen of Necessity*, 185.

[158] Kahn, *Shelter,* 78.

[159] Note that the *Craftsmen of Necessity* text refers specifically to "artisans," although it does not refer directly to the term 'DIY.' The reference to artisans appears in *Shelter* and in the original text. Kahn, *Shelter,* 79: Williams, *Craftsmen of Necessity*, 165.

[160] While the association of *Craftsmen of Necessity* with DIY is indirect via its inclusion in the *Shelter* DIY manual, the association is still significant because of *Shelter's* status as a seminal countercultural how-to publication. Importantly, the *Shelter* manual contains materials, tools, and artisanal techniques as well as DIY methodologies for constructing shelters. *Shelter* was directly influenced by *WEC*, as evidenced by a comment to this effect within the 1990 republication of *Shelter: see* Kahn, *Shelter,* 78.

[161] The text is saturated with descriptions and images of vernacular and indigenous environments, craftspeople and technologies; however, the text does not specifically state how one might define the artisan as a subject, as a craftsperson and so forth.

[162] Kahn, *Shelter,* 79: Williams, *Craftsmen of Necessity*, 166.

[163] Kahn, *Shelter,* 79: Williams, *Craftsmen of Necessity*, 166.

[164] Kahn, *Shelter,* 79: Williams, *Craftsmen of Necessity,* 166.

[165] *Craftsmen of Necessity* describes the artisanal approaches of "indigenous peoples" who are associated with "organic technology." Williams, *Craftsmen of Necessity*, 4.

[166] Williams, *Craftsmen of Necessity*, 175.

[167] Williams, *Craftsmen of Necessity*, 162.

[168] Williams, *Craftsmen of Necessity*, 107.

[169] Williams, *Craftsmen of Necessity*, 4. The text includes an argument that artisanal technology is ecological or balanced because it "creates natural cycles that balance themselves to reuse efforts, energies and materials; waste is absorbed and recirculated." Williams, *Craftsmen of Necessity*, 4-5.

[170] Williams, *Craftsmen of Necessity*, 169.

[171] Williams, *Craftsmen of Necessity*, 175.

[172] Williams, *Craftsmen of Necessity*, 161.

[173] The point is made that "mechanical technology' is often responsible for "environmental crimes." Williams, *Craftsmen of Necessity*, 4. Williams also makes the point that modern technology is not the cause of problems and human unease per se: "[i]f the modern system of manufacture were recognized to provide satisfaction for the people who produce, those people would surely begin to have a more significant life. Yet technological manipulation alone is not the solution; it is the result, not the cause. Before modern technology becomes compassionate, modern man must." Williams, *Craftsmen of Necessity*, 182.

[174] The following comment is made in reference to traditional craft-based communities and the use of small-scale technologies: "the community was still self-contained; it made only what it needed and used only what it made. The cohesion of the community was broken by the use of power beyond man and his nucleus of work. Machine technology was born in wind and water mills." Williams, *Craftsmen of Necessity*, 179.

[175] Turner, *From Counterculture to Cyberculture*, 219.

[176] Kahn, *Shelter,* 115.

[177] Gelber, *Hobbies*, 292.

Chapter 3: Ant Farm, Soleri and their DIY architecture manuals

3.0   Introduction

The previous chapter concentrated on the DIY discourse of post-war North America, in order to better clarify and articulate the term 'DIY.' This exploration has shown that there is a complexity to the term DIY and the associated discourse. To further explore the relation between DIY and architecture as it is conveyed in the post-war discourse, the present chapter concentrates on the connection between DIY and the architecture and architects of the 1960s and 1970s North American counterculture; focusing on Ant Farm and Soleri. Both Ant Farm and Soleri have been associated with DIY and the 'artisanal;' both have also been connected to the North American countercultural milieu, and created their own DIY architecture manuals based on their work of the 1960s and 1970s.

The early and later countercultural DIY discursive streams both highlight the role of the DIY manual in promoting a DIY sensibility. DIY manuals were used to disseminate how-to knowledge, information and techniques to their North American readership. In the 1960s and 1970s, DIY manuals were also used as educational platforms to promote countercultural ideology and self-sustaining lifestyles, as well as more pragmatically-focused information, to a specifically countercultural readership. Although many of the countercultural DIY manuals were not created by architects, manuals such as the *WEC* and *Shelter* contained information about architecture, architects, building construction techniques and materials. Sadler argues that in the case of the *WEC*, the manual can be understood as a form of architecture in itself, because it promoted a particular, holistic architectural sensibility.[1] In the present chapter, the discourses on Ant Farm and Soleri's practices, and their DIY manuals, will be used to distill a specific account of 'DIY architecture.' Reference will be made to three types of discourse: first, to the architectural discourse on Ant Farm and Soleri which was published in the 1960s and 1970s; second, to contemporary accounts of Ant Farm and Soleri's work by architectural historians and theorists; and third, to the DIY architecture manuals published by the architects themselves.

3.1   The rationale for focusing on Ant Farm's and Soleri's DIY architecture manuals

The first architectural practice of focus is that of the now-defunct art/architecture collective Ant Farm. Ant Farm was active in the decade from 1968 to 1978, and disbanded when a fire destroyed the collective's studio in a warehouse in Sausalito, San Francisco.[2] Ant Farm described themselves as "underground architects."[3] The term 'underground' was used in the countercultural movement,[4] and was also used specifically by Ant Farm to evoke their namesake, the North American Ant Farm toy. Founded by Chip Lord and Doug Michels, the Ant Farm collective included different members and collaborators

over the decade of their existence. They produced many built and speculative projects, including two building projects,[5] and several art projects, including performance-based works.[6] Even though Ant Farm's built art projects outnumber their built architectural projects, they remain associated with architecture. The Ant Farm collective included qualified architects and they have been positioned as operating in an "expanded field"[7] of architectural practice. Ant Farm designed and physically constructed many of their own projects, and published two DIY manuals focused on their air-inflated or inflatable projects—*Inflatocookbook*,[8] and its video companion, 'Inflatables Illustrated.'[9]

The second architectural practice of focus is that of Paolo Soleri. Originally from Italy,[10] Soleri is an architect still living and working in Arizona. He is best known for two of his built projects, the *Cosanti* and the unfinished *Arcosanti* complexes in the Arizona desert. Soleri has also written a number of philosophically-focused texts,[11] and texts based on speculative, un-built design projects.[12] With Scott M. Davis, Soleri published the DIY manual *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction* in 1984.[13]

There are three main reasons this study focuses on Ant Farm's and Soleri's DIY manuals. First, both Ant Farm and Soleri practiced architecture during the period of the counterculture, and have been associated with this milieu and its DIY sensibility.[14] They both operated in a similar geographic locale— the West Coast of North America—[15]which was seen as a hub of the counterculture, and the site of a thriving publication culture which spurned many DIY manuals such as the *WEC*.[16] Ant Farm's work also appeared in publications and DIY manuals which were directly associated with discourse on the counterculture.[17] The discourse on Ant Farm and Soleri can therefore be contextualised in relation to the DIY discourses of the post-war North American counterculture.

The second reason for focusing on Ant Farm's and Soleri's DIY manuals relates to their association with DIY. This association primarily arises through their own DIY manuals. Ant Farm published two editions of *Inflatocookbook*,[18] a DIY manual for constructing air-inflated structures. In 1971, they created a video companion to *Inflatocookbook*, called 'Inflatables Illustrated.'[19] Ant Farm was also associated with the production of other DIY manuals.[20] Contemporary theorists including architectural historian Felicity Scott,[21] and Constance Lewallen and Steve Seid,[22] have also associated Ant Farm with DIY. According to architectural historian Caroline Maniaque: "the *Inflatocookbook* took its place in a series of "how-to" underground publications, along with Steve Baer's *Dome Cookbook* (1968), Lloyd Kahn's *Domebook One* (1970), and Sim van der Ryn's *Farallones Scrapbook* (1969)."[23] Soleri's association with DIY is primarily through the publication of his DIY architecture manual, *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction*; an association that is reinforced through the positioning of his practice in relation to the countercultural milieu[24] and its attendant DIY sensibilities.

The third reason for focusing on Ant Farm's and Soleri's DIY manuals relates to their association with the 'artisanal.' Both Ant Farm and Soleri have been associated with the 'artisanal' via specific examples of projects they have designed and built themselves. Ant Farm's 1971-1973 residential project, The House of the Century, received a citation in an awards program run by the P/A journal.[25] The P/A Design awards jury chairman Hugh Hardy made the comment that it was "an act of total design, a true form of the handicraft, do-it-yourself, architect-as-artisan tradition."[26] The latter comment associates Ant Farm's DIY approach with the 'artisanal' and craft (although again the terms are not specifically defined). The House of the Century was to be featured in another unpublished DIY architecture manual—*From Bubbles To Stone*. As the follow-on to *Inflatocookbook*, *From Bubbles To Stone* was to draw connections between inflatable forms and The House of the Century project.[27] However, the *From Bubbles To Stone* manual was never published and, as such, there is insufficient information on the text for the purposes of this study. Thus, the present thesis and chapter focuses on the two editions of Ant Farm's *Inflatocookbook* and the 'Inflatables Illustrated' video manual.

Soleri's work has also been associated with the 'artisanal' and craft in several publications,[28] including a large monograph on his work titled *Soleri: Architecture as Human Ecology*.[29] These publications refer to the artisanal qualities of Soleri's buildings and artefacts, as well as his artisanal approach to design and construction. As will be discussed in more detail later in this chapter, Soleri was involved in the making of crafted objects and artefacts—such as the Cosanti wind bells—using techniques and approaches which are directly connected to his architectural experiments. In 1963, Soleri was awarded the AIA Craftsmanship Medal based on his earth-casting techniques and architectural projects,[30] and, in a 1965 article, Soleri was described as "[a]n Avant Garde Architectural Craftsman."[31] Soleri has himself associated his own architectural approach with craft and the 'artisanal' due to his concern with materials and making within project sites. He has described his built works such as the Cosanti and Arcosanti complexes as involving a "craft approach"[32] which, unlike his approaches to speculative un-built projects, is specific to a project context, site and time.[33] In the *Earth Casting* DIY manual, Soleri refers to Cosanti as an architectural experiment involving, amongst other influences, craft techniques.[34] On its rear cover, the *Earth Casting* manual is also described as "a workbook and manual for artisans,"[35] amongst others—including those "who want to experiment."[36]

It is important to note that Ant Farm's and Soleri's practices, projects and DIY architecture manuals are quite different in character. Nevertheless, by exploring their respective DIY manuals, it is possible to articulate the nuances relating to how materials and techniques are engaged in all three manuals, thus enabling a deeper and more particularised understanding of 'DIY architecture.'

3.2   Ant Farm's and Paolo Soleri's DIY architecture manuals

As previously discussed, there has been little direct examination and theorisation of Ant Farm's and Soleri's DIY architecture manuals. In the next sections, the focus will be on the format, organisation and approaches within these manuals, in order to draw forth key issues that, in turn, will be elaborated and connected to the countercultural DIY sensibility.

Figure 3.1: Two pages about the 'Kids' inflatable within the 1973 bound edition of Ant Farm's *Inflatocookbook:* note the same section appears in the 1970 edition.

Figure 3.2: The 1970 edition of Ant Farm's *Inflatocookbook* consisted of loose-leaf inserts originally intended for easy update and replacement.

Inflatocookbook

Ant Farm's *Inflatocookbook* DIY architecture manual provides how-to information for creating air-inflated structures and pillows that can be inhabited by humans (if of a sufficient scale). The first edition of *Inflatocookbook* was: "[c]ompiled and published November 10, 1970 to December 10, 1970,"[37] while a second, updated edition was published in 1973.[38] The how-to manual includes material suppliers, material characteristics and behaviours, small project templates, and suggestions for larger, hypothetical projects incorporating inflatables. It also contains references to speculative thoughts on

experimental architecture and spaces. While there is reference to other Ant Farm projects that are not inflatable-based, most of the projects in *Inflatocookbook* have some inflatable components or elements.[39] One exception is a 'recipe' for creating a (non-inflatable) dome from plastic tubes in the first *Inflatocookbook* edition.[40] *Inflatocookbook* uses text, sketch drawings and photographs to convey information. While the earlier 1970 edition includes some colour pages, the 1973 edition is reproduced in black and white. The 1970 edition makes an explicit reference to "Do It Yourself."[41] In a recent interview, Ant Farm members Chip Lord and Curtis Schreier stated that they made the 'cookbook' in response to the many enquiries they received from potential inflatable-makers.[42] Direct influences cited by Lord and Shreier include Brand's *WEC*, Baer's *Dome Cookbook*, and Don Lancaster's electronic DIY manuals.[43]

Inflatocookbook was published in two editions which were quite different in format, although generally similar in content. The original 1970 publication[44] and subsequent 1973 edition are un-paginated.[45] The 1970 *Inflatocookbook* was a limited-edition, self-published and hand-made volume consisting of loose-leaf sheets inserted in a plastic sleeve cover (Figure 3.2).[46] In theory, the loose-leaf format enabled updates to be inserted into the manual, thus implying an open-ended and evolving document.[47] This experimental graphic format was intended to prompt exchanges between Ant Farm and the readers, who were encouraged to send in 'feedback' for inclusion in subsequent editions of *Inflatocookbook*. The 1973 edition omits two sections of the 1970 edition,[48] and was bound.[49]

Both editions of *Inflatocookbook* contain a mix of advice based on Ant Farm's own experiences with inflatable creations, and include specific technical and material specifications, as well as material suppliers. The advice is presented in different ways. On the one hand, *Inflatocookbook* refers to the slightly humorous "Inflato-expert"[50] advice resulting from the architects' prior experiences with inflatable creation. This 'expert' information is conveyed via the somewhat prescriptive, step-by-step instructions that recall the format of the traditional North American DIY manual—for example, Starr's 1941 DIY manual *Fifty Things to Make for the Home.* In Starr's manual, projects are graphically and verbally described in a manner that encourages readers to copy and recreate the described artefact.[51] One example of the more prescriptive project format within *Inflatocookbook* is the 'Kids' bubble project (Figure 3.1), as it involves three sequential steps for forming and installing an inflatable; note that an inflatable form-pattern is also given.[52]

On the other hand, *Inflatocookbook* also contains examples of open-ended evocations of project circumstances requiring some degree of site, design or material improvisation and experimentation beyond the guidelines within the manual. In *Inflatocookbook*, Ant Farm states that inflatable forms and experiences are not bound to preconceptions of space or programme, particularly in relation to how inflatables are occupied. In Ant Farm's words; "CRAWL IN […] CONGRATULATIONS as you are

probably all keyed up with a thousand fantasies."[53] A sense of dynamism and instability is specifically reinforced when one enters, occupies and experiences the changing spaces of an inflatable. The interior spaces of inflatables are constantly unfolding as a consequence of the human inhabitants, air supply and billowing fabric.[54] Similarly, there is a sense that inflatable forms can be devised, made and/or combined in an open-ended manner by those reading the manual. For example, in the 'Truckin' University'[55] project (Figure 3.3), and in the text-based 'Hy-Tek'[56] and 'Good Taste Pneumatics' sections (Figure 3.9), there is no detailed description of a complete or final architectural form. Instead, what is described is a set of intentions, scenarios and conditions. For example, the 'Truckin' University' section outlines a list of potential project components for a temporary university structure and educational event, although the exact combination and assemblage of these components is not specified. The overall sense conveyed by these sections is that the manual is intended to prompt experimentation in how inflatables are made, occupied and experienced.
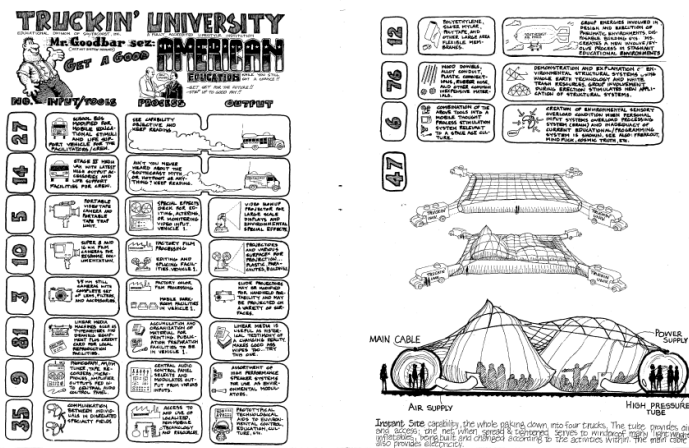
Figure 3.3: The 'Truckin' University' section of Ant Farm's *Inflatocookbook* describes a set of scenarios without sufficient detailed information to recreate a particular architectural form.
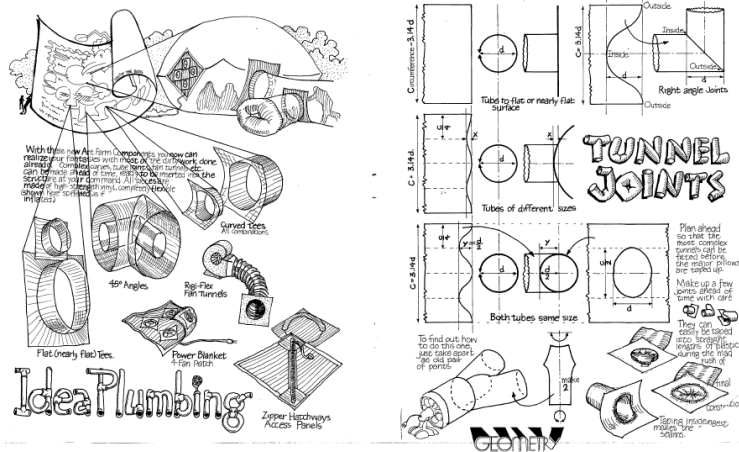
Figure 3.4: The ''Idea Plumbing' and 'Geometry' sections of Ant Farm's *Inflatocookbook* contains more detailed, prescriptive information about specific joints and detail shapes, although no overall architectural configuration is indicated.

The play between the prescriptive and the open-ended continues throughout the manual. The 'Idea Plumbing'[57] and 'Geometry'[58] sections show clearly described project elements, materials and details, but these require significant elaboration and deployment by the readers in order to construct an entire inflatable architectural project. In the 'Idea Plumbing' section (Figure 3.4), Ant Farm suggest that pre-

assembled joints such as 'Curved tees' and 'Rigi-flex Fan Tunnels' can be deployed in infinitely variable scenarios, stating that "[w]ith these new Ant Farm components you can now realize most of your fantasies with most of the dirty work done already."[59] Even though the tone of 'Idea Plumbing' is technically prescriptive, the potential architectural outcomes are indeterminate. Thus techniques, materials and forms are treated variably throughout both editions of the manual. In sections such as 'Idea Plumbing,' materials are generally described and quantified in a relatively didactic manner. Nevertheless, these detailed sections aren't directly matched or linked to fully-described architectural projects, such that the manual does not present or prescribe a straightforward architectural form to solve a specific problem. Similarly, sections such as 'Truckin' University' convey a sense of open-endedness with respect to architectural form, as there is insufficient detailed information about projects to enable straightforward project recreation. The loose-leaf format of the 1970 edition also reinforces the fragmentary nature of the individual sections and the overall manual. In terms of its open-endedness in both content and format, *Inflatocookbook* deviates from a prescriptive DIY manual genre.[60]
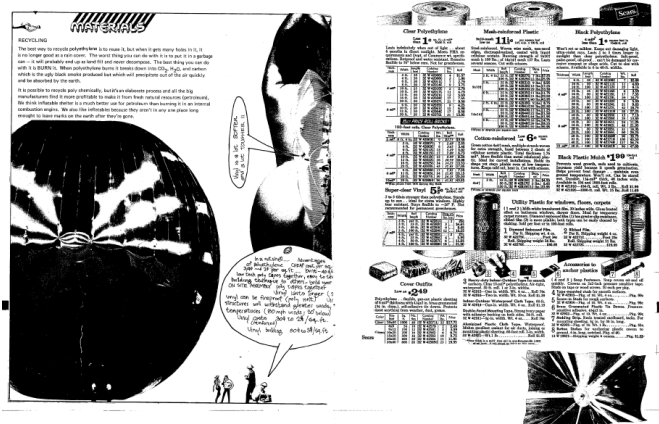
Figure 3.5: The 'Materials' section of the 1970 and 1973 *Inflatocookbook.*

Inflatocookbook contains many references to materials and how they might be worked. Both the 1970 and 1973 editions of *Inflatocookbook* include a 'Materials' section, which in the 1970 edition, is an A3, two page fold-out sheet, and in the 1973 edition, a four-page A4 sized spread (Figure 3.5).[61] The 'Materials' section of *Inflatocookbook* deals specifically with materials to be used to make inflatable envelopes. In the 1973 bound edition, the four pages after the 'Materials' section relate to 'Air Supply.' This 'Air Supply' section contains information relating to blower inflating devices, as well as the lightweight properties of the fabrics used to make inflatables, such as polyethylene.[62]

Materials are also referred to in other parts of the manual within project descriptions, including: the 'Kids' inflatable, and the 'World's Fastest Turtle' (Figure 3.1), and the aforementioned 'Truckin' University.' In the 'Truckin' University,' inflatable components are but one element of a 'kit-of-parts' that includes different materials, components and their combinations which are described as an "input" or "tools" for an educational inflatable event.[63] 'Truckin' University' lists different material 'inputs' including fabric, plastic, tape, and other less conventional material inputs such as slide projections and video

imagery (both within and on the inflatable envelope). While human bodies aren't classified as a material per se in either of the manuals, there is an ongoing focus on the occupation of inflatables and the way in which human bodies inflect the architectural space. The experimental inflatable spaces are seen to prompt new modes of occupation and social encounter. For example, the occupation of an inflatable is indicated as a project input within the 'Truckin' University' project: 'Input 47' shows a drawing of an inflatable with people inside.[64] Similarly, the 'Rasberry Exercises' section of the 1970 edition of *Inflatocookbook* describes the interactions between human occupants and the inflatable interior and envelope. [65] In both editions of *Inflatocookbook*, Ant Farm suggests that the experimental and liberating qualities associated with inflatables will be discovered when one is inside an inflatable and directly encountering the spaces.[66]

Inflatocookbook encourages readers to create and experiment with alternative architectural forms, technologies and materials that were atypical of architectural practice of the time—for example, using digital projections as part of the architectural experience.[67] The manual itself also adopts a graphically experimental format. *Inflatocookbook* has a strong visual identity due to the techniques of graphic overlaying, cut-and-paste and collage. Both editions of *Inflatocookbook* contain a mixture of written text, photographs, sketch diagrams and hand-drawn orthographic elevations and plans.[68] Three-dimensional sketch diagrams feature throughout the manual, as do photo-collages, which are intermixed with hand-drawn diagrams. An example of graphic overlay can be seen on the page 'A Course in Getting Acquainted with Inflatables—Chapter 1 of the Inflatocookbook' (Figure 3.6).[69] The page includes an A3-sized photograph of an inflatable interior which is overlaid with an introductory text about inflatables. The photograph shows the silhouette of two individuals inside a large volume of billowing fabric which appears to form two wave-like shapes. The overlaid text conforms to the shape of the waves and includes, in the first wave column, a manifesto-like statement about inflatables. The second column contains instructional information describing three steps for making inflatables, and includes sizes, material descriptions and 'blower' information. In the original 1970 edition, the A3 page is folded and loose-leaf; in the 1973 bound edition, the A3 page is bound into the front of the publication.[70]

Figure 3.6: 'A Course in Getting Acquainted with Inflatables.'
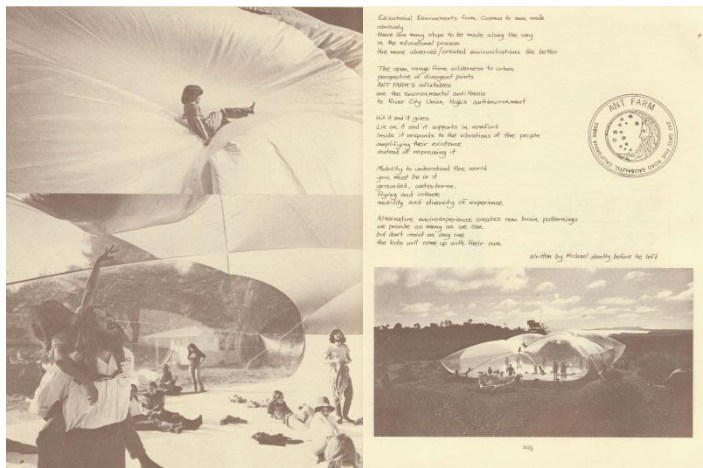
Figure 3.7: The images and words featured in the 'Rasberry Exercises' section of the 1970 *Inflatocookbook* were also published in another text—Salli Rasberry and Robert Greenway's 1970 *Rasberry Exercises: How to Start Your Own School and Make a Book* (shown left).
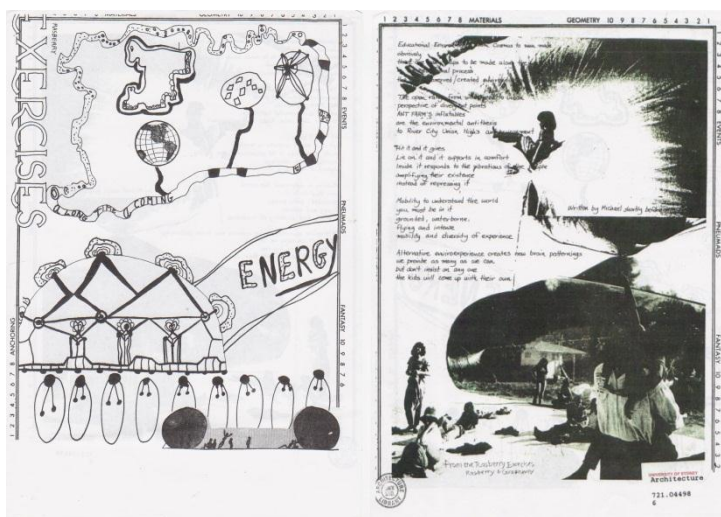
Figure 3.8: The front and rear pages of the 'Rasberry Exercises' section of Ant Farm's 1970 *Inflatocookbook.*

Another example of graphic overlay within the *Inflatocookbook* can be seen in the 1970 edition, on a page titled 'Rasberry Exercises' (Figure 3.8).[71] One side of the 1970 *Inflatocookbook* A4 page features hand-sketches and line drawings of a dome-like inflatable form, with the titles 'Exercises' and 'Energy.' The flipside of the page contains text overlaid on partial photographs of occupied inflatables. The text is poetic and evokes the fluidity of being inside inflatable forms.[72] A further example of graphic experimentation can be seen on another page referring to nomads, which uses a specific textual format to blend words. In the 'Good Taste Page Pneumatics' section (Figure 3.9), nomads are described using several parenthesised statements which are typed without space bars in the body of the text; for example: "(throughahazeofelectricneon)."[73] The graphic and textual blending in these pages could be understood in the context of Scott's point that: "Ant Farm's mode of presentation repeatedly sought to push the limits of existing formats."[74] In the aforementioned pages, graphic experimentation took the form of overlaying different media (photographs and words) and challenging textual conventions. The experimental graphic format appears inseparable from the experimental words, thoughts, spaces and actions conveyed in the DIY manual.
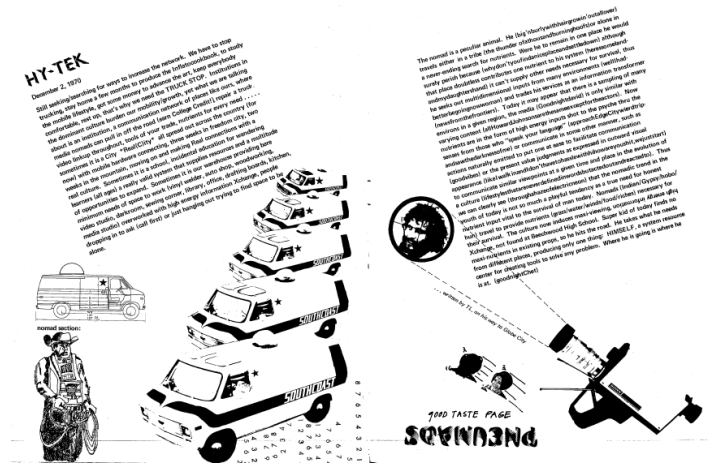
Figure 3.9: The 'Hy-Tek' and 'Good Taste Pneumatics' sections, which appear in both the 1970 and 1973 editions of *Inflatocookbook*.

Figure 3.10: Opening screen shot from Ant Farm's 'Inflatables Illustrated' video DIY manual.

'Inflatables Illustrated'

The 1970 edition of *Inflatocookbook* contains an advertisement for a video titled "how To inflatables,'[75] which may be a reference to the subsequently published *Inflatables Illustrated* video manual. *Inflatables Illustrated* is the video companion to *Inflatcookbook* and is similar in content to its hard-copy sibling (Figure 3.10). *Inflatables Illustrated* conveys conceptual, material and technical information about inflatables in an audio-visual format.[76] *Inflatables Illustrated* is now available within the 'Way Underground' section of the *Ant Farm Video*: the 2003 edited collection of Ant Farm films.[77] Broadly speaking, the video progresses through the stages of making an inflatable, from joining together plastic sheets through to inhabiting human-scaled inflatables. Footage is also selectively spliced together in a manner that disrupts straightforward information-delivery and consistency within, and between, different film sequences. Originally filmed by Curtis Schreier, Allan Rucker and Doug Michels, the largely black-and-white film is, according to Ant Farm, a "how-to, table-top tape [made] in a kitchen in SF."[78] The long-haired, labcoat-clad Schreier demonstrates the making of inflatables in 'real-time' and using "anything we find in the kitchen here."[79] This includes: a "pocket knife" (for cutting the plastic); a "trash bag;"[80] and; "mother's kitchen iron."[81]

For the purposes of this thesis, two types of film footage are identified: first, the instructionally-focused footage and, second, footage related to the occupation of inflatables. Two particular scenes in 'Inflatables Illustrated' reinforce the instructional focus of the footage. In the first scene, Schreier is joining smaller plastic sheets together for use in a larger inflatable (Figure 3.12). Focus is on two different "methods" and materials for sealing plastic sheets together as part of the inflatable construction technique.[82] Schreier's ironing-seaming technique involves heat-seaming plastic with another material surrounding the pieces, in order to prevent the plastic from being damaged by the heat of the iron. This second material is either Teflon sourced from a plastics supplier or aluminium kitchen foil. In the second instructionally-focused scene, Schreier's "geometry lesson,"[83] the focus is also on information delivery: specifically, how to create a tetrahedral pillow from a flat rectangular panel. Schreier demonstrates this technique using a piece of folded paper and a geometry diagram affixed to a wall (Figure 3.11). The instructionally-focused footage appears both informative and humorous, particularly with Schreier in his science lab coat operating 'mother's kitchen iron' (Figure 3.12).
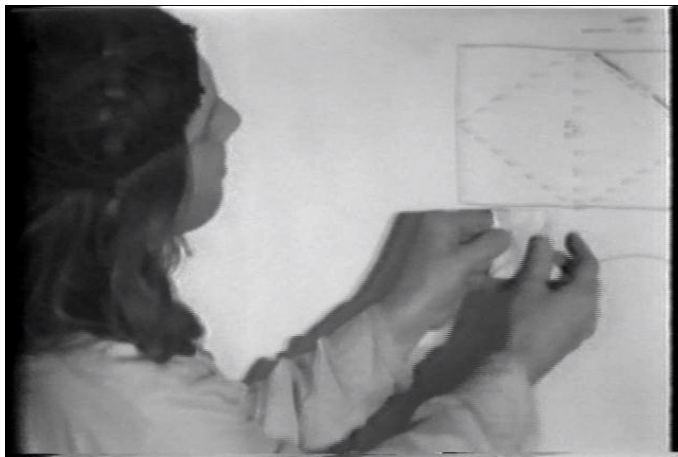
Figure 3.11: Screen shot of Schreier's 'Geometry Lesson' within 'Inflatables Illustrated.'

Figure 3.12: Screen shot of Schreier's ironing-seaming demonstration within 'Inflatables Illustrated,' in which he joins together two pieces of a domestic plastic bag using the heat of an iron.

It is insightful to compare the instructional focus of both *Inflatocookbook* and 'Inflatables Illustrated' as its video companion. The instructional information for making inflatables is conveyed through the step-by-step graphic and verbal instructions of *Inflatocookbook*, and the footage and audio commentary of

Schreier's geometry 'lessons'[84] in 'Inflatables Illustrated.' Both manuals contain in varying degrees information about inflatable geometry and form. *Inflatocookbook* contains some patterns and templates for making inflatables, whereas 'Inflatables Illustrated' contains only a wall shot of an inflatable geometric drawing, which is used as a visual backdrop to Schreier's geometry lesson. Both hard copy and video manuals convey techniques for working with and forming plastic, inflatable joints and seams. An impression may be gained that the audience can copy the techniques and some of the project patterns in order to recreate the inflatable forms as they appear in the manuals. However, most projects are not fully described by comprehensive patterns or architectural drawings, so it would be difficult to fully recreate and copy complete inflatable forms without significant reader input.

The manuals also convey a sense that there will always be some indeterminacy associated with creating and occupying an inflatable. Both manuals suggest that inflatables can be occupied in open-ended ways outside of the "xyz planes"[85] which characterise conventional rooms and buildings. The experimental aspects associated with inflatable occupation are reinforced by images of occupied inflatables in both *Inflatocookbook* and 'Inflatables Illustrated.' Thus, the second type of footage within 'Inflatables Illustrated' relates to the occupation of inflatables, and includes film footage of constructed, full-scale inflatables which are occupied by Ant Farm members and other, unidentified adults and children. Although these inflatables are full-scale, there is a mobility of scales and functions described in these scenes. In several scenes, Michels uses smaller inflatable elements and components within inflatable interiors to re-imagine potential inhabitations of differently scaled interiors. These scenes suggest that there is the potential to reimagine inflatable spaces at different scales and in different scenarios. Thus, a small fan ventilation tunnel is reimagined as a potentially-inhabitable and larger-scale beam-bridge construction, using toy soldiers to replicate human scale (Figure 3.13).[86] In an earlier scene, Schreier demonstrates how to make a small inflatable pillow, inviting the camera inside to suggest the experience of occupying a full-scale inflatable.[87] Both of these aforementioned scenes fade into other film footage of actual, occupied inflatable interiors. Like *Inflatocookbook,* 'Inflatables Illustrated' gives the impression that the function and occupation of inflatables may be indeterminate, and that being inside an actual inflatable may prompt consideration of other potential inflatables, scales and functions. This idea is reinforced by another scene of 'Inflatables Illustrated,' when Schreier suggests that inflatables are not restricted by programme or function per se.[88] He notes that "you can have a classroom, or you can have a bedroom, or anything."[89]

Figure 3.13: Michels uses a vent tunnel to imagine a large-scale inflatable beam at a different scale, show on the right 'occupied' by toy soldiers.

Figure 3.14: Interior screen shot of a large-scale inflatable.

Figure 3.15: Interior screen shot of boy inside a small tetrahedral inflatable, possibly sited in a sports hall.

Figure 3.16: Children climbing on top of an inflatable sited in an unidentifiable landscape.

Three particular scenes in 'Inflatables Illustrated' convey a sense that the physical form of an inflatable is related to its occupation. The first scene involves footage of people on top of, and within, an inflatable. The entire inflatable is not portrayed at any one time (Figure 3.14), and we obtain only a partial sense of its qualities.[90] The size of the inflatable is also such that it inflates very slowly, with fabric billowing in apparent synchronicity with the ambient music that accompanies the footage. Inside the inflatable, an occupant pulls sections of the inflatable fabric envelope inwards,[91] creating a visual image that recalls a still in the hard-copy *Inflatocookbook*.[92] The dynamic relation between moving bodies and inflatable form is played out in another scene involving a boy inside a child-scaled tetrahedral inflatable (Figure 3.15). In this example, the skin of the inflatable is taut and thus does not flow and shift in the manner of the aforementioned, large-scale inflatable.[93] The exterior of inflatable envelopes can also be occupied. This external occupation is evident in another scene showing close-up footage of children climbing over an inflatable (Figure 3.16).[94] The audio-visual format of the 'Inflatables Illustrated' manual conveys a greater sense of dynamic interaction between human bodies and inflatable structures than does the hard-copy manual. This is also because *Inflatocookbook* has less visual imagery and photographs showing humans interacting with, and working, actual materials in project sites. All the images within 'Inflatables Illustrated' involve humans interacting with and encountering materials in situ, including Ant Farm members making inflatable components and small inflatable pillows, alongside other occupants.

Scott refers to Ant Farm's use of the "do-it-yourself video"[95] as a method of challenging and 'interrupting' new digital techniques. The film editing techniques used within 'Inflatables Illustrated' could be understood as a form of 'interruption' or disruption of the didactic information-delivery format associated with some DIY manuals.[96] The scene-splicing and intermixing of different footage within the video also reinforces a sense of experimentation and architectural discovery. One example of scene-splicing relates to Schreier's aforementioned ironing-seaming scene which appears early within the 'Inflatables Illustrated' video. The filming cuts abruptly, and without explanation, from Schreier's ironing demonstration to a scene inside an unidentified inflatable.[97] The scene splicing techniques also recall the cut-and-paste graphic techniques found within the hard-copy *Inflatocookbook* manual.
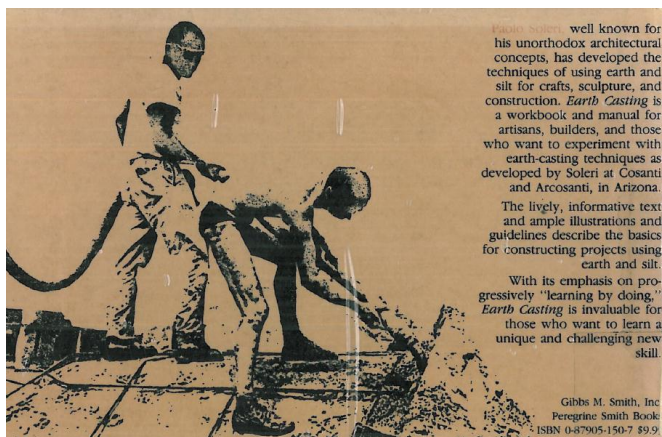
Figure 3.17: The rear cover of Soleri and Davis' *Earth Casting* manual or 'workbook.' Note the full title of the text is Paolo Soleri's *Earth Casting: for Sculpture, Models and Construction*.
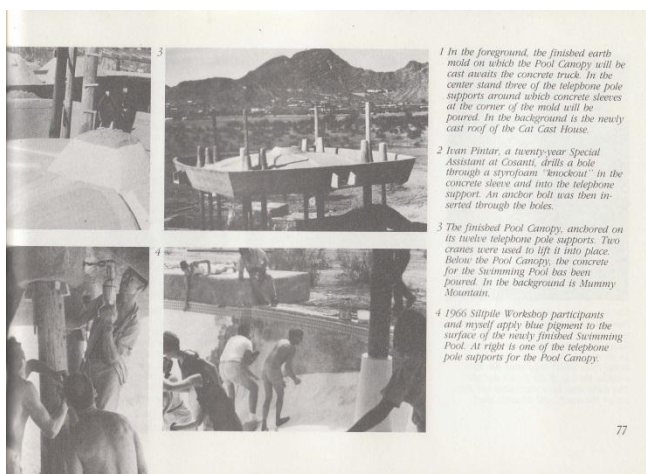
Figure 3.18: A page from *Earth Casting*, outlining the steps involved in the construction of a particular building—the 1966 Pool Canopy—at the Cosanti complex, Arizona.

Earth Casting

Soleri and Davis' 1984 DIY manual, *Paolo Soleri's Earth Casting: for Sculpture, Models and Construction*[98]—otherwise referred to as *Earth Casting* in the present thesis—is a small horizontal booklet (Figure 3.17). It is printed with black and white text and diagrams, although there are also images of coloured concrete surfaces on the reverse of the front and rear covers. Throughout the manual, the term "earth-casting"[99] generally refers to a technique for using soil to create a form or mould

for casting concrete and other materials that form in a liquid state (including ceramics, plaster, aluminium and bronze). Other similar terms are used throughout the manual and relate to the particularities of materials and earth-casting techniques, including: "silt-casting;"[100] "sand-casting,"[101] and; "pre-silt-cast."[102] The *Earth Casting* manual is primarily based on the experimental earth-casting techniques and projects developed at the Cosanti and Arcosanti sites in Arizona; projects also include smaller artefacts, like the ceramic and bronze windbells, and larger architectural constructions.

Although it was published in 1984, *Earth Casting* is based on projects mostly constructed in the 1960s and 1970s. It includes a mixture of: written text, diagrams and photographs of buildings, other built objects and artefacts, and construction techniques that include images of individuals working with and forming materials. Most of the photographs and descriptions relate to structures and artefacts constructed at Cosanti as part of the Cosanti Foundation,[103] Soleri's first experimental desert community in Arizona (Figure 3.18). The Cosanti projects were constructed from the 1950s to the 1960s. In the latter section of the manual, there is also reference to some larger, precast constructions from Arcosanti,[104] the follow-on project still under development in Arizona.

The manual begins with a brief biography of Soleri and an overview of his practice.[105] *Earth Casting* is positioned by Soleri as "a workbook for anyone who wants to learn to use the earth-casting technique as I have developed it over the past 25 or so years."[106] On the rear cover, *Earth Casting* is also described as "a workbook and manual for artisans, builders, and those who want to experiment with earth-casting techniques as developed by Soleri."[107] The introductory chapter suggests that the earth-cast buildings at Cosanti did not require complex knowledge or skills, because they were built using: "rough sketches, cheap and donated materials, and volunteer labour."[108] Although the text is described as a 'workbook' rather than as a DIY manual per se, its format and instructional focus reflects the DIY sensibility of other manuals, including *Inflatocookbook* and 'Inflatables Illustrated.' For example, some projects in *Earth Casting* are described sequentially via a "step-by-step process."[109] The back cover also makes reference to the text's "emphasis on progressively 'learning by doing';"[110] reflecting the educational and 'hands-on' foci of the DIY manual genre. Although there are images of buildings, the manual concentrates on communicating material tendencies, techniques and the somewhat experimental earth-casting processes to its readership. The silt-cast projects are never described via reproducible patterns, complete plans or elevations. According to Soleri, the photographs and descriptions of projects provide a vehicle for discussing issues such as "the versatility of the technique"[111] of earth-casting. Thus, projects are not positioned as complete architectural projects to be reproduced.[112] It could be argued that the manual encourages readers to experiment with earth-casting techniques by developing their own design projects.

Earth Casting has six chapters which explore issues associated with earth-casting, starting with small artefacts, and progressing to larger, more complex building structures. Chapter 1, titled 'How to Use This Book,' is a summary of the text, silt-casting techniques and example projects. Chapter 2 explores the nature of 'Silt As A Craft Medium,' and includes both detailed and generic information about silt's properties and behaviours. The subsequent chapters describe specific examples of silt-cast objects and structures of increasing scale and complexity, including the construction of the large precast Arcosanti Foundry Apse, commenced in 1972.[113]
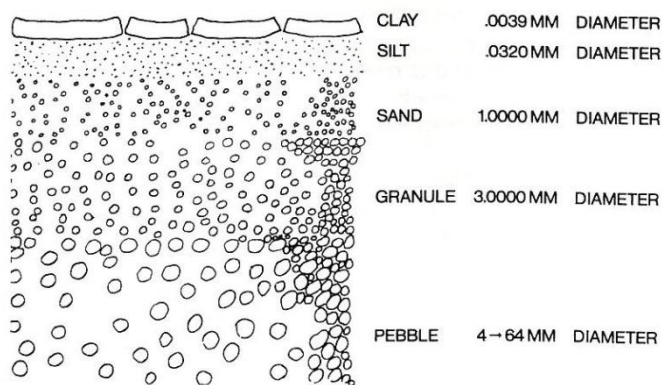
Figure 3.19: A diagram from the 'Silt As A Craft Medium' chapter in *Earth Casting*, indicates a 'typical' layering of sedimentary deposits.

Similar to the *Inflatocookbook* and 'Inflatables Illustrated' manuals, *Earth Casting* also indicates that there is a significant focus on materials within the DIY mode. In chapter 2, 'Silt As A Craft Medium,' materials are described in terms of how they may 'behave' during the casting and moulding processes. This chapter deals specifically with silt as a material, and is the first chapter of the manual dealing with silt in detail. Soleri begins this chapter with a micro-analysis of silt molecules and properties, including a diagram describing the constitution and sizes of silt, sand and clay particular matter (Figure 3.19).[114] Silt is positioned as instrumental to the earth-casting techniques, although there is some discussion of silt's materiality and own self-organisational capacities. Silt is thus classified and positioned not only as a material, but as a material that can be easily worked and manipulated using the casting and forming process described in *Earth Casting*.[115] Soleri notes in relation to the initial experiments at Cosanti that "[e]xperimentation proved the usefulness of earth and silt as molding mediums for many types of craft projects [...] making forms on which to cast concrete was the logical next step in the process."[116] The later point highlights experimentation with earth and soil as a defining feature of the earth-casting processes.

Later chapters in the *Earth Casting* manual describe other materials including sand, ceramics, clay, plaster and concrete, although not with the same degree of detail or emphasis that is placed on silt matter. In these later chapters, the focus is on the way materials 'perform' during the moulding and forming processes. For example, in chapter 5—'Sand-Cast Metal'—sand's material qualities are only

briefly discussed in a small paragraph about "synthetic, industrial foundry sand."[117] This chapter concentrates on foundry processes, moulding and metal-casting techniques. With respect to using sand for forming casting moulds, the process generally involves the compaction and shaping of sand inside a box, which is then "ready to receive the metal."[118] In the following chapter 6, 'Casting Concrete on Silt and Soil,' there is also no direct analysis of, or engagement with, concrete as a composite material, nor its molecular constitution and properties.

Unlike *Inflatocookbook* and *'Inflatables Illustrated,'* there are no images of occupied buildings in the manual to speak of. *Earth Casting* contains photos related to the construction and making of specific aspects of buildings. While details and elements of Soleri's architectural projects can be seen in these photographs, there are also no complete architectural drawings or photographic documentation of entire buildings. The few diagrams relating to the Cosanti and Arcosanti buildings draw attention to particular issues associated with building construction, such as the construction sequences and formwork used during the making of the Cosanti Ceramics Apse;[119] directing the reader's attention to issues related to materials and techniques. There are many images of individuals working on building projects at Cosanti and Arcosanti (Figure 3.20). The accompanying discourse is focused on details and issues encountered during the earth-casting processes, particularly material tendencies.[120]

Figure 3.20: A photograph of the hands-on approach to materials and forms advocated within the *Earth Casting* manual.

In relation to the working of materials, the introductory chapter, titled 'How To Use This Book,' establishes a sense of Soleri's understanding of the artisan as a craftsperson who has developed expertise with particular materials and techniques.[121] The manual also encourages its readers to experiment with real materials and tools through direct bodily contact: in Soleri and Davis' own words, experiencing "the "feel" of damp silt in your hands [...] "knowing" when the silt is damp enough for a given purpose."[122] Direct encounters with materials are positioned as a mode of thinking and 'knowing' through bodily action. Nevertheless, the manual also recommends exercising caution with more challenging procedures such as large-scale structures and complicated metallurgy. In this sense, the experimentation encouraged within *Earth Casting* is tempered by caution related to loadbearing structures and material handling. Unlike *Inflatocookbook* and 'Inflatables Illustrated,' there is little

discussion of the experimental social and spatial qualities associated with earth-cast architecture, and minimal indication of how one occupies or inhabits these buildings. However, the 'Glossary' section contains a small written statement about the alternative philosophical and planning concepts underpinning the Cosanti and Arcosanti complexes (upon which the *Earth Casting* manual is based).[123] The latter point reinforces the association of earth-casting processes and buildings with Soleri's experimental ideology and life philosophies.

