Material Matters: 
The Moral Imperative for a Large-Scale Perspective within the Archaeology of the Contemporary Past.

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2011
Submitted in partial fulfillment of the requirements for the degree of Bachelor of Arts (Honours), Department of Archaeology, School of Philosophical and Historical Inquiry, the University of Sydney.
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Abstract

Over the past decade, the archaeology of the contemporary past has become an established sub-field within archaeology. Yet, the overwhelming majority of research conducted within this sub-field is concerned with the study of immaterial social meanings that humans ascribe to materiality. The consequences of material as a physical entity are ignored. Although some contemporary archaeologists have sought to examine what the material does, they have been hindered by an emphasis on small-scale, synchronic approaches to research. The aim of this thesis is to argue that the archaeology of the contemporary past should incorporate an alternative approach to conducting investigations into contemporary materiality. I seek to show that the research of meta-categories of materiality, such as garbage, urbanism, weaponry and industry, fit within the current concern of contemporary archaeology to undertake a morally engaged archaeological practice. The moral imperative to investigate entire categories of materiality stems from the fact that the material component of community life generates its own outcomes. These outcomes are necessary for us to comprehend as fully as possible if we are to have any chance to avoid the negative consequences with which they are associated. Because of this large-scale investigations of contemporary are a necessary undertaking for contemporary archaeology.
Acknowledgments

I would firstly like to thank Dr Annie Clarke and Dr Sarah Colley for the knowledge and guidance they have provided me throughout the year.

My supervisor, Professor Roland Fletcher, has my deepest gratitude for his unwavering dedication and commitment to helping me work through my thesis. His enthusiasm and support was crucial in ensuring that no matter how much work I had to do, I remained fascinated and engaged throughout the course of writing my thesis. Thank you!

Special thanks to my family for their love and support. It was always a comfort knowing they were there for me if I ever needed them and the gifts of food were much appreciated!

Big thanks to everyone at STUCCO, especially my housemates (past and present) – Dave, Vic, Emma, Katie, Min and Freya. Thanks for your support and friendship!

Jessie Czaban – my deepest love and gratitude to you. You are truly amazing.
Chapter 1: Introduction

“To invent the train is to invent the train crash...”
(Graham and Thrift, 2007: 4)

Deep into the bedrock of Finland’s west coast, the world’s first long-term repository for nuclear waste is currently being built. Work on Onkalo (meaning ‘hiding place’) began early this millennium with the intention that the facility will be permanently sealed sometime after 2100. While this is an extremely long planning horizon for infrastructural work, it pales in comparison to the length of time over which the facility has to maintain its intended function. Onkalo must keep its high-level nuclear waste separated from the surrounding environment for at least 100,000 years. When we consider that the Great Pyramids of Giza have existed for ‘only’ 5000 years, the enormity of this cultural undertaking becomes apparent (Into Eternity, 2009).

The past decade or so has seen the emergence of a sub-field of archaeology concerned with the investigation of the recent past or contemporary period, which has become known as the ‘archaeology of the contemporary past’ (or ‘contemporary archaeology’). Since the 1970s, archaeologists have challenged the notion that archaeology is a discipline exclusively concerned with the more distant past (e.g. Reid et al, 1974; Rathje, 1979). However, it was not until around the start of the new millennium, that investigations into contemporary materiality became relatively commonplace. Yet, the vast majority of research

1 The temporal focus of research usually includes the 20th and 21st Centuries although some archaeologists restrict the time-period under investigation more precisely (e.g. Harrison and Schofield, 2010: 2).
2 The development of archaeological investigations into the contemporary period or the recent past has been dealt with in depth by others (e.g. Buchli and Lucas, 2001; Harrison and Schofield, 2010) and, therefore, I will not go over it in detail here.
conducted within this sub-discipline is concerned with investigating small-scale examples of materiality. The focus is the immaterial verbalized meanings that humans ascribe to the material (what will be referred to as ‘social meaning’) and which tend to have a very short-term outlook. Indeed, Olivier has provided a justification for this short-term perspective:

“The remains of our immediate historical environment are no less bearers of archaeological information than those of more ancient periods, but, since we are not yet able to grasp the medium and long-term dynamics into which these remains will be inscribed, we cannot apprehend such information...we should envisage an archaeology of the short term.” (Olivier, 2001: pp. 179)

But, how do we reconcile this commitment to the short-term with the reality that we are currently in the process of creating material that needs to be quarantined for 100,000 years? How do we justify an almost exclusive focus on social meaning when the material we have created in half a century demands the construction of facilities that need to outlive some of the oldest extant great monuments of humanity many times over? What the Onkalo nuclear repository highlights, and in a profound way, is that the material we create matters, and in a serious way. The material of human societies generates outcomes completely independently of human intention. It becomes an entity in itself, an ‘agent without intent’. However, it is not only highly toxic and controversial materials such as nuclear waste that have an impact on our societies. Mundane, everyday material, such as household garbage and the materiality of our cities (Figure 1.1), also provides a framework in and through which the community life of every society occurs. Yet, even this quotidian material, that is rendered invisible by its ubiquity, can have grave consequences, best illustrated by the issue of anthropogenic climate change. One of the unintended consequences of our mechanized industry is the increased production of greenhouse gases which is changing the composition of the atmosphere, and threatening the ability of our societies to continue to operate in their current fashion (Parry et al, 2007). Material has allowed humans to clear forests, dam rivers, build nuclear weapons and usher in the era of mass production and consumption. The acknowledgment that humans are now a factor influencing the formation of the geological record is
testament to our potency, and the power of our material creations (Steffen et al, 2011: 843). Indeed, environmental scientists are currently debating whether or not we should change the name of the geological epoch which we apply to the contemporary period, from the Holocene to the ‘Anthropocene’ – the ‘recent age of humans’ (Zalasiewicz et al, 2011).

With this potency comes the responsibility to attempt to manage the negative consequences of our material. Vigorous research into the outcomes of contemporary materiality can potentially assist societies to avoid or adapt to these negative consequences. The moral imperative exists to understand and mitigate the consequence to individuals of the material phenomena we have brought in to being. Archaeology has the potential to play a fundamental role in this regard, as it is the discipline that takes as its focus the material components of human societies and their role through time. However, for this type of research to occur, the incorporation of an alternative outlook on contemporary materiality from the one that is currently dominant within the archaeology of the contemporary past is required. One of the main features of contemporary archaeology, to its credit, is its explicit commitment to a morally aware archaeological practice. In consequence, an alternative outlook on materiality, which emphasizes the necessity of investigating what our material ‘does’ on a very large-scale, is perfectly compatible with this commitment. What needs to be incorporated within the archaeology of the contemporary past is an acknowledgment that the moral dimension of archaeological research applies not only to the short-term but also to the long-term outcomes of materiality. The intention of this thesis is to outline the necessary conditions for, and features of, an alternative approach to contemporary materiality and its moral dimension, which would require examining materiality on a large-scale and placing the contemporary period firmly in the context of long-term processes. Because, although Olivier is correct in stating that we cannot predict the future, the contemporary period is still very much a part of long-term processes. By approaching materiality with a concern for the long-term processes that have led to its precise contemporary manifestations, we may be able to gain a broader
perspective on how we are impacted upon by our material and perhaps even assist human societies to avoid some of the worst impacts of this material.

![Image of the urban world at night](image.png)

**Figure 1.1** The urban world at night (NASA)

### 1.1 Thesis Aims and Methodology

The overall aim of this thesis is to argue that there is a moral imperative for the archaeology of the contemporary past to study the impact that the material we produce is having, and is likely to have, on human societies. To achieve this primary aim, several secondary aims will need to be addressed. These include the demonstration that:

- The archaeology of the contemporary past currently has a concern for a morally aware archaeological practice which treats materiality as a means to critique social inequality and does not consider the outcomes of the material itself.
• Currently, the archaeology of the contemporary past in general has an overwhelming emphasis on investigating social meaning and that this has resulted in a focus on small-scale, particularist studies of material culture, which hinders attempts to investigate material outcomes.

• It is necessary to investigate contemporary materiality from a large-scale perspective if we are to be able to successfully gain an understanding of the outcomes of what the material does.

• Because our material framework has the potential to produce serious negative consequences for contemporary societies, there is a moral imperative for the investigation of this material.

• Archaeology has a particularly important role to play in the investigation of contemporary materiality due to the nature of the discipline’s capacity to study the material and take a long-term, large-scale viewpoint.

The methodology employed to try and achieve these aims is based on an appraisal of existing literature. More specifically, in seeking to outline an alternative approach to investigating contemporary materiality, this thesis will examine four meta-categories of materiality, namely garbage, urbanism, weaponry and industry, based on research conducted by both archaeologists and non-archaeologists who have engaged in the study of these categories or aspects of them.