3.3   Technological and material experimentation and the DIY manual

In the following paragraphs, three key issues of 'DIY architecture' will be distilled from Ant Farm's and Soleri's manuals that relate to experimentation: first, experimentation with technologies and materials; second, experimentation with educational approaches and pedagogies; and third, experimentation with social formations and groupings. Although these key issues are contingent and particular to the manuals themselves, the case can be made that they are defining features of the broader countercultural discourse as well. The first issue relates to the experimental, DIY approach to techniques and materials within the countercultural milieu, including technological and material repurposing. The second issue relates to the comprehensive, experimental educational ethos of the counterculture and the attendant role of the DIY manual. The third issue relates to the experimental approach to social formations, including individual and collective social identities, experienced through the mode of DIY architecture.

As discussed in chapter 2, the early post-war discourse on DIY in North America identifies tensions between the DIY approach to projects, and traditional artisanal and craft-based approaches. Much of this tension relates to the different techniques and tools deployed in DIY projects, and the degree to which these techniques fostered an awareness of material capacities. On the one hand, DIY products and kits were seen to debase traditional craft-based techniques and tools; on the other hand, DIY kits, products and manuals were seen to encourage and extend craft-making, construction, and an awareness of material capacities to a broader layperson readership. To assist in the dissemination of knowledge and skill, Starr argued that traditional artisanal techniques and materials could be adapted to suit an amateur audience with minimal tools and resources.[124] In the discourse on DIY in the counterculture, the focus was not on the tension between DIY and 'artisanal' approaches per se, but shifted to the promotion of technologies and techniques—artisanal or otherwise—that could support a holistic, countercultural lifestyle. Technology was evaluated on the basis of whether or not it was easy to deploy by countercultural individuals and communities.[125] Manuals such as the *WEC* incorporated information on both low and high-end technology; in these manuals, personal calculators and computers could be positioned alongside hand-cut timber, "[f]erro cement and plastic foam."[126] The term "AT" or "Appropriate Technology" was used by some counterculturalists to describe technologies that were also

seen to be environmentally-appropriate.[127] Kirk argues that countercultural DIY manuals such as *WEC* were crucial in introducing AT to a wider domestic audience, due specifically to the popularity of the DIY movement in North America.[128]

In practical terms, counterculturalists often deployed any and all available technologies using an experimental ethos. 'Dropper' Albin Wagner, an inhabitant of the short-lived, though well-known Drop City commune, expressed his personal views about the adoption of technologies within the commune: "[w]e have no integrity. We borrow, copy, steal any and all ideas and things. We use everything. We take things, we make things, we give things."[129] For counterculturalists like Wagner, all technologies could be redeployed in the service of larger life goals and needs. Countercultural theorist Fred Turner makes a similar point about the intermixing of low and high technologies. Turner argues that counterculturalists were focused on small-scale technologies (either low or high) that could be deployed by individual do-it-yourselfers.[130] According to Turner, "the old hammer-and-saw-wielding, do-it-yourself ethos of the back-to-the-landers had been fused to the craft ethic of computer programmers."[131] The technological 'bricolage' and experimentation evident in the counterculture inflects many of the DIY manuals of the time, including Ant Farm's and Soleri's own manuals.

Figure 3.21: An image of Ant Farm's July 4, 1974 'Media Burn' performance invokes their experimentation with different media and technologies.

Figure 3.22: Interior of The House of the Century, with the built-in television over the sink visible to the left of the photo.

For Scott, Ant Farm's experimentation with technologies, including inflatable technologies, is a key aspect of their architectural practice that can be related to the countercultural milieu in which they worked.[132] Scott also argues that Ant Farm appropriated and redeployed technologies in unexpected project contexts. Ant Farm's practice involved a wide spectrum of media including performance art,[133] installations,[134] buildings,[135] exhibitions[136] and video.[137] For one of their art projects promoted during a visit to Australia, they made hats from yeast and petroleum by-products, which caused the hats to change colour over time.[138] Ant Farm's experimentation with, and across, different media—particularly electronic media—has led Scott to characterise their practice as "[i]ntermedia."[139] The 'intermedia' approach to mixing different technologies was not only used in different projects, but within individual projects. A case in point is the use of video and print documentation of projects, which in turn became projects in their own right. The built inflatable environments provided the base photographic and video material for the subsequent publication projects, *Inflatocookbook* and the *Inflatables Illustrated* video. Similarly, local press footage of the 1975 *Media Burn* performance (Figure 3.21) became incorporated into Ant Farm's subsequent *Media Burn* video.[140] Video also became an important aspect of Ant Farm's art and architectural projects. Ant Farm video-documented many of their built projects and created a series of films, including the 'Inflatables Illustrated' video manual. Importantly, Scott also associates Ant Farm's hands-on, audio-visual experimentation with DIY. Scott refers to Ant Farm's use of video as a critical tool that was redeployed to challenge the dominance and power of mainstream television media. In Scott's words, "do-it-yourself video also served as a tool to engage or interrupt new techniques of power and control."[141]

In relation to technological and material experimentation within their architectural practice, Ant Farm's speculative building projects often incorporated multimedia components within the building envelope.[142] Audio visual technology also featured prominently in the experimental built residential project, The House of the Century (1971-1973). The project featured a built-in television over the distinctively shaped sink, looking towards the adjacent lake (Figure 3.22).[143] Aside from the incorporation of electronic media, The House of the Century involved many atypical and experimental construction techniques, which were in many cases necessary because of the unusual building shape. No local building contractors in Houston would bid on the project, forcing Ant Farm to build the project themselves as *Nationwide Builders*, with collaborator Richard Jost.[144]
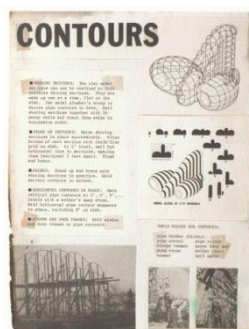
Figure 3.23: Images and diagrams of the construction logic for The House of the Century, which was designed and built by Ant Farm with Richard Jost.

Without digital fabrication technologies to assist in the complex formal modelling of The House of the Century, Ant Farm used a technique common to boat building, and created a timber architectural model with mapped contours (Figure 3.23).[145] According to Ant Farm, there were several problems associated with the experimental house form and its construction. Schreier jokes that "[i]t was so hot you couldn't wear your clothes in the house."[146] To make matters worse, the "windows didn't open."[147] In 1985, the waterproofing of the house created problems associated with the Brazos river flood.[148] The House of the Century project is nevertheless important within Ant Farm's oeuvre, because it was cited in the P/A Design awards for the experimental and handcrafted processes associated with its production.[149] This citation reinforces the idea that Ant Farm's experiments with technologies and materials were a significant aspect of their practice, even when the experiment may have produced somewhat negative outcomes.[150]

Ant Farm deployed different experimental materials in their art and architectural projects, and many of these materials were not within the usual remit of building and architectural practice. One of the distinctive elements of their unbuilt proposal for the Expo '70 Osaka Pavilion—part of the 1970s Osaka World's Fair—was the incorporation of LSD into the conception of the architectural experience. Ant Farm collaborated with Dr Harry Herman who was a controversial psychiatrist licensed at the time to supply LSD, marijuana, and mescaline in Austin, Texas. Their resulting "psychedelic non-pavilion" was intended to create an environmental setting for psychedelic studies.[151] Scott argues that Ant Farm's interest in psychedelic effects was to express itself in projects involving unpredictable shifting forms and disorientating effects, including projects with video projection components: components also incorporated into the inflatables and other experimental temporary event structures. Importantly, these experimental projects featured frequently throughout their *Inflatocookbook* DIY manual,[152] further reinforcing the connection between their technological and material experimentation, and their DIY approach. In accordance with the countercultural practice of redeploying experimental technologies to support alternative lifestyles, Ant Farm also experimented with new media technologies in architectural projects—in this case to support a critically-focused architectural practice.[153] This experimentation extended to the project content and video format of their DIY manual 'Inflatables Illustrated.'
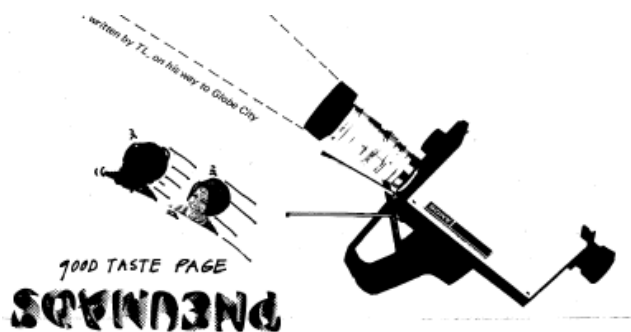
Figure 3.24: Detail image of Ant Farm's Sony 'Portapack' video camera, as featured within the *Inflatocookbook*.

The main project type featured in *Inflatocookbook* and 'Inflatables Illustrated' is the air-inflated structure or inflatable. Prior to Ant Farm's inflatable experiments, inflatables had already been associated with alternative architecture and experimental activities in Europe.[154] The experimental social effects associated with inflatables are reinforced in the 1976 *Radical Technology* publication, which referred to inflatables as "people-mixers."[155] While Ant Farm's practices have generally been connected to experimental technologies and materials, including the repurposing of technology, there has been limited detailed interrogation of their experimental approaches to materials and technologies within the *Inflatocookbook* and 'Inflatables Illustrated.'[156] Although Ant Farm adopted an experimental approach to inflatable materials, techniques and forms, their approaches were often based on readily available technology rather than specialised tools and equipment. The inflatables described within Ant Farm's DIY manuals can (in theory) be created from kitchen plastic bags,[157] aluminium foil, clothes irons and ladies hair dryers,[158] and, of course, the electricity used to power the blower.[159] Thus, with an *Inflatocookbook* on the bench top, the standard American kitchen could become a workshop for the potential creation of experimental inflatable pillows and spaces.
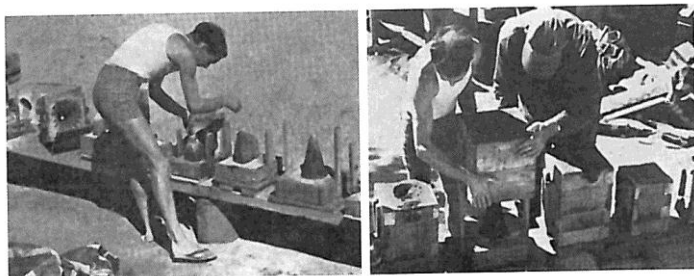
Figure 3.25: Soleri casting bronze bells, which are sold to help fund the Cosanti foundation.

According to Kirk, Soleri's Arcosanti project also belongs to a lineage of experimental "laboratories for countercultural shelter and appropriate domestic technology."[160] Similar to Ant Farm, Soleri also experimented with techniques and materials outside of the traditional remit of architectural practice. Soleri's experiments with making ceramic and bronze earth-cast windbells (Figure 3.25) are cited as the predecessor for the larger architectural projects, leading Soleri to state: "what had been a pot became a roof."[161] Rather than experimenting with a range of different media in the manner of Ant Farm, Soleri's technological experiments were focused around soil and earth-casting at different object and building scales.[162] Some of the buildings at Cosanti and Arcosanti did, however, incorporate other found and repurposed objects during the construction process.[163] The techniques for earth-casting discussed in the *Earth Casting* manual generally involve low technology and cheaply available materials which could be easily worked by hand and with simple tools.[164] The investment in simple technology and tools resonates with the earlier point made in relation to the counterculture: that counterculturalists embraced small-scale technologies that could be easily worked by individuals and small collectives.[165] Counterculturalists also repurposed and redeployed technology in other contexts. A range of materials, tools and techniques are described in *Earth Casting*, beginning with the hand-casting of the small artefacts, including the architectural models, bells and pots which are described in the early chapters of

the manual. The techniques and methods associated with the larger building projects follow on from the artefact-focused chapters. As previously discussed, there are no conventional project plans for the architectural projects, such that the focus is always on techniques and materials rather than the prescription of particular building forms.[166] Whilst *Earth Casting* outlines information about materials and techniques, it also encourages readers to experiment, particularly with direct material encounters. In Soleri and Davis' own words, "[y]ou must experience them for yourself."[167]

3.4 Comprehensive, experimental education and the DIY manual

It is important to contextualise Ant Farm's and Soleri's practices and manuals with respect to the countercultural DIY discourse on comprehensive, experimental educational and the DIY manual genre. It is also important to note that there has been minimal examination of Ant Farm's and Soleri's DIY manuals with respect to countercultural education.[168] Thus, one of the intentions of this chapter is to examine and articulate the educational aspects of their DIY manuals. Chapter 2 of the present thesis highlighted the pivotal role of the DIY manual as an educational mechanism for disseminating ideas and practical information to the countercultural audience. Manuals including *WEC*, *Domebook One*, *Domebook Two*,[169] *Shelter* and *Farallones Scrapbook*, disseminated and promoted "world-changing tools."[170] Even though the format of the *WEC* manual was originally based on a commercial retail catalogue, this retail format was repurposed and redeployed for alternative educational purposes. The *WEC* was self-described as a mechanism for spreading "comprehensive education"[171] about different phenomena in order to encourage a holistic conception of life. According to the *WEC*, counterculturalists saw 'comprehensive education' as different from specialised, mainstream educational approaches because it reinforced the connection and flow between different aspects of life. The comprehensive approach to learning was conveyed via the mix and diversity of practical and philosophical education within countercultural manuals. A case in point is the *Shelter* manual, which was intended to provide educational and lifestyle information, alongside practical building techniques, to its receptive audience. *Shelter*'s self-declared purpose was "to provide a wide range of information on hand-built housing and the building crafts and to maintain a network of people interested in building and shelter."[172] Similarly, *Farallones Scrapbook* was created to encourage an alternative and more collaborative educational approach to school environments. This manual encouraged teachers and students to collaboratively make their own educational spaces, as part of a democratic educational spirit.[173] All the aforementioned manuals had an explicit educational intention: to spread practical, philosophical and life knowledge to like-minded readers. Importantly, the diverse, interwoven categories of information within these countercultural manuals could be understood as part the 'comprehensive' educational approach outlined in the *WEC* as focused on "whole design."[174]

Both the work and the DIY manuals of Ant Farm and Soleri can be understood with respect to the countercultural educational ethos of the 1960s and 1970s. Ant Farm participated in many educational events, which acted as an extension of the 'radical pedagogy'[175] promoted in their own DIY manuals. One such educational event was the provocative 'Air Emergency' Berkeley 'teach-in' at the University of California, conducted as part of the Earth Day performance.[176] Ant Farm's Berkeley teach-in features in both editions of their *Inflatocookbook* DIY manual.[177] In the context of the counterculture, the term 'teach-in' referred to educational events and was associated with the influential countercultural figure, Marshall McLuhan.[178] For McLuhan, the teach-in invoked a participatory and collective form of education. Ant Farm's Berkeley teach-in involved the performance of a fictitious "air failure" disaster, in which the participants took shelter in Ant Farm's 'Clean Air Pod (CAP 1500)' inflatable prop.[179] Ant Farm used techniques of performance, audience participation, costume and spatial props, in order to explore the problem of air pollution with the student participants. Ant Farm members dressed in gas masks and white lab coats, and affixed yellow circle air 'sensor' dots to audience members' heads.

Scott contextualises Ant Farm's involvement in architectural and countercultural education as part of a broader countercultural ambition, which she refers to as the "radicalization of pedagogy."[180] Scott argues that Ant Farm's radical pedagogical agenda was part of their critique of the architectural professional through "a disavowal of professional and pedagogical norms."[181] Ant Farm were directly connected to, and influenced by, *WEC's* educational agenda and the format of the *WEC* publication itself.[182] According to Scott, Ant Farm met with *WEC* founder Brand and with Kahn, editor of the *Domebooks*, in 1969—just prior to the publication of Ant Farm's first edition of *Inflatocookbook*.[183] Brand also commissioned Ant Farm to create an experimental inflatable structure to use as a temporary shelter for the *WEC* supplement production in the Saline Desert, California, 1970.[184] Thus, for Scott, projects like 'Truckin University' (as featured in the *Inflatocookbook*) can be considered as a form of countercultural pedagogy: "Ant Farm's proposed educational system—like the *Whole Earth Catalog* before it, which was explicitly referenced as a precedent—extended in relevance to all moments of a person's existence."[185] Importantly for Scott, this educational agenda was also interconnected with their "do-it-yourself ethos."[186]

The first 1970 loose-leaf edition of Ant Farm's *Inflatocookbook* includes a statement about both the educational and experimental intention of the manual. According to Ant Farm, the educational purpose of the manual was to "gather information and skills learned in process and organize it for easy access."[187] Ant Farm also positions the manual as "a catalyst for our thought process and further development."[188] Invoking the spirit of the countercultural teach-in, the manual was intended not only to disseminate information, but to prompt further thought and action amongst its readership. In another example—the 'Ant Farm Hy-Tek' section of the 'Advertisement' page (available in the 1970 *Inflatocookbook* edition*)*—Ant Farm states that: "[w]e appreciate contact with people—printed words,

written words, slides, photos, movies, videos, talking visiting [...] please reprint, redesign, and manufacture yourself anything here, and tell us what happens. We'll help with information, components, plans where available."[189]

The format of the first edition of *Inflatocookbook* can also be understood in terms of Ant Farm's educational agenda. The 1970 *Inflatocookbook* was loose-leaf in format so the pages could (theoretically) be updated and expanded as part of the educational 'feedback loop,'[190] which was to involve feedback from readers in subsequent *Inflatocookbook* editions. *Inflatocookbook* also contained philosophical and conceptual statements about the experimental nature of inflatable architecture, particularly its life-liberating qualities.[191] In this sense, *Inflatocookbook* was similar to the 'comprehensive' educational format of countercultural manuals—such as the *WEC* and *Shelter*—that mixed practical and technical information with philosophy and ideology. Reinforcing the flow and interconnection between thought and action within countercultural education, Ant Farm member Lord states that the 1960s was a time that involved: "a complete religion, a philosophy, and a set of tools to realise."[192] Ant Farm's stated intention for *Inflatocookbook* was to communicate a basic methodology or technique for creating shelter that could be expanded and developed by readers. In Ant Farm's words, it is "[a] beginning, a method so simple we can share it at will."[193] This latter point underscores the educational purpose of their DIY architecture manuals.

Like Ant Farm, Soleri was (and is still) actively involved in education and research projects. His two built projects in the Arizona desert—the Cosanti (1956-1974)[194] and the ongoing Arcosanti (1969+)[195] complexes—reinforce the connection between Soleri's architectural projects, experimental education and research. These architectural complexes are explicitly described as research experiments[196] or experimental laboratories[197] connected to Soleri's own notion of 'arcology;' his ecological and architectural vision of a future human society.[198] Soleri specifically established the not-for-profit *Cosanti Foundation* as a research and educational platform.[199] As Cosanti was intended as a research foundation, the intention was to involve, and collaborate with, different people as part of the project's evolution. Thus the creation of the Cosanti complex involved collaboration with various individuals, including "students, apprentices, scholars, teachers, instructors, retired professors, members of the performing arts, artists and craftsmen."[200] Many of the Cosanti buildings were constructed with the assistance of architecture students who participated in the summer Siltpile Workshops between 1964 and 1974.[201] For Soleri, the architectural qualities of Cosanti (and Arcosanti) are directly connected to the input of the different student groups. He suggests that the involvement of different student groups resulted in each Cosanti building having "its own unique character and detailing."[202]

Soleri published many texts to disseminate his ideologies and speculative architecture, including his philosophically-focused and text-based *Technology and Cosmogenesis* (1985).[203] Like Ant Farm, Soleri

also published his own DIY manual. The *Earth Casting* "workbook"[204] begins with an explicit statement about its educational purpose and its anticipated amateur audience.[205] *Earth Casting* was to provide readers with information relating to the materials, techniques and processes involved in earth-casting projects. It contains pragmatic information about soil and casting techniques, which, in the case of the building techniques, are illustrated using detailed images and descriptions of particular aspects of the Cosanti and Arcosanti structures. In the manner of the *WEC* and other countercultural publications, the pragmatic is also mixed with the philosophical—a defining characteristic of the countercultural 'comprehensive' educational approach. Thus *Earth Casting* also contains a small summary of Soleri's philosophical conceptions of the earth-cast complexes at Cosanti and Arcosanti, including his philosophical notion of "arcology."[206] Yet unlike the *WEC* and *Shelter,* the intermixing of pragmatic and philosophical information happens within the rear 'Glossary' of *Earth Casting*, rather than throughout the entire manual.[207] Nevertheless, *Earth Casting* implies that significant reader input and participation is required to develop craft and architectural projects. This is because the workbook doesn't prescribe the overall form or patterns for projects, but rather provides only "lists of possible projects that can be done using the information in those chapters."[208] Instead of focusing on complete architectural project and overall forms, each chapter prompts the readers to consider a "specific material" and "methods."[209]

In summary, Ant Farm's and Soleri's work and DIY manuals can be connected to the broader North American countercultural context of the 1960s and 1970s and its alternative educational agenda, characterised by a comprehensive approach to education. Both architects participated in educational events and were directly involved in universities and architectural education. Both architects created their own DIY architecture manuals based on their own experimental research with materials, techniques, projects and lifestyles. These manuals were positioned (by their architect-authors) as educational platforms for disseminating experimental tools, techniques, projects and philosophies to its readers. Equipped with sufficient tools and information, the readers were, in theory, free to act, make, create and occupy their own DIY artefacts, buildings and worlds.

Thus far, two key issues associated with experimentation have been distilled from the DIY architecture manuals of Ant Farm and Soleri. The first issue is that the DIY manual can be understood as a mechanism for encouraging material and technological experimentation in support of alternative lifestyles and ideologies. The second issue is that the DIY manual can be considered as an extension of the comprehensive, experimental pedagogy of the counterculture, in the sense that it reinforced the flow and interconnection of different aspects of life. Countercultural DIY manuals—including those by Ant Farm and Soleri—can also be understood as prompts for the experimental uses of small-scale technologies and materials, with a discernible focus on the organisational capacities and potentialities of materials. Ant Farm and Soleri experimented with different technologies and media atypical of conventional architectural practice, and promoted this mode of experimentation within their DIY

architecture manuals. Thus different media ranging from inflated bags, video projection, boat building contour models, clay pots and windbells were explicitly connected to, and incorporated within, their respective architectural practices. The same DIY manuals were positioned as educational platforms for disseminating information and ideology to readers.[210]

For the purposes of the present thesis, the two key issues of 'technological and material experimentation,' and 'comprehensive, experimental education,' can be understood as defining features of the DIY mode of operation instantiated within Ant Farm's and Soleri's DIY manuals. While Ant Farm's and Soleri's DIY manuals include information about their previous experiments with different techniques and materials, readers were consistently encouraged to learn from these experiments and to develop their own experiments through direct encounters with materials and other occupants, both constituting an integral part of the DIY processes. Thus, the third key issue distilled from the DIY manuals of Ant Farm and Soleri is 'experimental social formations,' elaborated below.

3.5   Experimental social formations and the DIY manual

As discussed in chapter 2, the early post-war discourse on DIY in North America was strongly associated with the social aspirations of the nuclear family. Sparke argues that DIY encouraged consumerism within the nuclear family, [211] as illustrated in specific cases of do-it-yourselfers upgrading their homes to the standards of their peers and neighbours. In the DIY discourse associated with the counterculture of the 1960s and 1970s, DIY was paired with a radical social agenda which ironically critiqued mainstream society and its reliance on capitalism. With appropriate tools, knowledge and ideas, counterculturalists could provide for themselves and thus (theoretically) operate outside of capitalist production systems. Putting aside the merits and successes of this radical countercultural social agenda, a DIY sensibility was seen to foster alternative social and collective formations by providing information and tools to support alternative modes of living and self-production. Turner argues that countercultural publications such as the *WEC* promoted the idea that "the products of American science and industry—from camping gear to calculators—could be reconfigured as small-scale devices essential to individual collective transformation."[212]

The discourse surrounding Ant Farm's practice suggests that it could also be associated with radical social experimentation: a social experimentation that was directly encouraged in their DIY manuals. Ant Farm itself could be understood as an experimental social grouping: it was conceived as a collective practice, and has been referred to as an experimental "commune."[213] Schreier refers to Ant Farm being, at various times, "a commune, a collective, a collaborative."[214] To reinforce their collective and experimental nature, architectural theorists Simon Sadler and Michael Sorkin have both suggested that Ant Farm's organisational model was that of the "rock band" rather than that of a conventional

architectural practice.[215] Ant Farm also thought of themselves as an extended family: "[t]he extended family concept is at the core of an expanding ecological consciousness: by sharing food, resources, entertainment, clothes, the joy of children, we minimize the amount of resources used."[216] The Ant Farm family was radically different from the post-war nuclear family associated with the DIY discourse of the 1940s and 1950s; rather, it was part of an expanded network of like-minded, countercultural "nomads."[217] In 1970 and 1971, Ant Farm members shared meals and lived together in their studio in the manner of the countercultural communes—albeit in an urban rather than the rural setting typical of many communes of the time. The Southcoast Group, based in Houston, would also send some of its members to collaborate on specific Ant Farm projects for set periods. Similarly, Schrier cites The House of the Century project as an exemplification of Ant Farm's collective nature, as many people lived on site while the project was realised.[218]

Ant Farm were a design collective, not only in name but in the ethos embedded in their art and architecture. Projects such as the inflatable structures and 'Truckin' University'[219] depended significantly on group assemblage and occupation.[220] The readership of *Inflatocookbook* (and 'Inflatables Illustrated') could be thought of as an extension of the Ant Farm collective, in the sense that readers were encouraged to provide Ant Farm with feedback on their manuals and their own inflatable experiments. The 'Feeeeeeeeeeeedbaaaack....' section of the 1970 edition of *Inflatacookbook* requests its readers to send feedback to Ant Farm relating to a range of issues encountered during inflatable creation, including social experimentation (Figure 3.26). To prompt its readers, Ant Farm posed the question: "[h]ow did you work with people."[221] Ant Farmer members also directly participated in the design, construction and occupation of their inflatables[222] and it could be argued that Ant Farm saw themselves, as well as their audience, as part of the collective architectural experiment. To paraphrase from another countercultural publication, *Radical Technology*, the "[m]ost exciting use of inflatables (eg Action Space) is not as dwellings but as people-mixers and mind-blowers."[223]

Figure 3.26: The 'Feeeeeeeeeeeedbaaaack....' Section in the 1970 *Inflatocookbook.*

Figure 3.27: Screen shot of large inflatable interior within "Inflatables Illustrated.'

The experimental social effects associated with occupying inflatables are conveyed within *Inflatocookbook* and 'Inflatables Illustrated.' For Ant Farm, the unusual and dynamic spatial effects created through the combination of air and fabric 'unhinge' conventional social and functional uses of architecture. Ant Farm make the point that within an inflatable: "new dimensional space becomes more or less whatever people decide it is—a temple, a suffocation torture device, a pleasure dome. A conference, party, wedding, meeting, regular Saturday afternoon becomes a festival."[224] In *Inflatocookbook*, "freedom"[225] is associated with the inflatable spatial qualities. This is because Ant Farm believes that the inflatable can: "help to break down people's category walls about each other."[226] Importantly, the occupants of inflatable spaces are positioned as direct participants in the creation of the architecture, a participation that involves direct bodily encounters with fabric, air, tape, and each other.[227] Similar comments about the experimental functioning and spatial qualities of inflatables are made within 'Inflatables Illustrated.'[228] For Ant Farm, the social experimentation associated with inflatables has the capacity to inflect both collective and individual identity (Figure 3.27). The occupants and makers of the inflatables include the "nomad,"[229] who is referred to in *Inflatocookbook* as the producer of individual identity. For Ant Farm, nomadic social identity is directly linked to individual action and movement, particularly as nomads both seek and produce alternative spaces and opportunities outside of mainstream society. In Ant Farm's words, the countercultural nomad produces his identity via encounters and interactions in the world, thus producing not only experimental inflatable environments but social identities:

> Super kid of today finds no maxi-nutrients in existing props, so he hits the road. He takes
> what he needs from different places, producing only one thing: HIMSELF, a system
> resource center for creating tools to solve any problem. Where he is going is where he is
> at.[230]

In the case of Ant Farm's manuals, the DIY manual is crucial in associating experimental DIY architecture with experiments in individual and collective social formations. In the 'Rasberry Exercises' section of the 1970 *Inflatocookbook*, Ant Farm states: "[a]lternative enviroexperience creates new brain patternings."[231] 'Brain patternings' and thought are interconnected to bodily experience, DIY action and individual and social identities.
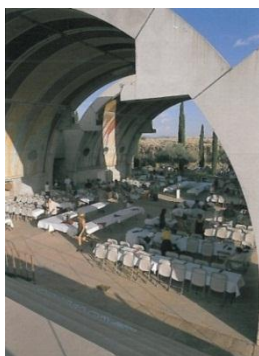
Figure 3.28: 'Italian night:' communal feasting at Arcosanti.

Figure 3.29: The Arcosanti concept model, as featured in the *Earth Casting* manual.

Soleri's Cosanti and Arcosanti built projects, alongside his un-built proposals for living environments, have also been positioned as experiments in alternative, collectively-orientated living. Cosanti was conceived and built as a site for experimenting with materials and techniques[232] as well as living patterns.[233] Experiments in communal living at Arcosanti, the follow-on project to Cosanti, include regular festivals, communal feasts,[234] and other similar events involving permanent and temporary residents (Figure 3.28). This has led to the characterisation of the Arcosanti residents as "Soleri's macro-family."[235] Like Ant Farm's countercultural family, Soleri's family involves an extended family model of like-minded people. Arcosanti is an ongoing experiment in communal living, as evidenced by the modification of both lifestyles and architectural environment in reaction to both perceived successes and failures in collective living there.[236] Soleri has also compared living at Arcosanti to living in a monastery, where like-minded individuals adhere to a collectively-focused social model.[237]

A collective sensibility also inflects the site planning of the Cosanti and Arcosanti complexes (Figure 3.29). Both are largely self-sufficient, with working and living occurring in the same complex. The planning models of both complexes differ significantly from the American suburban model.[238] While Ant Farm's approach to social and collective experimentation was open-ended, Soleri's approach to the collective and the social is structured and disciplined. Nevertheless, both Ant Farm's and Soleri's approaches involve conceptions of social models that were interconnected to architectural approaches, and alternative to the mainstream American social and environmental models of the time. Importantly (and like Ant Farm), Soleri's visions for an alternative urban society were discussed within his DIY manual. Although most of the *Earth Casting* text is dedicated to silt-casting materials and techniques, reference is also made to the earth-cast structures at the Cosanti and Arcosanti complexes as being part of a larger, alternative and collectively-focused vision for society.[239]

3.6   Summary: experimental materials, education and social formations in *Inflatocookbook,* 'Inflatables Illustrated,' and *Earth Casting*

In 1950s post-war North America, DIY was associated with mainstream society. DIY manuals were seen as vehicles for promoting and disseminating DIY tools, techniques and knowledge to support the post-war nuclear family in its creation and maintenance of the family home. A radical shift occurred in the 1960s and 1970s North America, whereby the DIY phenomenon and manual was reappropriated for an alternative social and countercultural agenda. The format of the mainstream retail catalogue and DIY manual was deployed by key countercultural figures including Steve Baer (*Dome Cookbook*), Stewart Brand (*WEC*), Lloyd Kahn (*Domebooks* and *Shelter*), and later, architects such as Ant Farm (*Inflatocookbook* and 'Inflatables Illustrated') and Soleri (*Earth Casting*). In countercultural hands, the DIY manual became a somewhat radicalised educational mechanism for promoting an alternative, experimental way of life (and building) to that found within mainstream American society.

The alternative lifestyles promoted in the manuals were to be supported by experimental uses of materials, technologies, architecture and environments. The countercultural DIY manual was based on, and encouraged, experimental encounters between people, materials, tools, technologies and architectures. A focus on DIY action and experimentation was also evident in Ant Farm's *Inflatocookbook* and 'Inflatables Illustrated,' and in Soleri and Davis' *Earth Casting*. Aside from promoting experimentation, Ant Farm's manuals were also graphic, typological and (in the case of the video manual) audio-visual experiments. While more conventional in its textual format, Soleri's manual was nevertheless focused on material and technological experiments based around silt. As is to be expected of all experiments, and as is evident in the discourse, there were both successes and problems associated with the experimental lifestyles of the counterculture and their attendant architectures. Nevertheless, the focus of this (and the previous) chapter is not on the success or failure of these experiments and the DIY architecture manuals per se, but rather on distilling and articulating a specific account of 'DIY architecture' in response to the initially poorly articulated accounts of DIY in the post-war discourse.

In the present chapter, reference was made to discourse surrounding the work and practices of Ant Farm and Soleri, and to the countercultural discourse on DIY and DIY manuals. Three key issues were distilled from Ant Farm's and Soleri's manuals relating to material, educational and social experimentation. These key issues could be seen to constitute an account of 'DIY architecture,' albeit an account that is contingent to the manuals themselves. Importantly, the material, educational and social experimentation invoked in the manuals was associated with experiments in DIY architecture, including Ant Farm's inflatables and Soleri's earth-cast buildings. Ant Farm's and Soleri's DIY manuals can be understood as educational platforms for disseminating and promoting these material and social

experiments, in order to encourage new modes of collective and individual thought, life and action. In spite of the minimal theorisation of DIY and its connection to the 'artisanal,' the DIY manuals examined in this thesis indicate a significant focus on experimental encounters with materials and tools—encounters that are often theorised as 'artisanal.'[240] To understand the artisanal aspects of DIY architecture with more depth and clarity, the present thesis will now turn to the writings of Deleuze and Guattari and their very particular definition of the *artisanal*.

Notes

[1] Sadler, 'An Architecture of the Whole,' 108.

[2] Scott, *Living Archive 7*, 7.

[3] Ant Farm members originally described themselves to a friend as 'underground architects,' who then associated their reference to the 'underground' with the plastic Ant Farm toys common at the time; this comment lead to the practice's name. Scott, *Living Archive 7,* 201.

[4] M. Preston Burns, 'What is the Underground?,' *Notes from the New Underground*, ed. Jesse Kornbluth (New York: The Viking Press, 1968), 209.

[5] Ant Farm's first conventional and built architecture is the *Antioch Art Building*, built in 1971 in Ohio. According to Ant Farm member Doug Michels, the Antioch Art Building was 'Ant Farm's largest project." Lewallen and Seid, *Ant Farm 1968-1978*, 53. It involved a very quick construction phase, tight budget and standard 'off-the-shelf' components. Ant Farm's second building project is the residential project The House of the Century, 1971-1973, which was a vacation house for Marilyn and Alvin Lubektin at Mojo Lake, Angelton, Texas.

[6] One example of Ant Farm's performance-based installation is the *Media Burn* of July 4 1975. Doug Michels and Curtis Schreier drove a Cadillac into a wall of burning television sets as part of a critique of consumerism. According to Chip Lord, the performance generated interest in the popular media at the time and influenced later music productions such as Bruce Springsteen's 1987 song '57 Channels (and Nothin' On)', and; Roman Coppola's 1998 video for music band *Supergrass* for their song 'We Still Need More*'*. See Lord's 2002 epilogue to *Automerica*, as published in Lewallen and Seid, *Ant Farm 1968-1978,* 162-163.

[7] Michael Sorkin, 'Sex, Drugs. Rock and Roll, Cars, Dolphins and Architecture,' in *Ant Farm 1968-1978*, ed. Constance M. Lewellan and Steve Seid (Berkeley: University of California Press, ltd., 2004), 13.

[8] Ant Farm, *Inflatocookbook* (1970 and 1973). While the first edition was loose-leaf and inserted into a plastic cover, the second edition was staple-bound.

[9] Ant Farm, 'Inflatables Illustrated.'

[10] Italian-born Soleri is an architect who first moved from his native Turin to live in the United States in 1949. See Antonietta Iolanda Lima, *Soleri: Architecture as Human Ecology* (New York: The Monacelli Press, 2000), 21. He received his Doctorate in architecture from the Turino Politechnico. According to Soleri and Davis, this was awarded in 1947: Soleri and Davis, *Earth Casting*, ix. Note that this date is different to the date of conferment cited in Jeffrey Cook's 1969 article on Soleri; Cook refers to Soleri's Doctorate being awarded in February 1946: see Jeffrey Cook, 'Paolo Soleri', *Architectural Association Quarterly*, Volume One, Number Two (April 1969): 16. Travelling to America on completion of his doctorate, Soleri took up a scholarship to study in the United States as an apprentice to Frank Lloyd Wright. Soleri served his apprenticeship at both Taliesen East in Wisconsin and Taliesen West in Arizona, from 1947-1948. Soleri and Davis, *Earth Casting*, ix. According to Cook, Soleri's architecture studies in Turin were interrupted by World War II. Cook, 'Paolo Soleri,' 16. After a brief return to Italy, Soleri and his family later settled in Arizona. Soleri's first main commission in Arizona was the *Dome House* of 1949, for his client Leonora Woods. Soleri later married Colly, the daughter of his client. Lima, *Soleri*, 115.

[11] Paolo Soleri, *The Bridge Between Matter and Spirit is Matter Becoming Spirit* (New York: Anchor Press/Doubleday, 1973); Paolo Soleri, *The Omega Seed: An Eschatological Hypothesis* (New York: Anchor Press/Doubleday, 1981); Paolo Soleri, *Space for Peace: A Matter of Mind* (Paradise Valley: Cosanti Foundation, 1984); Soleri, Paolo, *Technology and Cosmogenesis* (New York: Paragon House Publishers, 1985); Paolo Soleri,

'Space for Peace: a matter of mind', in *L5 News*, Issue 10 (September 1985), 12-13; Paolo Soleri, *The Urban Ideal: Conversations with Paolo Soleri*, ed. John Strohmeier (Berkeley: Berkeley Hills, 2001); and, Paolo Soleri, *What If?: Collected Writings 1986-2000 (*Berkeley; Berkeley Hills Books, 2002).

[12] Paolo Soleri, *Arcology: City in the Image of Man* (Cambridge: MIT Press, 1969); Paolo Soleri, *The Sketchbooks of Paolo Soleri* (Cambridge: MIT Press, 1971); Paolo Soleri, *Fragments: A Selection from the Sketchbooks of Paolo Soleri*: *The Tiger Paradigm-Paradox* (San Francisco: Harper and Row, 1981); Paolo Soleri, *Arcosanti: An Urban Laboratory? (*San Diego: Avant Books / Cosanti Foundation, 1983); Soleri and Davis, *Earth Casting*; Paolo Soleri, 'The Secular Cathedral', *A New World Trade Centre: Design Proposals from Leading Architects Worldwide*, ed. Max Protetch (New York: Regan Books / Harper Collins Publishers, 2002), 128-129.

[13] Although published in 1984, Paolo Soleri's *Earth Casting* is primarily based on work constructed in the 1960s and 1970s.

[14] Constance Lewallen makes a cultural connection between Ant Farm and Paolo Soleri. Lewallen argues that Ant Farm were '[i]nspired by such visionaries as Buckminster Fuller and Paolo Soleri, as well as the utopian European architecture group Archigram. Constance Lewallen, 'Introduction,' in *Ant Farm 1968-1978*, ed. Constance M. Lewallen and Steve Seid (Berkeley: University of California Press, ltd., 2004), 1. Work by Soleri and Ant Farm was published in the same 'Cosmoroma' section of the September 1969 *AD* journal, which published contemporary and cutting-edge architecture. This journal referred to Soleri's then newly-published 1969 book *Arcology, the city in the image of man* (within the Cosmoroma 'Fashion favourites' section). 'Fashion favourites', *Architectural Design*, Cosmorama section (September 1969): 469. In this same journal edition, the Cosmorama section also included a review of Ant Farm's six-week *Time slice* experimental education workshop at the University of Houston. 'Time slice,' *Architectural Design*, Cosmorama section (September 1969): 475. In reference to another connection between Ant Farm and Soleri, Ant Farm visited Soleri's Arcosanti project in 1971, during a road-trip to Houston en route to The House of the Century project. Scott, *Living Archive 7,* 160.

[15] In geographic terms, Paolo Soleri's Arcology project in Arizona could be considered as being geographically 'close' to Ant Farm's California practice base which was primarily in Sausalito, San Francisco, California.

[16] According to Kirk, the San Francisco and the Bay region underwent "a well-documented creative renaissance" in 1968 that spurned a range of creative practices focused on environmental and alternative social endeavours, including the punk music scene and the *WEC.* See Kirk, *Counterculture Green,* 43. The San Francisco area also spurned a thriving alternative publishing culture. Self-published books such as *The San Francisco Bay Area People's Yellow Pages* provided "[a] directory of alternative goods and services in the San Francisco Bay:" see the rear cover of Mary Donnis, Sally Harms, Winifred Mullinack, Joan Saffa, Diane Sampson, Jan Zobel, *The San Francisco Bay Area People's Yellow Pages Number* Four (San Francisco: The People's Yellow Pages, 1975), rear cover. The counterculture wasn't confined to the Bay area alone, as evidenced by a document similar to *The People's Yellow Pages*: the 1973 *Earthworm II Community Directory*, created in Illinois as part of "building a counterculture community." Free Prairie Community, *Earth Worm II Community Directory* (Champaign-Urbana: Free Prairie Community, February 1973), 1.

[17] The different DIY architecture manuals of this time are often connected in both approach and specific content: projects, texts, images and information were recycled between the manuals, in cut-and-paste style. There are several examples of Ant Farm's work being promoted and discussed in different DIY manuals. For example, and as discussed in the previous chapter 2, an extract from Ant Farm's *Inflatocookbook* appeared in *Farallones*

Scrapbook. Van der Ryn, *Farallones Scrapbook*, 115-116. Ant Farm advertised their inflatables in the January 1971 edition of *WEC*. Ant Farm appeared in early editions of *Domebook One* and *Domebook Two:* see Lloyd Kahn, ed., *Domebook 2* (Bolinas, CA: Shelter Publications, August 1971), 118. A page about Ant Farm's 1972 *The House of the Century* residence appeared in Shelter; see Kahn, *Shelter*, 125. In *Shelter*, some of the text about the project is taken from 6/5 May 1973 *Progressive Architecture* text with an introduction by Jim Murphy. In turn, the *Progressive Architecture* journal text was republished in Ant Farm's own *Ant Farm Timeline.* The *Progressive Architecture* text was published when the project received a citation in its awards programme. The same text is also used in Ant Farm's own 1976 *Ant Farm Timeline*, republished in Lewallen and Seid, *Ant Farm 1968-1978*, 112-113.

[18] Ant Farm, *Inflatocookbook* (1970 & 1973).

[19] Ant Farm, 'Inflatables Illustrated.' Ant Farm's *Inflatocookbook* is described as "a how-to book of loose leaf pages in a hand-made vinyl wrapper that costs $3 in 1971." Ant Farm, 'Info section: Inflatables Illustrated,' in *Ant Farm Video*, colour and B&W NTSC DVD, Mpeg-2 format, original produced by Allan Rucker and Curtis Schreier, ed. Chip Lord (Ant Farm: 1971, Ant Farm: 2003), 23 min.

[20] Ant Farm also helped design the graphics and layout for *Guerilla Television*, a 1971 DIY manual advocating the use of video and cassettes to create alternative TV networks. Michael Shamburg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehart and Winston, Limited, 1971). *Guerrilla Television* features Ant Farm's *Truckin' University* and *Media Van* projects, also published in the 1971 *Inflatocookbook.* Although unpublished, Ant Farm developed a template for another DIY publication called *From Bubbles to Stone*. According to Scott, *From Bubbles to Stone* was to be ''an updated do-it-yourself manual that was to include pat of the *Inflatocookbook* along with *A Ferrocement Construction Guide,"* see Scott, *Living Archive 7*, 139. *From Bubbles to Stone* was to include information on the ferro-cement construction techniques which were used on their residential project The House of the Century. Ant Farm collaborated with Richard Jost for its design and construction. Jost also published his own DIY manual on the project, called *A Ferrocement Construction Guide*. Richard Jost, *A ferrocement construction guide* (Houston: University of Houston, 1972).

[21] Scott refers specifically to Ant Farm appropriating the DIY format of an earlier manual—Steve Baer's *Dome Cookbook*—for their DIY manual, *Inflatocookbook.* Scott, *Architecture or Techno-Utopia*, 211. Incidentally, Curtis Schreier, who was a founding Ant Farm member, helped Bear to construct his passive solar house in Colorado. Scott, *Living Archive 7*, 62.

[22] Lewallen and Steve Seid, *Ant Farm 1968-1978.*

[23] Comment by architectural historian Caroline Maniaque in her text 'Searching for Energy' in *Ant Farm 1968-1978*, ed. Constance M. Lewallen and Steve Seid (Berkeley: University of California Press, Ltd., 2004), 19.

[24] Kirk has specifically positioned Soleri in relation to the counterculture scene; see Kirk, *Counterculture Green*, 85. Soleri himself is more cautious in terms of establishing a distance between his world views and certain youth elements of the counterculture. For example, Soleri acknowledges that his *Cosanti* and *Arcosanti* projects were voluntarily built by many "hippie archetypes," yet he specifically distances himself from, in his words: "living an anarchic kind of free for all." Soleri, *The Urban Ideal,* 38. Soleri also notes that: "I wasn't confirming with a movement. There was never the notion in me that I could change the social nexus with a beard:" Soleri, *The Urban Ideal*, 38. Soleri then clarifies his admiration for traditional French culture, involving a mix of tradition and

the libertine: "the old culture where things seem to be working. I think of the French. They're libertines. They do all sorts of things. But they seem to be definitely surviving and doing quite well."

[25] See the *Ant Farm Timeline*, as published in Lewallen and Seid, *Ant Farm 1968-1978*, 114: and Scott, *Living Archive 7,* 238. The P/A award citations for The House of the Century were made not only on the basis of the unique building shape and ferro-cement construction techniques, but the unique "do-it-yourself" process through which the building was created. According to Ant Farm, this process involved significant client trust and freedom. A 1974 collage drawing of *The House of the Century* project by Michels includes images of the Ant Farm team with the text: "[t]rust your architect!' Lewallen and Seid, *Ant Farm 1968-1978*, 60.

[26] See the *Ant Farm Timeline*, as published Lewallen and Seid, *Ant Farm 1968-1978*, 112.

[27] Scott, *Living Archive 7*, 139.

[28] Soleri has been associated with craft through his architectural constructions, and through his hand-made and crafted objects which marked the beginning of his earth-cast building experiments. Soleri was awarded an American Institute of Architects Craftsmanship Medal; the citation made direct reference to three Cosanti projects. See Soleri and Davis, *Earth Casting*, 14. In another example of the association of Soleri with craft, Soleri's "garden bells wrought in iron by Palo Soleri" were featured in a 1965 journal article about American craft: see Mrs Vanderbuilt Webb and James J. Rorimer, 'A Colloquy by Experts on The American Genius for Crafts', *House Beautiful*, 107, 2 (February 1965): 112. A 1964 student publication notes that Soleri's then-unbuilt design proposals for Arcosanti and Cosanti were developed whilst Soleri "was engaged in the production of crafts including bronze and clay wind bells." Paolo Soleri, *The Development by Paolo Soleri of the Design for the Cosanti Foundation Arizona, U.S.A*, ed. Keller Jr. Smith & Reyhan, Tansal, Volume 14, Number 4 (Raleigh, North Carolina: Student Publications of the School of Design, North Carolina State University, 1964), 2. In relation to the connection between Soleri's practice and the artisanal, Soleri himself refers to becoming an artisan during the creation of the Arcosanti. Soleri, *Technology and Cosmogenesis*, 132. In the 2007 text *The Mind Garden: Conversations with Paolo Soleri II*, Soleri suggests that the artisan is involved in handmade production techniques and tends to produce and work locally. See Paolo Soleri, 'Artisan, Craftsman, Artist,' in *The Mind Garden: Conversations with Paolo Soleri II*, Michel F. Sarda (Phoenix: Bridgewood Press, 2007), 53-63. For Soleri, an artisanal investment in work involves aspirations for aesthetics beyond simple pragmatic issues of functionality, craft expertise and purpose (54-55). Soleri also argues that the artisan aspires to a comprehensive mode of living (53). Most importantly (for the purposes of the present thesis), Soleri associates artisanal production with a focus on matter and its capacities: "[w]hat is an artisan? Handmade pottery production, from getting the raw clay, mixing it into slip and then proceeding with the firing […] this is all artisan's trade." Soleri, *The Mind Garden*, 53.

[29] Lima, *Soleri*, 147. Lima also aligns Soleri's practice with William Morris' ideas about craft and architecture. Lima, *Soleri*, 148.

[30] Joseph Nicholas Wills, 'Siltpile at Scottsdale; Course Given by P Soleri at Summer Session, Arizona State University school', *AIA* Journal of the American Institute of Architects, 40, 6 (December 1963), 97.

[31] The term 'architectural craftsmen' was deployed in the title of a 1965 interview and discussion with Soleri, conducted by an unnamed interviewer. While there is no specific mention of the term 'architectural craftsman' in the main text, there is reference to the "craft approach." See Paolo Soleri, 'Thoughts of Paolo Soleri: An Avant-Garde Architectural Craftsman,' *The Archi*, 42, 2 (Winter 1965): 9.

[32] Soleri, 'Thoughts of Paolo Soleri,' 10.

[33] For Soleri, projects involving a craft approach are specific to a project site and context. In relation to the craft approach, he notes that "[i]t has to be located as to be completely functional for that problem. You really have to use it for that place—that moment." Soleri, 'Thoughts of Paolo Soleri,' 10.

[34] Soleri and Davis make the point that: "[t]he Cosanti complex is the result of a combination of ancient craft techniques, new variations on these techniques, scrounged and donated materials, aesthetic perceptions, unorthodox architectural concepts, and the sweat of many workers." Soleri and Davis, *Earth Casting*, 4.

[35] Soleri and Davis, *Earth Casting*, rear cover.

[36] Soleri and Davis, *Earth Casting*, rear cover.

[37] Ant Farm, *Inflatocookbook* (1970), 'Ant Farm.'

[38] Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.'

[39] For example, 'Truckin' University' is a speculative project for a mobile university, and includes a large inflatable plus a number of other project elements including digital projection media. The project is described via drawings and diagrams. Ant Farm, *Inflatocookbook* (1970 & 1973), 'Truckin' University.'

[40] Ant Farm, *Inflatocookbook* (1970), 'Dome Recipe.'

[41] 'Do it yourself' is referred to in the 'Off the Shelf' section within the original 1970 edition of *Inflatocookbook*. There is reference to four items that can be purchased from Ant Farm. These items are listed under the sub-title 'Do It Yourself' and include: the '40' Vinyl Pillow;' the '100' Polyethylene Pillow;' the 'Ant Farm Calendar;' the 'Inflato-Cookbook,' and; 'Custom Vinyl Work.' The logic involved in categorising the above items as DIY is inexplicit; however, descriptions of the individual items imply their DIY qualities. For example, the 'Ant Farm Calendar' is a wall calendar with clear vinyl sleeves for inserting dates and items. The calendar is described as "[a]nother easy do-it-yourself.' See Ant Farm, *Inflatocookbook* (1970), 'Off the Shelf.' The "Inflato-Cookbook' itself is also described as a "How-to." In *Inflatocookbook*, the DIY ethos is reinforced by other sections, such as the humorous cut-out 'DIY' money—termed 'Outlaw Energy Credit'—available in the 1970 edition. The green and orange-printed A3 paper sheet of 'Outlaw Area Energy Credit' is printed double-sided and includes; Ant Farm's Sausalito address, and a circular stamp bearing the image of a hemp leaf and the statement 'Fort Knox Gold.' A scissor graphic implies the credits are to be cut-out. Ant Farm, *Inflatocookbook* (1970), 'Outlaw Area Energy Credit.'

[42] Linda Kallipoliti, with Curtis Schreier and Chip Lord (Ant Farm), 'Interview with Chip Lord and Curtis Schreier (Ant Farm),' in *Eco Redux; design remedies for a Dying Planet,* audio recording (San Francisco, September 7, 2007), accessed 18/09/2011, http://www.ecoredux.com/audio_chiplordandcurtisschreier2.html.

[43] Kallipoliti with Schreier and Lord (Ant Farm), *Interview.* There is no specific reference to any particular title or manual. Note that in 1974, Don Lancaster published a DIY manual for electronics. Don Lancaster, *TTL Cookbook* (Sams, 1974).

[44] As previously discussed, the 1970 edition states it was published November 10, 1970 to December 10, 1970, although the 1973 edition notes the original publishing date as 'Jan. 1971.' Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.' The present thesis will use the 1970 date for consistency, as direct reference is made to the original publication which states 1970 as its publication date.

[45] As previously discussed, the 1970 edition contains a page with a re-worked newspaper article, dated 1972 ('Breathing- That's Their Bag); one might presume this loose-leaf sheet has been inserted as a supplement post-1970. The updatable nature is indicated in the subscription information which states that the $3.00 a year

subscription rate includes "at least one supplement of information feedback from this issue, and probably more."
See Ant Farm, *Inflatocookbook* (1970), 'Ant Farm.'

[46] The 1973 *Inflatocookbook* edition referred to in the present thesis makes the point that the first 1970 printing of
2000 copies involved "loose leaf in a vinyl folder." The 1973 edition was also updated and bound, in Ant Farm's
words, "for ease of printing and distribution," see Ant Farm, *Inflatocookbook* (1973), 'Ant Farm'. The 1970 edition
referred to in this thesis contains 24 two-sided, loose-leaf sheets including A3 and A4-sized printed sheets and a
single, smaller-than-A4 sized sheet. The sheets are mostly black and white with some colour, and, according to
Ant Farm, were "[c]omposed on an IBM Selectric Composer, courtesy of Big Rock Candy Mountain;' see Ant
Farm, *Inflatocookbook* (1970), 'Ant Farm.' It is important to note that Big Rock Candy Mountain was associated
with Stewart Brand and the *Whole Earth Catalog's* Portola Institute, Inc. The 1970 *Inflatocookbook* was printed by
'Rip Off Press.'

[47] According to Ant Farm, while subscribers could pay "$1.50 for a single copy," a subscription rate of "$3.00 for
one year [...] will include at least one supplement of information feedback from this issue, and probably more." Ant
Farm, *Inflatocookbook* (1970), 'Ant Farm.' Other than subsequent printing that included some content changes
and omissions, this author is unaware if subscribers received updates, as was indicated in the 1970 edition. Scott
suggests that the updatable format was never fully realised, because of the subsequent publication of the hard-
copy, bound format. Scott, *Living Archive 7,* 66.

[48] Two items included in the 1970 edition are absent in the 1973 bound edition, although no rationale is stated for
their omission. The first item is an advertisement for a forthcoming 'New issue: Inflatocookbook 2 (Spring 1971).
Ant Farm, *Inflatocookbook* (1970), 'Inflatocookbook 2.' Note that the published 1973 edition is not referred to as
'Inflatocookbook 2.' The second item is the 'Rasberry Exercises' insert associated with inflatables made for the
experimental Pacific High School, Santa Cruz. 'Rasberry exercises' was published in *The Last Whole Earth
Catalog*, alongside an advertisement for Ant Farm. The A4 page included in the 1970 *Inflatocookbook* and titled
'Raspberry Exercises' is a copy (in terms of word content) of two A4 pages from another text by Salli Rasberry and
Robert Greenway, *Rasberry Exercises: How to Start Your Own School and Make a Book* (Albion, California: The
Freestone Publishing Company, 1970), 102-103. In the *Rasberry Exercises* book, the page features an imprint of
Ant Farm's logo, which does not appear in *Inflatocookbook*.

[49] The present thesis refers to the 1970 and the 1973 bound (stapled) versions of *Inflatocookbook*. The 1973
edition is now readily available to potential 'audiences' on the internet as a pdf download.

[50] Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.' Ant Farm position themselves in a humorous manner on another
page. A 'Donald Duck' cartoon strip shows young duck characters saying goodnight to an Ant Farm toy, with the
voice bubble stating the names of then current Ant Farm members. This happens in the third and final frames of
the cartoon as an apparent 'punchline.' See Ant, Farm, *Inflatocookbook (*1970 and 1973), 'Donald Duck.'

[51] Starr, *Fifty Things to Make for the Home*.

[52] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Kids.'

[53] Ant Farm, *Inflatocookbook* (1970 and 1973), 'a Course in Getting Acquainted with Inflatables.'

[54] Ant Farm note that: "[t]he freedom and instability of an environment where the walls are constantly becoming the
ceiling and the ceiling the floor and the door is rolling around the ceiling somewhere releases a lot of energy that is
usually confined by the xyz planes of the normal box room." Ant Farm, *Inflatocookbook* (1970 and 1973), 'a
Course in Getting Acquainted with Inflatables.'

55 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

56 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

57 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Idea Plumbing.'

58 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Geometry.'

59 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Idea Plumbing.' The 1970 edition has the caption 'Advertisement' at the base of the 'Idea Plumbing' page, recalling the mix of advertising, information and ideas found in the *WEC* publication.

60 The loose-leaf format can be seen operating in a 'live' context within the 'Ant Farm's Dirty Dishes' film footage, as featured in the *Ant Farm Video*. The film opens with a scene shot in their Sausalito studio in which two parents seek to purchase ants for their children's ant farm toy. Ant Farm then spruik their alternative educational ideas and interest in home-education, while the mother peruses, reads and removes select loose pages of *Inflatocookbook*. Ant Farm, 'Ant Farm's Dirty Dishes', in *Ant Farm Video*, B&W NTSC DVD, Mpeg-2 format, original Warehouse Tapes produced by Ant Farm, edited 1978 at Electronic Arts Intermix (EAI), ed. Chip Lord 2003 (Ant Farm: 1971, Ant Farm: 2003), 8.27 min, 04.31/08.27.

61 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

62 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Air Supply.' The 'Air Supply' section appears as a two-sided, A3 fold-out page in the 1970 edition.

63 Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

64 While people are not listed as a specific 'input' in 'Truckin' University' project, they are drawn as indicative stick figures within the accompanying sketch diagram. Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

65 This is a partial reproduction of two pages from the 1970 text *The Rasberry Exercises—How to Start Your Own School and Make a Book,* written by Salli Rasberry and Robert Greenway. This book was connected to the countercultural movement and its educational agenda. In *The Rasberry Exercises* book, an Ant Farm insignia in the shape of a letter seal appears on the text page; this insignia is not included in *Inflatocookbook* reproduction. *The Rasberry Exercises* was also advertised in another countercultural DIY manual, *The Last Whole Earth Catalog*: *Access to Tools* (San Francisco, Harmondsworth: Portola Institute, Penguin Books Ltd.,1971), 404.

66 In relation to the experimental spatial and social qualities of inflatables, the specific point is made that: "[i]f you hadn't figured out a reason or excuse, why to build inflatables becomes obvious as soon as you get people inside. The freedom and instability of an environment where the walls are constantly becoming the ceilings and the ceiling the floor and the door is rolling around the ceiling somewhere releases a lot of energy that is usually confined to the xyz planes of the normal box room." Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

67 Ant Farm used video to document projects, and also incorporated televisual media within projects—such as the built-in television set of The House of the Century residence. Scott refers to Ant Farm's use of video as "a conceptual turn back though architecture with different tools." Scott, *Living Archive 7,* 155.

68 In the 1970 and 1973 editions of *Inflatocookbook,* plans are used for the 'Kids' inflatable pillow, 'Tunnel Joints,' and the 'Glometry' pages; an elevation of the 'Media Van' appears in 'Hy-Tek.'

69 Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[70] In the 1970 edition, the flipside of the A3 page 'A Course in Getting Acquainted with Inflatables' features the inflatable project 'The World's Largest Snake,' printed in colour. In the 1973 edition, 'The World's Largest Snake' appears in black and white and is bound on the page before 'A Course in Getting Acquainted with Inflatables.'

[71] Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[72] Ant Farm's 'Rasberry Exercises' text is overlaid on photographs of built and occupied inflatables. The full text is now reproduced in full to convey its poetic effect: "Hit it and it gives / lie on it and it supports in comfort / inside it responds to the vibrations of the people / amplifying their existence / instead of repressing it / Mobility to understand the world / you must be in it / grounded, waterborne, / flying and intense / mobility and diversity of experience / Alternative enviroexperience creates new brain patternings / we provide as many as we can / but don't insist on any one / the kids will come up with their own." Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises:' Rasberry & Greenway, *Rasberry Exercises*, 103.

[73] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumatics.'

[74] Scott, *Living Archive 7,* 80.

[75] Ant Farm, *Inflatocookbook* (1970), 'Video Tape.' The video is referred to in the 1970 *Inflatocookbook* in part a section called 'Video Tape,' under the section sub-heading 'Advertisement.' *Inflatables Illustrated* is not referred to directly; however, there is a reference to a specific tape that contains footage titled "how To inflatables.' Available for purchase, the video tape reel, titled 'Ant Farm,' is (according to the advertisement) 845 ft and contains several videos within the tape including: "a day in the life, how To inflatables, Real©ity event documentation, gimme shelter, plus vacancy ooM…$39.95."

[76] Reference in the present thesis is to the edited *Inflatables Illustrated* on the 2003 'Ant Farm Video.' Ant Farm, 'Inflatables Illustrated.' The *Inflatables Illustrated* video is located within the 'Way Underground' section of the *Ant Farm Video* DVD.

[77] In an opening scene of 'Inflatables Illustrated,' Schreier is filmed wearing a white lab coat and a dome cap headband. See Ant Farm, 'Inflatables Illustrated.'

[78] Ant Farm, 'Info section: Inflatables Illustrated,' in *Ant Farm Video*, colour and B&W NTSC DVD, Mpeg-2 format, original produced by Allan Rucker and Curtis Schreier, ed. Chip Lord 2003, Ant Farm: 1971, Ant Farm: 2003, 23 min. 'SF' would be a reference to San Francisco.

[79] Ant Farm, 'Inflatables Illustrated,' 00.01.25/00.23.00.

[80] Ant Farm, 'Inflatables Illustrated,' 00.01.25/00.23.00.

[81] Ant Farm, 'Inflatables Illustrated', 00.16.04/00.23.00.

[82] In relation to different materials used for seaming plastic together, Schreier states that: "we'll try both methods and just see...just see how they handle." Ant Farm, 'Inflatables Illustrated,' 00.02.01-00.02.05/00.23.00. The implication is that material performance may vary in different executions, and while this may imply an element of unpredictability, the overall impression in this individual scene is of experience in controlling the formation of the materials. Cameraman Allan Rucker refers to ironing two sheets of plastic together as a "procedure;" Schreier refers to the two different "methods." Ant Farm, 'Inflatables Illustrated,' 00.05.51/00.23.00.

[83] The term "lesson" is used in the written 'info' section of the *Ant Farm Video* DVD, in relation to the footage of Schreier's geometry lesson, see Ant Farm, 'Inflatables Illustrated: Info.'

[84] Ant Farm, 'Inflatables Illustrated: Info.'

[85] Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[86] Ant Farm, 'Inflatables Illustrated', 00.09.57/00.23.00.

[87] Schreier invites the 'audience' to imagine being inside the small inflatable pillow: "do you want to find out what it's like inside an inflatable…go right in." The camera moves towards the opening and a voice states: "we have a lot of inside inflatable tape." Ant Farm, 'Inflatables Illustrated,' 00.09.43/00.23.00.

[88] This point is reinforced by Scott, who refers to the complications resulting from inflatables not having a determinate function. In relation to the ventilation and uplift problems associated with Ant Farm's 1970 inflatable for the temporary *WEC* production facility, she notes: "[c]ast as a decoupling of relations between form and program, inflatables produced an environment all but hostile to conventional use." Scott, *Living Archive 7,* 83.

[89] Ant Farm, 'Inflatables Illustrated,' 00.09.08-00.09.13/00.23.00.

[90] Ant Farm, 'Inflatables Illustrated,' 00.10.30/00.23.00. This scene is initially filmed from above, and the camera zooms in on another cameraman climbing on top of the inflating fabric. Further camera operators appear later, wandering through the morphing spaces and blurring a sense of filming and the filmed. The film also reveals a skeletal dome adjacent to the inflatable membrane which houses what appears to be an audio desk (see Ant Farm, 'Inflatables Illustrated,' 00.10.48/00.23.00). The precise external location or environmental context of the inflatable is unclear, with glimpses of an external environment—possibly a warehouse—partially visible through the translucent fabric envelope.

[91] Ant Farm, 'Inflatables Illustrated,' 00.11.00/00.23.00.

[92] Farm, *Inflatocookbook (*1970 & 1973), 'A Course in Getting Acquainted with Inflatables.'

[93] In this scene, the inflatable is constructed and placed inside what appears to be a sports hall. The entire inflatable form shifts across the hall space when the boy walks inside it. The envelope partially indents when a ball is thrown against it, or the boy pushes it from inside. Ant Farm, 'Inflatables Illustrated,' 00.19.07-00.20.00/00.23.00.

[94] Ant Farm, 'Inflatables Illustrated,' 00.5.54/00.23.00. The impression is that they are filming a projected film on a wall screen while Schreier continues his voiceover. The voiceover continues amidst mechanical sounds which resemble a reel film projector.

[95] Scott, *Living Archive 7,* 155.

[96] Starr's *Fifty Things to Make in the Home* could be understood as having a more didactic manual format, as projects are described via the sequential steps involved in their construction.

[97] Ant Farm, 'Inflatables Illustrated,' 00.03.18-00.03.40/00.23.00.

[98] As previously noted, Soleri and Davis' DIY manual will be referred to in this dissertation using the shortened title *Earth Casting*.

[99] Soleri and Davis, *Earth Casting*, 4.

[100] Soleri and Davis, *Earth Casting*, 24.

[101] Soleri and Davis, *Earth Casting*, 57.

[102] Soleri and Davis, *Earth Casting*, 100.

[103] Soleri makes the point that the manual draws from his personal experiences with earth-casting projects," starting with Cosanti "in the mid-1950s." See Soleri and Davis, *Earth Casting*, 1.

[104] The Arcosanti examples appear later in the text, for example, within the section on precasting; see Soleri and Davis, *Earth Casting*, 95.

105 Soleri and Davis, *Earth Casting*, ix-x. Note there is no such history or information about Scott Davis, the joint author of the manual.

106 Soleri and Davis, *Earth Casting*, 1.

107 Soleri and Davis, *Earth Casting*, rear cover.

108 Soleri and Davis, *Earth Casting*, 14.

109 This term 'step-by-step' is specifically used in reference to the construction of the 1968 'Student Apse' at Cosanti, see Soleri and Davis, *Earth Casting*, 84. Another referring to step-by-step construction is "the nine-step process" for making sand-cast plaster architectural models; see Soleri and Davis, *Earth Casting*, 50.

110 Soleri and Davis, *Earth Casting*, rear cover.

111 Soleri and Davis, *Earth Casting*, 9.

112 Instead of focusing on specific project forms: "earth-casting projects […] are used as examples of what can be done with the earth-casting technique and of how to actually do earth casting." Soleri and Davis, *Earth Casting*, 1.

113 According to the project timeline included in the *Earth Casting* manual, the Arcosanti Foundry Apse began construction in 1972, with heavy construction happening in 1973. Soleri and Davis, *Earth Casting*, 8. The Foundry Apse was completed in 1974; see Soleri and Davis, *Earth Casting*, 101.

114 In *Earth Casting*, silt is classified as "a fine grained sediment." Soleri and Davis, *Earth Casting*, 22. The manual lists the attributes of the silt that make it useful for craft and construction, including how "it can be worked and carved either when it's damp or when it's dry." Soleri and Davis, *Earth Casting*, 23. Soleri also makes the point that "[s]ilt can be formed into almost any shape." Soleri and Davis, *Earth Casting*, 21.

115 Although silt's molecular properties and capacities are discussed, the general impression conveyed by the *Earth Casting* manual is that silt is considered for its instrument use in making particular projects and forms. For example, silt is described as: "useful for different types of craft and construction projects." Soleri and Davis, *Earth Casting*, 22.

116 Soleri and Davis, *Earth Casting*, 2.

117 Soleri and Davis, *Earth Casting*, 60.

118 Soleri and Davis, *Earth Casting*, 60.

119 For example, an unscaled section diagram of the Cosanti Ceramics Apse indicates the formwork and pre-casting techniques that were used during construction. Soleri and Davis, *Earth Casting*, 98.

120 In chapter 6, 'Casting Concrete on Silt and Soil,' individuals featuring in the photographs are generally referred to as "Arcosanti Workshoppers." Soleri and Davis, *Earth Casting*, 95: the singular term "Arcosanti Workshopper" is used on page 93. There is also the occasional reference to individual workers, such as the workshopper "Ivan Pintar." Soleri and Davis, *Earth Casting*, 77. Illustrated references to individual workshoppers also appear on page 78 and 97.

121 Soleri and Davis, *Earth Casting*, 2.

122 The point is made that: "[t]here are some aspects of the silt-casting process which require direct experience in order to fully grasp them. The "feel" of damp silt in your hands, the pile cooling the air around you, the feel of a knife in your hand cutting silt, "knowing" when the silt is damp enough for a given purpose, cannot be fully described or explained in words. You must experience them for yourself." Soleri and Davis, *Earth Casting*, 27.

123 Under the heading 'Arcosanti,' reference is made to the philosophical 'vision' for Arcosanti and the Cosanti foundation: "Arcosanti is intended to be an urban laboratory for the purpose of investigating the process of designing, constructing, and operating a functioning prototype arcology." Soleri and Davis, *Earth Casting*, 106.

124 Starr, *Fifty Things to Make for the Home*, v.

125 Some of the technologies advocated in these manuals have dubious environmental credentials based on contemporary environmental standards. This has led Kirk to differentiate between two strands of countercultural shelter movements: the techno-utopian shelter, and shelters referring to "traditional craft, biological models, and natural materials." Kirk, *Counterculture Green,* 86.

126 Kahn, *Shelter,* 122.

127 Incidentally, The Point Foundation—which was connected to and funded the *WEC* production—channelled money into enterprises that developed 'AT' and ecologically-orientated environmental design. Kirk, *Counterculture Green,* 87.

128 Kirk, *Counterculture Green*, 87-88.

129 Albin Wagner, 'Drop City: A Total Living Environment,' in *Notes from the New Underground*, ed. Jesse Kornbluth (New York: The Viking Press, 1968), 235.

130 Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and The Rise of Digital Utopianism* (Chicago: The University of Chicago, 2006), 92-93.

131 Turner, *From Counterculture to Cyberculture*, 219.

132 Scott, *Living Archive 7,* 82. Scott also argues that Ant Farm adopted the military tropes, technologies and language deployed by others in the counterculture, including Baer in his *Dome Cookbook*. Felicity D. Scott, 'Media Ecology", *Architecture and Art; New Visions, New Strategies*, ed. Eeva-Liisa Pelkonen and Esa Laaksonen (Helsinki: Alvar Aalto Academy, 2007), 140; Scott, *Architecture or Techno-Utopia*, 211. Scott refers specifically to Ant Farm's military-style use of the term 'Clean Air Pod (CAP 1500)' in the Berkeley teach-in, which was used to simulate an 'escape' from air pollution and radiation.

133 Ant Farm's performance-based works include the 1975 *Media Burn* and the 1976 *CARmen, the Automobile Opera*, performed at the Sydney Opera House.

134 Site-specific installations include the 1972 *100 Television Sets*, and the 1984 *Cadillac Ranch* sculpture.

135 Building works include the 1971 Antioch Art building, and The House of the Century.

136 Exhibitions include the *Time Capsule 1972-1984*, and its associated opening performance in 2000, at the Art Guys Studio Houston, and *The Human-Woman Time Capsule*, Mother's Day Time Capsule, Art Gallery of NSW, in 1976.

137 'Inflatables Illustrated' is a film work in its own right, and is also based on other inflatable project works which feature in the film.

138 Ant Farm's experimental hats were displayed and discussed on air during an Australian daytime current affairs show which aired during their 1976 visit to Australia. Hurr describes the processes of spraying the hats with aerosols to change the hat's appearance. See Ant Farm, 'Off-Air Australia 1976', in *Ant Farm Video*, colour and B&W NTSC DVD, Mpeg-2 format, Ant Farm Australia Tour 1976, original by Doug Hurr, Doug Michels & Curtis Schreier, ed. Chip Lord 2003 (Ant Corps: 1976, Ant Farm: 2003), 21 min, 00.6.11/00.21.00.

139 Scott, *Living Archive 7,* 86.

140 See *Ant Farm Video*, Ant Farm 2007, incorporating the 1975 video footage of *Media Burn*.

[141] Scott, *Living Archive 7*, 155.

[142] Scott notes that "in Ant Farm's encounter with electronics and video their architecture had become coupled with an updated version of the environment." Scott, *Living Archive 7*, 151.

[143] As a built example of incorporating digital technology into an architectural project, a television was built over a distinctively-shaped sink in The House of the Century. See image as published in Scott, *Living Archive 7*, 242.

[144] Lewallen and Seid, *Ant Farm 1968-1978,* 61.

[145] Ant Farmer Doug Hurr had previously built a ferro-cement boat and adapted this contour modelling technique from boat-building practice. The timber model was sliced into contour sections to develop the pattern for the steel reinforcing. The welding for the house was done by local Houston riggers accustomed to working on oil rigs. Lewallen and Seid, *Ant Farm 1968-1978,* 61. Richard Jost produced a 1972 publication detailing the construction methodology, called *A ferrocement construction guide*: Scott, *Living Archive 7*, 144: Jost, *A ferrocement construction guide*. A 2007 four-part you-tube video series shows Jost explaining the stages and outlining some of the subsequent construction problems. Richard Jost, *House of the Century Construction (1972) – Part 1 of 4*, youtube video 2007, http://www.youtube.com/watch?v=l8dTgrf2u58&feature=related.

[146] Comment by Curtis Schreier in a 2002 conversation between Constance M. Lewallen and Ant Farmers Chip Lord, Douglas Michaels and Curtis Schreier. Lewellan and Seid, *Ant Farm 1968-1978*, 61. Photos of this house have been taken with naked people, although it is unclear if these images are related to thermal comfort. For example, see the image of The House of the Century in the *Ant Farm Timeline*, published in Scott, Living *Archive 7,* 241. A photograph of a naked female in the entry corridor also appears in Ant Farm Video. See Ant Farm, 'House of the Century 1972-2072 for Marilyn Oshman,' in *Ant Farm Video*, colour and B&W NTSC DVD, Mpeg-2 format, hidden bonus film (Ant Farm: 2003). It can be assumed that Marilyn Oshman is the maiden name of Marilyn Lubetkin.

[147] Comment by Doug Michels as quoted in Lewallen and Seid, *Ant Farm 1968-1978*, 61

[148] During the floods, the building acted like a waterproof vessel and retained water within the interior. Thus the timber interior rotted and the residence is now a ruin in the landscape, as an unintended consequence of the waterproofing technique. Lewallen and Seid, *Ant Farm 1968-1978*, 61.

[149] Ant Farm, *Ant Farm Timeline*, 126, as published in Lewallen and Seid, *Ant Farm 1968-1978*, 114: and Scott, *Living Archive 7*, 238.

[150] Another case in point was Ant Farm's experimental inflatable commissioned by the *WEC* for a site in the Californian Saline desert: the 1970 Whole Earth Catalog Supplement Production Facility. The problems associated with this inflatable included the failure of an anchoring cable in high winds, and ventilation problems; see Scott, *Living Archive 7*, 83.

[151] Unsurprisingly, Herman failed to raise the funds for the Osaka pavilion project and was later discredited in Texas. In their expo proposal, Ant Farm quoted from an article in the August 1966 issue of the *Progressive Architecture* journal, called "LSD: A Design Tool?" See Scott, *Living Archive 7,* 25: 'LSD: A Design Tool?,' *Progressive Architecture*, 47 (August 1966), 147-153. In this article, LSD was discussed as an experimental tool for designers and architects. According to Turner, LSD held currency in the counterculture movement and influenced the perceptions of key figures involved with *WEC,* including Stewart Brand. LSD was linked with mystical experiences and revolutionary insights in the counterculture and, later, the hacker and cyberspace scenes. Turner, *From Counterculture to Cyberculture*, 165.

152 Scott, *Living Archive 7*, 88.

153 See Scott's point about Ant Farm's use of video technology as a critical tool in architectural practice. Scott, *Living Archive 7*, 155.

154 An influential issue of the *Architectural Design* (*AD*) journal about pneumatic structures was published in June 1968, edited by Monica Pidgeon: 'Pneu World', *Architectural Design* (June 1968). In March 1968, three architects involved with the French collective Utopie organised the *Structures Gonflables* exhibition in Paris. According to theorists Rosalie Genevro, Utopie was comprised of three French architects—Jean Aubert, Jean-Paul Jungmann and Antoine Stinco—as well as sociologist and theorists including Hubert Tonka and Jean Baudrillard. See Rosalie Genevro, 'Introduction,' in *The Inflatable Moment: Pneumatics and Protest in '68,* ed. Marc Dessauce (New York: Princeton Architectural Press / The Architectural League of New York, 1999), 7. This exhibition included architectural experiments as well as pneumatic products. One of the key members of Utopie was theorist Jean Baudrillard, who also attended the 1970 annual International Design Conference at Aspen (IDCA) where he denounced experimental utopian tendencies in the late 1960s. According to Genevro, by May 1969, Utopie had abandoned their pneumatic experiments. Genevro, 'Introduction,' 8-9.

155 Peter Harper, Geoffrey Boyle and the editors of Undercurrents, ed., *Radical Technology* (New York: Pantheon Books, 1976), 105. Ant Farm is not specifically mentioned in this text.

156 Other than Scott's references to Ant Farm's experiments with technology and DIY in *Living Archive 7*.

157 In reference to the use of non-standard architectural materials*, Inflatocookbook* outlines the first step for creating an inflatable using standard materials from a domestic kitchen: "[t]ake a baggie from Mother's larder." Ant Farm*, Inflatocookbook* (1970 & 1973), 'A Course in Getting Acquainted with Inflatables.'

158 This deployment of standard domestic technology can be seen in 'Inflatables Illustrated' video manual, Ant Farm, 'Inflatables Illustrated,' 00.01.57/00.23.00.

159 Scott notes the irony of the inflatable as being an alternative environment so dependent on the mainstream electricity grid. Scott, *Living Archive 7*, 174.

160 Kirk, *Counterculture Green,* 85.

161 Soleri and Davis, *Earth Casting*, 10. In *Earth Casting*, this quote is attributed to another text by Soleri, *The Sketchbooks of Paolo Soleri*; although no specific pages are cited. A similar quote appears in Lima's monograph, also attributed to Soleri: "[t]hat which had become a pot became a house." Paolo Soleri as quoted in Lima, *Soleri*, 147. Although the source of this particular quote is unclear in Lima's 2000 text, Lima contextualises the quote in relation to her direct conversations with Soleri.

162 Soleri makes a significant point that "[c]asting concrete on earth forms makes it possible for you to pour shapes that are not possible with more conventional construction methods." Soleri and Davis, *Earth Casting*, 9. It is important to note that this point was made in 1984, prior to the development of sophisticated digital modeling tools and construction techniques.

163 Lima, *Soleri,* 149.

164 The focus in the present thesis is on Soleri's DIY manual and attendant small-scale approach to technology. However, it is important to note that Soleri's recent hypothetical project for a new World Trade Centre, New York, relied on the speculative use of "magnetic levitation propulsion" to power a very tall elevator system. Arcosanti, 'World Trade Centre New York: The Secular Cathedral,' Mayer, Arizona: Arcosanti, 2005, http://www.arcosanti.org/theory/arcology/arcologies/newWTC.html, accessed 9 November 2010. Interestingly,

Soleri suggests that while lifts can be used to ascend within the tower, descent is via "a large combination of children's playground and swimming pool slide, of roller-coaster rides and of emergency slides in passenger airplanes." Paolo Soleri, 'The Secular Cathedral', *A New World Trade Centre: Design Proposals from Leading Architects Worldwide*, ed. Max Protetch (New York: Regan Books / Harper Collins Publishers, 2002), 128-129.

[165] Turner, *From Counterculture to Cyberculture*, 219.

[166] Soleri makes the point that earth-cast projects have a distinctive aesthetic style, although there are no conventional architectural drawings or complete images of the complex to speak of within the *Earth Casting* manual.

[167] Soleri and Davis, *Earth Casting*, 27.

[168] There has been no specific elaboration of the countercultural educational aspects of Ant Farm and Soleri's manuals, aside from Scott's discussion of Ant Farm's DIY manuals as part of their pedagogy. See her comment about pedagogy and the DIY ethos within Scott, *Living Archive 7*, 100.

[169] The *Domebook* manuals were associated with alternative pedagogy, as they were based on experimental dome constructions created by high school students from Santa Cruz's experimental, independent Pacific High School. Kahn, *Domebook Two* (October 1972), 32-33.

[170] Reingold, *The Millenium Whole Earth Catalog*, cover inset. Note that Deleuze and Guattari also refer to the term 'tools,' which they differentiate from the term 'weapon.' Deleuze and Guattari, *A Thousand Plateaus,* 444. A detailed discussion of tools is beyond the scope of the present thesis; as such, the term 'tools' is specifically used in the present thesis in relation to the DIY discourse and the countercultural discourse.

[171] J. Baldwin, Untitled introduction, *The Millenium Whole Earth Catalog*, ed. Howard Reingold (San Francisco: Harper San Francisco, 1994), cover inset.

[172] Kahn, *Shelter,* 2.

[173] Van der Ryn, *Farallones Scrapbook*, 2.

[174] Sadler, 'An Architecture of the Whole,' 108.

[175] "The radicalization of pedagogy" is a term used by Scott in association with Ant Farm's educational approach. Scott, *Living Archive 7,* 20.

[176] A local *Oakland Tribune* newspaper article about the controversial nature of Ant Farm's teach-in appears in *Inflatocookbook*. Scott refers to the teach-in being in April 1970; see Scott, *Living Archive 7*, 76-77. However, the newspaper article published in the 1973 *Inflatocookbook* is dated April 22, 1972. Scott notes that the original 1970 *Oakland Tribune* article 'Breathing—That's Their Bag' article was reworked and redated for *Inflatocookbook*. See the section 'Faculty Urges U.C. Control of Air Labs', Oakland Tribune, Wednesday April 22, 1972, republished in Ant Farm, *Inflatocookbook (*1970 and 1973), 'Faculty Urges U.C. Control of Air Labs.'

[177] Scott, *Living Archive 7,* 20.

[178] McLuhan specifically referred to the term teach-in in his 1967 publication *The Medium is the Message*. McLuhan refers to the drop out and the teach-in being "correlative." While the dropout is a "rejection of nineteenth-century technology as manifested in our educational establishments," the teach-in is positive and creative. He also notes the experimental and collaborative pedagogy embedded in the teach-in: "[t]he teach-in represents an attempt to shift education from instruction to discovery, from brainwashing students to brainwashing instructors. It is a big, dramatic reversal [...] As the audience becomes a participant in the total electric drama, the classroom

can become a scene in which the audience performs an enormous amount of work." McLuhan, *The Medium is the Message*, 101.

[179] Ant Farm, *Inflatocookbook (*1970 and 1973), 'Faculty Urges U.C. Control of Air Labs.'

[180] Scott, *Living Archive 7,* 20. Scott argues that Ant Farm's very foundation in 1968 was based on a pedagogical agenda, with Ant Farm accepting a position to teach at the University of Texas 4 months after their inception. According to Scott; "Doug Michels and Chip Lord founded Ant Farm in San Francisco in October 1968 on a "platform of educational reform," relocating to Texas toward the end of January 1969 when the opportunity arose to teach at the University of Houston for the spring semester." Scott, *Living Archive 7,* 20.

[181] Scott, *Architecture or Techno-Utopia,* 213.

[182] Ant Farm made the following comment in relation to the format of *WEC*, which they saw as revolutionary in comparison to traditional print media of the time: "the whole earth catalog is a new form, the underground newspaper is still a newspaper." Quoted in Scott, *Architecture or Techno-Utopia,* n86, 321. Scott attributes the original quote to an April 1970 statement in *The Masked Cougar.* 'Ant Farm Fantasies,' 5.

[183] Scott, *Architecture or Techno-Utopia,* 53.

[184] Scott, *Living Archive 7*, 83. In 1973, Brand also relocated *WEC* to the Sausalito, California pier, where Ant Farm's studio was located. Another connection between Ant Farm and the *WEC* was a commission to create an inflatable for the *Liferaft Earth Event*. According to Scott, the *Liferaft Earth Event* was to be a week-long, environmentally-orientated 'Wild West' festival in San Francisco. Scott describes this festival as ill-fated as "it did not happen." Scott, *Living Archive 7*, 70. According to Ant Farm, the *Liferaft* project was "turned down for Stewart Brand's Liferaft Earth Event:" see Ant Farm, *Inflatocookbook* (1973), 1. According to Ant Farm member Curtis Schreier, Stewart Brand became angered by the difficult environmental conditions associated with the inflatable they created for *WEC's* supplement production facility (as referred to by Scott, *Living Archive 7,* 82).

[185] Scott, *Living Archive 7,* 104.

[186] In relation to Ant Farm's 'Truckstop Network' project (which appeared in the guise of the 'Truckin University' project within *Inflatocookbook*), Scott refers to: "[t]he transformative personal and pedagogical prospects attributed to access to high tech equipment as well as the do-it-yourself ethos were also important factors, as was the graphic sensibility used to promote a new vision of the environment." Scott, *Living Archive 7,* 100.

[187] This statement appeared in both 1970 and 1973 editions. Ant Farm, *Inflatocookbook (*1970 & 1973), 'Ant Farm.'

[188] This statement appeared in only the 1970 edition. Ant Farm, *Inflatocookbook* (1970), 'Ant Farm.'

[189] Ant Farm, *Inflatocookbook* (1970), 'Ant Farm Hy-Tek.'

[190] Scott reinforces the point that the second edition of *Inflatocookbook* was staple-bound, and thus "the feedback-based transformation would not be realized." Scott, *Living Archive 7*, 66.

[191] Ant Farm refers to, for example, the "freedom and instability" promoted within an inflatable within the 'A Course in Getting Acquainted with Inflatable' section. The full title of the page is 'A Course in Getting Acquainted with Inflatables—Chapter 1 of the Inflatocookbook,' which will be shortened hereafter to 'A Course in Getting Acquainted with Inflatables.' Note that although there is a reference to 'chapter 1' on this page, there does not appear to be a 'chapter 2' or any subsequent chapters in the *Inflatocookbook.*

[192] Kallipoliti with Curtis Schreier and Chip Lord (Ant Farm), *Interview.*

[193] Ant Farm*, Inflatocookbook,* 1970, 'Ant Farm.'

194 The 1974 date is the last listed date of any construction resulting from the 'Siltpile Workshops' at Cosanti in the *Earth Casting* manual—this was the date of the Antioch Workshop, Cosanti. See Soleri and Davis, *Earth Casting*, 6. Note also that Lima refers to Cosanti projects starting in 1956 "and continuing for about twenty years:" see Lima, *Soleri*, 160. For consistency, the dates from *Earth Casting* will be used throughout the present thesis.

195 The date '1969' is given as the start date of the Arcosanti projects in the *Earth Casting* manual, including "preliminary design work" and the establishment of services. However, construction on the South Vault building began in 1970. See Soleri and Davis, *Earth Casting*, 7. Lima refers to Arcosanti beginning in 1970: see Lima, *Soleri*, 231.

196 Soleri specifically notes that "[c]onstruction and research will be the means" for investigating "Architecture as environment.' Soleri, *The Development,* 5.

197 Soleri explicitly positions Arcosanti as an experimental research project. Soleri, *Technology and Cosmogenesis*, 103. He also states that "Arcosanti is search and research in the field of environment and habitat (the field of civilisation)." Soleri, *Technology and Cosmogenesis*, 102.

198 In *Earth Casting*, Soleri describes 'arcology' as originating from the separate terms "architecture + ecology.' Soleri and Davis, *Earth Casting,* 106.

199 The *Cosanti Foundation* was formalised in 1965, but informally began in 1956 with the construction of the Earth House at *Cosanti*. Cosanti is also used to refer to the built component of the arcology project in Arizona. According to Soleri and Davis, "[t]he Cosanti structures were built between 1956 and 1974". See Soleri and Davis, *Earth Casting*, 13. Soleri and his family originally lived at Cosanti. Adam Abraham, 'Arcosanti and Cosanti: Thought Provoking Arizona Destinations', *FabulousTravel.com* (6 August 2007), accessed 26/06/2010, http://www.fabuloustravel.com/usa/article/393/21828: 1. *Cosanti* is now designated as an Arizona Historic Site.

200 Soleri, *The Development,* 5. The term 'Cosanti' is made up of the terms *cosa*—the Italian word for 'thing'—and *anti*, referring to an anti-consumerist stance. Lima, *Soleri*, 160.

201 Soleri and Davis, *Earth Casting*, 4. In his 1969 article, Cook notes that the workshops became an official summer course for students at the Arizona state University in 1966. Cook also notes that "the unconventional mixture of hard physical labour and intense philosophical brainstorming represent a hopeful alternative to the traditional form of architectural academicism." Cook, 'Paolo Soleri,' 23. The architecture students originally came to learn how to make plaster architectural models using silt-casting techniques. The architectural model casting technique was also used to create models of buildings constructed at Cosanti that were also silt-cast, albeit at a 1:1 scale and involving a variation in the original techniques. Soleri and Davis, *Earth Casting*, 2-3.

202 Soleri and Davis, *Earth Casting*, 13.

203 Soleri, Paolo, *Technology and Cosmogenesis*.

204 Soleri and Davis, *Earth Casting*, 1.

205 Chapter 1 of *Earth Casting,* 'How to Use this Book," makes reference to the target audience: "[o]ur intent is for someone who has no experience in working with earth and silt to start from the basics and progress to more advanced projects." Soleri and Davis, *Earth Casting*, 1.

206 Soleri and Davis, *Earth Casting*, 106.

207 In the preface of *Earth Casting,* there is reference to Soleri's "unorthodox architectural concepts;" however there is no explanation of what these concepts are. Soleri and Davis, *Earth Casting*, ix.

208 Soleri and Davis, *Earth Casting*, 1.

[209] Soleri and Davis, *Earth Casting*, 1.

[210] See the comments relating to education and learning within both Ant Farm and Soleri's manuals: Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm;' and Soleri and Davis, *Earth Casting*, 1.

[211] The association of DIY with both the nuclear family and consumerism was made by Sparke. See Sparke, *An Introduction to Design and Culture,* 120.

[212] Turner, *From Counterculture to Cyberculture*, 94.

[213] Scott, *Architecture or Techno-Utopia,* 177.

[214] Kallipoliti with Curtis Schreier and Chip Lord (Ant Farm), *Interview.*

[215] Michael Sorkin, 'Sex, Drugs. Rock and Roll, Cars, Dolphins and Architecture' in *Ant Farm 1968-1978*, ed. Constance M. Lewallen and Steve Seid (Berkeley: University of California Press, ltd., 2004), 6: Simon Sadler, *Archigram: Architecture without Architecture* (The MIT Press, 2005), 159. Note that Sadler also refers to Archigram as deploying the rock-band model. Sadler also cites C. Ray Smith and his 1977 *Supermannerism: New Attitudes in Post-Modern Architecture* text as the original source for the analogy between the rock band and countercultural architects: see C. Ray Smith, *Supermannerism: New Attitudes in Post-Modern Architecture* (New York: E.P. Dutton, 1977), 25. In footage from a media interview during their 1976 visit to Sydney, Australian reporter Julie Foster noted that Ant Farm "lead a nomadic, yet collectively organised life scattered throughout California. They say that their cohesion is extraordinary." Ant Farm, 'Off-Air Australia 1976.'

[216] Ant Farm as reproduced in Scott, *Living Archive 7*, 70.

[217] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

[218] Kallipoliti with Curtis Schreier and Chip Lord (Ant Farm), *Interview.*

[219] 'Truckin' University' was a hypothetical project for a mobile university, which incorporates elements or tools from other Ant Farm projects, including inflatables. 'Truckin' University' was featured in both editions of *Inflatocookbook*. Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

[220] Ant Farm's oeuvre included many examples of art installations and event-based projects involving large-scale collective experience and action during assembly, site adjustment and occupation. The construction and occupation of large-scale inflatables are a key example. Inflatable components that require group assembly are also incorporated in speculative projects like 'Truckin' University" within the *Inflatocookbook.* In other examples, art projects have a significant performative element, involving the audience to some degree in the art experience. For example, the *Media Burn* performance involved both Ant Farm members and paid actors performing in front of a large audience of media and local visitors. Similarly, *Time Capsule 1972-1984* involved Chip Lord, Doug Michels and Curtis Schreier opening a refrigerator time capsule in front of an audience at Art Guys Studio, Houston, 2002. See Ant Farm, 'Info section: Time Capsule,' in *Ant Farm Video*, colour and B&W NTSC DVD, Mpeg-2 format, original produced by Allan Rucker and Curtis Schreier, ed. Chip Lord (Ant Farm: 1971, Ant Farm: 2003), 23 min. The capsule (a refrigerator) was commissioned by the Contemporary Arts Museum in Houston and was opened in 2000 at the Art Guys Studio.

[221] The page asks for feedback from the readers on a range of issues. Ant Farm, *Inflatocookbook* (1970), 'Feeeeeeeeeeeeedbaaaack….'

[222] For example, Schreier and Michels can be regularly seen in footage of occupied inflatables in 'Inflatables Illustrated.'

[223] Harper, Boyle and the editors of Undercurrents, *Radical Technology*, 105. While Ant Farm is not specifically cited in this text, the experimental aspects of inflatables are clearly articulated.

[224] Ant Farm*, Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[225] Ant Farm refer specifically to the "freedom and instability" of the constantly changing inflatable interior. Ant Farm*, Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[226] Ant Farm*, Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[227] In relation to direct bodily encounters with inflatables, Ant Farm refers to participants using "her, his hands" to create inflatables. Ant Farm*, Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[228] Footage includes a verbal exchange between Ant Farm members, talking about the psychological freedom afforded by non-rectangular spaces.

[229] Ant Farm*, Inflatocookbook* (1970 and 1973), 'Good Taste Page: Pneumatics.'