It is not the aim of this thesis to disparage the work of archaeologists who study the social meaning attached to material culture. Indeed, the archaeological investigations that do display an explicit concern for moral issues are often of great social relevance. What this thesis proposes is that, additionally, we require an analysis that examines contemporary materiality at all scales – small, medium and large. The intention here is simply to highlight a neglected area of study, and demonstrate that it is of vital importance.
1.2 Thesis Constraints and Scope

There are a number of limits to this thesis which need to be outlined. First, this thesis is not intended to be an in-depth examination of the four material categories that will be discussed. Such an attempt would be futile given the scope of each category and the space limitations of this thesis. Instead, the intention is to provide an overview of each category with the aim of highlighting why it is morally necessary to study these categories in a contemporary context with a large-scale and long-term perspective.

There will be no explicit discussion of the precise methodologies that archaeologists might develop to study material categories in a contemporary setting. The research techniques which are relevant are completely dependent both on intellectual fashions and on the particular questions that individual archaeologists choose to pursue. The intention in this thesis is to specify the qualities that an archaeological approach will bring to the investigation of contemporary materiality. Throughout the course of this thesis the small number of discussions of archaeological work that do take a large-scale perspective on materiality will be used to provide examples of how such research is possible and what it may be able to do.

1.3 Conceptual Framework

1.3.1 ‘Social Meaning’

First, it is necessary to define what will be referred to as ‘social meaning’. Research that emphasizes social meaning gives priority to the non-physical declared ‘meanings’ that result from human perception and/or social interaction and discourse. The consequences of the precise physicality of materiality (i.e. how materiality generates its own outcomes due to its physical make-up) are not
the focus of study. The dichotomy derives from a logic which Dolwick (2009) has described:

“...the world is invariably split up (a priori) into two separate halves: a social half, consisting of humans; and a natural-material half, consisting of things, etc. In this sense, human beings (subjects) are seen as the primary agents of a social world, and ‘social’ is what occurs when meanings and representations are passed from person to person. Consequently, elements of the natural-material world (objects) are ignored, or reduced to their symbolic representations. (Dolwick, 2009: 22)

Although it is not necessary for a researcher concerned with social meaning to adhere explicitly to this perspective, Dolwick cogently outlines what investigations of social meaning prefer to examine. There are three different types of social meaning that archaeologists attempt to access through the study of materiality that are of relevance to this thesis:

- The use of materiality to expose aspects of social organisation. Chapter 2 in particular will examine this type of social meaning in relation to the use of archaeology as a means to critique social inequality. The material record is used in this manner as a resource in social discourse, as the point of these investigations is to ‘materialise’ or ‘presence’ particular events and circumstances as a method of critically intervening in contemporary societies. However, this type of social meaning is distinguished from the following one as the social discourse element is generally not what archaeologists are studying, but how they intend their research to be used.³

- The investigation of the ‘verbal meanings’ that human agents ascribe to material culture, including the use of material culture in social discourse or identity formation. Chapter 3 will examine this and the following type of social meaning.

³ Of course, all archaeological research becomes a part of social discourse, however it is a particularly prominent aspect of its intended purpose in this case.
• The phenomenological or experiential dimension of materiality, which examines human perceptions and the experience of interacting with materiality.

These non-physical meanings will be referred to by the phrase ‘social meaning’ in the context of this thesis.

1.3.2 The Moral Dimension

While this thesis is concerned with highlighting the moral imperative for a large-scale and long-term perspective on contemporary materiality, it will not be located within any particular moral framework (e.g. Marxist, liberal individualist, post-modernist etc.). Instead, the basis for asserting that there is a moral imperative to study contemporary materiality relies on a few simple premises:

• Our material framework has the potential to generate serious consequences that could negatively impact upon human societies.

• The investigation of contemporary materiality could assist human societies to better understand what our material does in the long term and the impact it can have.

• The increased understanding of material impacts could potentially assist societies to avoid or ameliorate negative outcomes.

• Therefore, there is a moral imperative to undertake such research.

This outlook is compatible with any existing moral framework that aims for the alleviation of human suffering. There is no reason, therefore, to specify any particular framework apart from this very general one.
1.4 Thesis Outline

**Chapter 1:** Outlines the aims, conceptual framework and scope of the thesis.

**Chapter 2:** Examines the current moral perspective of the archaeology of the contemporary past and outlines the influence of postprocessualism in the creation of this moral outlook.

**Chapter 3:** Discusses the more general preoccupation of archaeologists of the contemporary past with the examination of the social meaning ascribed to materiality. Again, the influence of postprocessualism on this outlook will be examined. A discussion will also be given on how this emphasis on social meaning has stymied the development of examining materiality on a large-scale, which has, in turn, hindered attempts to examine what materiality actually does.

**Chapter 4:** Examines the material category of garbage and how it influences societies. The Garbage Project will be discussed to provide an example of how it is possible to study contemporary materiality on a large-scale.

**Chapter 5:** Examines the material category of urbanism and its role in shaping contemporary societies. How archaeologists are currently engaged in the study of pre-modern forms of urbanism will be discussed to highlight the necessity of studying contemporary urbanism and the importance of a long-term perspective in relation to theses studies.

**Chapter 6:** Continues the discussion on large-scale categories of materiality by looking at weaponry and industry. The concept that technological developments are not inherently progressive will be examined, as well as the proposition that communities learn to negotiate the outcomes of their material milieu.

**Chapter 7:** Highlights how the material categories discussed within this thesis are interconnected, although, for the purposes of research, it is often necessary to separate them. A summary of why research into contemporary materiality is of
particular importance in relation to concerns of societal collapse will be given.
The role of archaeology in a contemporary setting, which examines large-scale materiality, will be discussed. An overall summary of the thesis will be provided.
Chapter 2: The Archaeology of the Contemporary Past – The Moral and Political Dimension

“We show evidence: we bring presence to the fore and put the corpses on the table.”
(González-Ruibal, 2008: 260)

2.1 Introduction

For a number of decades now, it has been argued that archaeology is inherently a political practice with moral consequences. Nowhere is this moral and political dimension of archaeology clearer than when investigating the recent or contemporary past. Not only has the 20th and 21st centuries seen unprecedented destruction of human life and the natural environment, but the temporal proximity of these events to our own lives imbues them with added meaning (Buchli and Lucas, 2001: 9). As González-Ruibal (2008: 259) states: “How can we survey a concentration camp, excavate a trench or a mass grave, or study a derelict ghetto without getting involved in politics?” Many archaeologists working on the recent past or contemporary period have recognized this to the extent that an explicit concern for engaging in a morally and politically aware archaeological practice is one of the central concerns of the archaeology of the contemporary past. A number of the main practitioners of contemporary archaeology have clearly expressed this commitment. For example, Harrison and Schofield (2010: 126) have stated that the “political dimension is one of the defining characteristics of the archaeology of the contemporary past” and as González-Ruibal (2008: 259) notes, “the archaeology of the contemporary past has to be political”. As of 2011, published works on the archaeology of the

4 That contemporary archaeologists articulate their moral concerns in terms of a commitment to politics is indicative of their approach to materiality, which privileges social meaning as will be discussed below.
contemporary past that in some way express a concern for moral issues include studies of.⁵

- Homelessness (Kiddey and Schofield, 2011; Zimmerman and Welsh, 2006; Zimmerman et al, 2010)

- State oppression (Zarankin and Funari, 2008; Buchli and Lucas, 2001b)

- Forensic archaeology (Doretti and Fondebrider, 2001; Fondebrider, 2009; Saunders, 2002; Funari et al, 2009; Ferllini and Croft, 2009; Cox, 2001) (Figure 2.1)


- Social conflict (Badcock and Johnston, 2009; Schofield, 2000, 2009)

- Memory and national identity (Hart and Winter, 2001; Bernbeck and Pollock, 2007)

However, research undertaken within the archaeology of the contemporary past has a particular conception about what the aims and methods of a morally aware archaeological practice are. The intention of this chapter is to show that the archaeology of the contemporary past is focused on exposing social inequality and injustice in contemporary societies by way of the material record. Such a perspective is embedded in a focus on social meaning as defined in Chapter 1. Essentially, material remains are used as a means of access to the social realm to expose unequal social and power relations and thus act as a critical intervention in the politics of the present. To illustrate this, a discussion will firstly be provided on the introduction of an explicit morally and politically committed

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⁵ This is far from an exhaustive list – it is simply intended to indicate some of the broad research topics. Additionally, some of these research projects fit into two or more of these categories.
archaeological practice by postprocessualism, which applied social theories concerned with political action to archaeology. An examination will follow of how such perspectives have influenced the archaeology of the contemporary past in the manner in which it engages in an archaeological practice with a clear moral commitment.