[230] Ant Farm*, Inflatocookbook* (1970 and 1973), 'Good Taste Page: Pneumatics.'

[231] Ant Farm*, Inflatocookbook (*1970), 'Rasberry Exercises.'

[232] Soleri and Davis, *Earth Casting,* 4 and 6: Kirk, *Counterculture Green*, 85.

[233] Soleri and Davis, *Earth Casting,* 106.

[234] According to both Cook and Wilson, the regular communal feasts at Arcosanti are reminiscent of Italian family life. Cook, 'Paolo Soleri,' 21: Marie Wilson, *Arcosanti Archetype: The Rebirth of Cities by Renaissance Thinker Paolo Soleri (*Fountain Hills, Arizona: Freedom Editions, 1999), 47.

[235] Cook, 'Paolo Soleri,' 21.

[236] Communal life is not without its difficulties, which are evidenced by some changes to the Arcosanti programme that were made to accommodate the realities of communal living. For example, originally there were many communal kitchens that eventually were (in the main) centralised and attached to the Arcosanti café. Soleri states that these changes were a reaction to poor participation in collective duties amongst some visitors: "[u]nless you have very strong, self-responsible people, you've got a mess. If someone is not willing voluntarily to wash the things in the sink, for instance, in a few weeks the sink becomes a mess." Soleri, *The Urban Ideal,* 39.

[237] Soleri, *The Bridge Between Matter and Spirit is* Matter Becoming Spirit, 80. For Soleri, Arcosanti is the embodiment of broader philosophical ambition to create a balance between human and nature. Soleri has written many philosophical texts in which he outlines his view of human evolution and technology, biology, God and ecology. In one text, he notes his long term "quest for an environment in harmony with man." Paolo Soleri, *The Development by Paolo Soleri of the Design for the Cosanti Foundation Arizona, U.S.A,* 5. Soleri's speculative texts written in the 1980s reveal his interest in theology. He refers to the readings of radical French Catholic priest, theologist, geologist and palaeontologist Pierre de Teilhard de Chardin. See, for example, Soleri, *The Urban Ideal*, 36. Some counterculturalists also turned to ideas of alternative spirituality and the shamanic, intermixed with psychedelic experiences associated with LSD. LSD was linked with mystical experiences and revolutionary insights in the counterculture, and later with the hacker and cyberspace scenes. For example, countercultural figure and advocate of cyberspace, John Perry Barlow, credited his philosophical insights to reading the religious writings of Teilhard de Chardin, and to LSD. Turner, *From Counterculture to Cyberculture*, 165. Soleri, however, did not refer to psychedelic drugs and was opposed to many elements of youth culture on display within the countercultural movement, including sexual experimentation. See, for example, Soleri's writings in *Space for Peace,* 243; in *Fragments,* 33, and; in *The Omega Seed,* 34.

238 Soleri describes the Cosanti buildings as "an interconnected complex, forming what is really a small neighbourhood." Soleri and Davis, *Earth Casting,* 13. This planning layout reduces the need for daily commuting and spaces are connected via pedestrian routes; cars are external to the site and used infrequently. Wilson, *Arcosanti Archetype,*14. Soleri was explicitly critical of the American model of suburban development and associated sprawl, advocating instead for dense urban environments (like that planned for Arcosanti). He was also critical of his former employer, Frank Lloyd Wright, in relation to his notion of *Broadacre City* concept. Soleri associated this concept with suburban sprawl and resource depletion. Soleri, *The Sketchbooks of Paolo Soleri*, 7. In *The Urban Ideal*, Soleri notes that "[t]he source of our problems is that we've given ourselves the wrong pattern to build upon. The wrong pattern is the suburban pattern. And the American dream is unnecessarily chained to it." Soleri, *The Urban Ideal*, 127. As part of his architectural agenda, Soleri argues for the biological human need to live in dense, communal settings: "there is no substitute for physical, bodily contact exponentially folding over itself which the city affords man." Soleri, *The Sketchbooks of Paolo Soleri*, 7.

239 Soleri and Davis, *Earth Casting,* 106.

240 For example, and as discussed in detail in chapter 2, there is strong focus on the 'artisanal' attendance to materials within Williams' text *Craftsmen of Necessity* (the same text that was also reproduced in the countercultural manual *Shelter).*

The Artisanal

Chapter 4: The notion of the artisanal

4.0   Introduction and background

The present chapter establishes the conceptual framework and theoretical ground for exploring DIY architecture in subsequent chapters. Chapters 2 and 3 of the present thesis identified a significant focus on materials and processes within the post-war discourse on DIY in North America, including the countercultural DIY manuals of Ant Farm and Soleri. Chapter 3 also explored an initial association between 'DIY' and 'DIY architecture,' and the 'artisanal,' within the discourse on DIY in the North American counterculture of the 1960s and 1970s. The countercultural text *Craftsmen of Necessity* describes the 'artisanal' with respect to an attendance to materials and associated capacities and processes. On the surface, these descriptions appear to resonate with the philosophical notion of the *artisanal* as described by Deleuze and Guattari. This resonance warrants further investigation, particularly in terms of the deeper question of DIY architecture and the artisanal that is of concern in the present thesis. If chapters 2 and 3 can be understood as a summary of conventional understandings of DIY and DIY architecture in post-war North America, chapter 4 establishes the conceptual context for rethinking DIY anew. The notion of the *artisanal* and its attendant definitions and conceptions will be used as "tools"[1] for theorising and exploring DIY architecture.

Deleuze and Guattari's *A Thousand Plateaus* is the second in the the *Capitalism and Schizophrenia* volumes.[2] *A Thousand Plateaus* is one of four key collaborative works written by Deleuze and Guattari, including the earlier *Anti-Oedipus*: *Capitalism and Schizophrenia* (1972).[3] In his 'Translator's Foreword' to *A Thousand Plateaus*, Massumi describes the text as: "a positive exercise in the affirmative "nomad" thought called for in *Anti-Oedipus*."[4] For Massumi, the notions and processes involved in 'nomad thought' challenge the hierarchical thinking characterising much of Western philosophy.[5] Deleuze and Guattari's nomad thought dissolves customary boundaries between ideas, subjects and objects. It could be argued that Deleuze and Guattari's nomad thought resonates with the heterarchic approach to materials, education and social formations invoked in the discourse on DIY in the 1960s and 1970s North American counterculture.

The key 'plateau'[6] of *A Thousand Plateaus* dealing with the *artisanal* is the '1227: Treatise on Nomadology—the War Machine.' Although only a small section of *A Thousand Plateaus* is explicitly devoted to the artisan, it is part of a broader philosophical discourse within Deleuze and Guattari's important collaborative work. The '1227' plateau contains two sections referring to the *artisan* and *artisanal* processes, including a specific definition of the artisan related to the following and prospecting of matter. Deleuze and Guattari's notion of the *artisanal* will be explored using three key, interrelated

philosophical conceptions: flow and following; the matter-form relation, and; action, matter and transforming bodies. Although these conceptions are all distinct, it is difficult to understand and explore the notion of the *artisanal* without reference to these associated ideas. In the present chapter, the philosophical notion of the *artisanal* will be explored using the aforementioned related philosophical conceptions as subheadings. In chapter 5, these philosophical conceptions will be deliberately aligned with key issues of DIY architecture (identified in chapter 3), in order to explore the "resonances"[7] and "relays"[8] between the notions and discourse. Before turning to a detailed examination of the philosophical notions, the chapter begins with a comparative discussion of the countercultural discourse on the 'artisanal,' and the philosophical notion of the *artisanal*.

The artisanal in countercultural discourse, and in Deleuze and Guattari's philosophical writings
Although the 'artisanal' is never precisely defined in the countercultural DIY discourse, a particular text published during the countercultural period in North America—the 1974 *Craftsmen of Necessity*— provides a detailed account of 'artisanal' procedures using specific examples of vernacular craft, including woodworking and metallurgy.[9] Williams' *Craftsmen of Necessity* is associated with the counterculture through its publication in the *Shelter* manual: the well-known countercultural text on hand-made buildings and small-scale building technologies.[10] *Shelter* also features more experimental residential projects, such as Ant Farm's *The House of the Century* (1972), which is experimental in terms of both its distinctive shape and its unusual ferro-cement construction.[11]

In *Craftsmen of Necessity*, artisans are understood to be "following"[12] the characteristics of materials as they are discovered during direct contact with them. The 'following' of matter and its flow is also a key characterisation of the *artisanal* mode of operation within Deleuze and Guattari's *A Thousand Plateaus*.[13] Other key issues within *Craftsmen of Necessity* demonstrate a striking correspondence with Deleuze and Guattari's philosophical discussions of the *artisanal* within their collaborative text *A Thousand Plateaus*.[14] Both *Craftsmen of Necessity* and *A Thousand Plateaus* invoke a heterarchic conception of materials and form, in the sense that form doesn't dominate a conception of matter. In both texts, artisans are described as operating in a particular way when working specific materials: artisans acknowledge that materials already have their own capacity to form and transform.[15] Both texts suggest that the artisan develops an intuitive knowledge of materials through direct contact with them. Artisanal approaches involve, in William's words: "intuitive knowledge,"[16] and; in Deleuze and Guattari's terms, "intuition in action."[17] Furthermore, both texts discuss the specific examples of the artisanal "woodworker"[18] and the "blacksmith,"[19] and also refer to dynamic encounters between the woodworker, timber and tools (although the descriptions of process are differently nuanced in each text). Williams argues that when a woodworker uses his tools: "a conversation is conducted between worker and material."[20] According to Deleuze and Guattari, the woodworker is led by the character of the timber as

it is being worked with tools: thus the "artisan who planes follows the wood, the fibres of the wood, without changing location."[21]

Interestingly, Williams' account of the 'artisanal' involves direct bodily contact between the artisan's individual body, tool and material.[22] As noted within *Craftsmen of Necessity*: "[t]he work of most artisans is a total involvement of mind and body. Many have found that two hands are not enough."[23] Although Deleuze and Guattari's theories can be discussed in relation to bodies,[24] there is no specific reference to the artisan's individual body per se in their definition of the *artisanal*. This is not surprising, considering Deleuze and Guattari's invocation of a more fluid notion of the body throughout *A Thousand Plateaus* which is not bound to individual subjects.[25] Given Deleuze and Guattari's stance on the body, it could simply be argued that the body of the woodworker is implicated in the following of matter and its flows in *A Thousand Plateaus*.[26] *Craftsmen of Necessity* makes an additional point about the uniqueness of each 'artisanal' output to the material and situation at hand, and in the process, raising a potential associated problem of the disconnection between the 'artisanal' maker and the final user of the artisanal artefact. Williams notes that:

> But even though the artisan represents the first step in removing production from the user—
> a process that has moved vast distances in the modern world—the artisan maintains a
> pristine ratio of one worker and one result […] The products, though preconceived, are
> spontaneous and varied. Each is as fresh and vital as though it were the only one ever to
> exist.[27]

While this is not a problem in the DIY mode—as the designer is the maker and user (by definition)—the point is worth noting. Deleuze and Guattari do not speak of a disconnection between making and use, which again is not surprising based on their desire to think beyond functionalist conceptions. Deleuze and Guattari do reiterate the specificity of each matter and its potentialities to each *artisanal* operation, such as "wood with the right kind of fibres."[28] Williams makes a similar point about the intimate, specific, ongoing relation between artisan, materials, including tools, which he argues differentiates the "home craftsperson"[29] from the artisan to some extent; based on the artisan's focus and dedication to the production of specific items.[30] Deleuze and Guattari also make the point that not all craftspeople are artisans, but their differentiation is based on the artisan's primary commitment to attending to materials, rather than the amount of time committed to *artisanal* practices.[31] Deleuze and Guattari nevertheless reinforce a focus on "pure productivity"[32] which is similar to William's aforementioned focus on the production processes.

There are key differences relating to the artisanal accounts in both texts. One significant difference is that Deleuze and Guattari explicitly define the *artisan* in *A Thousand Plateaus*. The artisan is defined

according to the particular ways she encounters materials: "[w]e will therefore define the artisan as one who is determined in such a way as to follow a flow of matter."[33] There is no explicit definition of the 'artisanal' within *Craftsmen of Necessity*. Another important difference between the two texts relates to the different approaches to technology. In *Craftsmen of Necessity*, simple hand-based tools and traditional vernacular technologies are favoured over more complex, 'machine-based' technologies.[34] While a preference for small-scaled technology was common within the counterculture, this preference did not necessarily preclude high or machine-based technologies.[35] Similarly, Deleuze and Guattari do not specifically cite a preference for certain technologies, or an opposition to machines, because their account of the *artisanal* is specifically related to process and procedure i.e. a following of matter-flows. Williams, in contrast, expresses a negative view of the effects of machine technologies and mass production on artisanal lifestyles.[36] Due to the focus on traditional vernacular crafts and attendant materials within *Craftsmen of Necessity*, there is no discussion of 'artisanal' approaches involving contemporary manufactured materials such as the plastics described in Ant Farm's and Soleri's manuals.[37] It is worth noting that Deleuze and Guattari also focus on woodworking and metallurgy in their account and definition of the *artisanal*, although their definition is not tied to specific materials or techniques.[38] Any differences in their artisanal accounts are not seen to undermine any resonances or relays between their respective thoughts, because both Williams, and Deleuze and Guattari, associate the artisanal with a particular methodology for incarnating and transforming materials from one state to another. However, *A Thousand Plateaus* articulates the *artisanal* in more precise and process-orientated terms than *Craftsmen of Necessity*. Accordingly, *A Thousand Plateaus* facilitates a theorisation of *artisanal* practices that are not tied to a particular expertise, skill set or material, and which (arguably) makes the *artisanal* notion applicable to theorising a range of practices and procedures, including DIY.

Figure 4.1: Moroccan wood turner, as featured in the 1974 *Craftsmen of Necessity*.

Craftsmen of Necessity is focused on, and generally invokes, direct bodily encounters between artisan-makers, tools and materials. This is illustrated in the specific examples of traditional 'craftsmen' directly working metal, timber and so forth. In conventional architectural practice, the architect is often not physically involved in the fabrication of buildings, and prepares drawings and written specifications that anticipate the building form in advance to its actual construction in the project site. It is worth noting that Ant Farm and Soleri's DIY architecture manuals also include some written and drawn specifications: however, the expectation is that there will be direct bodily contact between the do-it-yourselfer, tools and materials. Similarly, there is an expectation that the nuances of any 'real' material will be discovered by the designer-maker during the DIY mode of operation. Any generalisation of a material type or category within the manuals is also challenged and contextualised by the designer-makers own encounters with 'real' materials in project sites. Thus all the images and words relating to materials in these manuals are specifically focused on direct encounters with materials and their attendant properties, more than the overall or generic architectural forms they may take. Importantly, Ant Farm and Soleri's manuals are based on projects in which the architect is the maker and thus involved in similar direct bodily encounters with materials and tools to those invoked within the *Craftsmen of Necessity*. *Craftsmen of Necessity* is also focused on direct artisan-tool-material encounters, as well as positioning the 'artisanal' as a comprehensive mode of living.[39]

Within the countercultural DIY discourse of the 1960s and 1970s, 'artisanal' skills and approaches were neither limited to the professional domain, nor confined to the construction phases of projects, because the do-it-yourself 'maker' could also be the designer and the 'end-user.' Thus in the counterculture, 'artisanal' techniques and approaches were promoted in DIY manuals such as *Shelter* and *WEC* as an approach for 'everyone.' Using Sadler's terms, manuals such as the *WEC* provided "a vastly expanded realm of expertise."[40] Both Ant Farm and Soleri weren't specifically trained or indentured as artisans or professional builders, but developed these skills through their own DIY experiments with materials and form which then became the basis of their own DIY architecture manuals.[41] Ant Farm and Soleri's DIY architecture manuals are thus based on direct bodily encounters with materials within project sites.

With respect to the overall thesis aim—to develop a theoretical account of DIY architecture—this thesis now turns to the philosophical notion of the *artisanal*, with a specific concentration on Deleuze and Guattari's theorisation. The *artisanal* will be elaborated through a discussion of the related conceptions of: flow and following; the matter-form relation; and action, matter and transforming bodies. It is important to note that these different conceptions are interrelated, and there are inevitable overlaps in their discussion.

4.1   Flow and following

In *A Thousand Plateaus*, Deleuze and Guattari: "define the artisan as one who is determined in such a way as to follow a flow of matter."[42] They discuss the *artisanal* mode with specific reference to the examples of woodworkers and metallurgists, rather than architects.[43] There is no direct comparison between the artisan and the architect, even though other theorists have established such direct binaries.[44] Deleuze and Guattari do, however, refer to the opposing 'operations' deployed by the Gothic "journeyman" and the "architect."[45] They argue that the techniques used by the Gothic journeyman are different to those of the architect, who uses drawings that are produced away from project sites as a primary operational approach: "[t]he ground-level plane of the Gothic journeyman is opposed to the metric plane of the architect, which is on paper and off site."[46] This reference to the 'journeyman' and 'architect' occurs in the '1227' plateau (the same plateau featuring the discussion of the *artisanal*), in a section referring to the different approaches to 'labour' within different scientific models. Even though the Gothic journeyman is not specifically described as an artisan, there is a link between the conception of the artisan and journeymen within the '1227' plateau. Blacksmiths or "smiths"[47] are suggested as one example of journeymen, and are later referred to as artisans within the same plateau. Thus, while Deleuze and Guattari do set up an 'opposition' between the techniques of the journeyman or blacksmith-artisan and the architect, this point does not preclude consideration of the *artisanal* within architectural practice. One might argue that an architect who follows 'the flow of matter' is engaged in an *artisanal* mode of operation. Incidentally, Deleuze and Guattari make reference to the tent (and the dome) as specific 'architectural' examples associated with the nomad.[48] A focus on specific architectural forms, such as the tent or dome, was seen as counter-productive in the present thesis. This is because the discourse on DIY is focused on processes, materials and action, more than building typology and form.

According to Deleuze and Guattari's definition of the artisan as the follower of "matter-flow,"[49] the artisan is not distinguished as an individual possessing a particular expertise, even though this attribute is not specifically excluded from the definition. However, subjects must demonstrate a wholehearted commitment or 'determination' to follow matter-flow to be considered *artisanal*. Accordingly, "winnowers and potters" are not considered to be *artisanal* by Deleuze and Guattari, because "they only secondarily take up craft activity."[50] Whether one is defined as a potter or artisan is not of primary concern of the present thesis: the key point is that the *artisanal* mode involves a primary focus on a material's dynamic qualities during its working and transformations. Importantly, the *artisanal* is not tied to specific skill set. As a consequence, the artisan can be discussed in relation to subjects who may not, for example, be qualified or indentured as professional artisans, but who have developed an *artisanal* approach through the following of the flow of matter.

One of the key conceptual notions associated with the artisan is that of 'flow.' Flow is a complex notion referred to throughout *A Thousand Plateaus* and may be considered a "general condition"[51] of life from which we attempt to extract things, categories and particular phenomena. Theorists Mark Bonta and John Protevi argue that Deleuze and Guattari's notion of flow invokes that which "escapes" order and hierarchy.[52] Deleuze and Guattari identify many flows in relation to the artisan, and matter is one of these flows.[53] While *artisanal* following may involve flows other than matter, there is always a primary focus on matter-flow.[54] Another flow identified in relation to artisans is markets, which are "no longer a flow of matter,"[55] but involve flow nonetheless. Artisans might follow the flow of markets, and in doing this, could be considered as "workers"[56] within a capitalist market system, rather than artisans. In the latter scenario, the focus becomes the flow of markets (for example, the flow of money and retail finances), more than matter-flow per se (such as attending to the qualities of a particular timber slice as it is being worked). Many phenomena are described in relation to flow, and Deleuze and Guattari give further examples. In the '1227' plateau, Deleuze and Guattari refer to the "flows of grass, water, herds."[57] In a later plateau of *A Thousand Plateaus*, Deleuze and Guattari identify "four principal flows" of the world economy: matter-energy; the flow of population; the flow of flood, and; the urban flow.[58] These examples suggest that flow is the 'condition' of life from which we attempt to extract phenomena, such as the phenomenon of the movement of peoples across the planet, the dynamic conditions of cities and so forth. Phenomena—and life itself—can be understood as existing in a state of flux specifically because they are composed of multiple, complex and interacting forces.

According to architectural theorists Smith and Ballantyne (drawing from Deleuze), an immersion in the intensity and flow of material phenomena enables one to remove oneself from the constrictions imposed by rigid categories, habits and rules—described as "the hierarchies of habit."[59] The disruption of habit occurs when one is focused on and attending to the material phenomena at hand, as opposed to drawing heavily from a pre-conceived or habitual response to a phenomenon. One example might be when one encounters an inflatable space or interior for the first time. While there will no doubt be some expectation of what the space might be like, the actual experience will inevitably differ from the expectation, and also differ from other comparative experiences of conventional fixed-wall spaces and rooms. Smith and Ballantyne's interpretation of flow and its associated challenge to 'the hierarchies of habit' will become of particular interest in chapter 5, when the experimental spatial encounters described within Ant Farm and Soleri's DIY manuals are explored.

During *artisanal* operations, Deleuze and Guattari refer to matter being engaged as if in a state of flow: "matter in movement, in flux, in variation."[60] According to Bonta and Protevi, Deleuze and Guattari suggest that matter is "alive" and capable of self-organisation.[61] Like other phenomena, matter can be understood as existing in a state of flow because of its interconnections to, and interactions with, other matter and forces during its transformations from one state to another. Lloyd Thomas makes a similar

point in her discussion of materials and architectural form, arguing that form cannot be thought of as disassociated from its production context.[62] To take the example of timber, the processes involved in carving a piece of timber cannot be disassociated from other factors influencing its transformations: the chisel tool, the body of the woodworker, the nuances of the timber species and so forth. All matter is conceived as part of the flow of life, in larger systems and assemblages. This has implications for thinking about the manner by which artisans work with materials; treating materials as active, 'alive,' as possessing a form and the capacity to transform, rather than being passive, inert and formless.

Even though the *artisanal* is not tied to a particular matter or material, it is worthwhile referring to the particular examples of materials discussed in the '1227' plateau. Within this plateau, Deleuze and Guattari discuss the *artisanal* mode using the examples of woodworking[63] and metallurgy,[64] and their associated materials. In an earlier plateau of *A Thousand Plateaus*—'1837; Of the Refrain'—they make specific reference to reinforced concrete,[65] although this material is primarily discussed in terms of its formal properties rather than production processes (artisanal or otherwise). Deleuze and Guattari also refer to Simondon's discussion of the formation of a brick,[66] which will be discussed in more detail shortly (4.2). And, even though the artisanal notion is not limited to specific material practices, the present chapter elaborates the same examples of woodworking and timber,[67] metals and metallurgy, and brick that are used to discuss the *artisanal* within *A Thousand Plateaus*.

The idea that matter exists in flow relates to the idea that it must be 'followed.' During *artisanal* operations, matter is assumed to exist in a dynamic state due to the many influences inflecting its transformations; this shifting state must therefore be attended to or followed. Using Deleuze and Guattari's words, artisans are "obliged"[68] to follow the flow of matter as it is encountered. Following does not necessarily involve a change in physical or geographic location, such that a woodworker can 'follow' the specific potentialities of timber grain in a particular segment or section of timber.[69] An artisan *may* change geographic location in order to 'seek' or prospect certain materials with desirable characteristics, such as "wood with the right kind of fibres."[70] In *A Thousand Plateaus*, 'prospecting' is therefore a procedure associated with 'following' and is part of a sequence referred to as a "more general process"[71] involving matter-flow. The latter point may give the impression of a wilfulness or forcefulness in the artisanal process, yet there is always an attendance to material capacities, even during the prospecting process.[72] Deleuze and Guattari also note that artisans are focused on "the matter-flow as pure productivity."[73] This focus on productivity is not to imply a wilful disregard of a particular material's form and capacities for self-organisation: the artisan is merely following and participating in the flow and dynamism already at play in the material.[74] The artisan does not seek inherent or underlying 'meaning' within a material but instead discovers, and works with, a material's specific potentialities and capacities through direct action and 'doing.'

Following can be understood as a dynamic *artisanal* operation involving artisans encountering and engaging "real-life"[75] material phenomena. Deleuze and Guattari use the term 'real-life' to differentiate operations that involve following and responding to actual materials, from operations that predict material phenomena in advance to any direct encounter. Accordingly, Deleuze and Guattari point out that artisans respond intuitively to what they encounter (which is always in flux), instead of being completely reliant on preconceived rules or theories about its performance. To illustrate this point, Deleuze and Guattari make reference to the construction of cathedrals in the Middle Ages, which occurred without pre-planning or engineering as we understand it today.[76] Thus for Deleuze and Guattari, 'following' involves "intuition in action."[77] The procedure of following involves a "surrendering to"[78] and being "carried away"[79] by the flow of matter and its own potentialities, specific to these very particular materials encountered in real-life.

In *A Thousand Plateaus*, following is also associated with the 'nomad' or ambulant sciences and differentiated from the procedures of "reproducing" associated with 'royal' or State sciences.[80] These two different philosophical models of science reflect two different ways of understanding and operating in the world which are based on different assumptions about material phenomena.[81] The procedure of 'reproducing' is orientated towards the generalisation and categorisation of material phenomena by developing rules and theorems that predict material behaviours in advance to any actual or real-life encounter. If one can categorise and predict material behaviour, one may (in theory) be able to reproduce the behaviour in other similar scenarios. 'Reproducing' is associated with the royal or State scientific model of the world, as it invokes a desire to order the world and its phenomena using rules and theorems—albeit it theorems that are extracted from very specific, real-life phenomenon. These same rules and "stable models"[82] are then applied to other similar scenarios with the hope of recreating or reproducing the same phenomena in another setting—using the rules to overcome individual variations in sites, material samples and so forth. Due to the reliance on rules, the State scientific model is also associated with the "legal model"[83] and the axiomatic mode of operation. Axiomatics involves rules, guidelines and "control calculations"[84] which guide encounters with materials according to particular expectations of what materials will do in real-life. Within the axiomatic mode, if materials do not conform to the prediction about their behaviours, they are judged as aberrations: for example, a growth knot in a pine timber board may be seen as an imperfection. In contrast, the same knot could be experienced as a consequence of the specifics of a material rather than an aberration per se—an opportunity, a feature to be worked into wall cladding and so forth. This latter approach is referred to as problematics or the problematic mode:[85] a mode of operation deployed within the aforementioned 'nomad' sciences. Like the artisanal mode, problematics also relates to how matter is understood, worked and encountered in real-life.

Deleuze and Guattari elaborate the aforementioned example of building cathedrals in the early middle-ages as an example of the problematic mode of operation. These cathedrals were built by artisans using intuitive experience and accumulated artisanal knowledge deployed within the project site, rather than through the application of engineering axioms, principles and theorems. Deleuze and Guattari associate the absence of the pre-engineering calculations with the collapse of some of these medieval cathedrals.[86] The artisans who were working on the cathedral constructions discovered and responded to problems as they were encountered—including the problem of structural instability and collapse—and did not use any calculations or theorems that may have predicted these calamities prior to their occurrence. These pre-construction calculations do not necessarily guarantee structural stability, particularly in the event of unforeseeable events such as natural disasters; yet there may be a significant minimisation of the risk of structural collapse through the incorporation of safety margins within the calculations. Thus Deleuze and Guattari point out that the problematic mode can involve issues associated with "safety."[87] The collapsed cathedrals *could* be successfully rebuilt by artisans who then deploy their new knowledge and experience of 'real-life' structural stability, without reference to engineering calculations per se. This observation leads Deleuze and Guattari to note that the nomad sciences: "overstep the possibility of calculation [...] and soon run into problems that are insurmountable from that point of view; they eventually resolve those problems by means of a real-life operation."[88]

Problematics are closely connected to the following and intuition involved in the artisanal mode, as the dynamic and changing state of matter requires continuous negotiation and response. This creates a complex situation, and "the complexity of the operation testifies to the existence of resistances it must overcome"[89] i.e. the associated problems and risks of safety, and so forth. Accordingly, the different modes of problematics and axiomatics are not mutually exclusive and are instead inevitably tied to each other in a "field of interaction."[90] For example, problems are often 'discovered' during encounters with real-life phenomena; problems which can then be dealt with by the mechanisms of the State sciences and its attendant axiomatics.[91] Having said this, Deleuze and Guattari note that there is always an inevitable "distortion"[92] in the axiomatic model as it is based on generalisations and abstractions of real-life phenomena. It can be argued that in real-life, there will always be some degree of deviation from any predictive model of material phenomena, even if these deviations involve only subtle variations (such as surface variations in a timber board), rather than more obvious examples (such as that of catastrophic structural collapse).

The artisan, who is attending to real-life materials and problems, can respond to the very specific nuances and possibilities of the actual materials at-hand. In the '1227' plateau, Deleuze and Guattari refer to the example of the woodworker who is following the fibres in a piece of wood, as part of the "more general process"[93] of *artisanal* production. If, in the aforementioned example, fibres can be understood as the grain in a piece of timber—a grain which is particular to the specific timber section—

then *artisanal* following involves responding to, and working with, the particularities (and potentialities) of the grain during its transformation into another form. The focus in the artisanal operation is to work the material according to its capacities, rather than wholly 'imposing' a preconceived form on the material. Deleuze and Guattari refer to this artisanal procedure as a "surrendering to the wood, then following where it leads [...] instead of imposing a form upon a matter."[94] It is important to note that the grain doesn't determine or predict the transformation of the timber because it doesn't contain a set essence or a set form(s). The grain is instead understood to invoke multiple potentialities to transform which, alongside the many other forces inflecting material transformations (tools, workshop settings and so forth), are followed by an attentive artisan.[95] Thus within the *artisanal* mode, matter and specific materials are understood to exist in a state of flow because they are part of, and connected to, other forces which are also part of a 'general condition' of life.

Massumi reinforces the idea that matter has an active character and self-organising properties in his description of the "wood-tool encounter,"[96] his own elaboration of Deleuze and Guattari's *artisanal* account of woodworking.[97] Massumi posits the transformation of timber as involving a confluence that includes (but are not limited to) the incline of the artisan's plane angled to follow the lines of timber grain,[98] the force of the woodworkers body behind the tool[99] and so forth. Massumi suggests further examples relating to the making of a timber table that include the influences of the workshop in which the wood is worked: thus an encounter occurs "between the blade and the form of content: a piece of wood, a customer order, rain, trucks, delivery, a tree."[100] These forces and influences, such as a customer order, may not necessarily involve direct physical encounters with the wood itself. Even in the predetermination that there will be a table made from a piece of timber, there are still many possibilities and actions beyond this predetermination. While Massumi's aforementioned examples concern a single bespoke table, one could argue that infinite interventions and variations can inflect even mass-produced items, like an IKEA bookshelf. In the IKEA example, the transformation of the flat-packed bookshelf is effected by the capacity of the purchaser to assemble the object, the adjustment of the shelf length to fit an apartment wall, the adjustment of individual shelf heights to accommodate specific books and so forth. Each encounter contributes to the variability and particularities of matter's transformations and incarnations; importantly, materials are never a passive element of these encounters because their capacities substantially inflect, for example, the bookshelf form(s).

As matter is understood to have a form and a capacity to form (within the artisanal mode of operation), it will do so regardless of any workings, *artisanal* or otherwise; however, the artisanal mode provides a specific way of understanding and working with materials. The artisan, in attending to the dynamics of materials and their transformations, is not only focused on the molecular and physical properties of the material at hand, but is involved in a set of circumstances effecting production and productivity. The artisan-woodworker understands that timber matter has vitality, an ongoing potentiality and a capacity to

form and transform through encounters with other matter and "forces."[101] The artisan also understands herself as one of a range of forces inflecting the transformation of the timber. Massumi also suggests that the woodworker's encounters with timber are part of a continuum that begin prior to, and extend beyond, the artisan's direct encounters.[102] Thus, for example, the timber-table transformation process can be understood to encompass future encounters between the table and those dining at it; its potential recycling and future transformation into firewood, and so forth. All these future scenarios aren't entirely predictable and although their potentiality might be guessed in advance (through reading the grain, based on previous encounters with that timber species and so forth), we can only chart and think about these encounters and their "paths"[103] post-occurrence or encounter.

Another key point in Massumi's example is the absolute particularity of each matter and encounter. During the 'wood-tool encounter,' the woodworker follows the cues in a specifically chosen piece of timber: the cues in this case are the directional lines in timber grain, which Massumi describes as "qualities."[104] Importantly, these qualities of the specific piece of timber indicate a potential to transform and not a determinate direction, set qualities or underlying essences.[105] According to Massumi's conception, the woodworker chooses a particular piece of wood based on her reading of its qualities to "envelop a potential"[106] to transform. The artisanal working of wood involves a concern with form, however, when Massumi uses the term "form,"[107] he does not mean a static entity or inevitable shape. The term 'form' invokes the confluence of a number of specific forces that have inflected its creation. Returning to the example of the making of a table, the table form itself cannot be separated from the encounters between tools, wood, concepts,[108] amongst other forces.

Each *artisanal* transformation involving matter is particular and differently nuanced to each situation. In their account of artisanal woodworking, Deleuze and Guattari do not speak explicitly about the particularities of each piece of timber per se, but they do describe the artisan's prospecting for a specific piece of timber "with the right kind of fibres."[109] Deleuze and Guattari also refer to the following of a material's "singularities,"[110] as if an artisanal attendance to each individual 'real' material may ameliorate an otherwise wilful imposition of form on matter. Furthermore, Deleuze and Guattari point out the 'distortions' involved in any abstractions and generalisations of real-life materials and their behaviours. These distortions are an inevitable consequence of assuming that all material 'types' are homogenous and static, and thus should conform to predictable behaviour patterns.[111] The artisan, in contrast, attends to a particular and real-life material in its dynamism and unpredictability.

In summary, Deleuze and Guattari provide a very specific definition of the artisan as one who follows the flow of matter. Artisans encounter and directly respond to materials during their various transformations and incarnations in real-life. Artisans perceive that any transformation of a material involves a confluence of forces, and these forces are in themselves always shifting as part of the

condition of flux and flow inflecting all life. Accordingly, artisans are compelled to follow the shifting scenarios inflecting material phenomena. In their following of this matter-flow, artisans work with, and intuitively respond to, real-life materials, which are differently nuanced in each encounter (albeit it to varying degrees). The present focus on the *artisanal* mode of encountering timber is not to preclude nor suggest that wood can't be worked in another way by, for example by a joiner who is primarily focused on a particular strategic goal, such as the shape of a chair to be mass-produced from plywood. Additionally, the previous focus on woodworking as an *artisanal* operation doesn't preclude other operations involving different materials—metallurgy will be further elaborated as an artisanal operation in the next section of the present chapter. The thesis will now turn to Deleuze and Guattari, and Simondon's, conception of the matter-form relation, and its relation to the notion of the *artisanal*.

4.2   The matter-form relation

An attendance to matter and its capacities is a key characterisation of the 'artisanal' within the countercultural discourse on DIY, and also, within Deleuze and Guattari's philosophical writings on the *artisanal*. According to Deleuze and Guattari, the artisan assumes that materials have their own self-organisational capacities which inflect any transformation or forming processes. Accordingly, there is an 'assumption' of a particular relation between matter and its form(s), which can be referred to as "the matter-form model,"[112] and which Deleuze and Guattari elaborate with reference to the writings of Simondon.[113] In the '1227' plateau and prefacing their definition of the artisan, Deleuze and Guattari draw attention to Simondon's critique of the hylomorphic model of the matter-form relation, also referred to as the hylemorphic model:[114] a model that has been dominant in Western philosophy since Plato and Aristotle. According to the hylomorphic model, matter is, in essence, subservient to form. The term hylomorphism derives from the terms 'hylē' or matter and 'morphē' or form.[115] While the present thesis focuses on a contemporary problematisation of hylomorphism, it is important to note that the notions associated with hylomorphism have been ingrained in thought since the origins of Western philosophy. *Timaeus and Critias* outlines Plato's belief that all matter of the world is an approximation (albeit imperfect) of idealised, perfected forms which exist in the realm of the spirits and beyond the everyday material world.[116] Aristotle, a student of Plato, is the key classical figure associated with the hylomorphic model of life.[117] In Aristotle's writings, there is an implied subservience of matter to form,[118] as form is understood as the plan or structure for matter—form gives matter its identity. For the purposes of the present thesis, a key issue within the hylomorphic model is that matter is assumed to be passive, subservient and secondary to form.

Simondon wrote two influential texts concerning technology and objects which make reference to the matter-form relation. The first text, *On the Mode of Existence of Technical Objects-Part I* was his PhD thesis.[119] In the second text, *The Individual and Its Physico-Biological Genesis*, the hylomorphic model

is explicitly criticised as an over-simplistic representation of the complexities involved in the matter-form relation.[120] Even though there is minimal discussion of the artisan in these texts, Simondon's discussion of the form-matter relation is of interest due to its bearing on Deleuze and Guattari's notion of the artisanal; particularly the way in which matter and form are engaged within the *artisanal* mode of operation.[121]

The hylomorphic model takes form and matter to be separate entities, with matter being passive and in need of a form to be imposed upon it. For Simondon, the difficulty in this duality is that it obscures two important issues: first, that matter already has a form and a capacity to form,[122] and; second, that the model oversimplifies the complex interactions that occur when matter transforms from one state to another.[123] These two key issues are interrelated. First, for Simondon, the hylomorphic model involves a sense of hierarchy because it is founded on a belief that form must be *imposed* on matter. Simondon's criticism of this hierarchical thinking is illustrated in his discussion of the formation of a brick within *The Individual and Its Physico-Biological Genesis*. Simondon points out that, on the surface, the formation of a brick may appear to involve a simple process involving the insertion of a prepared matter (sand, clay, lime, iron oxide, magnesia) into a brick-shaped mould. According to this simplistic 'hylomorphic' account of brick formation, there is a basic transformation sequence—prepared matter to mould to brick—in which the mould itself imparts the brick form on the passive 'raw' materials.[124] Although there may be some movement in this sequence of raw matter-to-form, the model inevitably downplays the dynamics and complexities of actual transforming matter. Simondon points out that there are actually a series of intermediate and dynamic threshold states, and molecular transformations, involved in the transformation of the clay mix or matter into a brick. Importantly, the clay-matter already possesses a form (even if we don't see it in this way); one might argue that the clay has a certain liquid form in relation to sand/lime/iron oxide/magnesia, but it has a form nonetheless. The clay-matter already has the capacity to transform into a brick, otherwise it would not do so; the brick mould simply provides the 'limit state' for the extent of the brick. Simondon therefore posits "the mould as limit."[125] For Simondon: "[t]here is in the rough clay an aptitude for becoming a plastic mass with the dimensions of a future brick."[126] This is not to suggest that 'brick' is an implicit form in the clay matter, but rather that the clay already has the potentiality to form in such a manner (and other forms are also possible). It is interesting to note that the countercultural text *Craftsmen of Necessity* also raises the similar point that: "[e]ach kind of material has its own form. Artisans come to know their materials and just which forms they assume comfortably."[127]

Deleuze and Guattari give strength to Simondon's point that matter already has a form, when they refer to "the formed or formable matter"[128] that then undergoes further transformations. In the brick example, the mould may establish the limit state during the operation, yet it is only one aspect effecting the transformation. Thus, the mould is not the sole determinant or imparter of the brick form. If the bricks

are fired and perhaps glazed, they undergo further incarnations and transformations through their interactions with fire, glazing slips, salt chemicals and so forth; dynamic encounters and potentials which may also be concealed in the over-simplistic hylomorphic model. In particular, the hylomorphic model does not recognise that matter already has a form and capacity to form. This form is neither static or fixed because other formal incarnations are also possible.

For Simondon, the conceptual dominance of form over matter within the hylomorphic model reflects both a sense of "social hierarchy"[129] and the hierarchical thinking typical of Western thought.[130] Deleuze and Guattari note that the "form-matter duality" is part of a broader world view involving the "organization of work and of the social field through work."[131] Incidentally, one might argue that this sense of social hierarchy produces the need for such a category as 'DIY,' as a mode of specialised production distinct from other actions and productions in everyday life.

Interestingly, Deleuze and Guattari differentiate the nomad and State scientific models on the basis of their respective positions on the matter-form relation and the attendant division of 'labour.'[132] In conceptual terms, artisans and 'nomad' scientists recognise that form and matter are heterarchically intertwined, whereas 'State' scientists do not. Thus 'nomads' (including artisans) do not segregate the activities associated with, for example, engineering and architecture from site-based construction. In other words: "the division of labour fully exists, but it does not employ the form-matter duality"[133] contained in the hylomorphic model. Deleuze and Guattari argue that State scientists, however, establish hierarchies relating not only to form and matter—whereby matter is subservient to form—but to the organisation of work and labour. The 'State' operative model would likely distinguish the pre-planning and designing associated with engineering and architecture from site-based construction and building. Importantly, while both scientific models adopt different approaches to work, one model is not more superior to the other: in Deleuze and Guattari's words, "it is different."[134]

The second key point distilled from Simondon's writings is that the hylomorphic model cannot account for the "fundamental dynamisms"[135] involved in matter's transformations—a point also highlighted in *A Thousand Plateaus*.[136] This is because the hylomorphic model oversimplifies the dynamic exchanges and sequences involved in a material's transformation from one state to another. According to Deleuze and Guattari, the hylomorphic model obscures any "energetic materiality in movement."[137] Their criticism of the hylomoprhic model focuses on the concealment of the complex interactions that occur within the "zone"[138] of matter transforming from one state to another: a zone of "energetic, molecular dimension."[139] This state of betweenness—between matter (with one form) and a new form—is important within Deleuze and Guattari's *artisanal* mode of operation, because it is within that zone of betweenness that matter "propels its traits through form."[140] As seen in Simondon's example of the incarnation of a brick, the formation of the brick cannot be isolated or detached from the many dynamic

processes and interactions involved in the brick production, including the clay and the "workman."[141] Within the countercultural text *Craftsmen of Necessity*, artisans also discover the 'form' of materials through their direct, bodily involvement with production processes.[142]

Deleuze and Guattari posit metallurgy as an example of the dynamism involved in matter's transformations.[143] This is because metal forms are not always produced according to a generalisable or set linear sequence with a clear 'beginning'—for example, prepared matter which is coal, iron ore and limestone—and a single 'end' output—such as formed pig-iron steel. A case in point involves the production of mild steel for the building industry, in which cold-formed steel may be worked and reworked as part of the de-carbonation processes. During these 're-working' and re-forming processes, there is a dynamism involved in the molecular exchanges, including successions of heating, cooling and so forth that cannot be oversimplified to a series of sequential steps or threshold states through which matter 'passes' in order to become a 'form.' Deleuze and Guattari point out that in metallurgy: "operations are always astride the thresholds, so that an energetic materiality overspills the form."[144] They provide particular examples of non-ordered threshold states and transformations within metallurgy, including the example that "quenching follows forging and takes place after the form has been fixed."[145] Within the *artisanal* mode, matter is engaged and worked as if within a state of continuous transformation that, in real-life, may not always conform to pre-imagined material behaviours and a set succession of operations.

The present chapter has thus far focused on the *artisanal* notions of flow and following, and related conceptions of the matter-form relation. This thesis will now turn to a philosophical conception of action and matter because action is also a defining characterisation of Deleuze and Guattari's *artisanal* mode. The *artisanal* mode involves a focus on doing and action, rather than adopting a detached or external perspective of material phenomena. The notion of action will also be elaborated with reference to Grosz's conceptions of action with respect to matter and bodies.

4.3   Action, matter and transforming bodies

In the countercultural discourse on DIY, there is a focus on doing, action and productivity, albeit a productivity that has often been discussed as a reaction to the mainstream capitalist production systems.[146] It is worth noting that Deleuze and Guattari's discussion of the *artisanal* occurs within the second volume of *Capitalism and Schiophrenia*, but it is not bound to a reactive sense of capitalism, is not related to markets alone[147] and instead affirms a sense of productivity in its own right, a "pure productivity."[148] Deleuze and Guattari directly associate *artisanal* operations with "action"[149] as well as asserting the "active"[150] character of materials themselves. If matter exists "in movement, in flux, in variation,"[151] the artisan herself must become an active participant in transformative processes by

working with, and responding to, dynamic material circumstances. Thus Deleuze and Guattari assert that following the flow of matter involves "intuition in action."[152] Deleuze and Guattari refer to metallurgy as an example of matter's active character and vitality within the *artisanal* mode:

> In short, what metal and metallurgy bring to light is a life proper to matter, a vital state of matter that doubtless exist everywhere but is ordinarily hidden or covered, rendered unrecognizable, dissociated by the hylomorphic model.[153]

This sense of matter's vitality underscores the multiple transformative potentialities of any matter. Any actualised material still retains its potential to change into other forms; any potential to form and transform does not predetermine a set outcome or form for that specific matter. Thus only certain potentials will be actualised in any transformation, *artisanal* or otherwise. Of particular interest to the present study is the idea that matter's capacity to be transformed is not constrained or limited to a prefigured pathway. Although Deleuze and Guattari do refer to the "real-life operation[s]"[154] that characterise the nomad sciences and *artisanal* mode, their conception of matter is not restricted to that which is actualised or already 'exists' in real-life; but is also focused on the potential of matter to become. *A Thousand Plateaus* is infused with discussions of both the actual and the virtual, including 'becoming' and transforming matter, and "unformed matter."[155] In their collaborative text *What is Philosophy,* Deleuze and Guattari refer to actualised matter as "states of affairs."[156] These states of affairs "*cannot be separated from the potential through which it takes effect* and without which it would have no activity or development."[157] According to this conception, matter has a potential that has not yet been actualised, and is also not foreordained.[158] While these latter comments are made in relation to a discussion about science and philosophy, they suggest that there is an interrelation between actualised matter and becoming-matter inflecting Deleuze and Guattari's philosophical conceptions: conceptions which inevitably inflect any discussions of transforming matter within the *artisanal* mode.

During *artisanal* operations, matter may be actualised, however the focus is on the processes involved in a material's transformation from one state to another. Importantly, the artisan participates in this "zone of medium and intermediary dimension."[159] By focusing on processes and actions, rather than relying on theories about a material's behaviour alone, the artisan may be 'guided' by unexpected encounters and discoveries: "for example, the variable undulations and torsions of the fibres guiding the operation of splitting wood."[160] Actual and becoming matter, potential matter and transforming matter: all are invoked in the confluence that also includes the actions of the artisan's own body (the hand holding and guiding the plane, and so forth). In *Craftsmen of Necessity*, Williams refers to 'artisanal' processes as involving bodily interaction and dialogue "between worker and material."[161]

The thesis now turns to a conception of action and matter in Grosz's recent book chapter 'Feminism, Materialism and Freedom,' because this conception both affirms the relation between action and matter, and refers to the coextensivity of the bodies involved in matter's transformations. Grosz has written about Deleuze and Guattari and architecture in various texts, including her 2001 text *Architecture from the Outside: Essays on Virtual and Real Space*.[162] In 'Feminism, Materialism and Freedom,' Grosz refers to actions involving matter—both actual and virtual or becoming.[163] It could be argued that Grosz's affirmative conception of action and matter invokes the sense of affirmative productivity conveyed by Deleuze and Guattari's discussion of the *artisanal* mode. With this in mind, it is important to note that there is no explicit reference to Deleuze and Guattari or the *artisanal* mode in 'Feminism, Materialism and Freedom;' although there is reference to other texts which do directly refer to Deleuze.[164] 'Feminism, Materialism and Freedom' is insightful for the present thesis for two main reasons. First, Grosz affirms a notion of action which is not bound to a set of pre-existing constraints or limits, or underlying meaning structures within the material world. Grosz refers to the capacity for all organic life to participate and act in the world (to some degree) as the "zone of indetermination."[165] This notion of indeterminate action and acting bodies arguably resonates with the sense of affirmative productivity evident in Deleuze and Guattari's *artisanal* mode, and also, in Ant Farm and Soleri's DIY manuals themselves. The latter will be explored in chapter 5. Second, Grosz's theorisation of action and matter is quite different to other arguments concerning matter and action that posit DIY as an anti-capitalist and reactive mode of production. Her conception focuses on notions of matter and action rather than a reactive social politics.