![Excavation of a mass grave containing the bodies of people killed by the Argentinean dictatorship (1976-1983) (from Fondebrider, 2009: 50)](image)

**Figure 2.1** Excavation of a mass grave containing the bodies of people killed by the Argentinean dictatorship (1976-1983) (from Fondebrider, 2009: 50)

### 2.2 The Influence of Postprocessualism – Archaeology as a Political Practice

Postprocessualism (or ‘interpretive’ archaeology) first emerged in the late 1970s and early 1980s. Like the ‘processual’ approach, which it aimed to critique, postprocessualism did not represent a unified approach to archaeology but was a conglomeration of a diverse set of concerns and ideas. Nevertheless, these ideas coalesced around a number of central themes. Johnson (2010: 105-111) identifies a number of the main tenants of postprocessualism, some of which include:
• Rejecting a positivist view of an objective scientific (or archaeological) practice.

• Stressing the need to examine the thoughts and values of people in the past to understand the archaeological record.

• An emphasis on the agency of individuals.

• Treating material culture as a ‘text’ from which to interpret different meanings.

Another central feature of postprocessualism was a concern to highlight the inherently political nature of archaeology. Postprocessualism mirrored a number of developments that were occurring (or had already taken place) in other social sciences and the issue of politics was central to a number of these perspectives. As Trigger (2006: 444) notes, at least two of the intellectual movements that influenced postprocessualism, namely the Marxist-inspired French social anthropology and postmodernism, were interested in challenging authority in the political as well as the intellectual arena. Although these two intellectual traditions differ significantly they both shared a deep moral commitment to challenging social inequality and advocated for active political engagement, which a number of archaeologists subsequently applied to archaeology.

A fundamental aspect of an explicit commitment to a political practice for both of these traditions was a rejection of positivism. The Marxist-inspired French anthropology that developed in the 1960s was strongly influenced by the neo-Marxism of the Frankfurt School. One of the main emphases of the Frankfurt School was examining the role that ideology played in societies as expressed in the writings of theorists such as Jürgen Habermas (1971, 1975) and Herbert Marcuse (1964). The Frankfurt School is associated with developing ‘critical theory’, a form of social critique aimed at exposing the role of ideology in naturalising exploitative capitalist social relations. Neo-Marxist anthropologists
applied this perspective to argue that the social context of research in the social sciences was a factor influencing interpretation and that the principle of objectivity in interpreting data maintained by positivism was a myth (Trigger, 2006: 446). Postmodernism took this rejection of positivism further emphasizing the subjective nature of knowledge, embracing extreme relativism and stressing that there is no objective truth, only a subjective construction of reality (i.e. that every individual interprets and derives meaning from the world differently). Thus, one of the main features of postmodernism is an emphasis on multi-vocality, or the encouragement of multiple points of view in interpretation (Johnson, 2010: 199-204). Radical postmodernists attempted to disempower the dominant narratives promoted by powerful social actors through the encouragement of marginal and oppressed members of society to express their own viewpoints thus exposing the self-interest and deception propagated by the powerful (Trigger, 2006:447). Because of the hypothesis that there is no objective scientific practice the aims of academic research for these two intellectual traditions was to expose inequality and exploitative social relations.

Postprocessualism took on this explicit concern for politics and rejection of positivism derived from neo-Marxism and postmodernism and applied them to an archaeological context. The general moral outlook of postprocessualism is based on a desire to expose social inequality, to challenge powerful social actors and to assist in the empowerment of oppressed members of society. This general moral commitment was expressed in a myriad of different ways reflecting the diverse nature of postprocessualism. Some of the main aspects of postprocessualism’s moral outlook included:

- Advocating for the need to be critically aware of the political dynamics of archaeological research, whether by avoiding projecting contemporary ideas onto past societies and thereby naturalising current social relations (e.g. Wylie, 1985; Leone, 1981) or through examining the role of archaeology in promoting colonialism, nationalism and imperialism (e.g. Trigger, 1984; Arnold, 1990). Associated with this was the application of critical theory to archaeology to develop a ‘critical archaeology’, designed
to demystify the role ideology played in the interpretation of the archaeological record (e.g. Wylie, 1985; Leone, 1981; Leone et al, 1987).

• The promotion of agency theory. One of the consequences of the models of society advocated by functional processualism, such as systems theory (e.g. Renfrew, 1978), was that humans were portrayed as passive automatons whose behaviour was determined by social norms and structures that had evolved as adaptations to the environment. In opposition to this, postprocessualism stressed that individuals have agency. They possess the ability to manipulate, negotiate or break social rules and act independently (e.g. Hodder, 1982; Miller and Tilley, 1984; Shanks and Tilley, 1987a, 1987b).

• An emphasis on multi-vocality by encouraging the incorporation of multiple perspectives on the interpretation of the archaeological record. Feminist (e.g. Gero and Conkey, 1991; Spector, 1993; Wright, 1996) and Indigenous archaeologies (e.g. Smith, 1999; Thomas, 2000; Atalay, 2006) have flourished since the emergence of postprocessualism, as well as have attempts to engage local communities and other stakeholders in the archaeological process (e.g. Potter, 1994; Marshall, 2002; Moser et al, 2002).

Thus, postprocessualism was instrumental in introducing explicit moral concerns into the discipline of archaeology through encouraging practitioners to conceive of archaeology as inherently political. These concerns were translated into efforts to use the archaeological record as a means to expose social inequality and empower marginalized groups. Research of this variety is extremely important and necessary. By itself, however, this particular moral approach is limited as it is exclusively concerned with the social realm. The operation of materiality on human societies, as an agent in its own right, is excluded from this

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6 For more recent discussions on agency in archaeological theory see Dobres and Rob, 2000; Dornan, 2002; Hodder and Hutson, 2003.
picture. Yet, it is this outlook on a moral archaeological practice which has been vigorously embraced by the archaeology of the contemporary past.

2.3 The Political and Moral Dimension of the Archaeology of the Contemporary Past

As described in the introduction to this chapter, the archaeology of the contemporary past has enthusiastically embraced a moral outlook articulated in terms of a commitment to politics. Its approach to engaging with these issues strongly reflects that of postprocessualism, namely an emphasis on the ability of archaeology to provide a critique of contemporary society. The main method through which the archaeology of the contemporary past carries out a morally and politically aware archaeological practice is through the reconstruction of particular events that expose social inequality and injustice. By uncovering or ‘presencing’ material remains archaeology can ensure that they become objects in social discourse, thereby assuring that the marginalized of the past and present are not forgotten, that social inequality is exposed and brought to the fore and that powerful social actors cannot hide the consequences of their actions.

The moral perspective in this approach is an intensely personal one. The focus is on exposing the conditions of existence (or death, in the case of forensic archaeology) of fellow humans with the purpose of promoting empathy within the broader community. The approach to these issues is often expressed by contemporary archaeologists as a desire to ‘give voice’ to the marginal and oppressed and to provide alternative accounts and discourses to dominant narratives as can be seen in the following quotes:

“Within so many voices, which are almost universally dominant competing ones, other voices are silenced and do not speak, or more accurately, are not able to be heard. Thus the archaeological act...attempt to constitute and articulate these voices.” (Buchli and Lucas, 2001: pp. 14)
“...archaeology has a particular obligation to those people whom society pushes to its margins—the abject, the poor and the subaltern. Archaeology can act as both a form of exorcism, by bringing to light and casting out those hidden and haunting aspects of the past, and a form of redemption, in reconciling communities and nations with their recent hidden histories.” (Harrison and Schofield, 2010, pp. 9)

“'In small things forgotten' (Deetz 1977) we find the voices of the subaltern, the Other, those who have no voice in official records (slaves, women, blacks, the colonized). Archaeology, then, can also provide alternative accounts of supermodernity by focusing on destruction and the abject, the less gentle face of the world we live in.” (Gonzalez-Ruibal, 2008: pp. 248)

The desire to use the archaeological record as a tool for social discourse is clearly expressed by Buchli and Lucas:

“The presencing of absence, that is its materialization through the archaeological act, makes things ‘matter’ in the sense Judith Butler uses, that is bringing absence into being materially and enfranchising it as an object of social discourse.” (Buchli and Lucas, 2001d: 174)

The intention here is to shed light on and ‘verbalise’ circumstances that are marginalized due to the fact that their very existence is an indictment on contemporary societies. Bernbeck and Pollock (2007) also make this point explicitly in their call for an ‘archaeology of perpetrators’ to place a spotlight on those guilty of human rights abuses (Figure 2.2). They state that: “The principal goal of an archaeology of perpetrators is to provoke controversial public discourse” (Bernbeck and Pollock, 2007: 227).