In 'Feminism, Materialism and Freedom,' Grosz argues that any transformation involving matter involves a complete transformation of all aspects of any encounter, such as the transformation of the acting subject.[166] Grosz suggests that "action in life"[167] relates to the potential to act which is also projected onto, and imagined through, the material circumstances of life. One example may involve a person travelling to a new and beguiling city; whilst walking its streets, he might imagine what it might be like to live there permanently. In this example, the imagining of a new life and identity is projected onto the real-life circumstances of the city coextensive with the direct bodily experience of it. For Grosz, the potential to act, transform and become is specifically associated with matter, even if it involves: "the struggle with matter, the struggle of bodies to become more than they are, a struggle that occurs not only on the level of the individual but also of the species."[168] There is also an associated affirmative sense of freedom or "freedom to."[169] Grosz's 'freedom to' involves a perception that one can act, create and make a new future without specific reference to current limits; the transformation involves some level of creative indeterminancy that cannot be fully anticipated in the present.[170] Importantly, each action involves a transformation of the entire situation, including the human body involved in any action: action occurs in, and through, bodily encounters with matter.[171]

It is insightful to explore Grosz's conception of action and freedom in relation to a different, anarchist conception of action and freedom as it specifically relates to a contemporary account of DIY. In their essay 'Do It Yourself...and the Movement Beyond Capitalism,' anarchist theorists Ben Holtzman, Craig Hughes and Kevin Van Meter[172] write about DIY as an anarchist practice, making specific reference to Deleuze and Guattari.[173] They argue that DIY facilitates a mode of empowered action outside of capitalist structures and commissioning systems, involving agents who can provide and produce for themselves. This recalls an earlier point made by Roland in relation to DIY in 1950s North America: that the DIY movement could involve a reaction to the pressures effecting society. These pressures include, for Roland, the negative aspects of "a consumption-orientated culture"[174] and the "emotional demands"[175] of everyday life. For Holtzman, Hughes and Van Meter, the distinguishing characteristic of DIY is that it produces things, encounters and services that are somehow unhinged from the capitalist agenda. DIY is therefore positioned as a mechanism for "undermining exchange-value while simultaneously creating use-value outside of capitalism."[176] Do-it-yourselfers can create and produce for themselves, even if they are creatively reusing or redeploying items and materials that are a by-product of the mechanisms of capitalism. This anarchist conception of DIY action is fundamentally different to the notion of action that is advocated by Grosz. Grosz makes the observation that a sense of 'freedom to' involves actions which are not limited or bound to a particular set of pre-imagined options available in a particular situation, such as acting with or against capitalism.[177] Yet for these anarchist theorists, DIY facilitates a mode of empowered action in specific reaction to capitalist structures and commissioning systems. Borrowing from Grosz's terms, this conception of DIY involves a reactive "freedom from" a set of perceived constraints (those of capitalism), rather than the affirmative "freedom to"[178] act without reference or reaction to capitalism.

The conceptual difference between Grosz's conception of 'freedom to' and 'freedom from' is complex, and relates to a sense of limitations. 'Freedom from' involves reference to a defined state, form or point; whereas 'freedom to' involves an imaginative projection without specific reference to any 'limits' imposed by present circumstances (perhaps regardless of whether any limits exist or not). Grosz's theorisation could be elaborated via the example of IKEA hacking, focusing specifically on the multiple potentialities of transforming objects.[179] IKEA hacking involves some degree of creative alteration or transformation of a standard mass-produced object that is otherwise intended for a specific purpose. The hacking usually happens during the assembly of actual, standardised components. IKEA hacks are differentiated from standard DIY products which are bound to a uniform set of assembly instructions and marketed uses. According to music theorist Michael F. Zbyszynski, IKEA hacking is: "all about not accepting what's presented for sale as is […] about not just doing a 'paint by numbers' of your life."[180] In this sense, the IKEA hack might be understood as a 'freedom from' the standard IKEA instruction manual. There is a freedom here, but it is a freedom bound to the product itself. When IKEA hacks are

first created, they are unique to individual circumstances, even though their makers may subsequently post instructions allowing others to, in theory, recreate the same or similar hack.[181]

In an alternative sense, the IKEA hack invokes an affirmative 'freedom to' because IKEA hacking suggests that any product or form can be hacked. The idea of IKEA hacking opens up prospects for different hacks and hacking processes beyond IKEA products themselves, and thus in this sense may be considered a 'freedom to.' In relation to the latter, the key point is that a hacked object's form, context and use is not bound to, nor limited by, standard assembly instructions, its advertised purpose, nor perhaps even the maker's original intentions for the object (which is specifically the case for hacks created somewhat spontaneously from found or discovered objects). Thus the processes involved in IKEA hacking can be conceptualised as involving at once a 'freedom from' the IKEA product, and a 'freedom to' reimagine and to recreate objects unconstrained by any existing associations with function, purpose or value.

For Grosz, any action that involves a reaction to present constraints differs from the sense of affirmative action that transforms current circumstances without reactive purpose or measure. Within this new set of circumstances, there is the potentiality of further actions and transformations, even if the exact actions and their outcomes can't be entirely predicted in advance.[182] Grosz makes the point that actions involve some level of indeterminacy in terms of their outcomes, and as such, can only be thought and rationalised post-action and actualisation. She argues that there is a sense of freedom associated with the indeterminacy of actions, because there is always a potential for further transformations and becomings that can transform the present circumstance in uncertain directions.[183] The latter point will become a key issue in reading Ant Farm's and Soleri's DIY manuals which are based on the architects' own actions and experiences of material phenomena; and yet are targeted at the creation of new architectures, architectural processes and transformations beyond that which is suggested in the manuals. These transformations include the transformations of bodies and social organisations, somewhat unconstrained by already existing options, including those presented in the manuals.

4.4   Summary: flow and following; the matter-form relation; and action, matter and transforming bodies

The present chapter concentrated on the philosophical notion of the *artisanal,* primarily distilled from the collaborative writings of Deleuze and Guattari. The *artisanal* was elaborated with reference to the related conceptions of: flow and following; the matter-form relation; and action, matter and transforming bodies. Reference was also made to the writings of other 'Deleuzian' theorists including architectural theorists Smith and Ballantyne, the philosophers Massumi and Grosz, and the anarchist theorists Holtzman, Hughes and Van Meter. This chapter also drew attention to a similar discourse on the

'artisanal' within the countercultural text *Craftsmen of Necessity*. Both *Craftsmen of Necessity* and *A Thousand Plateaus* describe the artisan as a follower of material capacities and potentialities. However, Deleuze and Guattari's definition of the *artisanal* is not bound to a particular expertise, material or technology as it tends to be within *Craftsmen of Necessity*, due to the general opposition to machine-based technologies expressed within this latter text (an opposition that was arguably uncharacteristic of the counterculture as a whole).

According to Deleuze and Guattari, artisans acknowledge that matter exists in a dynamic state when it is transforming, and as a consequence, artisans are 'obliged' to follow the multiple, shifting forces inflecting its transformations: matter thus exists "in movement, in flux, in variation."[184] The transformations involve a series of dynamic and sometimes unpredictable threshold states that are not easily described in generalised models. In *A Thousand Plateaus*, Deleuze and Guattari make reference to Simondon's critique of the hylomorphic model, in which matter is positioned as passive, static and requiring formation. In contrast, artisans (according to Deleuze and Guattari's definition) assume that matter has a form and an ongoing capacity to further transform through dynamic relation with other forces and matters. For Grosz, matter is also linked to action, freedom and the bodies involved in transformative processes. In the next chapter, the three key *artisanal* notions of flow and following; the matter-form relation, and; action, matter and transforming bodies; will be explored in, and through, Ant Farm and Soleri's DIY architecture manuals. These manuals have also been associated with the 'artisanal,' and are infused with discussions about material capacities, action, bodies and transformations.

Notes

1 Foucault and Deleuze, 'Intellectuals and Power,' 108.

2 In the 'Authors Note' section of *A Thousand Plateaus*, Deleuze and Guattari refer to the *Capitalism and Schizophrenia* volumes—of which *A Thousand Plateaus* is the second volume—as "composed not of chapters but of ""plateaus;"" Deleuze and Guattari, *A Thousand Plateaus*, xxi.

3 As noted in chapter 1 of this thesis, the other three collaborative works by Deleuze and Guattari are: *Anti-Oedipus*: *Capitalism and Schizophrenia* (1972); *Kafka: Toward A Minor Literature* (1975), and; *What is Philosophy?* (1991).

4 Brian Massumi, 'Translator's Foreword: Pleasures of Philosophy,' in *A Thousand Plateaus: Capitalism and Schizophrenia*, Gilles Deleuze & Félix Guattari, ed. Brain Massumi (London: Continuumm, 2004), xi.

5 Massumi makes the following insightful comment about nomadic thought which is worth quoting in full: "[n]omad thought" does not immure itself in the edifice of an ordered interiority; it moves freely in an element of exteriority. It does not repose on identity; it rides difference. It does not respect the artificial division between the three domains of representation, subject, concept, and being; it replaces restrictive analogy with a conductivity that knows no bounds. The concepts it creates do not merely reflect the eternal form of a legislating subject, but are defined by a communicable force in relation to which their subject to the extent that they can be said to have one, is only secondary." Massumi, 'Translator's Foreword,' xii-xiii.

6 In his 'Translator's Foreword' to *A Thousand Plateaus*, Massumi argues that all the plateaus in the text are dated because each date "corresponds to the point at which that particular dynamism found its pure incarnation in matter." Massumi then notes that "the "Treatise on Nomadology" is dated 1227A.D because that is the date: "when the nomad machine existed for a moment in its pure form on the vacant smooth spaces of the steppes of Inner Asia". Massumi, 'Translator's Foreword,' xv. While Deleuze and Guattari themselves do not explain the relevance of chapter title and date, 1227AD was the year in which the Mongul emperor Genghis Kahn died: Kahn united nomadic tribes through substantial war campaigns. Deleuze and Guattari directly refer to Genghis Kahn within several early paragraphs of the '1227' plateau. See Deleuze and Guattari, *A Thousand Plateaus*, 390. The '1227' plateau also begins with reference to the work of French philologist Georges Dumézil, who analysed "Indo-European mythology;" Deleuze and Guattari, *A Thousand Plateaus*, 388-390.

7 Deleuze & Guattari, *What Is Philosophy,* 23.

8 Foucault and Deleuze, 'Intellectuals and Power,' 208.

9 *Craftsmen of Necessity* is principally concerned with what is described as "organic technology" as practiced by "indigenous people," including artisans. A section at the beginning of the text states that: "[m]ost of the indigenous people of the world still practice organic technology. This is the opposite of machine thinking. It is a way, not a device, a philosophy to govern the methods of selecting action." Williams, *Craftsmen of Necessity*, 4.

10 Excerpts of the text *Craftsmen of Necessity* were first published in *Shelter* in 1973, just prior to its official publication.

11 Kahn, *Shelter*, 125.

12 Williams, *Craftsmen of Necessity*, 166.

13 Deleuze and Guattari, *A Thousand Plateaus*, 452.

14 Although there is an arguable correspondence between these texts, there are no apparent historical links between them per se. There is a 6 year gap between the publication of *Craftsmen of Necessity* in 1974 (noting

excerpts of the text were first published in *Shelter* in 1973) and the first French publication of *A Thousands Plateaus* in 1980*:* there are no specific cross-references between the texts. *Craftsmen of Necessity* does not contain any references to other texts.

[15] Williams, *Craftsmen of Necessity*, 161: Deleuze and Guattari, *A Thousand Plateaus*, 451.

[16] Williams, *Craftsmen of Necessity*, 161.

[17] Deleuze and Guattari, *A Thousand Plateaus*, 452.

[18] Williams, *Craftsmen of Necessity*, 161: Deleuze and Guattari, *A Thousand Plateaus*, 451-452.

[19] Williams, *Craftsmen of Necessity*, 161: Deleuze and Guattari, *A Thousand Plateaus*, 455.

[20] Williams, *Craftsmen of Necessity*, 166.

[21] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[22] Such as the Moroccan cooper or barrel-maker, who uses his feet as a vice when working wood. Williams, *Craftsmen of Necessity*, 169.

[23] Williams, *Craftsmen of Necessity*, 169.

[24] Deleuze and Guattari refer to the collective body as constituted by metallurgists, but do not specifically refer to individual artisan's bodies, see Deleuze and Guattari, *A Thousand Plateaus*, 454.

[25] For example, in their description of the idea of a BwO (Body without Organs) within *A Thousand Plateaus*, Deleuze and Guattari describe the body as a "production" or assemblage of intensities, challenging customary associations of the body with a distinguishable subject. Thus: "[a] BwO is made in such a way that it can be occupied, populated only by intensities. Only intensities pass and circulate. Still, the BwO is not a scene, a place, or even a support upon which something comes to pass […] it is a matter that occupies space to a given degree— to the degree corresponding to the intensities produced. It is nonstratified, unformed, intensive matter, the matrix of intensity […]" Deleuze and Guattari, *A Thousand Plateaus*, 169.

[26] For example, the body of the woodworker is implicated in the action of planing wood using a hand-plane tool: "the artisan who planes wood follows the wood." Deleuze and Guattari, *A Thousand Plateaus*, 451.

[27] Williams, *Craftsmen of Necessity*, 145.

[28] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[29] Williams, *Craftsmen of Necessity*, 145.

[30] This is because the artisan devotes much time to making and manufacturing: "[a]lthough the artisan tries to make his goods as responsive to the user as possible, a certain kind of direct, spontaneous invention is eliminated when the user is no longer responsible for the production. The artisan understands his tools, his material and the product, in terms of manufacture, more thoroughly than the home craftsman, but he responds to manufacturing needs more readily than to use. He cannot possibly foresee a necessary innovation in a tool the way the worker can who spends his days using that tool." Williams, *Craftsmen of Necessity*, 145.

[31] Deleuze and Guattari, *A Thousand Plateaus*, 454.

[32] Deleuze and Guattari, *A Thousand Plateaus*, 454.

[33] Deleuze and Guattari, *A Thousand Plateaus*, 452.

[34] Williams, *Craftsmen of Necessity*, 4.

[35] Turner, *From Counterculture to Cyberculture*, 92-93.

[36] Williams, *Craftsmen of Necessity*, 3; 182. Even though Williams refers to organic technology as involving "a way, not a device," this way seems to exclude machine-based technologies. See Williams, *Craftsmen of*

Necessity, 1. This resistance to machine-based technologies was atypical of the counterculture, as indicated in publications such as the *WEC* that contain information on both high-end and low technologies. As previously discussed, there was a widespread preference for small-scale technologies within the counterculture, rather high or low technologies specifically.

[37] Deleuze and Guattari do not refer to plastic in their account of the *artisanal*, but it is worth mentioning that their account is not tied to particular materials or technologies. In terms of contemporary machine-manufactured materials, Ant Farm's inflatables are mostly composed of plastic sheets. There is also a small reference to plastics within *Earth Casting*; with respect to the incorporation of materials such as "[t]ranslucent plexiglass pieces" in skylights. Soleri and Davis, *Earth Casting*, 85.

[38] Deleuze and Guattari, *A Thousand Plateaus*, 451-454.

[39] Even though a definition of the 'artisan' and 'artisanal' encounter is not specifically provided, the focus in *Craftsmen of Necessity* is arguably not on the artisan's social standing per se, but is rather on artisan-tools-material encounters.

[40] Sadler, 'An Architecture of the Whole,' 127.

[41] Both Ant Farm and Soleri explicitly state that their DY manuals are based on their own design and construction experiences with 'actual' materials in project sites. Ant Farm make the point that: '[t]he experiences that qualified us as 'Inflato-experts' occurred over an 18 month period in which we designed, built, and erected inflatables for a variety of clients and situations." Ant Farm, *Inflatocookbook,* 1973, 'Ant Farm.' Similarly, Soleri makes the point that the *Earth Casting* DIY manual is based on "the earth-casting technique as I have developed it over the past 25 or so years." Soleri and Davis, *Earth Casting,* 1.

[42] Deleuze and Guattari, *A Thousand Plateaus*, 452.

[43] Deleuze and Guattari, *A Thousand Plateaus*, 451-452; 454.

[44] Deleuzoguattarian theorist John Protevi refers to a dichotomy between the architect and the artisan: see John Protevi, 'Political Physics: Deleuze, Derrida and the Body Politic,' in *Transversals New Directions in Philosophy*, ed. Keith Ansell-Pearson (London: The Athlone Press, 2001), 131. In *Deleuze and Geophilosophy: a Guide and Glossary*, Bonta and Protevi argue that the architect is a figure who somewhat willfully imposes "form on a chaotic matter;" they position the architect as quite different in character to the artisan who they argue "coaxes bodies to thresholds of self-organization." Mark Bonta and John Protevi, *Deleuze and Geophilosophy: A Guide and Glossary* (Edinburgh: Edinburgh University Press, 2004), 53. However, the present thesis does not establish such a duality between the artisan and the architect, as the focus is on the specific procedures and processes deployed.

[45] Deleuze and Guattari, *A Thousand Plateaus,* 406.

[46] Deleuze and Guattari's differentiation between *artisanal* and architectural techniques does not preclude the architect from adopting procedures and operations that are better aligned with artisans. Incidentally, Protevi argues that the artisanal approach is seen as inferior in Western society due to the traditional division between the intellect and labour: "[t]he invisibility or denigration of artisanal sensitivity, while first appearing in canonical Western philosophy with Plato, is a deep-rooted philosophical prejudice." Protevi, *Political Physics* 150. The 'division of labour' may be associated with architectural practice, as a consequence of the separation between designing and construction activities. However—as demonstrated in the present thesis—there are exceptions, as seen in projects in which the architects are also the designers and makers.

[47] Deleuze and Guattari, *A Thousand Plateaus*, 455.

[48] Deleuze and Guattari make a specific connection between architecture and the nomad sciences and procedures. They note that: "[t]here are, of course, forms of cooking and architecture that are part of the nomad war machine, but they fall under a different "trait," one distinguishing them from their sedentary form. Nomad architecture, for example, the Eskimo igloo or the Hunnish wooden palace, is a derivative of the tent: its influence on sedentary art came by way of domes and half-domes, and above all of *space starting very low*, as in a tent." Deleuze and Guattari, *A Thousand Plateaus*, N84, 627.

[49] The term "matter-flow" is used in relation to the artisan, and will be elaborated further in a subsequent section of the present chapter. Deleuze and Guattari, *A Thousand Plateaus*, 451.

[50] Deleuze and Guattari, *A Thousand Plateaus*, 454.

[51] Chris L. Smith and Andrew Ballantyne, ed., 'Flow: architectue, object and relation,' *Architecture Research Quarterly (ARQ),* 14, 1 (2010): 21.

[52] Bonta and Protevi, *Deleuze and Geophilosophy*, 87. Bonta and Protevi make the point that flow refers to that which escapes the ordering imposed by larger, dominant or "molar categories," hence their reference to the molecular and "micro-deviation:" "[i]n the construction of social bodies (bodies politic), molecular flow is what escapes molar categories." Bonta and Protevi, *Deleuze and Geophilosophy*, 87.

[53] Deleuze and Guattari, *A Thousand Plateaus*, 452.

[54] Prospecting might involve following the flow of markets, but in general, it is an extension of the following of the matter-flow, including the seeking of specific materials. Deleuze and Guattari, *A Thousand Plateaus*, 452.

[55] When artisans follow a 'market,' the 'following' is described as a second- order itinerancy: "[o]f course there are second-order itinerancies where it is no longer a flow of matter that one prospects and follows, but, for example, a market. Nevertheless, it is always a flow that is followed, even if the flow is not always that of matter." Deleuze and Guattari, *A Thousand Plateaus*, 452.

[56] Deleuze and Guattari refer to artisans who are seeking and prospecting certain materials, and note that this process of prospecting can change the focus of the operation to other flows, such as financial issues and market pressures. They note that: "the organization that separates prospectors, merchants and artisans already mutilates artisans in order to make "workers' of them." Deleuze and Guattari, *A Thousand Plateaus*, 452. Even if artisans are understood as workers, following markets, they are only considered 'artisans' specifically because they follow the flow of matter.

[57] Deleuze and Guattari, *A Thousand Plateaus*, 453.

[58] Deleuze and Guattari, *A Thousand Plateaus*, 517.

[59] Smith and Ballantyne argue that there is a connection between an immersion in material phenomena, and the breaking of habits. They specifically state that: "[i]t is important that we understand such engagements in flow not as some form of nirvana of perception but as an intensity of material encounter or connection removed from pre-given rules of engagement and the hierarchies of habit." Smith and Ballantyne, 'Flow: architectue, object and relation,' 25.

[60] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[61] Bonta and Protevi, *Deleuze and Geophilosophy*, 111.

[62] Lloyd Thomas, *Building Materials*, 210.

[63] Deleuze and Guattari, *A Thousand Plateaus*, 451-452.

[64] Deleuze and Guattari, *A Thousand Plateaus*, 453-455.

65 Deleuze and Guattari make the following point about concrete as a material in relation to architecture: "matters like reinforced concrete have made it possible for the architectural ensemble to free itself from arborescent models by employing tree-pillars, branch-beams, foliage-vaults." See Deleuze and Guattari, *A Thousand Plateaus*, 362-363. Note that there is no specific reference to the dynamics involved in the transformation of concrete, nor the manner of its forming; the mess involved in mixing and pouring concrete, the engineering involved in the reinforcement placements and so forth. There is also no direct connection established between the artisanal mode and this commentary about reinforced concrete.

66 Deleuze and Guattari, *A Thousand Plateaus*, 450-451.

67 The first example of the artisan suggested in *A Thousand Plateaus* is that of the woodworker. Deleuze and Guattari, *A Thousand Plateaus,* 451-452.

68 Deleuze and Guattari, *A Thousand Plateaus*, 451.

69 In relation to the notion of following and geographic location, Deleuze and Guattari note that: "[d]oubtless the operation that consists in following can be carried out in one place: an artisan who planes follows the wood, the fibres of the wood." Deleuze and Guattari, *A Thousand Plateaus*, 451.

70 Deleuze and Guattari, *A Thousand Plateaus*, 451.

71 Deleuze and Guattari, *A Thousand Plateaus*, 451-452.

72 Deleuze and Guattari do refer to elaborating and "tapping into forces" in the "1837: Of the Refrain" plateau, and in relation to the formation of reinforced concrete. There is no specific discussion about artisanal following in this particular section of the '1227' plateau, although there is discussion about the relation between a material and form: "[i]t is no longer a question of imposing a form upon a matter but of elaborating an increasingly rich and consistent material, better to tap increasingly intense forces." Deleuze and Guattari, *A Thousand Plateaus*, 363. Although this comment about tapping forces is not made specifically in relation to the artisanal mode of operation, it does reinforce a focus on the processes and forces at play in a material's transformations. In relation to reinforced concrete, Deleuze and Guattari refer specifically to the "intensity and direction of force to be tapped;" see Deleuze and Guattari, A Thousand Plateaus, 363.

73 Deleuze and Guattari, A Thousand Plateaus, 454.

74 Deleuze and Guattari make the point that metal is already the "productivity of matter," and as such, the metallurgist-artisan is following what is already the 'productivity' of the soil. Deleuze and Guattari, *A Thousand Plateaus,* 454.

75 The term "real-life' is specifically used by Deleuze and Guattari: see Deleuze and Guattari, *A Thousand Plateaus,* 412.

76 Deleuze and Guattari make reference to cathedral construction as particular examples of the nomadic (and arguably artisanal) approach, see Deleuze and Guattari, *A Thousand Plateaus*, 412.

77 Deleuze and Guattari, *A Thousand Plateaus*, 452.

78 Deleuze and Guattari refer to the example of timber as a 'surrender:' "it is a question of surrendering to the wood, then following where it leads by connecting operations to a materiality, instead of imposing a form upon a matter." Deleuze and Guattari, *A Thousand Plateaus*, 451.

79 Deleuze and Guattari refer to being absorbed and led by material phenomena: "[o]ne is obliged to follow when one is in search of the "singularities" of a matter, or rather of a material, and not out to discover a form [when one is] carried away by a vortical flow." Deleuze and Guattari, *A Thousand Plateaus*, 410.

[80] See the discussion in the '1227' plateau: Deleuze and Guattari, *A Thousand Plateaus*, 410-412.

[81] Importantly, they reinforce the point that the procedure of following is "[n]ot better, just different" from the reproducing characterising State science. Deleuze and Guattari, *A Thousand Plateaus*, 410.

[82] These "stable models" are developed to help predict and control situations, hence the association of models with mechanisms of control and the hierarchical ordering of the 'State.' Deleuze and Guattari, *A Thousand Plateaus*, 412.

[83] Reproduction is also associated with "the legal model" because it involves trying to reproduce a phenomenon using rules and guidelines. Deleuze and Guattari, *A Thousand Plateaus*, 411.

[84] Deleuze and Guattari, *A Thousand Plateaus*, 412.

[85] A discussion about 'following' occurs in relation to 'problematics' within the 'Proposition III" section of the '1227' plateau. Deleuze and Guattari discuss problematics as the encountering of, and response to, problems in real-life, Deleuze and Guattari, *A Thousand Plateaus*, 410-412.

[86] Specific reference is made to the collapse of the two cathedrals at Orléans and Beauvais at the end of the twelfth century. Deleuze and Guattari, *A Thousand Plateaus*, 412.

[87] Deleuze and Guattari, *A Thousand Plateaus*, 412.

[88] Deleuze and Guattari, *A Thousand Plateaus*, 412.

[89] Deleuze and Guattari, *A Thousand Plateaus*, 411.

[90] This interaction occurs in particular as problematics are associated with "inventing problems whose solution is tied to a whole set of collective, non-scientific activities but whose scientific solution depends on the contrary, on royal science." Deleuze and Guattari, *A Thousand Plateaus*, 413.

[91] Deleuze and Guattari note that State science deals with, and responds to, any problem "by introducing it into its theorematic apparatus and its organization of work." Deleuze and Guattari, *A Thousand Plateaus*, 413.

[92] When discussing the development of rules about material phenomena, Deleuze and Guattari note the problems of reducing the particularity of phenomena to generalisations; "this cannot be done without a distortion that consist in uprooting variables from the state of continuous variation, in order to extract from them fixed points and constant variations." Deleuze and Guattari, *A Thousand Plateaus*, 451.

[93] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[94] In relation to the forming of materials through a following of its qualities, Deleuze and Guattari state: "[a]t any rate, it is a question of surrendering to the wood, then following where it leads by connecting operations to a materiality, instead of imposing a form upon a matter." Deleuze and Guattari, *A Thousand Plateaus*, 451.

[95] For example, a particular wood has fibres which may be encountered by an artisan and which may "guide" the operation of a wood plane.

[96] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 15. Note that Massumi is a translator of *A Thousand Plateaus* and author in his own right.

[97] Note that Deleuze and Guattari also use the term "tool' in the '1227' plateau: when contrasting tools to weapons. Massumi's discussion of tool is differently nuanced and specific to the *artisanal* encounter; as previously noted, the term tool was used in the *WEC* countercultural manual to refer to something (not necessarily an object) which could be deployed, including knowledge, techniques and so forth.

[98] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 10.

[99] Describing the interplay between conceptions of form and matter, Massumi notes: "[t]here is substance on both sides: wood; woodworking body and tools. And there is form on both sides: both raw material and object produced have determinate forms, as do the body and tools." Massumi, *A Users Guide to Capitalism and Schizophrenia*, 12.

[100] For Massumi, the working of timber involves many influences; "[b]ut many things intervene between what has been defined as the form of expression and the edge of the blade: a boss, a body, hands, technique, intentions, the handle of the tool. And between the blade and the form of content: a piece of wood, a customer order, rain, trucks, delivery, a tree." Massumi, *A Users Guide to Capitalism and Schizophrenia*, 15.

[101] Massumi, *A Users Guide to Capitalism and Schizophrenia*,10.

[102] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 15.

[103] Grosz, 'Feminism, Materialism and Freedom,' 147.

[104] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 10-11.

[105] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 10.

[106] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 10.

[107] Massumi, *A Users Guide to Capitalism and Schizophrenia*, 14.

[108] Massumi notes that the dynamic forces that inflect matter's transformations can be extended into the process inflecting the language and thought used to explore the notion and processes of the 'wood-tool encounter' (although thought is different to actualised matter). In Massumi's words: "[t]he dynamism is lifted out of one substance and incarnated in another. Thought repeats the interrelation in its own substance; it mimics the encounter, establishing a parallel network of vectors, but between different points (concepts instead of tools and wood). The dynamism can be rethingified, reactualized, by a further translation, into written or oral language (phenomes or written characters in their syntactical interrelation)." Massumi, *A Users Guide to Capitalism and Schizophrenia*, 14.

[109] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[110] Deleuze and Guattari, *A Thousand Plateaus*, 410.

[111] In discussing the notion that rules and laws can predict material behaviours, Deleuze and Guattari point out that rules can only be applied if certain assumptions are made about any matter: specifically, that matter is both inert and passive. They note that: "laws [adapt] a fixed form and a constant matter to one other." Deleuze and Guattari, *A Thousand Plateaus*, 451.

[112] Deleuze and Guattari, *A Thousand Plateaus*, 450.

[113] Deleuze and Guattari, *A Thousand Plateaus*, 450-451.

[114] Simondon, *The Individual and Its Physico-Biological Genesis*, 2. Note that in this thesis, reference is made to the Adkins' English translation.

[115] Protevi, 'Political Physics,' 120.

[116] Refer to the 1977 Penguin Classics edition of Plato's *Timaeus and Critias*, trans. Desmond Lee (London: Penguin Classics, Penguin Books Ltd., 1977).

[117] According to Aristotle, there is a distinction between the form and substance of matter: "those who say the Forms exist, in one respect are right, in giving the forms separate existence, *if* they are substances." This quote by Aristotle is taken from *The Basic Works of Aristotle*, ed. Richard McKeon, trans. W.D. Ross (New York: Random House, Inc., 1941), 809. Theorist John Vella argues that according to Aristotle, all substances have both form and matter which are thus distinguished, although difficult to separate in reality. John A. Vella, *Aristotle: A Guide for the*

Perplexed (London: Continuum International Publishing Group, 2008), 92-93. This point can be seen directly in Aristotles 'Book Zeta' of *The Metaphysics*, when Aristotle points out that it is difficult to distinguish human bodies from the matter that constitutes it: "the form of man is always observed in flesh, bones, and the familiar parts—are these then also parts of the form/account? Surely not. Surely they are matter, but matter which, by dint of the form of a man's being imposed on no other things, is inseparable." Aristotle, *The Metaphysics,* trans. Hugh Lawson-Tancred (London: Penguin Books, 1998), 207.

[118] In the 'Book Zeta' of *The Metaphysics*, Aristotle does argue that 'substance' provides the underlying essence of things. When discussing how things exist, he argues that; "substance is something defined that underlies and it is this which is their substance and particular." Aristotle, *The Metaphysics,* 168. Aristotle also separates matter from form.

[119] Gilbert Simondon, *On the Mode of Existence of Technical Objects-Part I*, trans. Ninian Mellamphy (London: University of West Ontario, 2007).

[120] Simondon, *The Individual and Its Physico-Biological Genesis*.

[121] It is important to note that in *The Individual and Its Physico-Biological Genesis*, Simondon does not refer to the term 'artisan:' instead referring to the "workman" in his example of brick formation. Simondon, *The Individual and Its Physico-Biological Genesis*, 8. However, Simondon does refer to the artisan in his other text, *On the Mode of Existence of Technical Objects-Part I.* This reference occurs during a discussion of the "artisanal" in relation to hand-made production. Simondon, *On the Mode of Existence of Technical Objects-Part I*, 92.

[122] Simondon makes the explicit point that "primary matter has the capacity to become." Simondon, *The Individual and Its Physico-Biological Genesis*, 4.

[123] In relation to his critique of the hylomorphic model—and the processes involved in matter transforming from one state to another—Simondon notes that: "the real dynamism of the operation is extremely far from being able to be represented by the matter-form couple. The form and matter of the hylemorphic model are an abstract form and an abstract matter." Simondon, *The Individual and Its Physico-Biological Genesis*, 3. For Simodon, the abstraction and generalisation of matter's transformations conceals the particularities and dynamics associated with the actual operations involved in matter's transformations.

[124] Simondon makes the important point that the mould acts only as a limit state in the brick's formation. Accoridng to Simondon: "[t]he mold limits and stabilizes rather than only imposing a form: it gives the end of a deformation and achieves it by stopping it according to a definite contour […] One could make a brick without a mold, with one's hands, prolonging the shaping by a fashioning that would continue it without rupture." Simondon, *The Individual and Its Physico-Biological Genesis*, 4.

[125] Simondon, *The Individual and Its Physico-Biological Genesis*, 6. Simodon also refers to the "gestures" of form already contained in the matter, however, these gestures are not set or essential properties determining a form, but are instead suggest "a capacity to become." Simondon, *The Individual and Its Physico-Biological Genesis*, 4.

[126] Simondon, *The Individual and Its Physico-Biological Genesis*, 4.

[127] Williams, *Craftsmen of Necessity*, 161.

[128] Deleuze and Guattari, *A Thousand Plateaus*, 450.

[129] Simondon, *The Individual and Its Physico-Biological Genesis*, 10.

130 Simondon makes the point that Aristotle could use the hylomorphic model: "to support a universal system of classification […] Even the ration of the soul and the body can be thought according to the hylemorphic model." Simondon, *The Individual and Its Physico-Biological Genesis*, 2.

131 Deleuze and Guattari, *A Thousand Plateaus*, 407.

132 Deleuze and Guattari specifically note that the nomad models of science are different to the State model because: "they imply a division of labor opposed to the norms of the State. The difference is not extrinsic: the way in which a science, or a conception of science, participates in the organisation of the social field, and in particular induces a division of labor, is part of that science itself." Deleuze and Guattari, *A Thousand Plateaus*, 407.

133 Deleuze and Guattari, *A Thousand Plateaus*, 407.

134 In the larger quote, Deleuze and Guattari point out that: "[n]omad science does not have the same relation to work as royal science. Not that the division of labor in nomad science is any less thorough: it is different." Deleuze and Guattari, *A Thousand Plateaus*, 406.

135 Simondon, *The Individual and Its Physico-Biological Genesis*, 3.

136 Deleuze and Guattari note that: "Simondon exposes the technological insufficiency of the matter-form model, in that it assumes a fixed form and a matter deemed homogenous." Deleuze and Guattari, *A Thousand Plateaus*, 450.

137 Deleuze and Guattari, *A Thousand Plateaus*, 450.

138 Deleuze and Guattari, *A Thousand Plateaus*, 451.

139 Deleuze and Guattari, *A Thousand Plateaus*, 451.

140 Deleuze and Guattari, *A Thousand Plateaus*, 451. In the 'Notes on the Translation and Acknowledgements' in *A Thousand Plateaus*, the point is made that '[t]he word trait has a range of meanings not covered by any single word in English." The term 'trait' is used in the translation to refer variously to "graphic drawing", "identifying mark", "projectile" and "the act of throwing a projectile". Thus in this context, 'trait' may be associated with a potential for a particular form to be projected from this space of material transformation. It is not that a particular form is latent in a particular matter, as if it were pre-destined to form in a certain way, but more a question of a 'becoming-form' propelled into being through the processes and movements involved in an operation, such as the nuances of an artisan deploying a plane to follow wood fibres. See Brian Massumi, 'Notes on the Translation and Acknowledgements' in *A Thousand Plateaus: Capitalism and Schizophrenia*, Gilles Deleuze & Félix Guattari, trans. Brain Massumi (London: Continuumm, 2004), xix.

141 With respect to the role of the brick mould during the transformation of the clay mix into a brick, Simondon argues that the clay ('earth') and the workman also contribute to the transformation. He notes that: "[o]ne cannot say that the mold gives form; it is the earth which takes form according to the mold, because it communicates with the workman." Importantly, the 'earth' already has the capacity to form into a brick, which it does so in communication with other forces. Simondon, *The Individual and Its Physico-Biological Genesis*, 6.

142 Williams, *Craftsmen of Necessity*, 161.

143 Deleuze and Guattari discuss metallurgy in terms of the flow of matter, positing the following question: "Why is the *machinic phylum*, the flow of matter, essentially metallic or metallurgical?" Deleuze and Guattari, *A Thousand Plateaus,* 453.

144 Deleuze and Guattari, *A Thousand Plateaus,* 453.

[145] Deleuze and Guattari, *A Thousand Plateaus,* 453. Other suggested examples of non-ordered transformation sequences associated with metal include; the decarbonations involved in working and reworking certain forms of steel, and; the potential for a metal form to be subsequently re-melted and re-formed into an ingot.

[146] The countercultural focus on operating outside of capitalist production systems is invoked in the following comment by Rheingold, and editor of *WEC*:"[i]f you want to maintain independence in the era of large institutions, you are going to need good tools." Rheingold, *The Millenium Whole Earth Catalog*, 1.

[147] As expressed by Deleuze and Guattari, the artisan is defined through their determination "to follow a flow of matter:" Deleuze and Guattari, *A Thousand Plateaus*, 452. While there can be a prospecting of materials within markets and so forth, prospecting itself is not the primary determination of the artisanal mode. Deleuze and Guattari, *A Thousand Plateaus*, 452.

[148] The point is made that "artisans are those who follow the matter-flow as pure productivity," see Deleuze and Guattari, *A Thousand Plateaus*, 454.

[149] This specific reference to "action" occurs in relation to the artisanal procedure involved in following the flow of matter, which is also described as "intuition in action." Deleuze and Guattari, *A Thousand Plateaus*, 452.

[150] Deleuze and Guattari specifically note that: "Simondon demonstrates that the *hylomorphic* model leaves many things, active and affective, by the wayside." Deleuze and Guattari, *A Thousand Plateaus*, 450.

[151] Deleuze and Guattari, *A Thousand Plateaus*, 451.

[152] Deleuze and Guattari, *A Thousand Plateaus*, 452.

[153] Deleuze and Guattari, *A Thousand Plateaus*, 454.

[154] This comment about "real-life" is made in relation to the procedures associated with following real-life problems: see Deleuze and Guattari, *A Thousand Plateaus*, 412.

[155] The term "unformed matter" is used by Bonta and Protevi to describe Deleuze and Guattari's notion of virtual matter, or matter which hasn't been actualised (in connection with the artisan). Virtual or potential matter is understood to occur on the plane of consistency from which concepts are extracted. Bonta and Protevi, *Deleuze and Geophilosophy,* 109.

[156] Deleuze & Guattari, *What Is Philosophy,* 153.

[157] The discussion about 'states of affairs' is made in a chapter discussing the difference between philosophy and science: see Deleuze & Guattari, *What Is Philosophy,* 153. For Deleuze and Guattari, science concerns itself with functions, actualised matter: philosophy is specifically concerned with the creation of concepts and makes reference to the plane of immanence and the virtual. Importantly, and even though matter possesses 'potentials' to transform, not all of its potential will ever be actualised. Presumably, 'science' refers to both state and nomad science, although the two aren't specifically differentiated in the *What is Philosophy*. In *What is Philosophy*, Deleuze and Guattari make the point that the actual and the virtual (the extreme of any 'potential') are distinct but connected, as evident in the following point about the conceptual or virtual event: the event is "actualized in a state of affairs, in a body, in a lived, but it has a shadowy and secret part that is continually subtracted from or added to its actualization: in contrast with the state of affairs, it neither begins or ends but has gained or kept the infinite movement to which it gives consistency [...] The event is immaterial, incorporeal, pure *reserve*." Deleuze & Guattari *What Is Philosophy,* 156. Massumi reinforces the point that the virtual is different from any potential as sensed in matter: potential is closer to the actions that happen in real-life, whereas the virtual is the extreme of any

potential. Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation,* Durham and London: Duke University Press, 2002, 98-99.

[158] As matter has potentialities that are not actualised, matter always retains a potentiality to become: it can also "confront accidents, adjunctions, ablations:" see Deleuze & Guattari *What Is Philosophy,* 153.

[159] Deleuze and Guattari refer to Simondon when making this point. Deleuze and Guattari, *A Thousand Plateaus,* 451.

[160] Deleuze and Guattari, *A Thousand Plateaus,* 450.

[161] Williams suggests: "[a] conversation is conducted between worker and material." Williams, *Craftsmen of Necessity,* 166.

[162] Grosz, *Architecture from the Outside: Essays on Virtual and Real Space.*

[163] Grosz, 'Feminism, Materialism and Freedom.'

[164] The specific texts that Grosz refers to in 'Feminism, Materialism and Freedom' that also contain references to Deleuze are: Elizabeth Grosz, *The Nick of Time*: *Politics, Evolution, and the Untimely* (Sydney: Allen and Unwin, 2004), and: Elizabeth Grosz, *Volatile Bodies*: *Toward a Corporeal Feminism (Theories of Representation and Difference)* (Sydney: Allen & Unwin, 1994). Reference to these works is made within the notes section of 'Feminism, Materialism and Freedom:' see Grosz, 'Feminism, Materialism and Freedom, N2; 154. In 'Feminism, Materialism and Freedom,' Grosz focuses on the writings of Henri Bergson: Deleuze and Guattari also refer to Bergson throughout *A Thousand Plateaus*.

[165] Referring to the French philosopher Bergson's work on animal life, Grosz makes the point that "[e]ach animal species, whether regulated by instinct as are the social insects or by intelligence as occurs in gradations through the vertebrates, has a world in which it can act, in which it requires a certain consciousness and in which there is for it a "fringe" of freedom, a zone of indetermination that elevates it above mere automated responses to given stimuli. It is this "zone of indetermination" that for Bergson characterizes both the freedom representative of life and the capacity for being otherwise that life can bestow on (elements or factors of) material organization." Grosz, 'Feminism, Materialism and Freedom, 149.

[166] Interestingly, Deleuze and Guattari also refer to a struggle in association with matter: specifically, the "struggle against chaos." Deleuze & Guattari *What Is Philosophy,* 203. Grosz makes a point about a struggle with matter, but her concern appears to be focused more on the notion of freedom and action. She makes the point that: "[f]reedom is thus not primarily a capacity of mind but of body: it is linked to the body's capacity for movement, and thus its multiple possibilities of action." Grosz, 'Feminism, Materialism and Freedom,' 152. Grosz's argument is based on her interpretations of Bergson, although the presentation dissertation concentrates specifically on Grosz's feminist reading of action and matter. Deleuze and Guattari also make reference to Bergson's notion of intuition in relation to encountering and responding to problems in real-life. Deleuze and Guattari, *A Thousand Plateaus*, 619, N40.

[167] Grosz, 'Feminism, Materialism and Freedom,' 140.

[168] Grosz, 'Feminism, Materialism and Freedom,' 152.

[169] Grosz argues that freedom is often conceived of in terms of "freedom from' restrictions encountered within present circumstances, which she argues limits freedom to a reactive sense: rather than associating freedom with the positive potential to create, make and transform. Grosz, 'Feminism, Materialism and Freedom,' 140.

170 Grosz suggest that: "[f]reedom is the consequence of indetermination, the very indetermination that characterizes both consciousness and perception. It is this indetermination […] that liberates life from the immediacy and givenness of objects but also from the immediacy and givenness of the past." Grosz, 'Feminism, Materialism and Freedom,' 152.

171 Grosz refers to the connections between the struggle with matter, transformation and bodily action: "[f]reedom is not an accomplishment granted by the grace or good will of the other but is attained only through the struggle with matter, the struggle of bodies to become more than they are, a struggle that occurs not only on the level of the individual but also of the species." Grosz, Elizabeth, 'Feminism, Materialism and Freedom,' 152.

172 Ben Holtzman, Craig Hughes and Kevin Van Meter, 'Do It Yourself...and the Movement Beyond Capitalism', in *Constituent Imagination: Militant Investigations, Collective Theorization*, ed. Stevphen Shukaitis & David Graeber with Erika Biddle (Oakland: AK Press, 2007), 44-61.

173 Although Holtzman, Hughes and Van Meter make direct reference to Deleuze and Guattari, it would be argued that their discussion of DIY's 'use-value' is Marxist more than Deleuzean. While Grosz's conception of action and freedom makes no reference to DIY, her focus on affirmative action, matter and making is of particular interest to this thesis because actions involving materials are a key aspect of the DIY mode of operation and production.

174 Roland, 'Do It Yourself,' 162.

175 Roland, 'Do It Yourself,' 164.

176 Holtzman, Hughes and Van Meter, 'Do It Yourself,' 45.

177 Grosz, 'Feminism, Materialism and Freedom,' 146.

178 Grosz, 'Feminism, Materialism and Freedom,' 141.

179 IKEA hacking is a term made popular in a 2007 article in the New York Times, titled 'Romancing the Flatpack; Ikea, Repurposed.' Penelope Green's article refers to the notion of repurposing and altering standard IKEA products. Penelope Green, 'Romancing the Flatpack; Ikea, Repurosed,' *The New York Times,* 'Home and Garden,' 6 September 2007, http://www.nytimes.com/2007/09/06/garden/06hackers.html?pagewanted=1: 1-4.

180 Green refers to a comment made by music academic Michael F. Zbyszynski. Zbyszynski differentiates Ikea hacking from standard DIY: "[i]t's all about not accepting what's presented for sale as is […] about not just doing a 'paint by numbers' of your life." Zbyszynski, as quoted in Green, 'Romancing the Flatpack,' 1.

181 Instructions for IKEA hacks usually include a sequence of actions and material configurations in order to create the same or similar hack.

182 Grosz refers to the indeterminacy of actions prior to their actualisation: "[s]o although we can posit that X and Y are equally possible (or not equally possible), it is only after one of them has been actualized or chosen that we can see the path of reasons, causes, or explanations which made it desirable." Grosz, 'Feminism, Materialism and Freedom,' 147.

183 Grosz's feminist reading reinforces that, in relation to notions of matter and action; "[t]he problem is not how to give women more adequate recognition (who is it that women require recognition from?), more rights, or more of a voice but how to enable more action, more making and doing, more difference." Grosz, 'Feminism, Materialism and Freedom,' 154.

184 Deleuze and Guattari, *A Thousand Plateaus*, 451.

Explorations

Chapter 5: Explorations of the artisanal in Ant Farm's and Soleri's DIY architecture manuals

5.0 Introduction

Deleuze and Guattari's philosophical notion and definition of the *artisanal* involves a uniquely nuanced account of the processes involved in transforming matter, whilst invoking a sense of flow between artisans, objects, matter, thoughts, tools and, more broadly, life. One might argue that the North American counterculture of the 1960s and 1970s involved a similarly heterarchic approach to life, which blurred (in this case) the conceptual boundaries between subjects, environments and life philosophies. This is particularly evidenced in the mixed content and format of DIY manuals of the time, including Ant Farm's and Soleri's manuals. The present thesis chapter explores the resonances and relays between the DIY manuals and discourse, and the philosophical notion of the *artisanal*, in order to prompt new understandings of DIY architecture.

The post-war discourse on the DIY phenomenon of the 1940s to the 1970s is generally focused on issues of agency and subject, and frequently concentrates on the motivations of the readership for engaging in DIY. As noted by Roland—the early "academic" theorist of DIY[1]—it is problematic to define and articulate DIY according to the possible intentions and internal motivations of its practitioners.[2] By conceptualising 'DIY' through the notion of the *artisanal*, the discourse on DIY can be explored through a focus on materials, forms, procedures, actions and transformations: issues already loosely associated with DIY in both post-war discursive streams. By concentrating on the latter issues, this thesis highlights the complexities inherent in the DIY mode of operation in architecture, particularly with respect to the different approaches to materials evident in Ant Farm's and Soleri's DIY manuals (the focus of the present study). It is important to note that any account of 'DIY architecture' needs to invoke the complexities of the processes associated with the DIY mode of operation.

In chapter 4, the notion of the *artisanal* was explored with respect to the associated conceptions of: flows and following; the matter-form relation; and action, matter and transforming bodies. These conceptions have been used to frame the chapter sub-headings within the present chapter in order to guide the theoretical explorations. There is also a specific focus on examples related to DIY experimentation with materials, education and social formations—defining characteristics of Ant Farm's and Soleri's DIY manuals.

Ant Farm's and Soleri's DIY manuals as instantiations of DIY architecture

The DIY architecture manual is pivotal in disseminating a DIY sensibility, particularly within the North American counterculture of the 1960s and 1970s: the manuals are a DIY publishing practice themselves. Sadler not only reinforces the value of the DIY manual to the architectural discipline, but argues that a particular countercultural manual—the *WEC*—could be considered as "a sort of architecture"[3] in itself. Following on from this point, Ant Farm's and Soleri's DIY architecture manuals are explored as specific instantiations of DIY architecture, primarily due to their existing associations with DIY, architecture and the 'artisanal.'[4] The manuals themselves are obviously not the same as the actual materials and processes that are described by or anticipated within these manuals. Nevertheless, the manuals characterise and convey a particular DIY mode of operation within architecture. By focusing on three select manuals created by Ant Farm and Soleri, the intention is to distil a deeper, more particularised understanding of 'DIY architecture' and its attendant practices. It is important to note that within the DIY mode conveyed by these manuals, the architects simultaneously act in the different roles of designers, builders and occupants, and thus it is difficult to clearly distinguish between their professional and personally-orientated roles, actions and identities. As will be discussed further below, the blurring of these roles is a defining feature of the DIY mode instantiated within the manuals.

5.1 Flow, following and DIY

The philosophical notion of the *artisanal* is bound to other concepts, including that of 'flow' and 'following.' According to Deleuze and Guattari, the artisan is "one who is determined in such a way as to follow a flow of matter."[5] Within the *artisanal* mode of operation, there is an assumption that all of life (including matter) exists in a state of flow.[6] Of particular interest to the present thesis is the understanding that material phenomena (including inflatable creation, casting concrete on soil, and so forth) involve a confluence of forces. By extension, architectures, identities, ideologies and bodies might also be conceived as existing in dynamic relation and flow. Within Deleuze and Guattari's *artisanal* mode, matter is not encountered as an inert chaotic 'lump' that has no qualities of its own. Rather, matter is understood to be active and possess its own capacities to form and transform. Any transformation of matter from one state to another occurs through dynamic encounters and interactions with other forces, and, as such, it is difficult to think of matter being passive or disassociated from the other materials, tools, techniques and processes. For this reason, matter can only be understood as existing in "movement, in flux, in variation,"[7] using Deleuze and Guattari's language.

If artisans assume that matter exists in a dynamic state when it is transforming from one state to another, then artisans become "obliged" to work with, and follow, these flows and shifts.[8] Smith and Ballantyne describe the space in which matter transforms from one state to another as: "a space where things are in flux and have not reached a determined form, but interact with one another to produce the

next state of affairs."[9] To reinforce this sense of dynamism, interrelation and flux within the *artisanal* mode, it might be more appropriate to refer to 'transforming matter' and 'transforming materials' than matter and materials per se, to reinforce the connection between materials and the processes inflecting their transformations.

Inflatocookbook, 'Inflatables Illustrated' and *Earth Casting* discuss encounters with transforming materials in divergent ways, depending on the intent and focus of specific sections. To varying degrees, all three manuals suggest that any encounter with transforming materials is unique and site-specific to some degree, dependent not only on the specific material, that is, a specific roll of plastic from a shop in NY,[10] a specific soil type from Arizona,[11] but also on the specific interactions between the different materials at hand, the skills of the maker, the particularities of the tools,[12] to name a few influences. As each encounter with a material is specific to that moment, it is hard to definitively predict how materials will perform in advance. However, there is also a somewhat contradictory attempt to overwrite the specificity of each encounter through the establishment of generalisable techniques and sequential steps for dealing with, and controlling, material behaviours. Generalised accounts and characterisations of materials and attendant behaviours appear throughout all three DIY manuals, to varying degrees, as seen in such discussions as the joining together of plastic sheets (regardless of their individual nuances) in 'Inflatables Illustrated,'[13] and the generic diagram and step-by-step instructions for earth-casting a concrete bowl in *Earth Casting*.[14] These generalisations tend to downplay a sense that each material and its transformations are bound to a specific time and circumstance, because general principles are extracted from particular examples and summarised—as if the material phenomenon can be replicated in other scenarios. The divergent approaches to transforming materials in all three manuals—as simultaneously site-specific and generalisable—complicate the sense through which do-it-yourselfers are seen to engage, work with and follow uniquely nuanced material capacities.
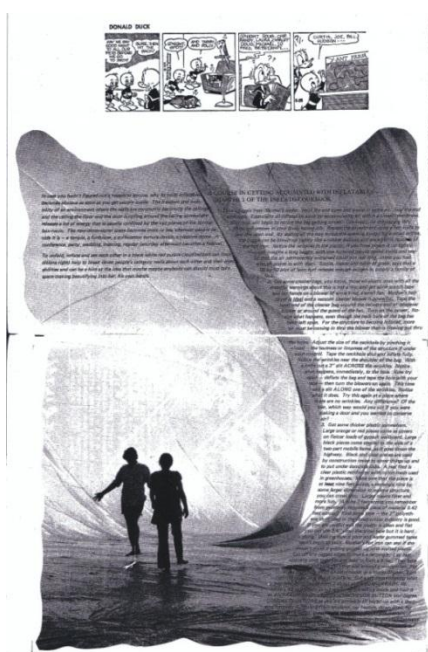
Figure 5.1: *Inflatocookbook*: 'A Course in Getting Acquainted with Inflatables'.

Inflatocookbook

In a section functioning effectively as a summary of, and introduction to, the 1973 manual,[15] Ant Farm binds materials to both DIY fabrication processes and the DIY fabricator (Figure 5.1). They note that *Inflatocookbook* contains "[i]mages of what environment can mean when a person takes it in his own hands, feeling it and molding new forms."[16] In both editions of *Inflatocookbook*, the form of the inflatable is directly linked to the processes involved in its construction and occupation, because the occupant is also the maker who can therefore respond to the situation 'at hand,' including its problems and opportunities.

Even so, materials and their workings are discussed in somewhat contradictory terns throughout *Inflatocookbook*, typified by the two different approaches to polyethylene's organisational capacities: as simultaneously possessing very particular, somewhat unpredictable behaviours that emerge during each inflatable project, and as possessing generalisable behavioural tendencies. In the first approach and example, the material is understood to be prime and active during the processes involved in its transformation from one state to another. This is seen in Ant Farm's introductory comments relating to polyethylene within the 'Materials' pages; these comments connect polyethylene fabric to fabrication processes:

> With a material as abstract as a micro-thick plastic film, and as easy to join as polyethylene,
> one can transit the entire design-then-build process in such a short time as to be able to
> see the process as a whole. In this sense polyethylene can be a medium for learning about
> whole design processes.[17]

The above statement may give the impression that because polyethylene is 'easy to join,' the general DIY process may be easy to grasp and generalise. That is, the simplicity of the construction process may overwrite any nuances related to unique or unpredictable material behaviours during each DIY project. And yet, the polyethylene material itself is described as a 'medium for learning,' which suggests that the inflatable-maker can be guided by the polyethylene material during each 'design-build.' Deleuze and Guattari's artisan follows and is guided by matter because she recognises that it exists in dynamic relation with other shifting forces while it is transforming. One can argue that there is a similar point in Ant Farm's description of polyethelene as 'a medium for learning.' The inflatable maker can be guided by her encounters with a specific polyethylene fabric matter: learning about its organisational capacities and potentialities, including its capacity to be joined with tape and formed into larger architectural constructions. Polyethylene may be positioned as a discernible material type, and yet its behavior and transformative capacities are enfolded into the processes through which the material is worked.[18]
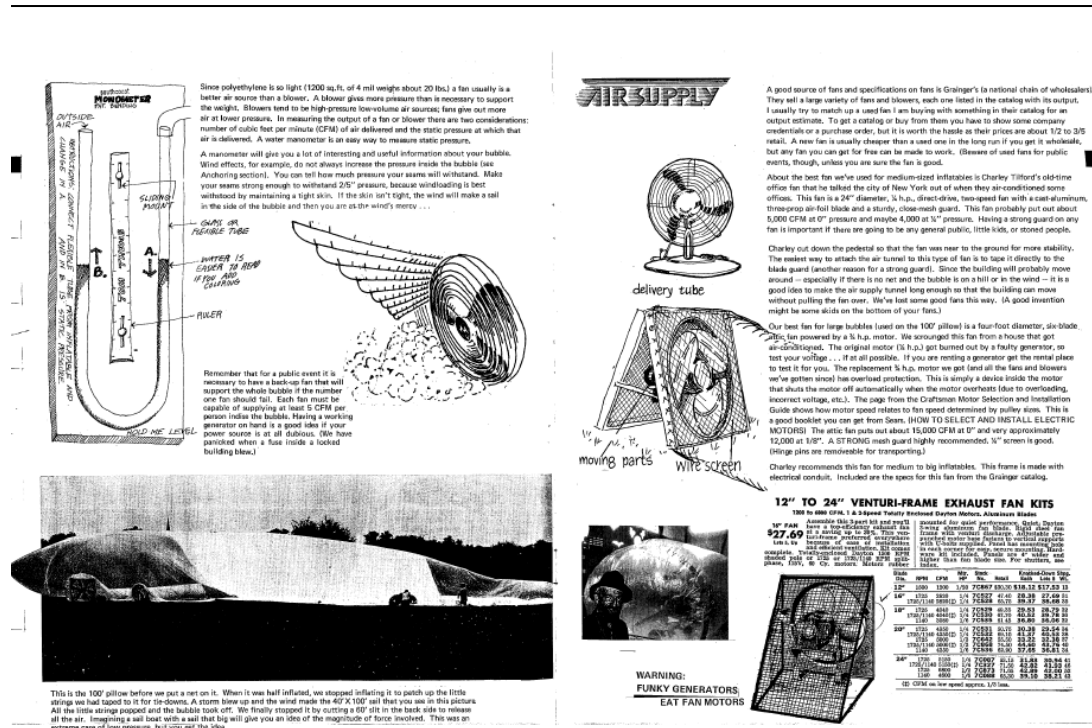
Figure 5.2: *Inflatocookbook*: 'Air Supply.'

Polyethylene's potential to be worked and transformed is explicitly considered in connection to other processes and forces inflecting inflatable form. The 'Air Supply' section of *Inflatocookbook* contains an example of an inflatable that indicates that the realities involved in assembling materials in-situ may not conform to expectations, specifically because materials are interconnected to other forces inflecting projects sites. A photo and accompanying words describe a scenario in which a very large 100' inflatable became airborne in high wind conditions (Figure 5.2). Thus the pre-anticipated architectural outcome and material transformations required some in-situ adjustment and 'following.' Within the *artisanal* mode of operation, there is an acknowledgement that it is difficult to consider a material's self-organisational capacities in isolation, and without reference to, its capacity to interact and transform in dialogue with other materials forces such as (in Ant Farm's specific case) unpredictable wind conditions.[19] In the aforementioned sections of *Inflatocookbook,* there is a sense that material transformations are—to borrow architectural theorist Lloyd Thomas' terms—"bound to the conditions which render them possible,"[20] including other materials and site-based processes associated with their production.

The second approach to polyethylene in *Inflatocookbook* is that of a material with behavioural tendencies that can be characterised under headings such as 'Materials,' 'Air Supply' and 'Anchoring.' These sections are, on the whole, pragmatically focused and statements are generally orientated to the use of plastic, tape and air for the achievement of specific goals. A statement typical of these pages can be seen in the following comment about reinforced polyethelene: "[t]his is fine, strong stuff, although a

little difficult to tape due to texture. There is also a company in Houston named Griffolyn that produces this stuff. I don't know how their prices compare."[21] The 'Air Supply' section of *Inflatocoookbook* also contains a number of calculations and theorems to help makers predict air pressure and surface ratios, and thus 'predetermine' suitable fabric sizes, joints and fans.[22] These kinds of generalisations are atypical of the *artisanal* mode of operation, even though they reinforce a sense that one material—say polyethylene sheet—cannot be considered in isolation from other aspects of inflatable creation, air pressure and so forth. On these particular pages, there is a discernible focus on material capacities and their interdependencies; yet there is minimal discussion about the need to account for, and follow, the particularities of each actual encounter.

Other sections of *Inflatocookbook,* however, describe neither material self-organisational capacities, nor their interrelation with other forces and materials. This is specifically evident in paragraphs that focus on the generalisable attributes of a particular material type or genre in isolation from other aspects of the production process.[23] For example, the following generalisations are made in relation to using tape to join fabric: "we use tape because it eliminates hardware, can be used in the field, and the technique can be mastered by large numbers of people."[24] Even though the focus is on how materials are worked and joined, there is no mention of the mess and dynamism involved in the working of real-life polyethylene and tape. Instead, the focus appears to be on how to recreate and reproduce material behaviours, taping techniques and so forth. The capacity to reproduce techniques and material behaviours reflects an assumption that the behaviours of 'component' materials might be accurately predicted in advance of, and in isolation from, any actual workings or transformations: an assumption better associated with Deleuze and Guattari's model of State science and its attendant 'axiomatics,'[25] rather than nomads or artisans.

One might argue that there is a continual play between attending to and controlling materials within *Inflatocookbook* which resonates with Deleuze and Guattari's point about the inevitable "field of interaction"[26] between different procedures and operational models. For Deleuze and Guattari, the nomad model involves a response to particular, "real-life"[27] phenomena, whereas the State model seeks to extract rules and theorems from the same phenomena in order to predict, control and reproduce these phenomena in other situations. One can see a similar 'interaction' between the two approaches to materials in *Inflatocookbook.* Through their own experiments with inflatables,[28] joining plastic and so forth, Ant Farm discovered and were guided by polyethylene's unique capacities in real-life. They subsequently used their own experiences to summarise, generalise and predict how materials might perform in other DIY scenarios.

Deleuze and Guattari suggest that the procedure of *artisanal* following does not necessarily involve "changing location" because the following of material capacities can be localised to a specific material

phenomenon, such as the "fibres of the wood."[29] However, the following associated with the 'prospecting'[30] of particular materials, such as "wood with the right kind of fibres,"[31] may indeed involve some geographic shift. This is because the following of matter-flow is part of "a more general process" [32] which may involve sourcing specific matter, including materials with certain desirable qualities or potentialities. Deleuze and Guattari's artisan prospects for actual, real-life materials such as 'wood' in forests.[33] In *Inflatocookbook,* there is a similar suggestion of a need to prospect particular materials for inflatables. A case in point is the section on 'Materials' which refers to sourcing polyethylene plastic from specific suppliers, such as: "Mr. Zimmler [who] is a fine guy."[34] Consistent with the notion of *artisanal* prospecting, there is directedness to seeking particular materials, such as Zimmler's plastic, yet it is a directedness that is material-focused. Prospecting cannot be thought of as simply choosing materials amongst a range of options in retail markets alone because artisans are attuned to the potentialities of actual materials during *artisanal* processes and productions[35]—prospecting is closely connected to discovering the inflections of a grain of timber with a chisel,[36] or the capacity of one's iron to melt and heat-seam particular polyethylene strips into larger sheets.

'Inflatables Illustrated'

In both the countercultural and philosophical texts referred to in the present thesis, the artisanal procedure of 'following' involves a following of the entire situation at hand, including the tools involved in the working and transformations of materials.[37] Within the countercultural milieu, the term 'tools' is used not only in a conventional sense (i.e. referring to implements), but also refers to advice, techniques, and any other information that might support the countercultural lifestyle.[38] The *WEC*—a key influence on the *Inflatocookbook*—uses the term 'tools' to refer to any information that is of "use."[39] According to this definition, topics as diverse as philosophy might be a 'tool' if seen to support or provide insight into countercultural life. *Inflatocookbook* and 'Inflatables Illustrated' contain information about tool implements and their deployment, alongside somewhat philosophical musings about the effects of inflatables on their occupants.[40] As the do-it-yourselfer is presumed to be the maker or builder as well as the designer, tool implements are seen to be of crucial and direct importance to the DIY architectural process.

Figure 5.3: 'Inflatables Illustrated:' video still of Schreier's iron-seaming demonstration.

A case in point in 'Inflatables Illustrated' involves the footage of "Mother's hot iron"[41] being used to heat-seam smaller plastic sheets together. Schreier demonstrates how to use the iron, and also how to respond to the associated problem of plastic melting on the hot iron surface (Figure 5.3). In the footage, the melting of plastic seems somewhat unexpected at that particular moment, and requires Schreier's immediate attention.[42] Nevertheless, Schreier does not seem overly concerned by the need to attend to the fuming iron.[43] There appears to be an overall acceptance that there is always some real-life unpredictability in DIY operations and their sequencing; in this particular example, the unpredictability relates to the particularities of the encounter between iron tool, material and maker.

To understand this particular ironing-seaming scene, it is useful to turn to Massumi's notion of the "wood-tool encounter"[44] within the *artisanal* mode. Massumi suggests that the working of matter involves a confluence of forces including, but not limited to, tools, materials, the skills of the individual artisan and so forth. When a designer is not directly involved in construction processes, she may not explicitly consider such issues as tools and the techniques for using them, because she is not directly involved in their use on site. Thus tools and fabrication techniques may not be thought of as a specifically architectural or design concern. The focus on tools and fabrication techniques then falls to the building contractors, who are directly involved in site fabrication, assembly and implementation of the pre-designed architectural project. Ant Farm's DIY manuals promote a mode of practice which blurs the phases and procedures associated with designing, constructing and occupying architecture, such that the do-it-yourselfer can engage with all aspects of the DIY creative process. This creates a sense of blurring between the specific materials, thoughts, tools and bodies interconnected to these DIY operations, in a manner that strongly resonates with Deleuze and Guattari's *artisanal* mode and the attendant following of matter-flow. As noted by Deleuze and Guattari, "this matter-flow can only be *followed*."[45]

In *A Thousand Plateaus*, Deleuze and Guattari suggest that there are two different approaches to encounters involving tools: either working with, or against, the situation at-hand (the former being an *artisanal* approach). They specifically state that: "the tool encounters resistances, to be conquered or put to use."[46] Following on from this point, it might be argued that during inflatable creation, the intention is not to 'conquer' tools such as 'Mother's hot iron,'[47] the kitchen knife used to cut polyethylene strips, and the aluminum foil used to heat-seam plastic sheets together. This is because procedures and techniques are adjusted in response to the tool's encountering of Schreier's hand, plastic and heat. It could be argued that the tools are all 'put to use' in the "Ant Farm Media Kitchen,"[48] and are part of a comprehensive approach to DIY architecture.[49]

Figure 5.4: 'Inflatables Illustrated': inflatable occupation.

Throughout the 'Inflatables Illustrated' video, different inflatable occupants—including Ant Farm members Michels and Lord—are shown adjusting, and attending to, the fabric and fan tunnel detail elements,[50] producing a scenario in which the design and construction phases are coextensive with the occupation phases. This coextensivity is reinforced in the scene involving the occupation of a large-scale inflatable accompanied by ambient music (Figure 5.4); this scene is selectively spliced or inserted into the middle of Schreier's ironing-seaming demonstration.[51] Human bodies are shown adjusting and pushing the outside and inside surfaces of the fabric envelope.[52] Throughout most of the video, the ongoing response to the shifting capacities of the inflatable envelope—from its incarnations as heat-seamed polyethylene sheets through to its inflation and occupation—conveys what might be described as an immersion in, and a *following* of, a material phenomenon.[53] Assuming that the occupation of inflatables is part of the continuum of making an inflatable—and the qualities of inflated and taped fabric might be thought of as the equivalent of the grain which is followed by Deleuze and Guattari's artisan[54]—then in the footage specifically relating to the occupation of inflatables, there is a following of the inflatable phenomenon through the continual adjustments to, and interactions with, the fabric envelope.[55]

Figure 5.5: *Earth Casting*: excavating the architectural interior after casting the concrete shell on soil formwork.

Earth Casting

Deleuze and Guattari's artisan follows the flow of actual or "real-life"[56] matter because she recognises that the behavior of materials cannot be fully anticipated in theoretical or predictive models. The *Earth Casting* manual makes a similar, albeit brief observation: that "some aspects of the silt-casting process […] require direct experience in order to fully grasp them."[57] Direct experience is required because the transformation of silt involves complex interactions between soil, temperature, moisture levels, tools, and bodies that are difficult to predict in advance. The 'earth-caster' must therefore work with, and follow, that which is encountered. In chapter 2, 'Silt as A Craft Medium,' Soleri and Davis note that:

> The "feel" of damp silt in your hands, the pile cooling the air around you, the feel of a knife in
> your hand cutting the silt, "knowing when the silt is damp enough for a given purpose, cannot be
> fully described or explained in words. You must experience them for yourself.[58]

The preface to the above comment in *Earth Casting* indicates that silt may have typical properties and behaviours, including its molecular constitution and sedimentary character.[59] And yet, these generalisations about silt, as made explicit by Soleri and Davis, will never capture the nuances of each encounter with actual silt, and will at best assist the maker in anticipating some aspects of the earth-casting processes. In the examples of earth-cast concrete buildings outlined in *Earth Casting*, the silt is used as a form for casting concrete into a particular shape; there is some pre-anticipation of the shape that might emerge prior to any actually casting processes.[60] Yet it is also clear that the nuanced variations in shape, texture and colour that emerge during each casting process will substantially inflect

the architectural form and its particular qualities. These individual nuances are hard to fully anticipate,[61] particularly when combined with the somewhat unpredictable effects of voluntary or amateur construction labour[62] and other such forces as the bulldozers used to excavate the soil from the interior after casting (Figure 5.5). This is specifically evident in the following discussion about the earth-casting process:

> Inside the structure will be textures and patterns peculiar to the raw and often potentially beautiful machine-made surfaces. The mixture of freedom and discipline in the earth-forming procedure is of a different kind from the one found in orthodox form-making. The results will be a radical departure from orthodoxy or any unsatisfactory imitation of it.[63]

The play between strategic intention and spontaneous on-site improvisation—Soleri's aforementioned 'mixture of freedom and discipline'—can be seen throughout the entire *Earth Casting* manual. On the one hand, the manual conveys a sense that each earth-casting process produces uniquely nuanced and site-specific architectures, such as that seen in the Cosanti and Acrosanti complexes. The architecture is inflected by the particularities of the local silt,[64] alongside the found and repurposed materials and objects that are incorporated into the earth-cast buildings.[65] Even though Soleri and Davis note that drawings are necessary when casting concrete for large reinforced earth-cast structures (as they were at Arcosanti), they also stress that the drawings can be "rough, and some changes can be made as you go along."[66] Thus, the do-it-yourself earth-caster could operate in a somewhat improvisatory manner in certain scenarios, responding to available materials, problems and issues in the real-life project site (unless they are problems of structural engineering, which require some forethought[67]). Using Deleuze and Guattari's own language, the earth-caster can generally deploy: "sensitive and sensible evaluations." [68]

On the other hand, other sections of *Earth Casting* generalise material behaviour and types, suggesting a similar interaction between the 'particular' and the 'general' to that within Ant Farm's manuals. In some sections of *Earth Casting*, there is minimal indication that materials might have their own self-organisational capacities. For example, there is little detailed explanation about the mixing and pouring of concrete, nor any specific recommendation that it must be directly experienced and/or attended to.[69] Minimal information is also provided about the technique of forging metal using sand-casting techniques, due to concerns with the safety aspects of forging procedures. Soleri and Davis argue this specific technique should not be tried by amateurs and they therefore provide little detailed information about the technique. A similar issue highlighted in the early post-war DIY discourse was the need to adapt certain construction techniques and tools to suit the limited skill set of the inexperienced do-it-yourselfer;[70] a problem arguably resurfacing in Soleri and Davis' discussions about the complexities of casting metal.[71] It could be argued that *Earth Casting* does convey the complexities associated with

metal forging, but because these complexities are seen to be unpredictable and risky, the technique is seen to be beyond the reach of the average, inexperienced do-it-yourselfer.[72] Caution is also recommended in relation to the specification of steel reinforcement for earth-cast concrete building structures; readers are encouraged to consult with a professional architect or engineer about structural matters.[73] Similarly, in the 'Safety Codes and Fire Marshalls' subsection of *Inflatocookbook's* 'Materials,' reference is made to safety issues, which in this case relate to the fire safety of inflatables erected at public events.[74] Ant Farm explicitly notes that "[f]ire codes are necessary, witness circus tent fire tragedies."[75] They point out the need for a sufficient number of fire exits and appropriate air pressure, and they offer further cautions: "remember you are responsible for the safety of your structure,"[76] which requires some forethought and negotiation with regulatory bodies.

In the aforementioned cases of forging metal and steel-reinforcing in *Earth Casting*, and fire safety in *Inflatocookbook*, the experimentation and spontaneity of the DIY mode of operation is tempered by concerns with safety. In *Earth Casting*, it is suggested that 'metal' is not suitable for the experimentation associated with the DIY earth-casting processes, unless there is some significant prior experience and skill. Deleuze and Guattari raise a similar point about the "safety"[77] aspects of the *artisanal* mode of operation. They note that concerns with 'safety' often arise in conjunction with the following of real-life material phenomena. Deleuze and Guattari cite the specific example of the collapse of two French cathedrals at Orléans and Beauvais in the twelfth century.[78] These cathedrals were created through the following of in-situ conditions, and prior to the development of pre-engineering models and calculations that are associated with the model and mechanisms of the State sciences described in *A Thousand Plateaus*. These safety concerns generate the inevitable "field of interaction"[79] between different approaches to problems; for example, nomadic and artisanal models "confine themselves to inventing problems whose [...] scientific solution depends, on the contrary, on royal science and the way it has transformed the problem by introducing it into its theorematic apparatus and organization of work."[80] Within the DIY mode, one might argue that there is a similar 'field of interaction' between the spontaneous and the strategic, "freedom and discipline,"[81] which in this case is conveyed by each DIY manual. *Inflatocookbook* and *Earth Casting* advocate some experimentation with materials in certain contexts, and yet simultaneously discourage DIY experimentation with high-risk structures due to concerns with safety.

Earth Casting indicates that there is a following of the capacities of silt and found materials on site, the temperature of the silt pile within the project site and so forth, as part of the DIY mode of operation.[82] This is a 'following' that does not involve any shift in geographic location to the same degree as that conveyed in *Inflatocookbook*. *Inflatocookbook's* nomadic audience might travel extensively across North America in search of materials and social networks.[83] In contrast, DIY earth-casters are encouraged to seek soil in a local river or other similar locations "in your area."[84] The connection between the localised

prospecting conveyed within *Earth Casting*, and the more extensive prospecting of *Inflatocookbook*, is the shared quest for particularised materials with potentialities that may align with the focus of the artisanal DIY encounter (for example, the earth-casting of concrete on silt, or the joining of polyethylene sheets with tape). One might argue that during the prospecting procedures described in Ant Farm's and Soleri's manuals, there is some general pre-anticipation of material behaviours; however, there is always some degree of real-life adjustment to the actual and particular material—a point resonating very strongly with the *artisanal* procedures of following and prospecting invoked in Deleuze and Guattari's *A Thousand Plateaus*.

5.2   Matter, form and the communicable format of the DIY manual

The format and content of the DIY manual is intrinsically connected to the DIY mode of operation, particularly in the North American counterculture of the 1960s and 1970s. One of the key ways that the flow and interconnection between all aspects of life was conveyed in the countercultural DIY manuals of the time was via the intermixing of information on materials, tool implements, techniques, ideas and life philosophies. Ant Farm member Lord recently referred to the comprehensive countercultural approach to life as offering: "a religion, a philosophy and a set of tools to realise."[85] Ant Farm's and Soleri's DIY architecture manuals were—like many other DIY architecture manuals of the time—educational platforms for encouraging and disseminating experimental, countercultural ideologies. A key ambition of the counterculture was to connect living and thinking to a holistic conception of life, reinforcing the flow between things. This ambition was particularly evident in the countercultural pedagogy of 'comprehensive education'[86] conveyed within countercultural DIY manuals such as the *WEC* and *Shelter*. Baldwin (an editor of the *WEC*) makes the explicit point that: "[w]e've intentionally arranged it to make obvious that everything really is connected to everything else."[87] All aspects of life were seen to be interconnected: pedagogy, buildings, ecologies, thought, practical action and the DIY manuals themselves were enfolded into a confluence.

One of the key challenges related to the communicable format of the DIY manual appears to be the way in which the complexities of the matter-form relation are conveyed, particularly with respect to the interactions between the 'particular' and the 'generalisable' nature of materials. Similar to conventional architectural drawings and specifications, the DIY architecture manual is always a mediated form of encounter between hypothetical and actual project materials, production contexts and project sites. However—and unlike the specification documents targeting builders and building contractors—the manuals do anticipate direct contact between the reader and the actual materials in the construction site, because the reader is both the designer and maker. A correlation between the drawings and specifications, and the actual or completed built architectural form, doesn't appear to be a specific concern within Ant Farm's and Soleri's DIY manuals, because the architectural form could evolve to suit

each site in 'relay' with current project circumstances. Their DIY manuals are focused almost entirely on materials, fabrication processes, techniques and (in the case of Ant Farm's manuals) the occupation of real-life spaces. There is a discernible focus on communicating to, and engaging, the readership of the manuals in an open-ended manner.[88] Ant Farm's and Soleri's manuals generally guide or prompt the reader in their DIY operations, rather than prescribing how the reader should design, shape and occupy architectural or building form. Thus, in relation to conventional architectural specifications, Ant Farm's and Soleri's manuals convey a degree of flexibility with respect to the relation between materials and architectural form.

The "matter-form model"[89] is a key concern within Deleuze and Guattari's *artisanal* mode of operation because the way in which materials are assumed to form influences the techniques and approaches that are used during their transformations. This concern with the matter-form relation could be extended to DIY approaches to materials and forms, and how they are communicated to the extensive readership of DIY manuals. Before discussing the *artisanal* within *A Thousand Plateaus*, Deleuze and Guattari criticise the hylomorphic model of the matter-form relation, on the basis of its oversimplification of the processes that occur when matter changes from one form to another.[90] For Deleuze and Guattari, a key problem of the hylomorphic model is that matter is understood to form according to "a fixed order marking a succession of thresholds."[91] In other words, there is an assumption that matter should transform according to an ordered sequence beginning with an inert, prepared matter and ending in a final form (albeit a form that can then undergo another transformation). The potentially complex interactions and dynamic threshold states through which matter passes during its transformations are concealed in the hylomorphic model. Simondon argues that even in the case of a simple brick form, there are number of complex dynamic thresholds states through which the clay passes as it transforms into a brick.[92] For Deleuze and Guattari, a similar complexity can be seen within the *artisanal* practice of metallurgy.[93] During metallurgic operations, a metal form can be forged, worked and reworked, reformed, and transformed again into an "*ingot-form*"[94] by melting it down into another metal state. As exemplified within *artisanal* metallurgy, there is much variability within the different thresholds states and sequences involved in matter's incarnation from one form to another.

The hylomorphic model of the matter-form relation is orientated towards, in Deleuze and Guattari's own words: "imposing a form upon a matter,"[95] because there is a desire to recreate or repeat material phenomena in other similar scenarios by using a recipe, pattern and so forth. For Deleuze and Guattari, artisans operate using a different model from that of hylomorphism. Artisans directly encounter, respond to and work with materials in "real-life,"[96] so that they can also respond to the unexpected complexities that may arise during the transformation processes. Artisans are not entirely reliant on an axiom, a totalising theory or a generalisable process which is based on theories about material behaviours and assemblages. In *Building Materials*, Lloyd Thomas connects the assumptions and problems of the

hylomorphic model to architectural drawings and specifications which obscure the particularities and nuances of materials. She suggests that "[t]he simple mode of specifying materials by name seems to confirm the notion that any material is simply one of the diverse manifestations of material in general, and lends itself to the idea that one material can be substituted for another."[97] Lloyd Thomas cites alternative specification formats that reinforce the specificity of each material encounter, including specifications that name the particular geographic region or manufacturer a material is sourced from i.e. a specific timber or glass that is produced by a specific supplier. This, for Lloyd Thomas, is a further reinforcement that a material is inextricably bound to its particular production contexts, even within the generic format of architectural specification documents.[98] She cites further examples that incorporate information about production techniques and processes, rather than 'raw' materials alone.[99] Her examples include the specification and drawing documents for an experimental house, 9-10 Stock Orchard Street, London (2004), by the architects Sarah Wigglesworth and Jeremy Till. Due to the experimental material combinations used in this house, the architectural specification included not only descriptions of materials, but the processes related to their on-site fabrication, including the design and operation of the scaffolding needed to assemble the house's unusual sandbag wall insulation.[100] It is important to note that in the latter example project, there were still separate building contractors involved in the erection and construction of the building on site.
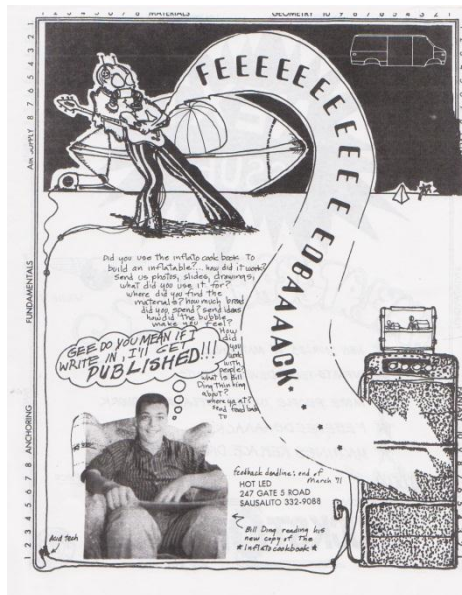
Figure 5.6: *Inflatocookbook*: the 'reader feedback' section of the 1970 edition.

Inflatocookbook

Standard architectural specification documents and drawings 'represent' future architectural forms and shapes to be constructed within building sites. In contrast, and throughout the *Inflatocookbook* manual, there is an assumption that the readers would develop their own design projects and forms—even if they used Ant Farm guidelines as initial prompts for their own projects.[101] Ant Farm did not want to present a singular, "expert"[102] design solution to a 'problem,' and instead encouraged multiple project potentialities and processes which were bound to each project circumstance. In the following request for

reader feedback within the 'Feeeeeeeeeeeeedbaaaack' section (Figure 5.6), it is clear that there are many interconnected aspects or 'forces' inflecting inflatable creation including materials, activities, forms, feelings and thoughts:

> Did you use the inflatocookbook To [sic] build an inflatable?...how did it work? Send us photos, slides, drawings. What did you use it for? Where did you find the materials? How much bread did you spend? Send ideas. How did the bubble make you feel? How did you work with people?[103]

 When reading the above statement, it is difficult to think of the making of inflatable form as involving a simple linear sequence, basic material 'inputs' and their ordering, that is, starting with plastic sheets and ending in a final inflatable form. There are other complex interacting forces to contend with other than that of polyethylene, including the readers' own experiences and skills.[104] There is also a sense that a 'reader feedback' section is necessary because the nuances of each project's production context cannot be entirely pre-anticipated by the architects (or perhaps even the readers themselves). The idea of the reader "feedback loop"[105] reflects the participatory and heterarchic ethos of the countercultural 'teach-in'[106] in which the student is treated as an active participant in the sharing and creation of knowledge. Through its reader feedback section, *Inflatocookbook* binds the reader's own thoughts and experiences to the DIY project. There is a consequent sense that inflatable forms cannot be thought of as distinct from such issues as material suppliers, how the occupants 'felt,' project costs and so forth.

While many of the descriptions about materials in *Inflatocookbook* are directed towards specific productions—the creation of occupiable inflatables, for example—the manuals incite further experimentation with materials and form beyond that which is immediately described. DIY inflatable form is to emerge coextensive with the material phenomena itself, and this will inevitably involve some unpredictability, complexity and confrontations with what Deleuze and Guattari refer to as "accidents."[107] *Inflatocookbook's* 'Feeeeeeeeeeeeedbaaaack' section conveys the complexities associated with DIY inflatable creation resulting from the multifarious 'inputs'[108] such as the money spent on the inflatable project.[109] Using Deleuze and Guattari's terms, there is an arguable "energetic materiality"[110] associated with the confluence of the forces inflecting DIY processes.

In *Inflatocookbook*, speculative architectural projects are, on the whole, diagrammatic and / or incomplete in their description. They could at best be regarded as prompts to incite action amongst its readership. This is consistent with Ant Farm's intention not to present fully determined project outcomes to its readership.[111] There are no complete architectural project templates within *Inflatocookbook*, aside from the diagrammatic project pattern or template for a 'Kids' turtle inflatable,[112] and the un-scaled and small 'Turbo Dome,' 'Dody' and 'Hexapillow' diagrams.[113] *Inflatocookbook* does feature other

diagrammatic and un-scaled sketches[114] and photographs of previously completed projects;[115] and yet this appears to be done in order to prompt consideration of potential construction details, techniques and design approaches. Even if readers were to use these generic patterns and diagrams, the drawings are sufficiently vague with respect to exact construction details, dimensional information and the final inflatable shape. Thus the readers must synthesise the guidelines into complete architectural forms specific to their own circumstances and sites.[116] To frame the intent and purpose of *Inflatocookbook*, there is a suggestion that the manual is filled with information to help "get your fantasies off the ground,"[117] and that when individuals have made their own uniquely nuanced inflatable, they will "probably [be] all keyed up with a thousand fantasies."[118]

Figure 5.7: *Inflatocookbook*: 'Input 12' of the 'Truckin' University' project.

The open-ended project format within *Inflatocookbook* extends to other architectural examples described in such a way that significant site improvisation and reader input is required. For example, the speculative un-built 'Truckin' University' project prompts readers to imagine and develop architectural outcomes from the somewhat vague guidelines contained in the manual. 'Truckin' University' involves the creation of a temporary mobile university, using inflatables and other project elements which are 'trucked' into a site.[119] The listed project elements or inputs don't have a set recipe for their combination and synthesis (Figure 5.7). With respect to assembling the materials described in 'Item 12,' readers are encouraged to deploy: "group energies involved in design and execution of pneumatic environments disposable building systems creates a new involve/byolve process in stagnant educational environments."[120] In 'Truckin' University,' there are no step-by-step procedures provided for the project 'input/tools' or explicit indication of how the project elements are to be assembled into whole or complete architectural projects. It would be difficult to recreate this project without significant action, elaboration and transformation by the reader-designer-maker-occupant. There is a sense of productive action throughout *Inflatocookbook,* but without a specifically defined output or architectural form for the materials and elements.
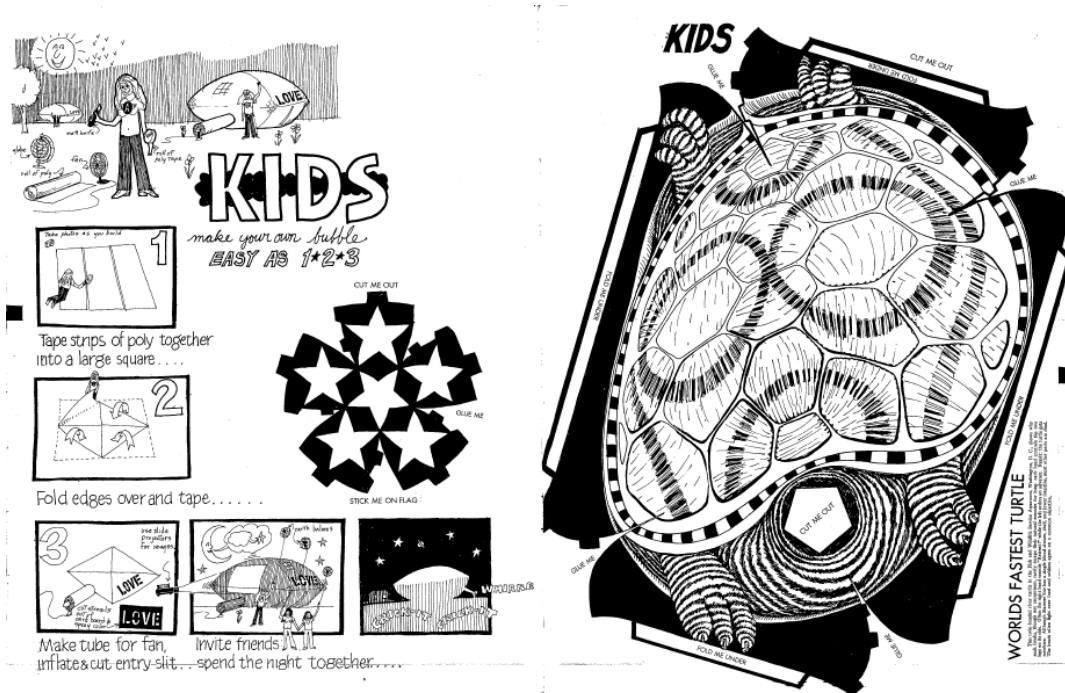
Figure 5.8: *Inflatocookbook*: the step-by-step format of the 'Kids' bubble project.

However, other sections of *Inflatocookbook* use a step-by-step instructional format which arguably downplays the aforementioned sense of complexity, 'energetic materiality' and reader improvisation. The step-by-step format is evident in some specific sections of *Inflatocookbook,* including the 'Kids' bubble project (Figure 5.8), and the inflatable construction procedure listed in *Inflatocookbook's* 'A Course in Getting Acquainted with Inflatables.'[121] The step-by-step format may imply that form (and material behaviours) can be captured in a generalisable sequence in which material (fabric, tape) is cut, joined, inflated, and then occupied as inflated form. Yet as pointed out by Simondon, and Deleuze and Guattari, real-life materials do not necessarily transform according to set or simple sequence of operations, and thus any predictive model will oversimplify and inevitably distort these real-life complexities.[122]

One of the key complications associated with any theorisation of Ant Farm's manuals relates to their use of both a fluid, heterarchical layout and format, such as that used in 'Feeeeeeeeeeeeedbaaaack' section and the aforementioned 'Truckin' University' project, and; a more hierarchical, step-by-step format and logic. The manuals simultaneously communicate that materials may transform through a series of complex, energetic and somewhat unpredictable processes, and (contradictorily) may also transform with minimal deviation from a pre-anticipated sequence or step-by-step logic. It is arguable that these contradictions relate to the communicable format of the DIY architecture manual itself. By simplifying material transformations to three "easy as"[123] steps, the DIY manual may encourage others

to plunge into a DIY world which will (somewhat ironically and inevitability) involve some complex and unpredictable transformations beyond that which can be "fully described or explained in words."[124] Within *Inflatocookbook*, the movement between the more fluid, heterarchical format, and the set-by-step instructional and project formats, ties the DIY mode of operation to multiple complex binaries—the active and passive, the dynamic and ordered, the unpredictable and the predictable, the particular and the general: binaries and complexities also discussed by Simondon, and Deleuze and Guattari, in their respective critiques of the hylomorphic model.[125]

In accord with the countercultural "comprehensive education" approach,[126] both editions of *Inflatocookbook* interweave information relating to experimental architecture and spatial effects, and materials and fabrication techniques. It is arguable that their graphic and visual formats influence the way the relations between materials and forms are invoked, specifically due to the order in which information on materials and their transformations are encountered. There is a differently nuanced binding and/or sequencing logic used in the different editions of *Inflatocookbook* that also produces a different sense of ordering. The first 1970 edition of *Inflatocookbook* consists of A4 and folded A3, double-sided and loose-leaf pages that are inserted within a plastic folder; these pages need to be removed and unfolded to be read. Accordingly, one may encounter a page on 'Air Supply' before reading more 'introductory' information relating to the rationale for creating inflatable architectures.[127] Depending on the way pages are reinserted, the reader may also never reencounter the pages in the same order. This potentially random ordering challenges any sense of a straightforward or discernible ordering logic, such that information on form, materials and conceptual design intentions may never be reencountered in the same sequence. In contrast, the 1973 bound edition of *Inflatocookbook* has a more straightforward logic, in the sense that the contents are bound and potentially read in a more consistent order, beginning with the intent and suggested purpose for inflatables, and followed by a template for a 'Kids' inflatable[128] and more detailed information. While the 1973 edition retains the strange intermixing of philosophical and practical advice, there is less complexity associated with the ordering of information about materials and their forms, and, potentiality, the complexities associated with the reception of the manual's approach to materials, making and inflatable form.

Figure 5.9: 'Inflatables Illustrated:' occupation of the exterior envelope of an inflatable.

'Inflatables Illustrated'

Although the audio-visual format of 'Inflatables Illustrated' makes it graphically different from *Inflatocookbook,* it also contains an unusual format and ordering logic which is generated by the selective film scene splicing within the video. For example, two scenes filmed within occupied inflatables are selectively spliced into the step-by-step narrative of Schreier's ironing-seaming demonstration, and without any explicit logic for the editing format.[129] Schreier's ironing-seaming demonstration begins with a material (fabric) that is then heat-seamed and joined to other fabric pieces. The first scene inserted into the ironing-seaming footage shows Michel inside an inflatable with other occupants;[130] the second inserted footage shows kids climbing on top of an inflatable (Figure 5.9), with a voiceover by Schreier who is discussing (and discounting) issues of safety related to climbing inflatables.[131] This selective scene-splicing interrupts the continuity of the ironing-seaming demonstration, challenging the ordering and logic of the instructional sequence. It is difficult to establish a neat and sequential understanding of moving from 'raw' fabric and tape, to 'final' inflatable form, when the footage relating to the occupation of an inflatable form appears inserted within, and prior to, the completion of the construction sequences.