Yet, essentially, what this approach represents is the reduction of the material to a means of access to human action and the consequences of social organisation (particularly social organizations defined by power relationships of oppression). The material becomes a replacement or symbol for the actual focus of study which resides firmly in the social realm. The specificity or outcomes of the material as material is of little consequence. As well as the treatment of
materiality as a means to an end, the result of this emphasis on using the material record to reconstruct human action is a relatively small-scale perspective in relation to both materiality and temporality. On a large-scale and over long time periods a specific social entity to critique no longer exists. Consequently, contemporary archaeology examines particular examples of materiality related to specific events, which in turn expose aspects of a particular society. Examples of contemporary archaeology’s small-scale focus can be seen in the list of research projects provided in the introduction to this chapter, which include Buchli and Lucas’ (2001b) ‘excavation’ of an abandoned council flat to investigate the reasons why the inhabitants would be forced to abandon their home (Figure 2.3), the Ludlow Collectives research into the Colorado Coal Field War (Ludlow Collective, 2001) and archaeological investigations of homelessness (e.g. Zimmerman et al, 2010) (Figure 2.4). Additionally, this perspective is also evident in the particularly prominent place the archaeology of the contemporary past’s gives to forensic archaeology, particularly the forensic investigations that
deal with uncovering mass-graves of the victims of political violence (e.g. Doretti and Fondebrider, 2001; Saunders, 2002; Olivier, 2001; Funari et al, 2009; Buchli and Lucas, 2001c; Harris and Schofield, 2009, 2010).

Figure 2.3 ‘Excavating’ an abandoned council flat (from Buchli and Lucas, 2001b)

Figure 2.4 Archaeologists investigate the material traces of homelessness (from Zimmerman et al, 2010: 450)
2.4 Conclusion

The aim of this chapter has been to outline the current moral perspective of the archaeology of the contemporary past, which is articulated in political terms and committed to using materiality as a means to expose inequality and critique contemporary societies. The origins of this moral outlook can be traced to the influence of postprocessualism, which applied social theories such as neo-Marxism and postmodernism to archaeological practice. It needs to be acknowledged that postprocessualism’s encouragement for archaeologists to consider the broader social context and implications of their research has been a fundamentally important development for the discipline as a whole. Indeed, many research projects undertaken by contemporary archaeologists represent some of the most socially relevant archaeological work currently being conducted. For example, forensic archaeology has been instrumental in the exposure of gross violations of human rights and has played a significant role in offering restitution to the families of murder victims\(^7\), while Bernbeck and Pollock's commitment to an 'archaeology of perpetrators' is of great social importance. As stated in the introduction to this thesis, my aim is not to disparage these studies or discourage further investigations into these areas. However, the archaeology of contemporary pasts also requires a large-scale and long-term perspective on materiality. Rather than exclusively treating materiality as a means to an end, that is, materiality functioning only as a symbolic or illustrative tool through which to understand specific social interactions, an alternate perspective is necessary. I argue for a perspective which examines the consequences of materiality as an agent itself, and the effects of these consequences on human societies. To achieve such an outlook it is necessary for the archaeology of the contemporary past to abandon its exclusive focus on social meaning. The following chapter is aimed at examining

\(^7\) However, the use of forensic archaeology (and any other archaeological study) does not represent an uncomplicated moral good on all occasions. Each situation is mediated by its particular complexities that impact the perceived outcomes of forensic investigations. For example, Crossland (2002) has provided a clear discussion of the deep ambivalence between the families of the victims of Argentina’s military dictatorship to the exhumation of their loved one's remains.
contemporary archaeology's emphasis on social meaning more broadly and how this emphasis is stymieing attempts to investigate the outcomes of materiality.
Chapter 3: The Archaeology of the Contemporary Past – Emphasising the ‘Social’

“what a thing does, the way in which a thing is present as a thing, cannot be reduced to something non-thingly and must be conceived from the thing itself”

(Verbeek, 2004: 89)

3.1 Introduction

As the previous chapter outlined, research within the archaeology of the contemporary past that is concerned with moral issues investigates the social meaning associated with materiality. However, this emphasis on social meaning is also shared by the broader discipline of the archaeology of the contemporary past. Contemporary archaeology as a whole is overwhelmingly embedded in an approach to archaeological research that treats material culture as a medium through which to access realms of meaning beyond that of the material itself (i.e. the social). The aim of this chapter is to examine how such an emphasis on social meaning has stymied attempts to investigate the consequences of materiality. To achieve this aim a discussion will be provided on the role of postprocessual archaeology in the initial development of archaeological research concerned with examining verbal meaning. How this perspective has been incorporated by the archaeology of the contemporary past will then be examined, followed by a discussion on efforts to escape the exclusive study of verbal meaning through the use of phenomenology. Finally, this chapter will examine attempts to study what materiality actually does through the use of actor-network-theory (ANT) and why such attempts have been largely unsuccessful.


3.2 Postprocessualism - Material Culture and Verbal Meaning

One of the central criticisms made of processual archaeology by advocates of postprocessualism was that processualism treated the archaeological record as a reflection of social phenomena. The combination of a functionalist conception of culture as ‘man’s extra-somatic means of adaptation’ (Binford, 1964: 425) and of societies as a whole being adapted to an external environment (e.g. Renfrew, 1978), resulted in material culture being perceived of as a reflection of survival strategies implemented by humans (Hodder et al, 1995: 4). In opposition to this, postprocessualism stressed that the material and the social aspects of every society interact. The material does not simply reflect the social but has a role in constituting it. From this perspective what was emphasized was the verbal meaning associated with material culture, that is, the role material culture plays in conveying ideas and beliefs to members of a community usually as a material symbol. The material, however, was given no constituting ability in itself. Only through its use in conveying verbal meaning could it impact society in any way. In the words of Ian Hodder:

“...material culture cannot of itself do anything: if it does ‘act back’ on society it must do so within the frameworks of meaning within the society itself. The way in which material culture acts on people is social; the action can only exist within a social framework of beliefs, concepts and dispositions.” (Hodder, 1986: 8).

Ironically, as this quote from Hodder highlights, this outlook on materiality reproduced what postprocessualism was attempting to avoid – the treatment of materiality as a reflection of the social. As Hodder made clear, the agency of materiality in itself was perceived of as non-existent. Only as a passive recipient of verbal meaning could it have any effect.

To access this verbal meaning from the archaeological record, a number of archaeologists advocated treating material culture as text (e.g. Hodder, 1986, 1987; Tilley, 1990, 1991). This stemmed from the influence of structuralism, which asserted that culture was like language, in that there are underlying rules, analogous to grammar, used to create meaning but that these rules are not
explicitly articulated. Postprocessualism’s approach to material culture as text, however, was more closely related to that of poststructuralism which stressed individual subjective readings of texts (Johnson, 2010: 109-110).

The consequence of this focus on the verbal meaning associated with material culture is an inevitable tendency to focus on particular examples of material culture examined over short time periods. Materiality can have multiple verbal meanings attached to it as a result of individual subjective interpretations. Additionally, the verbal meanings ascribed to materiality also change through time. An example of the multitude of verbal meanings that can be associated with materiality can be seen if we consider the meanings associated with, for example, the pyramids of Egypt. The verbal meaning of the pyramids would have varied greatly for the labourers who constructed them to the pharaoh for whom they were built. Their meanings have also changed dramatically through time, from the original intention of their construction to how they are conceived of today—for example, as tourist attractions. As a result, an emphasis on verbal meaning tends toward a small-scale research focus in which the number of ‘meanings’ can be relatively restricted.

3.3 Verbal Meaning in the Archaeology of the Contemporary Past

The verbal meaning associated with material culture is a major focus of study within the archaeology of the contemporary past. The anthropological discipline of modern material culture studies also studies the verbal meaning associated with contemporary material culture. As a number of scholars have noted, the distinction between these to disciplines is blurred (e.g. Buchli and Lucas, 2001; Harrison and Schofield, 2010: 94). Shanks and Tilley (1987b: 172-173) attempted to distinguish between the two by arguing that while material culture studies examine the discourses (i.e. verbal meaning) associated with artefacts, archaeology examines the material itself. However, as this chapter aims to argue, this is not the case. Indeed, Shanks and Tilley (1987b) make the above assertion within a paper that examines the verbal meaning of beer cans. Due to this
blurring of disciplinary boundaries it is difficult to distinguish what is considered archaeology and what is an example of material culture studies.

Some of the clearest expressions of the focus on verbal meaning within the archaeology of the contemporary past is in studies that examine the role of material culture in the expression and formation of identity. In these studies material culture is examined as a means through which individuals or groups derive meaning and/or express themselves. For example, Schofield (2000) has discussed the role of materiality in popular culture:

“…for a definition of youth culture, it is the specific set of artefacts belonging to that group that is relevant. And music, design and fashion, as well as codes of behaviour and their associated material culture, will characterize and serve to identify each ‘styletribe’ within the group” (Schofield, 2000: 134)

Another example of the study of identity formation can be seen in a research approach that has become known as ‘autoarchaeology’, which is derived from ‘autoethnography’. Autoethnography is essentially an anthropological investigation of the self, employing ethnographic methodologies (e.g. Ellis, 2004; Chang, 2008). Autoarchaeology follows this general principle with an emphasis on material culture as a particularly important medium of investigation (Harrison and Schofield, 2010: 12). The emphasis in these studies is on the personal meanings and memories (see below) attached to material objects and their importance to the investigator. Examples of autoarchaeological investigations include archaeologists examining their parent’s mantle piece as an archaeological site and the meanings associated with the familiar artefacts (Finn, 2009), excavating the childhood homes of grandparents (Ulin, 2009) and examinations of personal attachment to work environments (Schofield, 2009) (Figure 3.1).
3.4 Material Culture and Experience

Dissatisfaction with an exclusive emphasis on verbal meaning and the treatment of material culture as text began to emerge both within postprocessualism and outside of it, beginning particularly in the 1990s (e.g. Hodder et al, 1995). One attempt to try to bring the nature of the physicality of material culture into archaeology was influenced by phenomenology. The phenomenological approach recognized that material things are very different from words and cannot be reduced to language (Johnson, 2010: 117). The nature of materiality was examined through the experience of 'being-in-the-world' and of the dimensions of embodied sensory experience, emotions and memories invoked through interacting with materiality (e.g. Bradley, 2003; Bender, 1993; Tilley; 1994). As Olsen states, “Attention turned towards how materials and landscape, through active interaction with humans, served to shape experience, memories
and lives” (Olsen, 2003: 91). Contemporary archaeologists have also taken up the phenomenological approach. For example, in his article *Looking into the Recent Past*, Mats Burström states:

“One aspect of the archaeology of the recent past that I find particularly interesting is the relation between materiality and memory. Material remains seem to have a remarkable power to evoke people’s memories and their stories about the past.” (Burström, 2009: pp. 22)

Burström goes on to describe the evocative nature of a car cemetery in Sweden and its profound affects on visitors to the site through the existential reflections on the nature of time and decay that the abandon vehicles invoke (see also Burström, 2009). Another example of this is Schofield and Morrissey’s (2008) investigation of Strait Street in Valletta, Malta. Strait Street had been a hub of bars, clubs and prostitution fuelled by visiting sailors from the British Navy up until Malta declared independence in 1964 after which Strait Street went into terminal decline. Schofield and Morrissey investigated Strait Street by absorbing the atmosphere, recording buildings and artefacts and attempting to engage with the remaining residents about their memories and connections to the area (Figure 3.2).

Despite the intention to avoid reducing material culture to a means to convey verbal meaning and to incorporate the nature of materiality into archaeological analysis this phenomenological approach still reduces materiality down to a cognitive experience of an individual. It is still embedded within the social approach to archaeology as outlined in Chapter 1. The failure of phenomenological approaches to provide a means through which to study what the physicality of material actually does has led to alternate methods being attempted to achieve this goal in recent years and over the last decade in particular.
3.5 The Impact of Materiality

The dissatisfaction with the examination of materiality purely in social terms led to the development of ‘symmetrical archaeology’, which has become the most well known critique of the social emphasis within archaeology. Symmetrical archaeology aims to mesh the ‘social’ and ‘physical’ aspects of material culture rather than privileging one or the other (e.g. Olsen, 2003, 2007; Shanks, 2007; Witmore, 2007; Webmoor and Witmore, 2008). Olsen (2003) broadly encapsulates the approach taken by symmetrical archaeology:

“...A large proportion of recent studies in archaeology and the social sciences, however, seem to have been guided by a kind of ‘hermeneutics of suspicion’ (Ricoeur 1970), in which ‘all that is solid melts into air’, including the hard physicality of the world which sometimes is reduced to little more than discursive objects or ‘phenomena’ of the subjects’ cognitive experience... Today it has become
a commonplace to say that society is constructed, even far outside the relativist
settlement... However, few have devoted time to analyse the building materials —
the concrete and steel, rebar and pillars — involved in its construction; the
brigades of non-human actors that constrain, direct and help our day-to-day
activities...” (Olsen, 2003: 88)

Symmetrical archaeology has been influenced greatly by ‘actor-network-theory’
(ANT), which aims to dissolve the dichotomy between the physical and the social
by acknowledging the agency of the material world (e.g. Latour, 1993, 2005; Law,
1986, Callon, 1986). ANT rejects a number of dichotomies such as a
social/nature-material divide in favour of viewing the world in terms of actor-
networks. These actor-networks are made up of both human and non-human
agents and it is only through the interaction of both that the social can exist.
Through this perspective ANT acknowledges the agency of materiality (Dolwick,
2009).

Symmetrical archaeology and ANT have had very little impact on the archaeology
of the contemporary past despite the promotion of the approach by prominent
contemporary archaeologists. For example, ANT featured prominently in Matter,
Materiality and Modern Culture (Graves-Brown, 2000), an interdisciplinary
collection of works that had a major impact on the development of the
archaeology of the contemporary past. Harrison and Schofield are two of the
only archaeologists to discuss ANT explicitly in their work (Harrison and
Schofield, 2010). However, the application of ANT by Harrison and Schofield is
still a marginal aspect of their work. In their book After Modernity, Harrison and
Schofield discuss ANT in only one study in any depth and this is applied to an
examination of IKEA’s Billy Bookcase (Harrison and Schofield, 2010: 163-171)
(Figure 3.3). Their discussion of IKEA’s Billy Bookcase concludes that the
‘distributed agency’ of millions of bookcases produced by IKEA reside in their
role in helping to:

“...familiarize people with the idea of flat-pack shipping and home assembly, which
in turn has assisted IKEA to promote more of its products to a broader market
segment and to develop a dominance in the market. Through their ubiquity in the
West, and their ability to be customized by the user, they have also been involved in a broader process of allowing the storage of larger quantities of consumer goods within the home and the increased isolation of the individual within the space of the home.” (Harrison and Schofield, 2010: 170)

Despite Harrison and Schofield’s interest in studying what materiality does, as can be seen in their discussion of ANT (Harrison and Schofield, 2010: 95-98), the vast majority of the examples of research conducted under the title of the archaeology of the contemporary past discussed in their book are concerned with studying social meaning.

![Figure 3.3 IKEA’s Billy Bookcase (from Harrison and Schofield, 2010: 166)](image)

The lack of success in applying ANT to facilitate the investigation of the consequences of materiality is both a consequence of ANT itself and, in particular, the way in which it has been employed within the archaeology of the contemporary past. Dolwick (2009: 36) notes that ANT is not a theory *per se* but
is more of a descriptive method. It simply provides a way of conceptualizing the relationship between human and non-human actors. As a result, the archaeology of the contemporary past has employed ANT within its existing approach to studying materiality, which is mostly concerned with a synchronic analysis of small-scale examples of material culture. Yet, the agencies of everyday items, such as the Billy Bookcase, are generally fairly mundane, particularly when analysed synchronically. If small-scale examples of materiality are being examined over a short time period then the verbal meanings people attach to it, or the experience of interacting with it, are on the whole much more interesting. It is because of this that the archaeology of the contemporary past continues to remain focused on studying the social meaning associated with materiality.

3.6 Conclusion

The aim of this chapter has been to examine the current emphasis on various aspects of social meaning within the archaeology of the contemporary past and the influence of postprocessualism on this approach. Despite a clear desire to incorporate into contemporary archaeology analyses of what materiality actually does, the overwhelming majority of studies are still exclusively concerned with social meaning. A focus on synchronic investigations of small-scale examples of material culture account for this privileging of social meaning.

The remainder of this thesis is intended to outline an alternative approach to investigating contemporary materiality, which emphasises the outcomes of this material. To investigate what materiality does, without necessarily restricting ourselves to rather mundane studies, requires a large-scale and long-term perspective. By examining the operation of meta-categories of materiality on society and placing these categories within long-term processes it is possible to obtain a greater understanding of the impact that these material categories will have on contemporary societies. The following chapter will discuss the meta-category of garbage and the importance of taking a large-scale perspective on contemporary materiality, illustrated by the work of the Garbage Project.
Chapter 4: Garbage

“Garbage is among humanity's most prodigious physical legacies to those who have yet to be born…”

(Rathje and Murphy 1992: 4)

4.1 Introduction

In the town of Guiyu on China's southern coast 60 to 80 percent of families are engaged in electronic waste ('e-waste') recycling operations. These families salvage valuable metals from millions of tons of discarded electronics largely originating in developed countries. Up to 80 percent of e-waste from the United States ends up in Asia and Africa (Huo et al, 2007: 1113). Because safe high-tech recycling processes are expensive, the methods used in Guiyu are very basic, such as circuit board ‘baking’ and the use of acid baths (Figure 4.1 and 4.2). The health impacts of these processes are devastating and include skin damage, headaches, vertigo, nausea, chronic gastritis, and gastric, duodenal ulcers (Huo et al, 2007). However, if this e-waste were not recycled, it would most likely end up in landfills from which the toxic contents can potentially leak (Walsh, 2009). The recycling of e-waste is just one contemporary manifestation of a problem, which has existed since the emergence of sedentary societies, of what to do with our garbage.