It might be argued that any transformation from fabric to DIY inflatable form is not easily encapsulated within a simple linear narrative, because each project involves differently nuanced transformations, occupations, interactions and forces. For Deleuze and Guattari, *artisanal* metallurgy involves a series of techniques and transformations that do not always occur in a set order—heating, forging, cooling and so forth—and which are arguably contingent upon such inflections as the specific metal workshop in which the operations occur, the type of metal, the nuances of the furnace, the skills of the metallurgist, and so forth.[132] We might understand metallurgy as involving a series of strange transformations and procedural inversions. One might argue that there is a similar sense of procedural inversion conveyed by the somewhat unfathomable logic of the spliced film sequences within the 'Inflatables Illustrated.' The intermixing, and inversion, of construction and occupation footage reinforces a sense that the processes associated with inflatable creation involve complex and somewhat unpredictable transformation sequences. Referring to Deleuze and Guattari's discussion of *artisanal* processes, we might understand the blurring and overlap of the construction and occupation phases as suggesting that there is: "a continuous development [….and a] matter of continuous variation."[133]

During DIY inflatable creation, the maker of the inflatable may also be the occupant, as seen in the 'Inflatables Illustrated' occupation footage showing Ant Farm members alongside other individuals. Footage depicts Ant Farm in different interchangeable roles, including the roles of DIY instructors, builders and occupants who are adjusting tie-down details in response to such issues as air supply,[134] and pushing and pulling the fabric to change the internal inflatable shape.[135] One scene, for example, shows the silhouette of a person underneath the rolling inflatable floor:[136] their hands pushing and contributing to the wave-like movement of the fabric interior and spatial qualities, further reinforcing the flow between, and coextensivity of, maker, material and DIY forms.[137]

One could argue that the occupation of an inflatable by people is also an extension of the processes of designing and making. Similarly, the processes associated with material transformations, constructions, occupations and social identities also enfold into a continuum: a continuum involving the do-it-yourselfer in multiple, coextensive roles. Schreier and Lord argue that (for Ant Farm) inflatables facilitated a mode of architectural exploration which could "eliminate entire planning processes and go straight to building process."[138] This was because the inflatable designer was simultaneously the maker (and, evidently, the occupant). There is an impression that inflatable form isn't simply produced and then occupied, because there appears to be an ongoing adjustment to the fabric envelope, air-blowers and anchoring that cannot be easily reduced to a series of sequential actions and elements such as fabric-join-inflate-architectural form. Importantly, it could be argued that the selective scene splicing and editing of the video manual contributes significantly to the sense of complexity, coextensivity and confluence characterising DIY inflatable creation, and attendant assumptions about the relation between materials and their forms.

Borrowing again from Deleuze and Guattari's concepts (drawn from their discussion of metallurgy), there is a discernible "overspill" and "energetic materiality"[139] between the different operations and transformations involved in each real-life inflatable incarnation described in the video manual. Problems associated with inflatable creation are discovered and responded to in real-life, even during the occupation of an inflatable, when fabric, air pressure and other elements continue to be worked and adjusted. Deleuze and Guattari refer to the complexity of the real-life *artisanal* processes in which: "[e]verything is situated in an objective zone of fluctuation that is coextensive with reality itself."[140] In professional architectural practice, the phases of designing, making and occupying space are conventionally distinguished by the different, segregated and sequential roles of the architect-designer, the builder-maker, and the client-occupant. The DIY mode invoked in sections such as the selectively edited occupation scenes in 'Inflatables Illustrated' challenges this hierarchical segregation of roles and actions. The continuum of design-making-occupation conveyed in Ant Farm's manuals suggests a complexity to the DIY roles and actions. It might be more productive to refer to the inflatable-creator as a reader-designer-maker-occupant, who—due to the continuous blurring, inversion and overlapping between roles and actions—could also be a maker-reader-occupant-designer, an occupant-reader-designer-maker, and so forth.

Earth Casting

Both Ant Farm's hard-copy and video manuals juxtapose open-ended project descriptions with a more didactic, step-by-step instructional format and logic. This approach is also discernible within the *Earth Casting* manual with respect to the play between less prescriptive approaches to project sites and scales, and more didatic approaches and advice. In the first instance, *Earth Casting* has a similar open-endedness to the *Inflatocookbook* with respect to specific architectural forms, because it does not include comprehensive architectural drawings and specifications. *Earth Casting* suggests that readers must directly encounter, and work with, soil and tools, in order to develop their own earth-cast projects and architectures.[141] Images and discussions about Soleri's Cosanti and Arcosanti complexes are used to encourage the readers to design and make their own earth-cast structures. *Earth Casting* does associate the distinctive architectural aesthetic of Cosanti and Arcosanti with the earth-casting techniques (upon which the manual is based).[142] This may give the impression that the DIY earth-casting technique is specifically bound to Soleri's already-developed aesthetic palette, and yet there is no explicit statement to this effect. In chapter 1 of *Earth Casting*, the point is made that Cosanti and Arcosanti are the outcomes of processes involving cheap found materials and volunteer input (often inexperienced students); thus, "others with similar skills can build similar structures using similar methods."[143] Similar to the *Inflatocookbook,* focus is on advice, techniques and 'hints' rather than fully determined project outcomes.

There is also a similar directedness to Ant Farm's manuals which is evident in the sections of *Earth Casting* that prompt the reader to act or create according to a set of options, such as 'The five-step process for earth-casting a concrete bowl' (Figure 5.10).[144] *Earth Casting* also explains the construction of a Cosanti building using step-by-step imagery and logic.[145] And yet, while *Earth Casting* contains directions and suggestions about material behaviour and construction sequences, one might equally argue this is done to prompt extension from the most basic of exercises and techniques, rather than to direct readers towards a fully preconceived architectural form.
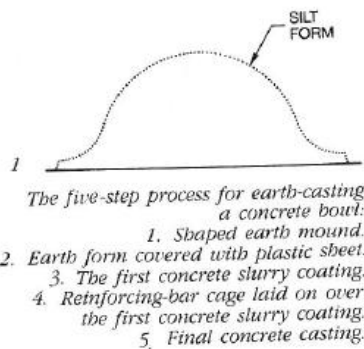
Figure 5.10: *Earth Casting*: a 'five-step process' for earth-casting.

The *Earth Casting* manual is a conventionally bound document with information generally ordered in terms of hierarchical scale progression: from descriptions of smaller earth-cast techniques and projects, through to larger scaled buildings.[146] However, the content of the manual still suggests a sense of heterarchy, specifically conveyed by the responsiveness to materials and site conditions during earth-casting procedures. Although there are no images of occupied earth-cast structures within *Earth Casting*, there is a similar invocation of the coextensive roles of the (do-it-yourself) designer and maker to that conveyed in Ant Farm's manuals. The Cosanti complex is described as "actually closer to being handicrafts projects than any sort of real construction."[147] The association of the Cosanti architecture with 'artisanal' handicraft relates to its somewhat improvisatory design and response to locally available silt, materials and labour. There was minimal need to document the Cosanti design in advance to its construction, such that "only rough sketches"[148] were necessary to guide certain operations on site, for example, overall measurements[149] and structural engineering.[150] The countercultural text *Craftsmen of Necessity* puts forward a similar suggestion about the unique character of each 'artisanal' artifact which is a consequence of the artisan's responsiveness to available materials and hand-crafted techniques: "[t]he products, though preconceived, are spontaneous and varied. Each is as fresh and vital as though it were the only one ever to exist."[151] This comment alludes to the play between strategic intention and spontaneous response to that which is encountered during the coextensive design and construction phases.

Figure 5.11: Earth Casting: the coextensivity of designing and making within an artisanal mode.

In summary, both the content of Ant Farm's and Soleri's manuals—and the experimental graphic and visual format of Ant Farm's manuals--convey a sense of the complexities of the DIY mode of operation, particularly with respect to the flow, inversion and overlap between constructing, making, and occupying architectural form. There is a consequent sense that DIY architecture cannot always be reduced to a simple nor straightforward sequence, starting with, for example, a polyethylene sheet, and; ending with an inflatable which can be occupied. For Simondon, and Deleuze and Guattari, the conceptual relation between matter and form inflects other aspects of life, including social relations. They argue that hierarchical social models extend from the hierarchical thinking underpinning the hylomorphic model of the matter-form relation.[152] Thus the matter-form relation has potentially broader implications for thinking through the relation between the architectural, the social and the political. Interestingly, the countercultural milieu involved a challenge not only to mainstream North America and its alignment with the capitalist agenda, but the associated segregated and hierarchical thinking.[153] Countercultural educational approaches (which influenced the DIY manuals of the time) invoked a comprehensive and holistic view of life, in which materials, thoughts, actions and transformations were heterarchically intertwined. It might be argued that Ant Farm and Soleri's manuals communicate a similar sense of heterarchy. The coextensivity and interchangeability of the roles, building phases and procedures conveyed by the content and / or the selectively spliced and edited format of Ant Farm's and Soleri's manuals reinforce the heterarchies and complexities of the DIY mode of operation and thinking. And

yet, there is a simultaneous and somewhat contradictory sense that some material behaviours are sufficiently simple and predictable, and can thus be encapsulated within the sequential, ordered logic of the step-by-step instructional format. To use Soleri and Davis' own words, there appears to be a simultaneous sense of "freedom and discipline"[154] involved in the DIY mode of operation, particularly when theorised using the notion of the *artisanal*.

Deleuze and Guattari make the point that predictive models of material phenomena always involve "a distortion"[155] of matter's variability and specificities. The logic of the predictive model can be seen in the step-by-step descriptions of the 'Kids' section of *Inflatocookbook*, Schreier's sequential 'Geometry Lesson' in 'Inflatables Illustrated', and the sequential, numbered photo sequences and procedures in *Earth Casting*. These generalisations and simplifications of material tendencies and DIY techniques are arguably a result of the manual's communicable format: encouraging and prompting the broad 'amateur' audience—with minimal experience and skills—to embrace the DIY mode of operation. By simplifying some of the complexities of the DIY procedures, the manuals may encourage tentative do-it-yourselfers to try DIY, which, according to *Inflatocookbook*, can be as "easy as 1-2-3."[156] One could, in theory, create an inflatable pillow following a relatively straightforward and sequential process, with little deviation from the guidelines and advice. And yet, once the do-it-yourselfers have immersed themselves in the messy material phenomena of tape, fabric and soil, all three manuals suggest that they will inevitably confront some degree of variation, complexity and unpredictability. The complexities of DIY operations are nevertheless generative and productive, because they challenge customary distinctions between the idea of experts and amateurs, and thus (in Ant Farm's own words): "help to break down people's category walls about each other and their own abilities."[157]

5.3   DIY action, materials and transforming bodies

The countercultural DIY architecture manuals referred to in the present thesis—including *Shelter*, and Ant Farm's and Soleri's own manuals—encourage direct bodily contact between the do-it-yourselfer and the 'real' materials in actual project sites. In Ant Farm's words, the do-it-yourselfer takes "space-making beautifying into her, his own hands."[158] Ant Farm's and Soleri's DIY manuals target the 'reader' as a potential designer/fabricator/occupant who herself is positioned as part of the transformative process. The manuals are based on the architect-authors' own direct bodily experiences of very particular projects. The point is made in both *Inflatocookbook* and *Earth Casting* that the architects' previous experiences qualify them to be in a position to share and disseminate their knowledge.[159] Yet the manuals also prompt consideration of potential future projects and experiments which are devised and enacted by the readers, unlimited by the suggestions contained in the manuals.[160] Importantly, all three DIY architecture manuals refer to "extra-physical"[161] transformations associated with encounters with

materials—transformations in thoughts, identities, bodies that are prompted by the DIY mode of operation and which are not easily discussed, conveyed or represented.[162]

The DIY mode of operation in Ant Farm's and Soleri's manuals involves a focus on action: designing, building and experimenting with architecture through direct bodily contact with materials within project sites. Deleuze and Guattari's *artisanal* mode involves productive action because artisans are focused on and "follow the matter-flow as pure productivity."[163] Deleuze and Guattari also characterise matter's transformations as "active."[164] In chapter 4 of this thesis, the notion of action was elaborated with reference to Grosz's notion of action, matter and freedom. For Grosz, action is associated with matter because it occurs in the real or actualised material world, and also because we project the possibility of any potential future action onto this material world.[165] This projective imagining not only involves matter that is already actualised in the present, but matter with a *potential* to be actualised in the future (and is therefore a becoming or virtual matter). Thus matter can be associated with potentialities, change and transformation, and a sense that one can act beyond the constraints of the present.[166] An important point for Grosz is that any action involves a transformation of the entire situation, including a transformation of the bodily subject involved in "the struggle for bodies to become more than they are."[167]

Within their respective DIY manuals, Ant Farm and Soleri suggest that the DIY mode of operation is part of a broader, holistic conception and transformation of life: potentially prompting such changes as '[n]ew brain patternings,"[168] or; "the evolution of the human spirit."[169] Transformations in thought and identity are understood to happen through the processes of making and occupying DIY architecture, which is particularly evident in three sections of Ant Farm's *Inflatocookbook*: 'Rasberry Exercises,' 'Good Taste Page Pneumads,' and 'Hy-Tek,' elaborated below.
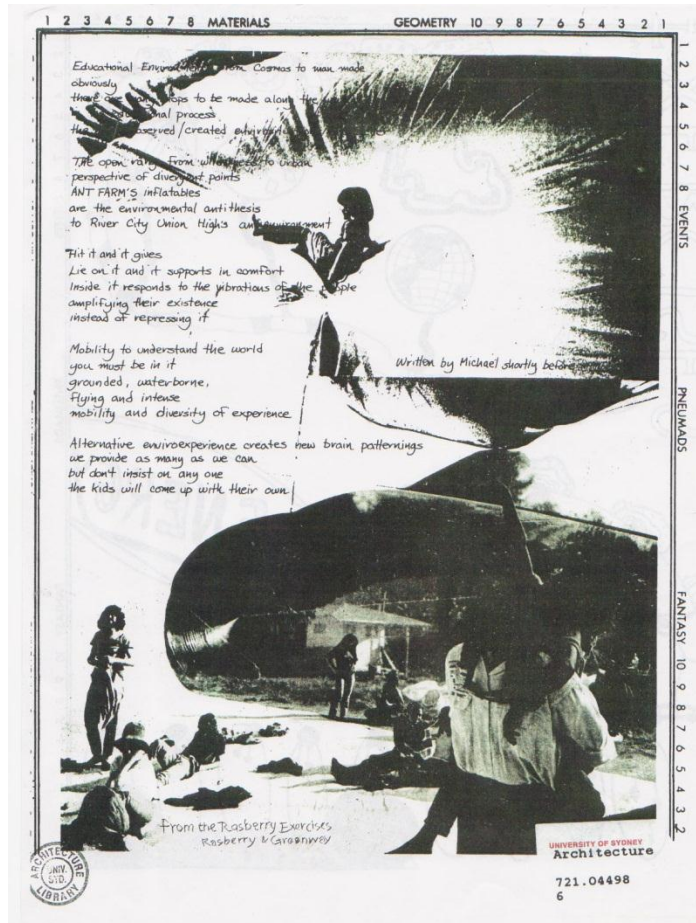
Figure 5.12: *Inflatocookbook*: 'Rasberry Exercises.'

Inflatocookbook

The 'Rasberry Exercises' section of the 1970 edition of *Inflatocookbook*[170] connects the creation and occupation of inflatable architectures to broader life transformations—albeit in the somewhat lyrical and imprecise manner typical of some experimental countercultural publications.[171] 'Rasberry Exercises' describes bodies interacting with a shifting inflatable membrane within an unidentified inflatable interior (Figure 5.12). While the envelope of the inflatable is physically mobile and moving, there is also a sense that this physical movement may prompt "extra-physical"[172] changes in the bodies interacting with it. Ant Farm describes the encounter between inflatable and occupants using the following lyrical language:

> Hit and it gives
> Lie on it and it supports in comfort
> Inside it responds to the vibrations of the people
> amplifying their existence
> instead of repressing it.[173]

Inflatable interiors—such as those invoked within 'Rasberry Exercises'—are positioned as experimental in comparison to standard interiors.[174] Inflatable interiors challenge the physical limits and 'repression' of the fixed, orthogonal spaces of "the normal box-room."[175] Beyond their dynamic physical effects, the inflatable is seen to (somewhat inexplicably) alter the very existence of the occupants because the inflatable envelope "responds" in synch with the occupants' bodies. Thus the occupant's bodies themselves are described as existing in flux and 'vibration.'[176] The occupant's body inflects the inflatable envelope, which in turn prompts the envelope to reciprocally inflect the body, and so forth. Consequently, there is an impression that DIY architectural space and form cannot be thought of as distinct from its occupants, their bodies and their lives. In 'Rasberry Exercises,' the occupant physically touches and interacts with the fabric spaces and her life "existence" is somehow altered, although the exact nature of this transformation is not clearly described. [177]

The interconnection between transformations in identities, bodies, movement and DIY architectures conveyed in 'Rasberry Exercises' inflects other sections of the *Inflatocookbook* manual. For example, the 'Good Taste Page Pneumads' section outlines the life and identity of the nomad journeying on the road (Figure 5.13). Ant Farm describes itself as "environmental nomads"[178] who are involved in inflatable production across North America. They also argue that the countercultural nomad—an obvious audient for the *Inflatocookbook* manual—has both physical and extra-physical needs that can only be satisfied during transit.[179] These needs include not only basic nutrients such as "food" but other less tangible inputs like "riches" and "high energy inputs."[180] These nutrients support subsistence and are described as part of the production of 'self' which happens in negotiation with various places encountered along the highway.[181] Other than suggesting that the countercultural nomad requires, and seeks out, "maxi nutrients" and "goodvibes,"[182] Ant Farm never precisely explains how nomadic needs are satisfied and identities are created. It appears that the nomadic identity exists in flux and is 'extracted' from the greater flow of life as it is continuously negotiated during the DIY mode of operation.
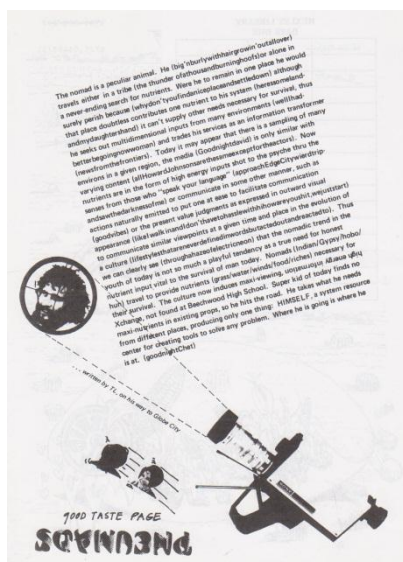

Figure 5.13: 'Inflatocookbook: Ant Farm's nomad.

The 'Hy-Tek' section of *Inflatocookbook* invokes a similar productive mobility[183] to that invoked in the 'Good Taste Page Pneumads' section. 'Hy-Tek' also associates transformations in identity with architecture, specifically through reference to the shared sensibilities of its *Inflatocookbook* readership.[184] The 'Hy-Tek' section refers to the production of the *Inflatocookbook* and Ant Farm's nomadic existence as travelling "media nomads."[185] Their travels across America immediately prior to *Inflatocookbook's* publication were also strategies for developing a social network of like-minded individuals: in Ant Farm's words "seeking/searching for ways to increase the network."[186] Ant Farm's social network is not bound to a specific geographic locale, and extends to the dispersed communities linked by their reading of the *Inflatocookbook* manual. While the nomadic lifestyle may involve a physical mobility, it also involves a commitment to the holistic manner of living and producing invoked in *Inflatocookbook*, and arguably within the counterculture as a whole.[187] *Inflatocookbook's* 'Good Taste Page Pneumads' and 'Hy-Tek' sections arguably invoke a similar sense of flow to that invoked in Deleuze and Guattari's *artisanal* mode, with matter's transformations connected to other flows and forces. In the case of 'Good Taste Page Pneumads' and 'Hy-Tek,' a sense of flow exists between inflatable architectures, identities and human 'existence' itself. Even so, the manual does not communicate how inflatable architectures 'amplify' this state of existence, interconnection and flow beyond the more obvious example that air-inflated architecture is, quite literally, in a constant physical state of change.

Ant Farm also makes the point that inflatables provide 'shelter;'[188] thus conveying a somewhat conventional framework and purpose for inflatable architecture.[189] If DIY inflatables are to be assessed according to their capacity to provide shelter, one might argue that there are many problems associated with inflatables, including the high level of energy use required to power the blower, and overheating and ventilation within the interior.[190] What is of interest to the present study is not the success of inflatables as everyday shelters—a separate issue in its own right—but the connection Ant Farm make between experimental inflatable architectures and transformations in life.

'Inflatables Illustrated'
The sense of mobility conveyed in 'Inflatables Illustrated' relates not only to the physically fluid form of the continuously shifting inflatable envelope, but to the 'extra-physical' transformations of self and identity described in the video, and attributed to the strange, new and liberating spaces encountered in inflatables.[191] One scene within 'Inflatables Illustrated' shows Ant Farmers Lord and Michels in verbal conversation whilst encountering and interacting with an inflatable interior. In this scene, Lord and Michels associate a sense of freedom with the absence of conventional architectural spatial boundaries, such as fixed rectangular walls. Both Lord and Michels argue that inflatables "remove [the] xyz axes"[192] that create and enforce habitual behaviours in space—a point also made in the hardcopy *Inflatocookbook*.[193] Importantly, habitual behaviours and "static living patterns"[194] are (for Ant Farm) tied

to the laws and rules associated with conventional building spaces. By breaking free of conventional spaces and their attendant "rectangular limits,"[195] the inflatable occupant might become liberated in body and thought, specifically because the habits of architectural function and programme are (for Ant Farm) part of the constriction and regulation of the larger flow that is life.

For Smith and Ballantyne, a complete immersion within, and attendance to, a material phenomenon enables one to break free from the constrictions associated with "pre-given rules of engagement and the hierarchies of habit."[196] This breaking of habit arises when we become attuned to the 'live' encounter and moment, rather than relying upon habitualised responses. One can argue a similar point with respect to the breaking of habits and patterns of occupation advocated within the 'Inflatables Illustrated' video manual. According to Ant Farm, inflatable occupants can immerse themselves in the experience of an inflatable and its attendant possibilities, rather than being focused on their usual patterns of behavior and response to conventional, fixed-wall interiors and "xyz planes."[197]

The large-scale occupied inflatables shown in 'Inflatables Illustrated' indicate that there is a physical morphing of walls/floors/ceiling surfaces,[198] particularly because the occupants are also constantly pulling fabric and generating different spatial involutions.[199] To reinforce the liberating and transformative qualities associated with these inflatables (as Ant Farm understand them), inflatables are discussed through comparison to conventional spaces. Inflatables require an entry/exit point,[200] but unlike conventional buildings, the entry / exit points of inflatables are complex and often unfixed, due to the physically changing nature of the fabric interior. This leads Ant Farm to make the following observation about an inflatable in which conventional spatial parameters are unhinged: "the ceiling the floor and the door is rolling around the ceiling somewhere."[201]

For Ant Farm, inflatables challenge "the rigid architectural paths we were led down as children;"[202] prompting changes in lifestyle and, one might argue, 'the hierarchies of habit'[203] associated with occupying conventional fixed-wall architectures. In both *Inflatocookbook* and 'Inflatables Illustrated,' there are no prescriptive guidelines relating to how one might occupy or use an inflatable; on the contrary, the intention is for the occupant to act within and occupy the DIY architecture according to their "fantasies."[204] Thus, one might argue that within Ant Farm's DIY architecture manuals, there is a simultaneous sense of a 'freedom from' a set of guidelines or bounding conditions (materials, DIY techniques, step-by-step instructions and so forth), and a 'freedom to' create and occupy inflatable forms beyond that which is contained within the manuals. As suggested by Grosz, bodies that can act 'independently' of habit may attain a sense of freedom: "[f]reedom is thus not primarily a capacity of mind but of body: it is linked to the body's capacity for movement, and thus its multiple possibilities of action."[205]

Figure 5.14: 'Inflatables Illustrated:' adjusting a fan tunnel element, which is reimagined as an inhabitable structure.

The sliding between scales in Ant Farm manuals also intensifies the play between already-actualised or made inflatables, and potential future inflatables and attendant transformations. A case in point within 'Inflatables Illustrated' involves three successive, selectively spliced film scenes. In these scenes, an already-made inflatable detail or element prompts the Ant Farm members to suggest or imagine the element as a differently-scaled inflatable. In the first scene, Schreier demonstrates how to inflate a pillow-sized inflatable, inviting the camera to film inside the small inflatable to simulate the occupation of a larger, human-scaled inflatable. The scene fades quickly to selectively-spliced footage of a real inflatable occupied by Michels and other unidentified adults.[206] In this next scene, Michels holds up a fan tunnel connector element (Figure 5.14), which he then reimagines as if it were an inhabitable beam of "living structures" bridging across a canyon.[207] Similar to the previous scene, the camera is invited to 'look inside the small inflatable element in order to imagine it as a human-scaled inflatable; two toy soldiers are inserted inside the base of the tunnel to simulate human occupation.[208] The camera focuses-in on the two figures of the soldiers, and the footage then fades to two real human figures climbing atop a large inflatable which is differently nuanced in shape and quality to the smaller tunnel.[209] This constant sliding between scales and inflatables incites the audience to engage in a process of imagining the potential beyond that which is being immediately described.[210]

It could be argued that the real or actual material of life does not limit or constrict the potentiality of any DIY action per se: each encounter with a real element prompts consideration of potential, indeterminate actions, forms or architectures beyond that which is being experienced in the present. As suggested by Grosz: "[i]ndetermination liberates life from the constraints of the present [...] the capacity to contract matter into what is useful for future action and to make matter function differently in the future."[211] Due to the focus on direct contact and experimentation with materials, the encounters within project sites might also generate new directions in thoughts, aesthetics, and forms. This is arguably both a 'freedom from' the guidelines in the manual and the actual materials and forms encountered on site, and a 'freedom to'

imagine something 'fantastic'[212] beyond anything imagined or prescribed in the manual or current conditions, and, importantly, beyond the bounds of habit imposed by conventional and familiar architectures.

Earth Casting

In the *Earth Casting* manual, there is also a suggestion that earth-cast architecture can prompt significant changes and transformations in other aspects of life. Both Cosanti and Arcosanti are positioned as research laboratories and prototypes for new, ecologically-focused modes of life.[213] However—and unlike *Inflatocookbook* and 'Inflatables Illustrated'—these transformations are associated with the intentions for the earth-cast structures at the Cosanti and Arcosanti complexes. This is because there are no images of actual occupied buildings at Cosanti and Arcosanti in the *Earth Casting* manual, nor significant elaboration about how life transformations might occur there. However, the 'Arcosanti' section within the rear 'Glossary' of the manual refers to the ideological and philosophical ambitions of this project: the transformation and evolution of the human subject within a specifically conceived environmental context. According to the manual, part of the intention at Arcosanti is to transform human society in harmony with the earth's ecology: "to conserve land and energy, support complex cultural and economic activities, and to give individuals a new perspective and renewed trust in society and the future."[214] Soleri's term 'arcology'—the conceptual basis of the Cosanti and Arcosanti complexes— makes the connection between architecture and life explicit: "the Cosanti Foundation has been conducting research towards the idea of an urban organization involving highly integrated three-dimensional complexes called ARCOLOGIES (from architecture + ecology)."[215]

One might argue that Soleri (unlike Deleuze and Guattari) is human-centric because he brings a concern with human evolution to the fore (albeit an evolution that is inseparable from natural processes, contexts and architecture).[216] Soleri's interest in human evolution does heavily qualify any correspondences between the DIY architecture of *Earth Casting*, and Deleuze and Guattari's philosophical notions (which act as a challenge to the dominance of the human subject in Western philosophy).[217] Even with its human-centric concerns, *Earth Casting* still associates a sense of flow and life transformation with architecture (i.e. the transformation of humanity and ecology prompted by the experimental architecture of Arcosanti).[218] Having said this, there is minimal elaboration of the processes and transformations promoted by the actual encounters and occupations at Arcosanti. *Earth Casting* lacks the invocations of flow, movement, bodies, identities, space and matter that are conveyed within *Inflatocookbook* and 'Inflatables Illustrated:' invocations produced via the imagery and words associated with the occupation of specific examples of inflatables.

Earth Casting does indicate that there is a similar sliding between the different scales of details, artefacts and buildings to that conveyed in Ant Farm's 'Inflatables Illustrated.' Soleri experimented with

small earth-cast structures—creating planter boxes, bells and architectural scale models—and these experiments directly informed his experiments with larger-scaled buildings. Thus Soleri's states: "[w]hat had been a pot became a roof."[219] On the surface, it may appear as if this sliding between differently-scaled artefacts and building constructions may overwrite or obscure the particularity of encounters with real-life materials: as if one scale and scenario is identical to another. This, however, is not the case. Soleri makes the explicit point that techniques need to be altered to suit different scales and site conditions.[220] The real-life earth-cast artefact prompts a reimagining at a building scale, and, as such, the reimagining happens coextensive with actual material. Now, an inflatable fan tunnel, or an earth-cast pot, is different in material character to a large 100 foot inflatable, or an earth-cast concrete building respectively—a point explicitly reinforced by Soleri himself.[221] However, this difference in character still invites consideration of other potential scales and spaces. In each of the aforementioned scenarios, only one possible incarnation is suggested, that is, reimagining an inflatable air supply tunnel as an inhabitable beam, or a pot as a building. The process of suggesting that a building-scaled transformation could evolve from something quite different in scale and character (a non-building, artefact, vent and so forth) conveys a sense that DIY architecture isn't bound to a set of clearly defined or prefigured 'architectural' options. The possibilities for DIY architecture arise within the encounter and struggle with material circumstances involving both actual and potential occupations, including bodies potentially becoming "more than they are."[222]

Noting some exceptions;[223] the DIY methodology generally disseminated in Ant Farm's and Soleri's manuals reinforces that there is (with some information and prompting), always the potential to act and to make, relatively uninhibited by current skill, expertise and finances. The potential to act may involve a sense of freedom, if there is also a sense that one can creatively transform a present situation without being bound to a set of prefigured options. For Ant Farm, inflatable DIY architectures may prompt new modes of thought and social interaction: "new brain patternings."[224] For Soleri, earth-cast architecture may facilitate a mode of living that prompts 'the evolution of the human spirit.'[225] In the present chapter, the intention was not to evaluate the practical success of the DIY manuals in prompting life transformations. How would one evaluate or measure life transformation, particularly using such vague criteria as "amplifying existence"[226] or "the evolution of the human spirit,"[227] as are suggested in the DIY manuals? The occupation of DIY architecture may prompt a transformation in individual and collective identity, but it is a transformation that could only be potentially described and charted post-encounter.[228]

Nevertheless, the DIY manuals do convey a sense that any transformation in life (including DIY architecture) involves a confluence of forces,[229] stemming from the interconnections between the making and occupation of experimental spaces, transformations in social identities, and the flows and evolutions of life experienced through the mode of DIY architecture. According to Grosz's theorisation of action and freedom, transformations may involve comprehensive and positive changes that cannot be

fully predicted or imagined in the present—a point resonating with the potential transformations of materials, architectures and social groupings invoked within Ant Farm's and Soleri's DIY architecture manuals.

5.4   Summary: artisanal, DIY architecture

Ant Farm's and Soleri's manuals communicate a sense that do-it-yourselfers attend to, and follow, materials as they are encountered within project sites. The point is made that the reader-designer-maker-occupant needs to develop a direct sense of material capacities through immediate bodily contact with actual materials, fabric, soil and so forth. In Ant Farm's manuals, there is a sense that encounters with materials are not confined to the construction phases of projects, but are rather part of the continuum and flow of designing, making, occupying, living and thinking about inflatable creation.[230] Although there is no specific imagery relating to the occupation of the earth-cast structures, *Earth Casting* nevertheless refers to the experimental evolution of the projects within the 'real-life' Cosanti and Arcosanti sites, as well to the projects being part of a broader, ongoing life/research experiment relating to Soleri's conception of 'arcologies.'

It is difficult to read the manuals as conveying a simple and singular impression of materials, procedures and forms. The theorisation of *artisanal*, DIY architecture in the present thesis demonstrates the complexities and tensions between particular and generalisable material phenomena within the DIY mode of operation, capturing something of the productive "field of interaction"[231] between the different scientific models, approaches and procedures discussed within *A Thousand Plateaus*. Deleuze and Guattari make the point that there is always a resistance to one approach, model or mode of operation being subsumed within the other.[232] Ant Farm's and Soleri's DIY manuals may be thought of as intensifications of the play between the particular and generalisable: the already-built or actualised inflatables and earth-cast spaces (which are documented and discussed in all three manuals), and; potential, experimental materials, architectures, social formations, actions and transformations yet to come. All three manuals contain incomplete project templates, detail fragments and words which collectively reinforce a sense that there are potential, multiple project outcomes and opportunities beyond that which is immediately described. Using the notion of the *artisanal* to theorise DIY, one might understand the DIY mode of operation in architecture as a productive struggle with the capacities of matter—both actual and potential—which emerge in the confluence of materials, tools, bodies, identities, sites and architectures: a following of "matter in movement, in flux, in variation."[233] Such an understanding might constitute the definition of DIY architecture that has thus far proved to be so evasive.

Notes

[1] An observation of Roland made by Gelber: see Gelber, *Hobbies,* 292.

[2] Roland, 'Do It Yourself,' 155. As discussed in chapter 2, one of the accounts of DIY suggested by Roland in his 1958 article 'Do It Yourself' centred on the relations between makers and materials, and "artisan production." Roland, 'Do It Yourself,' 162.

[3] Sadler, 'An Architecture of the Whole,' 108.

[4] The projects by Ant Farm and Soleri that have been described as 'artisanal' can also be directly connected to their DIY manuals. See the comments about Ant Farm's House of the Century project being both "do-it-yourself" and "artisanal" in Lewallen and Seid, *Ant Farm 1968-1978,* 112. As discussed in chapter 3, this house was to feature in the follow-on DIY manual to *Inflatocookbook,* as it directly related to the evolution of the inflatables. Scott, *Living Archive 7,* 139. Ant Farm member Chip Lord observes that: "the House of the Century freezes the bubble in ferro-cement." As quoted in Lewallen with Chip Lord, Doug Michels, and Curtis Schreier, 'Interview with Ant Farm,' 49. Soleri has also been associated with craft and the 'artisanal,' and was awarded the American Institute of Architects Craftsmanship Medal, based on his work at Cosanti (upon which the *Earth Casting* manual is based). See Soleri and Davis, Earth Casting, x; 14.

[5] Deleuze and Guattari, *A Thousand Plateaus,* 452.

[6] Smith and Ballantyne, 'Flow: architecture, object and relation,' 21.

[7] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[8] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[9] Smith and Ballantyne, 'Fluxions,' 30.

[10] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[11] See the specific reference to the particularities of silt used at Cosanti and Arcosanti, as suggested in the following comment: "the desert soil around Cosanti [which is] a silty loam […] It does not have all the properties of pure silt but is very useful for concrete casting." Soleri and Davis, *Earth Casting,* 14.

[12] See, for example, Schreier's discussion about the use of an iron and melting plastic during his ironing-seaming demonstration. Ant Farm, 'Inflatables Illustrated,' 00.16.30/00.23.00.

[13] Ant Farm, 'Inflatables Illustrated', 00.16.30/00.23.00.

[14] Soleri and Davis*, Earth Casting*, 16.

[15] In the 1973 bound edition of *Inflatocookbook,* this page appears early within the manual, potentially prefacing the reader's understanding of the manual: in the loose-leaf 1970 edition, the same pages are not necessarily encountered in the same order.

[16] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm.' Note that this page isn't necessarily encountered by the reader in a sequential order within the loose-leaf 1970 edition, and thus it is hard to know if it will function as an introduction in a linear sense. In the bound 1973 edition, the page appears early within the manual.

[17] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[18] The connection between design and making established through the working of the polyethylene material suggests there is indeed an enfolding of designing, making, material qualities and techniques. This latter point may be seen to contradict the phrase "design—then—build," which could be read to imply that there may be a linear sequence whereby designing proceeds building. This potential contradiction is not seen to undermine the strong connections between materials, transformations and design and making processes evident in the manual.

[19] Deleuze and Guattari use the term 'isolate' when comparing the 'following' of real-life matter (an operation of the nomad sciences), to the theory-based procedures of the royal or State sciences. They state that; "what is proper to royal science, to its theorematic or axiomatic power, is to isolate all operations from the conditions of intuition, making them true intrinsic concepts, or "categories."" Deleuze and Guattari, *A Thousand Plateaus,* 412.

[20] Lloyd-Thomas, *Building Materials,* 190.

[21] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[22] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Air Supply.'

[23] Sections such as 'Polyethylene,' 'Colour' and 'Tape' generally specify characteristics of those materials as if they are generalisable and inherent to all materials that fit within that genre. For example, The 'Polyethylene' section states: "(dictionary definition) impervious to moisture, lighter than water, tough, pliable, outstanding at dielectric high frequencies; excellent chemical resistance." Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[24] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[25] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[26] This comment specifically concerns the interactions between the nomad sciences—with which the artisan is affiliated—and the royal sciences. Deleuze and Guattari, *A Thousand Plateaus,* 412-413.

[27] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[28] As pointed out in both editions of *Inflatocookbook,* the manual was based on Ant Farm's own experiences of inflatables. Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm.'

[29] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[30] Deleuze and Guattari specifically refer to 'prospectors.' See Deleuze and Guattari *A Thousand Plateaus,* 452.

[31] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[32] In terms of following the grain of the wood, Deleuze and Guattari note that "this way of following is only one particular sequence in a more general process. For artisans are obliged to follow in another way as well, to go find the wood where it lies, and to find the wood with the right kind of fibres." Deleuze and Guattari, *A Thousand Plateaus,* 451.

[33] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[34] This comment is made in relation to sourcing tape for joining plastic and fabric for the inflatables. Ant Farm, *Inflatocookbook* (1970), 'Materials.'

[35] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[36] As discussed in chapter 4, Deleuze and Guattari also refer to metallurgists as followers and artisans, although their first example of the artisan is the woodworker. See Deleuze and Guattari, *A Thousand Plateaus,* 451-452 for the woodworker, and 454 for the metallurgist.

[37] As discussed in chapter 4, both *Craftsmen of Necessity* and *A Thousand Plateaus* refer to the 'following' of materials. See Williams, *Craftsmen of Necessity,* 166: Deleuze and Guattari, *A Thousand Plateaus,* 451.

[38] Rheingold makes reference to the *WEC's* intention to provide its readers with "world-changing tools." Rheingold, *The Millenium Whole Earth Catalog,* cover inset.

[39] Refer to the 'How to Use this Book' section of Reingold, *The Millenium Whole Earth Catalog*, 4. This edition also refers to 'thinking Tools,' including such techniques as the 'I Ching' philosophy, 'brainstorming' and computerisation. Reingold, *The Millenium Whole Earth Catalog*, 31.

[40] For example, Ant Farm discusses practical techniques for joining plastic, alongside more 'philosophical' musings about the "freedom" of being inside inflatables. Ant Farm, *Inflatocookbook,* 1970 and 1973, 'A Course in Getting Acquainted with Inflatables.'

[41] Ant Farm, *Inflatocookbook,* 1970 and 1973, 'A Course in Getting Acquainted with Inflatables.'

[42] During the ironing-seaming demonstration, the iron starts to smoke due to the melting of plastic and Schreier demonstrates how it can be wiped off. Ant Farm, 'Inflatables Illustrated', 00.16.30/00.23.00.

[43] Schreier does suggest that it might be best to use an old iron for the experiment. A similar statement is made in *Inflatocookbook*: "Mothers hot iron can seal if she doesn't mind it being gooped up melted plastic." Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[44] Massumi, *A User's Guide to Capitalism and Schizophrenia*, 15.

[45] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[46] The discussion of tools occurs in the '1227' plateau as part of a comparison between weapons and tools, although not directly in relation to the *artisanal* mode. Deleuze and Guattari, *A Thousand Plateaus,* 436.

[47] A description that appears in the *Inflatocookbook,* see Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[48] In the footage of Schreier's ironing-seaming demonstration, magnetic alphabet letters are stuck on a refrigerator in the background and spell out the words 'Ant Farm Media Kitchen.' Ant Farm, 'Inflatables Illustrated,' 00.01.05/00.23.00.

[49] Baldwin refers to the "comprehensive education" approach within the countercultural publication the WEC. Baldwin, untitled Introduction, cover inset.

[50] Lab coat-clad Ant Farm Members can be seen adjusting fan tunnel details and fabric in the first footage of an occupied inflatable (inserted within Schreier's ironing-seaming demonstration). Ant Farm, 'Inflatables Illustrated,' 00.03.25/00.23.00.

[51] Ant Farm, 'Inflatables Illustrated,' 00.11.44/00.23.00.

[52] Ant Farm, 'Inflatables Illustrated,' 00.11.44/00.23.00.

[53] Such as the adjustments evident in the occupation of a large-scale inflatable: see Ant Farm, 'Inflatables Illustrated,' 00.11.44/00.23.00.

[54] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[55] It might be argued that the blurring of the phases of designing, making and occupation within inflatables also relates to their general interest in the architect being the builder who also lives at the project site during the construction phase. In a recent interview, Schreier discussed the process involved in the creation of The House of the Century, noting that: "the idea of the architect-builder living on site is another form of study." Schreier also refers to North American architectural practice Jersey devils, which also inhabits a site during its construction. Kallipoliti, with Curtis Schreier and Chip Lord (Ant Farm), 'Interview,' 2007.

[56] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[57] This comment appears at the end of chapter 2, titled 'Silt as A Craft Medium.' Soleri and Davis, *Earth Casting,* 27.

[58] Soleri and Davis, *Earth Casting,* 27.

[59] Two diagrams appear on page 22. The first diagram describes the relative relations between sand, silt and clay within typical silt. The second diagram indicates the location of the silt layer within the ground. Soleri and Davis, *Earth Casting,* 22-23.

[60] In *Earth Casting,* Soleri and Davis suggest that some pre-planning is necessary for large-scale concrete structures to work out reinforcement prior to casting, and thus ensure structural stability. Soleri and Davis, *Earth Casting,* 71. There is also a suggestion that do-it-yourselfers "consult an architect or an engineer" in relation to structural reinforcing. Soleri and Davis, *Earth Casting,* 16.

[61] Soleri refers to the "special effects" created by the techniques involved in earth-casting concrete buildings: "[v]ariation in texture is one, variation in colour is another." Soleri and Davis, *Earth Casting,* 10: Soleri, *The Sketchbooks of Paolo Soleri,* 10.

[62] The projects at Cosanti and Arcosanti involved voluntary labour, experimentation, and cheap and donated materials. Soleri and Davis, *Earth Casting,* 14.

[63] Soleri and Davis, *Earth Casting,* 11. Note this comment appears in an extract from Soleri's earlier text: see Soleri, *The Sketchbooks of Paolo Soleri*, 10.

[64] There is explicit reference to the local Arizona silt and its qualities in the manual. See Soleri and Davis, *Earth Casting,* 2-3.

[65] For example, the manual refers to the use of "railroad ties" in the Cosanti Cat Cast house roof. Soleri and Davis, *Earth Casting,* 87. Soleri also compares the Cosanti structures to handicrafts because of the experimental site-based construction processes involving: "a small voluntary labor force, with cheap and donated materials […] experimental nature of their design, and the roughness of their execution." Soleri and Davis, *Earth Casting,* 14. Tools for earth-casting techniques can also be simple and drawn from other everyday contexts: intricate designs in the structures could be created through carving and shaping soil using ordinary "knives." Soleri and Davis, *Earth Casting,* 89. Note that Ant Farm also use ordinary kitchen implements as seen in Schreier's ironing-seaming demonstration in 'Inflatables Illustrated.'

[66] Soleri and Davis, *Earth Casting,* 71.

[67] Soleri and Davis, *Earth Casting,* 16; 80.

[68] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[69] For example, there is a simple 'Tools and Materials' graph in chapter 6 ('Casting Concrete on Silt and Soil'), however there is no explanation about the behaviour of concrete during mixing. It would be quite difficult to know how to pour concrete on the basis of the information provided in the *Earth Casting* manual, without some prior knowledge. Soleri and Davis, *Earth Casting,* 71.

[70] Starr made this suggestion in *50 Things to Make for the Home; see* Starr, *50 Things to Make for the Home*, vi.

[71] Soleri and Davis, *Earth Casting,* 66.

[72] In the 'Sand-Cast Metal' chapter, Soleri and Davis caution against experimentation with casting metal using sand forms, due to the: "safety factors involving the hot metal and potentially dangerous equipment. We do NOT recommend that amateurs who have no experience in this area attempt to cast metal from scratch. Since this is qualitatively different from casting clay or plaster in earth molds." Soleri and Davis, *Earth Casting,* 57. In another example of their concern for safety issues, they argue that the experimental drop casting' technique is "interesting [but] it is an unreliable and dangerous way to cast metal." Soleri and Davis, *Earth Casting,* 66.

[73] Soleri and Davis, *Earth Casting,* 16; 80.

[74] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[75] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[76] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Materials.'

[77] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[78] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[79] Deleuze and Guattari, *A Thousand Plateaus,* 413.

[80] Deleuze and Guattari, *A Thousand Plateaus,* 413.

[81] Soleri and Davis, *Earth Casting,* 11.

[82] Soleri and Davis, *Earth Casting,* 22.

[83] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumads.'

[84] Soleri and Davis, *Earth Casting,* 26.

[85] Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[86] Baldwin, Untitled introduction, cover inset.

[87] Baldwin, Untitled introduction, cover inset.

[88] In certain contemporary, professional practice contexts, it is arguable that the architects would be liable for problems arising in response to the use of the manuals.

[89] Deleuze and Guattari refer directly to the "matter-form model" in a paragraph directly preceding their discussion of the artisanal. Deleuze and Guattari, *A Thousand Plateaus,* 450.

[90] Deleuze and Guattari, *A Thousand Plateaus,* 450-451.

[91] Deleuze and Guattari, *A Thousand Plateaus,* 453.

[92] Simondon, *The Individual and Its Physico-Biological Genesis*, 4.

[93] Deleuze and Guattari, *A Thousand Plateaus,* 453.

[94] This is an example specifically referred to by Deleuze and Guattari. Deleuze and Guattari, *A Thousand Plateaus,* 453.

[95] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[96] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[97] Lloyd Thomas, *Building Materials,* 52.

[98] Lloyd Thomas' specific 'precedent' example concerns the specification of a material connected to its production context: is a particular glass produced by a specific manufacturer. This glass was specified in the late eighteenth century for the 'House at Old Bailey.' Lloyd Thomas, *Building Materials,* 55.

[99] The architects Reiser and Umemto are similarly interested in challenging the privileging of form over matter in architecture. In their *Atlas of Novel Tectonics*, their specific interest is in how a conception of material flows and forces can be considered to influence not only constructional logic but, in their words: "other levels of organization and program." Reiser and Umemoto, *Atlas of Novel Tectonics*, 90. Their examples relate to diagrams and project proposals rather than actual matter. Reiser and Umemoto refer to a specific building example: the concrete waffle slab structure used in engineer Pier Luigi Nervi's 1951 Gatti Wool Mill in Rome. According to Reiser and Umemoto, this project is an example of structure expressing 'the matter-force relationship.' Reiser and Umemoto make the point that creating a form that accounts for material optimisation and force 'flow'—in this case, the structural forces effecting a concrete waffle floor slab—is not in itself an approach acknowledging and working with a notion of matter-forces. This is because "putting material where the theoretical force lines lie [...] is a self-fulfilling

prophesy, as forces flow where the matter goes." Their criticism centres on the failure of Nervi to "influence other levels of organisation and program," which they argue will better account for the relations between matter, forces and flows in buildings. Reiser and Umemoto, *Atlas of Novel Tectonics*, 90.

[100] For example, the architects designed and specified an unusual sandbag rigging for the filling of sandbags that were used as acoustic wall insulation; this was necessary because of the atypical use of sandbags as a building material. In standard specifications, it is not common practice to specify the detailed design of such items as scaffolding or rigging, which is often the responsibility of the building contractor. Lloyd Thomas, *Building Materials,* 176.