The preceding two chapters examined the archaeology of the contemporary past, its particular conception of what a morally engaged archaeological practice is and its emphasis on social meaning. The intention of this chapter is to begin to introduce alternative approaches to engaging in a moral archaeological practice through the study of the consequences of materiality itself. A very brief overview of some of the outcomes that garbage has generated in past societies (mostly focusing on Europe and the United States) will be provided as a way to introduce the category of garbage as a material ‘agent without intent’. The Garbage Project
of the University of Tucson will then be discussed as an example of how archaeology can undertake the study of a meta-category of contemporary materiality. Although the Garbage Project has a relatively small time-depth, it is a unique example of a contemporary archaeological approach to materiality on a large-scale. The Garbage Project played an important role in the development of the archaeology of the contemporary past, yet ironically, its methodology differs significantly to the approach taken by other archaeologists whose studies come under the label of the contemporary archaeology. Overall, the Garbage Project points to the possibility of an alternative engagement with a morally aware archaeological practice that focuses on studying the impacts and consequences of materiality itself. The Garbage project highlights how archaeology may potentially assist contemporary societies in the better management of their material.

Figure 4.1 Circuit board baking in Guiyu, China (from Huo et al, 2007: 1115)
4.2 Garbage and its Consequences

Garbage\(^8\) is a feature of every human society past and present. There are four ways any society can attempt to manage garbage: dumping, burning, conversion into something useful (recycling) and minimizing the production of material that will end up as garbage (known as ‘source reduction’) (Rathje and Murphy, 1992: 33). Each of these methods has its own costs and consequences. For most of human-hominin existence, garbage did not represent a significant problem as the frequent abandonment of camping grounds by mobile groups prevented the build-up of garbage to the level at which it would begin to require management beyond the episodic tidying up of living areas. That mobile communities generally consist of relatively small numbers of individuals also represented a constraining factor to the mass generation of garbage. It was not until sedentary

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\(^8\) In this thesis ‘garbage’ refers to all discards and by-products associated with human activity.
societies began to emerge over the past 10,000 years that garbage became a significant operator influencing the life of a community (Rathje and Murphy, 1992: 32-33).

To a sedentary society, garbage in the aggregate represents an ‘agent without intent’, a material entity that influences the actions and development of a community. For much of the history of sedentary societies, and in the developing world today, the link between poor garbage management and health problems has represented the most serious of the outcomes of garbage. For example, the size and dense population of ancient Rome created an immense sanitation problem as the city struggled to manage its refuse. Although an effective public health administration had been established by the end of reign of Augustus Caesar in 14 CE, the management systems were always deficient for the city’s needs. Well before the Fall of Rome in the 5th Century CE, the city had become incredibly dirty and unhealthy (Melosi, 1981: 6). Today, the health threat of garbage persists particularly in the developing world (Figure 4.3).

Figure 4.3 Garbage amongst a Jakarta slum (UNHABITAT)
The need to somehow manage garbage led to a diverse range of strategies being implemented by ancient cities. Excavations at the site of the Bronze Age city of Troy revealed that the inhabitants would cover the floors of buildings with fresh clay once they had become too littered with garbage. Over time, the rising floor levels that resulted from this practice meant that roofs had to be raised periodically and doorways rebuilt. Eventually houses had to be demolished altogether, the old mud-brick walls were knocked down and served as the foundations of new buildings (Rathje and Murphy, 1992: 34). Similar practices throughout the Near and Middle East led to settlements rising above the surrounding landscape on the debris of former buildings to form massive mounds known as *tells* (e.g. Rosen, 1986). Ancient cities also constructed waste management systems and enforced behavioural strategies for minimizing the build up of garbage within urban areas. For example, the Indus Valley city of Mahenjo-Daro (founded about 2500 B.C.) had an effective drainage system and contained homes with built-in rubbish chutes, while the Greek city-state of Athens is said to have implemented the first ‘municipal dumps’ in the Western world and also enforced the first edict against throwing garbage into the streets (Melosi, 1981: 5-6). By and large the creation of strategies to manage garbage was a process that developed slowly in established agrarian-based urban areas. This all changed with the Industrial Revolution. Accompanying the Industrial Revolution was a massive increase in the rate of urbanisation. The mass influx of people from rural areas to the cities significantly outpaced the construction of infrastructure to manage this population boom. In this context the sanitation and waste management systems, although already inadequate, were overwhelmed. As Melosi notes:

“The lessons of good sanitation and public health learned over the years were forgotten or ignored. Nuisance laws were rarely enforced, public health laws went unheeded, and in some quarters cleanliness was all but forgotten.” (Melosi, 1981: 11)

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9 Indeed, every human settlement slowly rises due to the accumulation of debris (e.g. Gunnerson, 1973).
In addition to vastly accelerating urban population growth, the Industrial Revolution also resulted in the mass production of commodities. The lower price of many goods which resulted enabled a larger portion of the population to become consumers ushering in the phenomenon of mass consumption. Many items that were previously produced at a household level were bought in shops and the reduction in the price of commodities in addition to the long working hours of industrial labourers meant that the recycling of materials within the household declined. These factors led to an increase in the amount of garbage and waste in need of disposal (Rogers, 2005: 48-51).

The disease, poverty and overcrowding that many inhabitants of the early industrial cities suffered necessitated new approaches to the management of garbage. A dedication to improving sanitation was given a boost by the fact that the affluent could not escape the diseases that plagued the poor. In addition, epidemics also had the potential to disrupt the economy of entire cities. For example, the 1832 cholera epidemic in the United States led to the mass evacuation of people from New York, much to the dismay of the commercial interests within the city as business stagnated (Rosenberg, 1987: 26-36). The management of garbage and the improvement of sanitation therefore became a greater concern for the upper classes. Melosi identifies two main developments which aided in combating some of the negative outcomes of the Industrial Revolution in England, namely the ‘service revolution’ and the emergence of modern public-health science. City services such as fire and police protection, water supplies and waste collection (largely by scavenging), had been established over time and were mostly conducted by volunteers or paid agents. The acute pressures that were placed on early industrial cities led to the establishment of more consistent citywide services as well as public-health agencies or departments. Alongside this development was a more scientific approach to issues of public health. In 1842 the Poor Law Commission published a report on the sanitary conditions of the English population the most significant feature of which was the conclusion that disease was related in some way to filthy environmental conditions (Melosi, 1981: 11-12). However, it was not until the advent of germ theory and later bacteriology, which influenced sanitation near
the end of the 19th Century, that the precise link between unhygienic living conditions and disease was understood (Rogers, 2005: 59).

The advances in scientific and medical knowledge about the causes of disease and methods for its control led to a decoupling of garbage management and disease control. The management of garbage become less associated with health issues and instead became focused on controlling a public nuisance and allowing for the free flow of the economy, for example by keeping streets free of the hindrance of garbage (Figure 4.3). The separation of public health departments from waste collection was indicative of this shift (Rogers, 2005: 60). For example, in 1905 the sanitarian Rudolph Hering stated that the sweeping of city lanes was "for the purpose of preventing nuisances and inconveniences, rather than as a health measure" (quoted in Rogers, 2005: 60).

In contemporary societies of the developed world garbage has largely been exorcised from the consciousness of the general population. Regular garbage collection, modern sanitation facilities and disposal of garbage mostly outside of urban areas have resulted the majority of the population's of the developed world no longer living amongst their discards in the same way as occurred in the past. However, this does mean that garbage no longer has an impact on contemporary First-World countries. Modern garbage is as much an independent operator as it ever has been. For example, disposing of garbage in landfills is currently the most common method of waste-management globally, with approximately 95% of refuse disposed of in this way worldwide (Scott et al, 2005: 240). Landfills represent a potential significant hazard to the environment and to human health. Unlike early landfills modern versions are supposed to adhere to strict environmental regulations, such as lining landfills (usually consisting of alternate layers of clay, plastic and gravel with exhaust wells to extract ‘landfill gas’) to create a ‘cell’ in which the contents of a landfill are

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10 Although, as noted above, significant portions of developing world populations still live amongst garbage, while a significant amount of the developed world’s garbage problem is outsourced to developing countries. This in itself indicates the necessity of a global perspective in dealing with the problems of garbage.

11 Scott et al (2005: 242) note that up until the mid-1980s, landfills in Australia were sited and operated with minimal consideration for long-term environmental impacts.
contained to prevent any toxins from contaminating the environment. Disturbingly, most modern landfill liners are only guaranteed for 50 years or less (Rogers, 2005: 18-21). Additionally, there is a vast amount of our garbage that is not being managed at all and has the potential to cause very serious consequences. Immense quantities of plastics are accumulating in the earth’s oceans, some of which is being concentrated by gyres into huge floating ‘garbage patches’. The largest of these is located in the Pacific Ocean and is known ‘The Great Garbage Patch’ (or the ‘eighth continent’) (Figure 4.5). The plastic is poisoning marine animals, which in turn threatens the health of humans if they consume contaminated animals (Zhang et al, 2010; Derraik, 2002). As a result of these issues there exists a substantial requirement for conscious engagement with the study of garbage today in order to better understand its consequences.