[101] Schreier refers to the pages of *Inflatocookbook* as not having "specific designs, but they have representations of how a design might go." Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[102] Ant Farm opposed the idea of associating architecture with a problem-expert solution model: Schreier associates their architecture with a model of entertainment and experience, which he argues opens up practice to multiple outcomes and opportunities. Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[103] Ant Farm, *Inflatocookbook (*1970), 'Feeeeeeeeeeeedbaaaack.'

[104] The intention for the 1970 loose-edition of *Inflatocookbook* was that it could be regularly updated with new sheets. Although the subsequent 1973 edition was bound, it was according to Ant Farm still updated. They state: "[t]his second printing (July 1973) takes on a new form for ease of printing and distribution. It gets a new cover and binding, and some material has been omitted for update." Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.' In a recent interview, Schreier stated that the 1973 edition was updated in the sense that it contained some new example pages. Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[105] Scott, *Living Archive 7*, 66.

[106] As described by seminal countercultural figure Marshall McLuhan. See McLuhan, *The Medium is the Message*, 101.

[107] Deleuze and Guattari refer to confrontations with matter: specifically one "confront accidents." Deleuze and Guattari *What Is Philosophy,* 153.

[108] In their 'Truckin' University' project, Ant Farm use the term 'inputs' to refer to different forces and components that might be involved in this speculative project, if deployed in actual sites. Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

[109] Money is referred to as "bread." Ant Farm, *Inflatocookbook (*1970), 'Feeeeeeeeeeeedbaaaack.'

[110] A term used by Deleze and Guattari to invoke the complexity of transforming materials. Deleuze and Guattari, *A Thousand Plateaus,* 450.

[111] As previously discussed, Schreier referred to *Inflatocookbook* as not having "specific designs, but they have representations of how a design might go." Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[112] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Kids.'

[113] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Geometry.'

[114] Such as those that feature in 'Truckin' University and 'Hy-Tek.' See Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University' and 'Hy-Tek.'

[115] Such as the inflatable that features as a backdrop in 'Rasberry Exercises." See Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[116] An arguable exception here is the 'kids' inflatable that has been reduced to 3 easy assembly steps, and might be seen as involving minimal variation or 'reader' input (at least in terms of its construction). Ant Farm, *Inflatocookbook,* (1970 and 1973), 'Kids.'

[117] Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.'

[118] Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.'

[119] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

[120] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Truckin' University.'

[121] The 'A Course in Getting Acquainted with Inflatables' section lists three numerically-ordered steps for assembling a simple inflatable bubble, including the redeployment of a standard plastic bag as the material for a small inflatable. In this section, there may be an impression that inflatables emerge from a process that can be simplified and reduced to steps. There is no indication of the mess associated with ironing plastic, the toxic plastic smell of a hot iron burning melted plastic, the surprise of discovering misaligned sheet seams or new material potentialities during the taping procedure and so forth: encounters that suggests something of the dynamism encountered in the making (and occupation) of inflatables in real-life as conveyed in other sections of *Inflatocookbook*, and 'Inflatables Illustrated.' Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[122] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[123] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Kids.'

[124] A comment made in Soleri and Davis, *Earth Casting,* 27.

[125] Deleuze and Guattari, *A Thousand Plateaus,* 450-451: Simondon, *The Individual and Its Physico-Biological Genesis*, 3-4.

[126] Baldwin, Untitled introduction, cover inset.

[127] Ant Farm's rationale for creating inflatables is discussed within 'A Course in Getting Acquainted with Inflatables.' Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[128] Even though *Inflatocookbook* is un-paginated, the binding arguably produces a sense of sequential ordering to the pages. The more introductory sections, including 'Ant Farm' and 'A Course in Getting Acquainted with Inflatables' (which contain general information about Ant Farm and inflatables), are bound towards the beginning of the 1973 manual. Pages relating to more detailed information on materials and techniques are bound within the central section of the same manual. The introductory page 'Ant Farm' briefly summarises Ant Farms history with inflatables creations, while the 'A Course in Getting Acquainted with Inflatables' provides an initial rationale for why one would building inflatables. Both pages are included in both editions, although the 1973 'Ant Farm' page has some rewording and updates relating to publication dates. Ant Farm, *Inflatocookbook (*1973), 'Ant Farm' and 'A Course in Getting Acquainted with Inflatables.'

[129] Ant Farm, 'Inflatables Illustrated,' 00.03.1500.03.40/00.23.00.

[130] Ant Farm, 'Inflatables Illustrated,' 00.03.15/00.23.00.

[131] Ant Farm, 'Inflatables Illustrated,' 00.06.22/00.23.00.

[132] After defining the artisan, Deleuze and Guattari discuss the "energetic materiality" of metallurgy as an *artisanal* operation. Deleuze and Guattari, *A Thousand Plateaus,* 453.

[133] Deleuze and Guattari, *A Thousand Plateaus,* 453.

[134] In the 'Air Supply' section of *Inflatocookbook,* Ant Farm discuss their need to adjust the anchoring of a very large 100' inflatable, which started to blow away in a storm. They responded to the problem by cutting an additional opening slit in the pillow which changed the internal pressure relative to the external conditions. See Ant Farm, *Inflatocookbook* (1970 and 1973), 'Air Supply.'

[135] This can be seen in the video manual when Michels and Lord are filmed inside inflatables whilst adjusting them. Ant Farm, 'Inflatables Illustrated,' 00.20.13-00.20.26/00.23.00.

[136] In this scene, a body is partially visible under the fabric floor, pushing up the rolling fabric. See Ant Farm, 'Inflatables Illustrated,' 00.11.44/00.23.00.

[137] For Massumi, and as discussed in chapter 4, form does not refer to static shape but invokes a confluence of influences. Massumi, *A User's Guide to Capitalism and Schizophrenia*, 14.

[138] Kallipoliti, with Curtis Schreier and Chip Lord (Ant Farm), 'Interview,' 2007. Schreier and Lord refer to the inflatables being the built instantiation of a "Venn diagram" or bubble diagram, as distinct from being a conventionally planned and made building.

[139] Deleuze and Guattari, *A Thousand Plateaus,* 453.

[140] Deleuze and Guattari, *A Thousand Plateaus,* 412.

[141] Readers are encouraged to directly encounter and work with soil because their qualities "cannot be fully described or explained in words." Soleri and Davis, *Earth Casting,* 1.

[142] In relation to the aesthetic of the Cosanti Originals wind bell design, Soleri makes the point that: "[t]his style is evident throughout the entire Cosanti and Arcosanti sites, from the bell shapes and decorations to planters, sculpture, and building designs." Soleri and Davis, *Earth Casting,* 2.

[143] Soleri and Davis, *Earth Casting,* 14.

[144] Soleri and Davis, *Earth Casting,* 16.

[145] See the step-by-step and numbered imagery relating to the Cat Cast House, at Cosanti. Soleri and Davis, *Earth Casting,* 88.

[146] For example, the chapter 4, 'Silt Casting Models, Planters and Sculpture,' precedes chapter 6, 'Casting Concrete On Silt and Soil;' the latter deals with large-scale projects including those at Arcosanti.

[147] Soleri and Davis, *Earth Casting,* 14.

[148] Soleri and Davis, *Earth Casting,* 14.

[149] Soleri and Davis suggest that rough drawings of measurements are made before commencing construction. Soleri and Davis, *Earth Casting,* 71.

[150] Similarly, Soleri and Davis suggest that structural engineering and steel reinforcing for the concrete needs be worked out in advance to starting construction. Soleri and Davis, *Earth Casting,* 16.

[151] Williams, *Craftsmen of Necessity*, 145.

[152] Deleuze and Guattari, *A Thousand Plateaus,* 407: Simondon, *The Individual and Its Physico-Biological Genesis*, 10.

[153] This point recalls the aforementioned discussion about the "comprehensive education" as defined in the *WEC*. See Baldwin, Untitled Introduction, cover inset.

[154] Soleri and Davis, *Earth Casting,* 11.

[155] Deleuze and Guattari, *A Thousand Plateaus,* 451.

[156] Ant Farm, *Inflatocookbook* (1973), 'Kids.'

[157] Ant Farm, *Inflatocookbook* (1973), 'A Course in Getting Acquainted with Inflatables.'

[158] Ant Farm, *Inflatocookbook* (1973), 'A Course in Getting Acquainted with Inflatables.'

[159] In the 1970 edition of *Inflatocookbook,* Ant Farm note with some humour that "[t]he experiences which qualified as 'Inflato-experts' occurred over an 18 month period in which we designed, built, and erected inflatables for a variety of clients and situations." Ant Farm, *Inflatocookbook,*1973, 'Ant Farm.' In a similar, though more serious, point, Soleri also positions *Earth Casting* in relation to his accumulated experience: he notes that *Earth Casting* is "a workbook for anyone who wants to learn to use the earth-casting technique as I have developed it over the past 25 or so years." Soleri also refers to the readers learning "from both example and experience." Soleri and Davis, *Earth Casting,* 1.

[160] To illustrate this point with respect to the *Inflatocookbook* and 'Inflatables Illustrated,', there is minimal design project information, such as complete architectural projects, provided in the manuals. Instead, the focus is on partial project examples, details, advice, and so forth, which require significant input in terms of applying or synthesising the information into a complete, realisable architectural project. Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[161] This is a term used by Lloyd Thomas to accentuate the less tangible aspects of encounters involving matter's transformations, including aspects of production contexts that cannot be thought of as having a clear discernible physical entity, that is, labour and so forth. The term is used here in the present thesis to evoke such nebulous transformations as changes in identity and existence. Lloyd Thomas, *Building Materials,* 180.

[162] Such as Ant Farm's reference to inflatables prompting an 'amplification' of one's life. See Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[163] This comment is made in relation to metallurgists who are focused on the productivity of metal and the subsoil. Deleuze and Guattari, *A Thousand Plateaus,* 454.

[164] Deleuze and Guattari, *A Thousand Plateaus,* 450.

[165] Grosz, 'Feminism, Materialism, and Freedom,' 149.

[166] Grosz, 'Feminism, Materialism, and Freedom,' 149.

[167] Grosz, 'Feminism, Materialism, and Freedom,' 152.

[168] Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[169] Soleri and Davis, *Earth Casting,* 106.

[170] Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.' Note the same text and some of the images feature in the book *Rasberry Exercises*. See Rasberry and Greenway, *Rasberry Exercises*, 102-103.

[171] Recall, for example, the somewhat unclear statement in *Radical Technology* that inflatables are "people-mixers and mind-blowers." Harper, Boyle and the editors of UNDERCURRENTS, *Radical Technology*, 105.

[172] Lloyd Thomas, *Building Materials,* 180.

[173] This quote has been graphically reproduced as per the original in Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[174] The specific comparison in 'Rasberry Exercises' is to a standard high school space. Ant Farm note that: "Ant Farm's inflatables are the environmental antithesis of River City Union High's antienvironment." Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[175] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm.'

[176] Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[177] 'Rasberry Exercises' does not explain what constitutes an 'amplification' of one's life, and it appears as if one must therefore make and occupy inflatables to access this apparently life-transforming process. Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

[178] Ant Farm describes themselves as "environmental nomads." Ant Farm, *Inflatocookbook,* 1970, 'Ant Farm.' Incidentally, Ant Farm's self-positioning as 'environmental nomads' appears only in the 1970 edition.

[179] In Ant Farm's words, the nomad must "travel to provide nutrients (grass/water/winds/food/riches) for their survival. Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumads;' Note that in the 1973 edition, the 'Good Taste Pneumads' title is omitted from the top of the page, although the text is the same.

[180] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumads.'

[181] Ant Farm refer to the nomad creating his identity in association with transiting: [h]e takes what he needs from different places, producing only one thing: HIMSELF, a system resource centre for creating tools to solve any problem." Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumads.'

[182] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Good Taste Page Pneumads.'

[183] Ant Farm refer explicitly to "the mobile lifestyle." Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

[184] Ant Farm clarify how their more permanent office can be part of a broader network and connection: "[i]nstitutions in the dominant culture burden our mobility/growth, yet what we are talking about is an institution, a communication network of places like ours, where media nomads can pull in off the road (earn College Credit!), repair a truck, video linkup throughout, tools of your trade, nutrients of every need …." Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

[185] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

[186] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Hy-Tek.'

[187] The counterculture generally embraced the idea of 'nomadics' as a lifestyle and ideological ambition. For example, the 1974 edition of the *Whole Earth Epilog* contains a section devoted to 'Nomadics.' This section contains a range of information relating to transport devices, travel guides, and other unusual activities including a satirical account of touring religious organisation. See *Whole Earth Epilog*, First Edition (September1974), 669.

[188] In relation to the point about inflatables providing 'shelter,' Ant Farm specifically refer to the *Inflatocookbook* as providing: "a method so simple we can share it at will and never lose the security of being sheltered." Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm'.

[189] Schreier suggests that inflatables could be used as free-standing bedrooms because they can be heated (as a function of the heat-producing air blowers) and thus shelter the occupants from cold night temperatures. In relation to a demonstration inflatable pillow, Schreier makes the observation that: "if you make this really big, you can have a classroom, you can have a bedroom or anything. If you have a hairdryer, this is actually warm air now, you can sleep all night in this, if you were big enough." See Ant Farm, 'Inflatables Illustrated,' 00.09.08-00.09.18/00.21.20.

[190] A point made in relation to the arguable 'failure' of an inflatable; the temporary production facility in the Saline desert for the WEC special supplement edition. This failure specifically relates to the functional aspects of the inflatable. Scott, Living Archive 7, 83-84.

[191] In *Inflatocookbook,* Ant Farm also refer to the "freedom and instability" of inflatables. Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[192] Lord argues that an inflatable form "removes all the xyz axes of a space and […] it tends to give somebody a feeling that there are other spaces they can be in." Ant Farm, 'Inflatables Illustrated', 00.20.13-00.20.22/00.21.20.

Michels replies in a similar manner by stating that "rectangular rooms have to do with rectangular limits." Ant Farm, 'Inflatables Illustrated,' 00.20.26/00.23.00.

[193] *Inflatocookbook* reinforces that the inhabitation of the constructed inflatable is unpredictable and unbounded by the usual functional parameters imposed by the "xyz planes of the normal box room." Ant Farm, *Inflatocookbook,* 1970 and 1973, 'A Course in Getting Acquainted with Inflatables.'

[194] Ant Farm, 'Inflatables Illustrated', 00.20.36/00.23.00.

[195] Ant Farm, 'Inflatables Illustrated', 00.20.36/00.23.00.

[196] Smith and Ballantyne, 'Flow: architectue, object and relation,' 25.

[197] Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

[198] This point is reinforced in *Inflatocookbook,* which notes that the ""the walls are constantly becoming the ceilings and the ceiling the floor and the door is rolling around the ceiling somewhere." Ant Farm, *Inflatocookbook* (1970 and 1973), 'a course in Getting Acquainted with Inflatables.'

[199] Ant Farm, 'Inflatables Illustrated', 00.11.12/00.23.00.

[200] As an early example of Ant Farm's air-inflated structures, Ant Farm's 1969 'Timeslice' project—also referred to as Michel's 'Dreamcloud'—can be seen installed on a beach at Freeport, Texas, in two photos within Scott's Living Archive 7. See Scott, living Archive 7, 39-40. The project appears like a parachute on its side which is blown or inflated by the wind. Michel's 'Dreamcloud' which, although 'formed' in interaction with the wind, operates more like a wall than an enclosed space that could be compared to a conventional architectural building. Schreier and Lord refer to their experiments using redeployed parachutes, including an installation on a beach, in a recent interview, see Kallipoliti, with Schreier and Lord (Ant Farm), 'Interview,' 2007.

[201] Ant Farm, *Inflatocookbook* (1970 and 1973), 'a course in Getting Acquainted with Inflatables.'

[202] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm.'

[203] For Smith and Ballantyne: "[i]t is important that we understand such engagements in flow not as some form of nirvana of perception but as an intensity of material encounter or connection removed from pre-given rules of engagement and the hierarchies of habit." Smith and Ballantyne, 'Flow: architectue, object and relation,' 25.

[204] Ant Farm, *Inflatocookbook* (1970 and 1973), 'Ant Farm.'

[205] Grosz, 'Feminism, Materialism, and Freedom,' 152.

[206] Schreier addresses the camera: "[c]amera, do you want to find out what its like inside an inflatable: go right in." Out of camera vision, Michels makes the following comment while the camera moves physically close to the 'slit' opening in the inflatable pillow: "we have a lot of inside inflatable tape." Ant Farm, 'Inflatables Illustrated,' 00.09.40-00.09.49/00.21.2.

[207] Michels suggests that the living structure would be on the wall of the beam. Ant Farm, 'Inflatables Illustrated,' 00.09.50-00.10.01/00.23.00.

[208] Ant Farm, 'Inflatables Illustrated,' 00.10.15/00.23.00.

[209] This much larger inflatable is different in shape to the beam, and the footage is accompanied by ambient music that pulsates with the flow of the billowing fabric. Ant Farm, 'Inflatables Illustrated,' 00.10.30/00.23.00. The next footage in the video is of Schreier's 'Geometry Lesson.'

[210] Ant Farm's The House of the Century project prompts consideration of the sliding and shifting between scales. In a recent discussion about the project, Schreier referred to the repurposing of boat-building techniques in the house's conception and construction, stating it involved a shift: "from boat to building." Kallipoliti, with Curtis

Schreier and Chip Lord (Ant Farm), 'Interview,' 2007. There is an arguable sliding from the scale of boat construction to the scale of building construction. While this project was not featured in either *Inflatocookbook* edition, it was intended for inclusion in the 'From Bubbles to Stone' follow-up DIY manual. Scott, *Living Archive 7,* 139. The House of the Century project also contextualises Ant Farm's approaches to technology and architecture.

[211] Grosz, 'Feminism, Materialism, and Freedom,' 153.

[212] In *Inflatocookbook,* Ant Farm refers specifically to the readers' "fantasies." Ant Farm, *Inflatocookbook (*1973), 'A Course in Getting Acquainted with Inflatables.'

[213] Soleri and Davis, *Earth Casting,* 106.

[214] Soleri and Davis, *Earth Casting,* 106.

[215] This point is made in the 'Glossary' section. See Soleri and Davis, *Earth Casting,* 106.

[216] Soleri and Davis, *Earth Casting,* 106.

[217] In *What is Philosophy*, Deleuze and Guattari note: "[s]ubject and object give a poor approximation of thought. Thinking is neither a line drawn between subject and object nor a revolving of one around the other." Deleuze and Guattari, *What is Philosophy*, 85.

[218] Although Soleri's writings are arguably human-centric, Soleri makes the point that the Arcosanti complex is intended to demonstrate how humans might live more sustainably and harmoniously with nature. For this reason, humans are positioned alongside other biological and planetary forces at Arcosanti: in Soleri's words, "actively demonstrating ways to improve conditions of urban life while at the same time lessening our destructive impact on the earth." Paolo Soleri, *What if? Quaderno 11: Arcosanti Genesis*, (Mayer: Soleri Book Initiatives / Cosanti Foundation, 2008), 4.

[219] To reinforce that the same technique cannot be used at different scales, Soleri argues there was a process of "extrapolation' involved in moving between the different scales (pot to building) as well as the different materials (clay to concrete). It is nevertheless clear that each encounter with materials and form is unique. Soleri then makes the follow-on comment about the specifics of earth-cast structure being made by their occupant in reaction to particular material conditions and tools: [t]he mixture of freedom and discipline in the earth-forming procedure is of a different kind from the one found in orthodox form-making. The results will be radical departure from orthodoxy or any unsatisfactory imitation of it." Soleri and Davis, *Earth Casting,* 10-11. Note these statements are extracts from another earlier text by Soleri: *The Sketchbooks of Paolo Soleri,* 10.

[220] As discussed above, and to reinforce a sense that the same technique cannot be used at different scales, Soleri notes that there is some necessary "extrapolation." Soleri and Davis, *Earth Casting,* 10.

[221] Soleri refers to the particular variations in colour and so forth that result from the earth casting process. Soleri and Davis, *Earth Casting,* 69.

[222] Grosz, 'Feminism, Materialism, and Freedom,' 152.

[223] For example, the limitations imposed in relation to such issues as: fire safety and specific 'technical' parameters including air pressure within *Inflatocookbook,* and; metallurgy and structural engineering in *Earth Casting*.

[224] Ant Farm state that occupying inflatables may prompt "new brain patternings" Ant Farm, *Inflatocookbook,* 1973, 'Rasberry Exercises.' In 'Inflatables Illustrated,' new modes of living are prompted by inflatable spaces because they challenge the spatial constrictions otherwise imposed by 'xyz axes' of regular rooms. Ant Farm, 'Inflatables Illustrated,' 00.20.26/00.23.00.

225 Soleri and Davis, *Earth Casting,* 106.

226 Ant Farm, *Inflatocookbook* (1970), 'Rasberry Exercises.'

227 Soleri and Davis, *Earth Casting,* 106.

228 Grosz makes the observation that we can only know that a course of action is possible after it has actually occurred. Grosz, 'Feminism, Materialism, and Freedom,' 147.

229 A point highlighted throughout the *WEC* manuals via the blurring of information out materials, pragmatic building techniques and life philosophies.

230 The interconnections between thought and the design / making / occupation of inflatables can be seen in the 'feedback loop' suggested in the 1970 edition of *Inflatocookbook*. This is because readers were asked to submit their feedback on their experiences and thoughts, which could then inform subsequent *Inflatocookbook* editions. The 1973 edition states that it is updated, though it is unclear if the feedback loop occurred. What are specifically important to the present thesis are the intentional connections between thought, matter, action. See Ant Farm, *Inflatocookbook* (1973), 'Ant Farm.'

231 Deleuze and Guattari, *A Thousand Plateaus,* 413.

232 Deleuze and Guattari's specific point relates to the resistance of the nomadic sciences to subsumption by the royal sciences. Deleuze and Guattari, *A Thousand Plateaus,* 411.

233 Deleuze and Guattari, *A Thousand Plateaus,* 451.

6.1 Summary of the overall thesis aim and approach

As discussed throughout the present thesis, there is much complexity involved in any defining or theorisation of DIY. It is difficult to extract a precise definition of DIY from the discourse because of the divergent ways in which DIY is discussed and practiced. It is also difficult to think about DIY materials, techniques and architectures as articulable categories or processes when the DIY mode of operation appears to challenge customary distinctions between materials, bodies, objects, architectures, actions and transformations—both actual and becoming. The associated sense of complexity, heterarchy and flow is invoked by many of the North American countercultural DIY manuals, including those of Ant Farm and Soleri. It may well be that those aspects of DIY which challenge customary distinctions are the defining characteristics of DIY architecture.

To develop a theorisation of DIY architecture, the thesis first concentrated on the historical and cultural discourse on DIY in post-war North America where DIY emerged as an identifiable phenomenon. In this discourse, there is minimal scholarly critique and 'DIY' is used as a general umbrella term describing a diverse and divergent array of practices and socio-cultural influences. Two sequential DIY discursive streams were identified. The discourse on DIY in the 1940s and 1950s is associated with the nuclear family and ideas of home in mainstream North America, while DIY in the counterculture of the 1960s and 1970s is associated with a radically different and alternative countercultural 'family.' Throughout both post-war periods, the DIY manual was integral to the DIY mode of operation because it disseminated information, tools and philosophies to a more extensive public.

One of the key issues raised in relation to both DIY discursive streams was the imprecise and somewhat divergent uses of the term 'DIY' in association with different social and cultural factors. And yet across these discursive streams, DIY has been associated with a more nuanced discussion of the artisanal, based on an attendance to materials and fabrication processes. In the early DIY discourse, DIY products and approaches were seen to simultaneously erode traditional artisanal skills and techniques, and extend the accessibility of making and craft to a wider amateur audience. In the later countercultural DIY discourse, the focus shifted to the dissemination and promotion of the domain of self-production to the alternative, countercultural audience; there were no hierarchies or divisions between the 'artisanal' expert and amateur to speak of. Traditional and experimental building, craft and artisanal techniques, and broader life philosophies were intermixed and promoted in seminal countercultural DIY manuals such as the *WEC*, *Shelter*, and those of Ant Farm and Soleri. These

manuals would tend to concur with the idea of the 'artisanal' discussed within the text *Craftsmen of Necessity* as a comprehensive mode of life and production. One of the key ambitions of countercultural pedagogy was to challenge the hierarchical thinking and attendant educational practices of mainstream North America. With its heterarchical format and content, the countercultural DIY manual provided an educational platform for the dissemination of a comprehensive and reticulated conception of life to its dispersed though interconnected readership, promoting the idea of DIY as a conflux of materials, techniques, architectures, social identities, occupations and philosophies.

Ant Farm's and Soleri's architecture of the countercultural milieu has been associated with DIY and the 'artisanal.' This association arose with respect to their approaches within specific design-build projects, and the creation of their own DIY architecture manuals. Ant Farm's *Inflatocookbook* and 'Inflatables Illustrated,' and Soleri's *Earth Casting,* were based on their experimental projects of the 1960s and 1970s in which the designing and making phases of projects were coextensive with their occupation. These manuals are infused with complex discussions about materials and their transformations which are seen to inflect not only the physical aspects of life, but the "extra-physical,"[1] including somewhat ineffable changes in thoughts, identities and bodies.

To develop a more precise theoretical account of DIY, the thesis focused on the connections and relays between the term and notion of the artisanal as it is invoked within both the countercultural and philosophical discourse. The discussion of the 'artisanal' in the countercultural text *Craftsmen of Necessity* bears a striking correspondence to the philosophical notion of the *artisanal* elaborated by Deleuze and Guattari in their collaborative text *A Thousand Plateaus.* Deleuze and Guattari define the *artisanal* according to an attendance to materials, processes and procedures. Within the countercultural discourse, the 'artisanal' is never precisely defined, although it indicates a similar focus on processes, action and the self-organisational capacities of materials as they are discovered and encountered by artisans in "real-life."[2] Importantly, Deleuze and Guattari's definition of the *artisanal* is not specific to any material, technology or level of expertise per se. Their notion of the *artisanal* has provided a productive theoretical framework for exploring materials and their transformations within the *Inflatocookbook,* 'Inflatables Illustrated' and *Earth Casting* manuals, a framework that highlights the dynamic interrelations between matter and form that tend to be the shared territory of the philosophical notions, the countercultural notions and the DIY architecture manuals.

On the surface, the association of DIY with architecture and the artisanal may seem somewhat oxymoronic, if one associates DIY with the amateur, and artisans and architects with the expert professional. However, the detailed exploration of DIY architecture within the present thesis suggests that it is difficult to establish clear distinctions between the roles and approaches of the do-it-yourselfer and the expert, particularly when theorised using Deleuze and Guattari's process-based definition of the

artisanal. This very specific theorisation has facilitated a line of inquiry focused on the relations between materials and form in DIY architecture, rather than a focus on expertise per se. The DIY architecture of focus in the present study does have a set of defined outcomes—shelter, structure, space—and there is a directedness to the productions within this mode of practice. However, the directedness of the DIY mode of operation is not that of hylomorphism, in which form is seen to dominate and obscure matter's capacities for self-organisation. To some extent, Ant Farm's and Soleri's manuals convey an instrumental use of materials focused on the achievement of specific goals. Yet there is also a sense of experimentation and potentiality beyond that which is described or suggested. Rather than establishing a clear dualism between materials and architectural forms, the manuals prompt consideration of richer and more particular ways of engaging with materials, and their capacities and potentialities.

The detailed exploration of the three DIY architecture manuals using the philosophical notion of the *artisanal* complicates any singular reading of DIY architecture. This is due (at least in part) to the divergent ways in which the relations between matter and form are engaged in the manuals. On the one hand, the manuals convey the complexities, unpredictability and indeterminacies associated with any material transforming from one state to another. This is particularly evident in the images and words which indicate that there is a continual adjustment of the DIY architecture in response to the evolving project and site conditions. On the other hand, and to encourage others to 'DIY,' the manuals simultaneously oversimplify and generalise some material behaviours and techniques, arguably to make the DIY mode more accessible to its amateur readership. If there is an 'argument' to be concluded from the present study, it is that the theorisation of artisanal, DIY architecture instantiated within Ant Farm's and Soleri's manuals involves a productive struggle with matter, a struggle located in the 'field of interaction' between the particular and generalised, the strategic and the spontaneous, the actual and the becoming—with bodies struggling to become "more than they are."[3]

6.2 Problems, issues and limitations of the thesis

The scope of this thesis was limited to the North American postwar discourse on DIY, the DIY architecture manuals of Ant Farm and Soleri, and; the countercultural and specific philosophical notions of the artisanal. The thesis concentrates on a specific milieu and within the present thesis there is little desire to generalise from this point. This narrow focus was in part to counter the criticism made of the broad and nebulous use of the term 'DIY' in post-war North America. The focus was not to preclude other readings of DIY and DIY architecture, and, as such, was intended to prompt readers to consider further research with respect to other conceptions, conventions and historical periods.

The complex and nebulous nature of both the DIY discourse and philosophical notions underscored the difficulty of exploring and theorising 'DIY architecture.' For example, while there are similarities between

the DIY manuals and the philosophical notion of the *artisanal*, there are also dissonances. Noting these difficulties, the tensions between the divergent approaches to materials in the manuals were also theorised through Deleuze and Guattari's writings. In *A Thousand Plateaus*, Deleuze and Guattari complicate and problematise singular narratives, determinisms and dominant modes of thought through the proliferation of multiple binaries.[4] As such, they situate the notion of the *artisanal* within a broader speculative philosophy invoking different approaches to life. The philosophical notions are not described in isolation and are often referenced to their points of difference. For Deleuze and Guattari, the *artisanal* mode of operation inevitably coexists with other modes and procedures in a productive "field of interaction."[5] While the *artisanal* is associated with the nomad sciences and its procedures, it is also discussed in relation to the royal or State sciences. Similarly, the procedures of 'following' the particular and site-specific flows of matter are discussed with reference to the procedures of 'reproduction,' which involve a somewhat contradictory desire to generalise and abstract matter from its condition of flow. Thus the philosophical notions, whilst mobile and complex, are also valuable in dealing with the inherent complexities that arise from the DIY architecture manuals themselves. Although it was the intention to use the philosophical notions as a way to 'think' or to theorise DIY architecture, it was never the intention to establish a definitive conceptual model of DIY architecture; indeed, the thesis demonstrates the value of opening up 'DIY architecture' to further theorisations.

It was also not the intention of the present study to evaluate the success of a DIY mode of operation within architecture—such as the uptake of the manuals by non-architects, nor the ease with which a novice might use the manuals to build in 'real-life.' Instead, the intention was to provide a specific exploration of DIY architecture contingent upon the philosophical notions and manuals. In *Inflatocookbook,* 'Inflatables Illustrated' and *Earth Casting*, there are tensions between the divergent ways materials are positioned and discussed. Nevertheless, these tensions are seen as positive because they reveal a DIY mode of operation in architecture which involves a productive struggle with matter's self-organisational capacities during its various formations and transformations. This DIY mode of operation is not limited to predictive drawings and specifications, which would otherwise bind architecture to those forms and material combinations imagined in advance of any actual construction or occupation of a project site. The DIY mode involves a coextensivity of the design, construction and occupation phases, which could be seen to challenge the sense of hierarchy and segregation embedded within conventional modes of architectural practice which segregate these phases. In accord with the arguments made by Deleuze and Guattari, and Simondon, a sense of segregation and hierarchy in architecture could be associated with the hylomorphic model of the matter-form relation and its attendant assumptions about materials, and about life itself. In contrast, and as invoked in Ant Farm's and Soleri's DIY architecture manuals, the DIY mode of operation is positioned as part of the dynamism of life, and thus seen to inflect not only transformations in soil, fabric, and so forth, but individual and

collective identities, pedagogies and bodies. DIY architecture is, for Ant Farm and Soleri, a comprehensive mode of transformation.

6.3 Thesis outcomes

There are four key outcomes of the present thesis: an account of DIY architecture contingent upon Ant Farm's and Soleri's manuals; an identification of an artisanal mode of operation in connection with DIY architecture; a theorisation of the DIY architecture manual as operating between the specific, the generalisable and the potential; and a demonstration of a way to theorise architecture through the deployment of the philosophical notions in architectural discourse. First, this thesis elaborated an account of 'DIY architecture' through an analysis of the discourse on DIY in post-war North America, and Ant Farm's and Soleri's manuals. The DIY architecture of both Ant Farm and Soleri has been characterised as involving experimentation with materials, education and social formations in a heterarchic manner that was reflected in both the content and format of the manuals. Within the countercultural milieu, DIY manuals became a method for disseminating knowledge and tools to like-minded individuals, in order to encourage and promote both experimental and self-sufficient lifestyles.

A second key outcome of the present thesis is the articulation of an artisanal mode of operation in connection with DIY architecture. As discussed in chapters 2 and 3, the association of the term 'DIY' with architecture and the 'artisanal' was never precisely theorised or articulated in the post-war DIY discourse. The nebulous use of these terms complicates not only a precise understanding of the DIY phenomenon, but its association with the 'artisanal' and with architecture. Closer examination of this discourse reveals the terms are used to group a range of material-focused production approaches. It is argued that the philosophical notion of the *artisanal* brings into focus the manner by which materials are engaged within a DIY mode of operation that is also connected to architecture.

The third key outcome of this thesis is a theorisation of the DIY architecture manual as operating between the specific, the generalisable and the potential. Ant Farm's and Soleri's manuals are seen as particular instantiations of DIY architecture oscillating between the real-life experiences of materials—upon which the manuals are based—and potential future encounters with materials—which the manuals aim to provoke or prompt.[6] The DIY mode of operation can thus be associated with both direct encounters with very particular materials and project sites, and their subsequent generalisation. In conventional architectural practice, there is significant focus on the design of a future building form which is to be constructed or reproduced in real-life according to a set of predictive drawings and general written specifications. Like standard construction drawings and specifications, the DIY manual is also a form of mediated encounter. Yet unlike construction drawings and most specifications, the DIY manual assumes that the do-it-yourselfer can, and will be likely to, encounter variations in actual

material conditions on site, and thus should not be entirely reliant on predictive drawings and specifications. This is because the DIY designer is also the maker and occupant and is neither reliant upon others to form and engage matter, nor on predictive drawings and words that are intended to direct how any forming might occur within the project site. Although the do-it-yourselfer might use drawings as part of the DIY process,[7] she can work somewhat intuitively on site; discovering, responding to and adjusting construction processes according to the very particular conditions encountered on real sites over time. The DIY mode instantiated within Ant Farm's and Soleri's DIY architecture manuals can be understood as the intensification of the play between the strategic and the impromptu, the real and potential, the general and the specific. The sliding between scales and functions in the manuals also reinforces the play between actual matter and potential (or virtual) matter. Thus, the real-life conditions of an inflatable fan tunnel or an earth-cast pot prompt the imagining of potential DIY architectures. Importantly, the manuals promote an experimental mode of practice that involves potential transformations in thought, bodies and architecture beyond that which is immediately described or represented within the manuals.

When examined with respect to their engagements with matter, Ant Farm's and Soleri's manuals involve a similar conceptual complexity to the philosophical notion of the *artisanal*. Somewhat ironically, there is always a sense that the manuals can never fully capture the inevitable flows and indeterminacy encountered in real-life operations. Even though the manuals draw attention to the absolute specificity of the DIY encounter, there is also a necessity to generalise techniques and material particularities in order to share and communicate this information with the readership, including those with minimal experience of construction projects. This appears to generate tensions between the focus on particular, actual materials and processes in sites, and the abstraction and generalisation of those same processes in order to develop DIY procedures and models which cater to the amateur readership. Thus, with respect to the DIY architecture manuals, there is a relation between the general and the specific that is bound up with the communicable format of the manuals themselves.

The final key outcome of this thesis is the demonstration of a way to theorise architecture, which involves the deployment of the philosophical notions within architectural discourse. While the philosophical notions are arguably extracted from the very processes (both actual and virtual) which they invoke, it is not the intention of this thesis to develop new philosophical notions via the conceptual exploration of DIY practices and processes. The thesis does suggest there is a resonance between the philosophical notion of the *artisanal* and the discourse on DIY and DIY architecture, a resonance which has been used to highlight specific issues within the DIY architecture manuals and discourse. Accordingly, the philosophical notions are positioned within the context of specific examples of DIY practices and processes.

6.4 Implications and possibilities for future research

In the present thesis, the theorisation of Ant Farm's and Soleri's DIY manuals using the philosophical notion of the *artisanal* has drawn attention to, and problematised, a hierarchical conception of the matter-form relation. For Deleuze and Guattari, and Simondon, the conceptual subservience of matter to form within Western philosophy is associated with the sense of social hierarchy that is embedded in the operations of science, engineering and architecture.[8] One might argue that any discussion that brings matter to the fore troubles the traditional way we think of that which is architecture, as well as the political and the social. The problematisation of matter and form in architectural theory is highlighted in the recent discourses of Smith and Ballantyne, Lloyd Thomas, and Reiser and Umemoto. These architectural discourses also reinforce the need for further research on the matter-form relation within architectural theory and practice.

The limited scope of the present thesis facilitated a depth of study specific to a particular milieu, discourse and selected DIY manuals. Further study could explore both DIY and DIY architecture beyond the genre of the DIY manual, and further afield than the North American milieu. Sparke, for example, argues that the North American DIY phenomenon of the 1950s was later imported into Britain.[9] The British architectural group Archigram developed architectural projects that invoked a DIY sensibility.[10] Archigram's practice preceded and was highly influential on the young Ant Farm members.[11] Similarly, future research could concentrate on the connections between Ant Farm's practice and their experiences of, and influences on, Australian architecture during their visit to Australia in the 1970s.[12]

Additional research could also develop understandings of DIY architecture specific to other contexts, including contemporary architectural practice. There is much reference to DIY in contemporary cultural and architectural discourse, particularly in relation to the proliferation of websites promoting DIY techniques and approaches, including the popular www.makezine.com, and www.instructables.com.[13] These DIY websites effectively function as the equivalent of DIY manuals for particular techniques or projects. Project information and guidance can often be downloaded in the form of factsheets and step-by-step instructions. A case in point is the downloadable manual for a 'parking day' project template developed by the design and art collective Rebar, based in San Francisco.[14] Rebar's *Park(ing) Day Assembly Manual and Streetscape Intervention Toolkit* provides guidelines for creating a temporary installation in a car park. As was the case with Ant Farm's and Soleri's manuals, these contemporary DIY project websites and manuals are infused with discussions about materials and their transformations, and are targeted at the reader-maker-user, who may also be a designer of sorts depending on the nature of the project.[15] Discussions about DIY and architecture also appear in contemporary architectural discourse, particularly with respect to material-focused and experimental production approaches, techniques and installations.[16] As such, there may be value in developing and

exploring the philosophical notion of the *artisanal* with respect to contemporary case studies involving a DIY sensibility. Consistent with the DIY discourses considered in this study, contemporary discourses appear to use the acronym DIY as a nebulous umbrella term for different art, architectural and urban practices which involve a blurring of designing, making and use. Often these practices are located in public sites and, in accord with the North American countercultural focus on small-scale technologies,[17] involve experiments with materials or technologies which are directly manipulated by the designer-makers.[18] There is an arguable need to further explore and particularise the terms 'DIY' and 'DIY architecture' within a contemporary milieu (including potential connections to earlier countercultural practices and DIY sensibilities).

To theorise DIY architecture using the notion of the *artisanal* is to 'pierce' the conceptual walls that define and constrict current understandings of DIY. Deleuze affirms the value of the relay and interplay between theory and practice: "[n]o theory can develop without eventually encountering a wall, and practice is necessary for piercing this wall."[19] In the case of DIY architecture and its attendant discourse and practices, the framework through which we construct DIY architecture and its conceptual 'walls' is indeed complex and mobile, formed and transformed by the flux of life itself. Any theorisation of DIY architecture is inevitably bound to the complex material phenomena invoked in its practices, processes and modes of operation. As suggested by Ant Farm in their description of DIY inflatables, it is both challenging and wondrous to encounter an architecture in which "[t]he walls are constantly becoming the ceilings and the ceiling the floor and the door is rolling around the ceiling somewhere."[20]
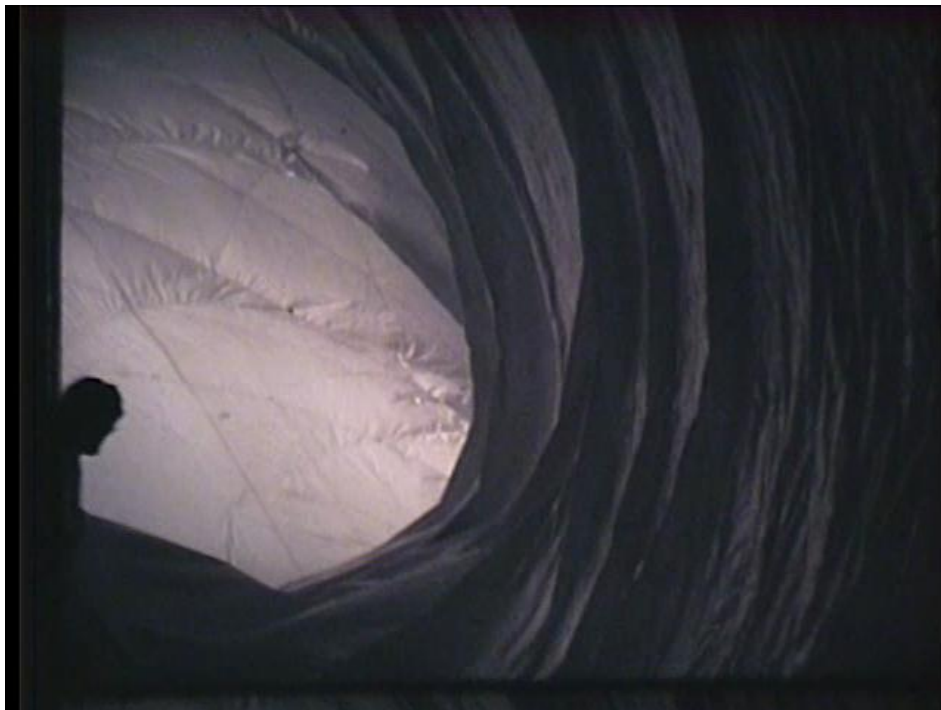

Figure 6.1: 'Inflatables Illustrated': DIY inflatable architecture as a conflux of materials, bodies, fabric, actions and transformations.

Notes

1 Lloyd Thomas, *Building Materials,* 180.

2 Deleuze and Guattari, *A Thousand Plateaus*, 412.

3 Grosz, Feminism, Materialism and Freedom,' 152.

4 Deleuze and Guattari's writings act as a challenge to modes of thought associated with Western human-centric philosophy.

5 Deleuze and Guattari, *A Thousand Plateaus*, 413.

6 As conveyed in drawings, words, diagrams and so forth, within *Inflatocookbook,* 'Inflatables Illustrated,' and *Earth Casting*.

7 For example, and as discussed in chapter 5, *Earth Casting* encourages some degree of drawing—including "very rough" drawings—in relation to the making of concrete earth-cast structures. "Measurements must be taken and specifications for the size and dimensions of the structure must be made. Even these can be rough. And some changes can be made as you go along." Soleri and Davis, *Earth Casting,* 71.

8 This point refers to their association of hylomorphism with the "organization of work and of the social field through work." Deleuze and Guattari, *A Thousand Plateaus*, 407. See also Simondon's discussion about hylmorphism supporting "a universal system of classification," including social hierarchy. Simondon, *The Individual and Its Physico-Biological Genesis*, 3 and 10.

9 Sparke, *An Introduction to Design and Culture*, 120.

10 As argued by Sadler, the British architecture collective Archigram began as "an informal consortium" in 1963, and continued in various guises until 1975. See Simon Sadler, *Archigram: Architecture without Architecture* (Cambridge: The MIT Press, 2005), 3. Archigram projects, such as the speculative 1968 and 1969 Instant City projects and the Monaco Entertainments Centre project (1969), were based on the inhabitant or user being able to assemble and customise projects from a standardised 'kit of parts.' Sadler argues that the 'kit-of-parts' approach enabled Archigram: "to design complete units capable of reorganization, carried by the whim of the owner-operator." Sadler, *Archigram*, 171.

11 Lewallen, *'Introduction,'* 1.

12 Research could expand on Ant Farm's visit to Australia in 1976. According to a 1976 interview with Ant Farm published in *The Age* newspaper, November 24, 1976, this visit was supported by sponsorship from the Arts Council in Sydney. Note this article is republished in the 'Ant Farm Timeline,' in Scott, *Living Archive 7*, 307.

13 The *MAKE* magazine has published a hard-copy of popular 'Instructables' from their website. According to editor Eric J. Wilhelm, "Instructables is a place where artists, bicyclists, crafters, engineers, modders, cooks, tinkerers, and techies gather to share advice and ideas freely, and post thousands of their fantastic projects." Eric J. Wilhelm, 'Making things by hand is cool again,' in *The Best of Instructables,* ed. The Editors of MAKE magazine and Instructables, Volume 1 (Sebastopol, California: O'Reilly Media, Inc., 2008), 1.

14 Rebar are a San Francisco art and architecture collective. Rebar's *Park(ing) Day Assembly Manual and Streetscape Intervention Toolkit* is, in their words, a "how-to manual." See Rebar, *Park(ing) Day Assembly Manual and Streetscape Intervention Toolkit,* Rebar/www.rebargroup.org, 2008, 'The History of Parking Day.' The Parking Day project began in 2005, when the group installed a temporary park in a metered parking bay in San Francisco. A photo of the project was widely disseminated on the internet, and spawned, in their words: "a short "how-to" manual on our website to help others get started." See Rebar, *Park(ing) Day Assembly Manual,* 'The History of

Parking Day.' This initial original how-to manual was followed by the *Park(ing) Day Assembly Manual and Streetscape Intervention Toolkit.*

[15] For example, the intention of the *Park(ing) Day Assembly Manual* is to encourage readers to develop their own car park installations and themes; the manual therefore provides guidance on issues such as planning approvals, signage and so forth. According to Rebar, parking day was an idea to be freely disseminated and adopted if used without an intention of commercial gain: "Rebar treated the idea itself as open source and applied a Creative Commons license: as long as it was not used for profit, we allowed it to be replicated by anyone, anywhere." Rebar, *Park(ing) Day Assembly Manual,* 'The History of Parking Day.'

[16] Consider, for example, the comment by architect and theorist Lisa Iwamoto who refers to "emerging and newly defined practices that, with a do-it-yourself attitude, regularly pioneer techniques and experiment with fabrication processes on a small scale." Lisa Iwamoto, *Digital Fabrications: Architectural and Material Techniques* (New York: Princeton Architectural Press, 2009), 4.

[17] As highlighted by Turner in his text *From Counterculture to Cyberculture*, 92-93.

[18] For example, refer to Iwamoto's aforementioned comment about innovative DIY architectural experiments involving small-scale technologies. Iwamoto, *Digital Fabrications: Architectural and Material Techniques*, 4. Iwamoto's own practice involves similar experiments with small-scale technologies and prototypes that often lead to installations in public galleries and university institutions, including Iwamoto and Scott's 2005 operable *In-Out Curtain*. See Iwamoto, *Digital Fabrications: Architectural and Material Techniques*, 76.

[19] Foucault and Deleuze, 'Intellectuals and Power,' 208.

[20] Ant Farm, *Inflatocookbook* (1970 and 1973), 'A Course in Getting Acquainted with Inflatables.'

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