Figure 4.4 New York's Fifth Street before (above) and after (below) the initiation of routine street cleaning, ca. 1895 (from Rogers, 2005: 58)
The role that archaeology can play in the study of garbage in a contemporary setting has been amply shown through the work of the Garbage Project.

**Figure 4.5** Graphic of the ‘Great Pacific Garbage Patch’ (from Magraw-Mickelson, J., 2009)

### 4.3 The Garbage Project

The Garbage Project began in 1973 at the University of Tucson, Arizona. Founder and director, Bill Rathje, stated that from the outset that the primary goal of the Garbage Project was:

“to demonstrate the utility of archaeological methods and theories for achieving a better understanding of issues of current public concern – including assessments of resource waste and proposed methods of waste minimization, measures of diet and nutrition, evaluations of household participation in recycling programs, identification of household-level sources of hazardous waste, cross-validation of
census counts of minority populations, and providing base data for the design of new 'environmentally friendly' packages" (Rathje, 2001: pp. 63).

The Garbage Project’s methodology can be divided into two broad categories – the sorting of garbage directly from households and the excavation of landfills. The household garbage sorts can in turn be divided into two categories, both of which were primarily concerned with analyzing what discard patterns reveal about human behaviour. The first, known as the regular sort, involved dividing neighbourhoods into groups based on income levels, family size and educational attainment. Sanitation workers in each of these neighbourhoods then supplied the Garbage Project with all the garbage placed out for pickup by randomly selected households. The individual constituents of each households garbage was then sorted, classified and the various characteristics (such as weight) of each were recorded. All the information was then entered into a database. Garbage recorded in this way can be used to either compare the discard patterns of different neighbourhoods or obtain a picture of different discard patterns over time (Rathje and Murphy, 1992).

The Garbage Project’s study of household discards led to a number of discoveries into the behaviour of the people of Tucson that were previously unknown. For example, during a widely publicized beef shortage in the United States in the spring of 1973 the Garbage Project recorded that the amount of beef wasted was approximately 9 percent of the total amount bought.12 However, in the months after the beef shortage, the quantity of wasted beef amounted to only around 3 percent of total purchased (Rathje and Murphy, 1992: 60-61). To account for this behaviour, the Garbage Project put forward the hypothesis of crisis buying. When confronted with widespread and often alarmist reporting of the beef shortage many consumers would respond by buying up large quantities of beef sometimes in cuts they were not familiar with. Lacking, however, the ability to store large quantities of meat and the knowledge of how to prepare unfamiliar cuts of meat in an appetising way the result was greater wastage. This hypothesis was given further weight in a study of a similar incident. The Garbage

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12 Meat is an ideal subject of investigation due to the fact that supermarket meat packaging is labeled with the type of cut, the weight, the price and the date of packaging.
Project observed the consequences of a sugar shortage in 1975 as corresponding to the crisis hypothesis proposed in understanding the 1973 beef shortage. Similarly, when the price of sugar and high-sugar products doubled wastage of those products tripled (Rathje and Murphy, 1992: 61-62).

The second method of studying fresh household garbage involved comparing and contrasting self-reports of household residents on their perceptions of what they threw out with what actual appeared in their discarded garbage. One of the most striking of the results of this form of research was how unreliable people are in accurately reporting their behaviours of consumption. What people reported to have bought, eaten, drunk and disposed of almost never corresponded directly or even closely matched what actually appeared in their garbage. For example, the Project observed a strong tendency for people to under-report the amount of unhealthy foods they consume (such as junk food) and over-report the amount of healthy food they consume (Rathje and Murphy, 1992: 70-71). Most people also under-reported the amount of alcohol they consumed by 40 to 60 percent (Rathje and Murphy, 1992: 71).

The second broad method by which the Garbage Project researched human discards was through the excavation of landfills, with the first such excavation taking place in 1987. The landfill excavations represented the broadening of the Garbage Project’s research aims from purely studying the relationship between garbage and human behaviour to include issues of garbage management (Rathje and Murphy, 1992: 21). These landfill investigations had two stated primary aims: 1) to see if the fresh household garbage could be cross-validated with the contents of municipal landfills and 2) to examine what happens to garbage after it has been interred in a landfill (Rathje and Murphy, 1992: 92). Landfills were investigated through drilling ‘wells’ into a landfill with a bucket-auger, to extract samples of garbage from selected strata. Some initial recordings of the excavated garbage were taken (such as temperature), while samples were gathered for later analysis. The sampled garbage was then sorted and recorded as per the methodology of the household garbage sorts with an additional volume measurement taken. Volume measurements of the constituents of landfills were
particularly important due to the fact that landfills are shut down when they become to full.

An understanding of which categories of garbage take up the most room in landfills is of particular importance. Like the household garbage sorts, the landfill excavations undertaken by the Garbage Project have led to a number of insights into the nature of landfills, such as the volume of space various categories of garbage actually takes up in landfill sites. The importance of studying the material as it exists, rather than relying on other methods to estimate the nature of a particular phenomenon, has been highlighted by this research.\textsuperscript{13} For example, a number of organisations had attempted to estimate the percentage of volume that plastics took up in landfills. The International Plastics Consultants Corporation (IPCC) used bulk density (volume per unit of weight) values obtained from different trade associations and businesses to estimate the volume of space taken up in landfills by each category of garbage. From this they could infer the percentage of space taken up by plastics. However, bulk densities were unknown for many categories of garbage such as yard waste, food waste and non-recyclable paper and plastic and had to be estimated. The IPCC ended up with an estimate of 27 percent for the volume of landfills that is taken up by plastics. In contrast, the Garbage Project, which measured the actual quantity of plastics in samples from landfills, measured the volume of plastics at less than 16 percent (Rathje and Murphy, 1992: 99-10).\textsuperscript{14} Other insights into the nature of landfills revealed by the garbage project include the fact that very little biodegradation occurs within them and how this affects the movement of leachate.

\textsuperscript{13} This issue will be discussed more in Chapter 7.

\textsuperscript{14} Paper, on the other hand, was found to make up well over 40 percent of landfill space (Rathje and Murphy, 1992: 103).
4.4 The Archaeological Investigation of Contemporary Materiality - Lessons from the Garbage Project

The main importance of the Garbage Project in relation to the aims of this thesis is that it represents an archaeological study of contemporary material culture that is not examining the social meaning ascribed to it. Because of this the Garbage Project fundamentally differs from other studies within the archaeology of the contemporary past. The Garbage Project is able to escape an exclusive focus on social meaning because the object of the project’s study is an entire category of materiality. The method by which the Garbage Project aimed to answer its research questions (described above) was through the study and analysis of quantitative data (Figure 4.6). As Rathje and Murphy note:

“...the archaeologists of the Garbage Project are not interested in the contents of any particular individual’s garbage can. Indeed, it is almost always the case that a given person’s garbage is at once largely anonymous and unimaginably humdrum. Garbage most usefully comes alive when it can be viewed in the context of broad patterns...” (Rathje and Murphy, 1992: 19)

As the above quote highlights, studying the garbage of a single household or excavating a single landfill is of little value in relation to the research aims. It is only by comparing multiple sets of data that anything meaningful can be obtained. For example, comparing the garbage from multiple households from different neighbourhoods can reveal the differing consumption patterns of low-income and high-income neighbourhoods (e.g. Rathje and Murphy, 1992: 65-66). Through the analysis of quantitative data the Garbage Project was able to study materiality as an independent entity in relation to other factors such as wealth, without the need to refer to any social meaning associated with it.\(^\text{15}\) The Garbage Project highlights the importance of scale in relation to studying the outcomes of materiality as *materiality*.

\(^{15}\) Although the Garbage Project used verbal statements in some of its household garbage studies, these reveal a disjoint between people's perceptions of what they throw away and what actually appears in their garbage.
Figure 4.6 The volume of garbage sorted by the Garbage Project by mid-1991 was the equivalent of 1,766 cubic yards – enough to create a pyramid 56 feet square and 45 feet high. The pyramid at the top represents the proportion of the garbage sorted that came from landfills (from Rathje and Murphy, 1992: 15)

In addition to the Garbage Project’s example of how contemporary materiality can be investigated on a large-scale through the analysis of quantitative data, it also provides examples of how archaeology can be a useful tool for the more successful management of this material. For example, a major issue in waste disposal is the amount of hazardous household waste that gets disposed of in landfills from which toxic materials can leak into the surrounding environment. To prevent this, local governments occasionally sponsor special collection days, where residents can bring hazardous waste to a specific location and public authorities will dispose of it in an appropriate manner. To gauge the effectiveness of these collection days, in 1986 the Garbage Project sorted samples of household waste one month before and two months after a collection day. The garbage discarded after the collection day contained more than twice the hazardous material by weight than the garbage discarded before. The cause of this behaviour was likely the intense media campaign that promoted the collection day and alerted homeowners to the hazardous waste in their homes.
As the official collection only occurred on one day people who missed their opportunity but who were eager to rid themselves of hazardous material simply disposed of it in the conventional manner, leading to an increase in toxic material entering landfills. It should, however, be simple enough to avoid this problem. Local councils could have regular collection days or set up a permanent facility where people can take their hazardous waste (Rathje and Murphy, 1992: 76-77). Without the Garbage Project’s investigations into the patterns of hazardous waste disposal, the counterproductive nature of local government disposal days would have remained unknown.

4.5 Conclusion

The intention of this chapter has been to show how garbage in the aggregate represents a material operator on human societies and how the Garbage Project provides an example of how it is possible to study contemporary materiality from a large-scale perspective. Garbage can potentially have grave consequences based on the method of its management, whether in its role as a spreader of disease or its ability to contaminate the environment. As described in the introduction, the consequences for mismanaged garbage can be disastrous for human health. Although we may consider the small amounts of garbage we come across on a day-to-day basis as being rather benign, in the aggregate, garbage represents an entity in need of conscious study and careful management. The necessity of gathering accurate information into the operation of garbage on societies is therefore of great importance. As the Garbage Project indicates, archaeology has the potential to assist in this endeavor through an emphasis on investigating materiality as it exists. Garbage is not the only form of materiality that has an impact on contemporary societies and which leaves a material legacy for future generations. The following chapter will examine the meta-category of urbanism as a material ‘agent without intent’. In addition to the necessity of a large-scale perspective as outlined in this chapter, the following chapter will also emphasise the importance of a long-term view when investigating contemporary materiality.
Chapter 5: Urbanism

“...the cities of the future, rather than being made out of glass and steel as envisioned by earlier generations of urbanists, are instead largely constructed out of crude brick, straw, recycled plastic, cement blocks, and scrap wood. Instead of cities of light soaring towards heaven, much of the twenty-first-century urban world squats in squalor, surrounded by pollution, excrement and decay.

(Davis 2006: 19)

5.1 Introduction

Over the past five thousand years urban areas have grown to become central features of contemporary societies (Smith, 2002: 3). Indeed, in the last few years we have witnessed a watershed moment in human history where for the first time the urban population of the planet exceeds the rural (Davis, 2006: 1). The rate of modern urbanization has been truly phenomenal (Figure 5.1). In 1950 there 86 cities in the world with a population of more than one million, in 2006 there were 400, while China added more city-dwellers in the 1980s than did all of Europe over the course of the entire 19th Century (Davis, 2006: 1-2). Simply due to the immense rate of urbanisation that we are experiencing means this an issue we cannot afford to ignore. Yet, to begin to fully comprehend why urbanism is something that we need to be consciously engaging with, we have to acknowledge that urban areas do not simply represent conglomerations of humans and their political, economic and social institutions. We instead need to consider them as material entities in their own right, entities which generate outcomes independent of human intention. These outcomes relate to the material make-up of urban areas and their impacts over time. Because of the nature and rapid expansion of contemporary urbanism and its impact on human societies the archaeological investigation of urbanism is of particular importance,
especially as a meta-category of materiality for investigation by contemporary archaeologists.

A number of archaeologists are taking a large-scale perspective on pre-modern forms of urbanism and comparing these earlier patterns of urbanism to more modern forms. Examples of this research include Ljungkvist et al’s (2010) examination of the long-term history of Constantinople particularly in regards to the resilience of the city and Sinclair’s (2010) analysis of the impact of environmental change on the settlement systems of the Zimbabwean Plateau in which the future prospects of current settlements in this region are questioned. The work of these archaeologists show that it is possible to study urbanism on a large-scale and also indicate why we need to bring these investigations into the contemporary period, as the outcomes of earlier urban forms raise some serious questions about contemporary urbanism and urbanisation. Whilst the discussion in the previous chapter on the Garbage Project was mainly concerned with how archaeologists can investigate an entire category of contemporary materiality, this section is concerned with introducing the necessity of a long-term perspective when investigating contemporary materiality.

![Figure 5.1](image.png)

**Figure 5.1** Global growth in urbanization from 1950 to 2000 (from Davis, 2006: 3)
5.2 Contemporary Urbanism

As stated above, the process of urbanism generates its own outcomes with which human societies must contend. These outcomes can potentially be positive, but there can also be serious negative outcomes associated with urbanism. Hence, there is a moral imperative for the vigorous study of urban processes to try and fully comprehend what the material we are creating is actually doing. A general discussion of some of the outcomes of contemporary urbanism will be provided in this section. While far from an exhaustive treatment of urbanism this appraisal is simply intended to highlight why urbanism matters.

As mentioned in the introduction, the scale of contemporary urbanism and the rate at which urban areas are growing is phenomenal. Urbanization was a relatively gradual process until the Industrial Revolution which initiated a sharp increase in the shift of rural populations into urban areas. Break-neck urbanization in the developing world initiated another dramatic increase in the rate of urbanization since 1950. Since 1950 the rate of growth has surpassed anything previously seen in human history (Figure 5.1). For example, in 1910, London was seven times larger than it was in 1800, yet the cities of Dhaka, Kinshasa and Lagos are each approximately forty times larger today than they were in 1950 (Davis, 2006: 2). Overall, only 18 percent of people in the developing world lived in urban areas in 1950, by the year 2000 this proportion had grown to 40 percent (UN-HABITAT, 2003: xxxi). We are witnessing the formation of new megacities (populations in excess of 8 million) and hypercities (populations of more than 20 million), while urban areas are joining one another to form new urban networks, corridors and conurbations. For example, Mexico City is expected to expand to incorporate much of central Mexico, including the cities of Cuernavaca, Puebla, Cuautla, Pachuca and Queretaro, into a single megalopolis (Davis, 2006: 5). Huge new expanses of low-density urbanism are being created in which the distinction between rural and urban is being blurred, as seen in the ‘desakota’ (‘city villages’) spreading throughout Southeast Asia
(Davis, 2006: 10). This immense scale of contemporary urbanism highlights why it is such an important phenomenon for us to understand, particularly considering that it influences the conditions of billions of people’s lives and has potential serious consequences for human societies.

One of these consequences, which is associated with the incredible rate of contemporary urbanisation, is the fact that much of the growth of urban areas is unplanned and occurring in the slums and informal settlements of the world (Figure 5.2). As Davis (2006: 17) notes, “Since 1970, slum growth in the South has outpaced urbanization per se”. While slums and urban poverty are nothing new, the sheer scale of what we are currently witnessing is unprecedented. The residents of favelas in the Brazilian city of São Paulo represented a mere 1.2 percent of the overall population in 1973; whereas by 1993 this figure had grown to 19.8 percent. Indian slums continue to grow 250 percent faster than overall population growth levels while between 1989 and 1999, 85 percent of Kenya’s population growth was absorbed by slums in Nairobi and Mombasa (Davis, 2006: 17-18). Overall, it was estimated that by the year 2001, 924 million people, or 31.6 percent of the global population, lived in slums (UN-HABITAT, 2003: xxv).

**Figure 5.2** Global distribution of informal settlements (from UNEP/GRID-Arendal Maps and Graphics Library, 2005)
As with other forms of urbanism, slums generate their own distinctive consequences that impact upon the residents themselves as well as broader society. A number of environmental hazards plague slum dwellers either due to the often marginal areas that they are built on or due to their very physicality (Figure 5.3). For example, slums are often built in areas that are prone to flooding, landslides, and industrial pollution or are actually constructed in and around garbage dumps. Slums are also prone to fires due to the extreme proximity of dwellings, the use of flammable construction materials, poorly wired electrical systems and the use of kerosene stoves and lamps and the lack of any fire-fighting resources (UN-HABITAT, 2003: 69). Other outcomes of slums and informal settlements include the creation of conditions that breed disease and promote ill-health (UN-HABITAT, 2003:74-77) and which transform the way warfare is conducted (see Chapter 7).

![Figure 5.3 Baseco informal settlement in Manila, Phillipines (UNHABITAT)](image)

What is made abundantly clear by the growth of global slums and informal settlements is that urban areas develop independent of human intention, often coming into conflict with our preferences, plans, social institutions and
organisation. Another example of this can be seen in the fact urban areas can expand beyond the boundaries with which people attempt to divide up land. For example, Mexico City has expanded beyond the political boundaries of the Federal District and into the surrounding State of Mexico, creating problems of co-ordination (The Economist, 2011: 29). Visa versa, our social, economic and political organisation may come into conflict with the necessities of infrastructure maintenance. For example, the northeast of the United States suffered massive failures of its electricity supply in 2003. Graham and Thrift (2007; see also Graham, 2005) state that the deregulation and liberalization of energy markets had led to a privileging of competition over the ongoing maintenance and upgrading of energy infrastructure. In a post-mortem of the crisis it was found that the total research and development spending on the electricity supply system of the entire United States amounted to $20 million, less than 0.01 percent of total sales in the electricity industry (Graham and Thrift, 2007: 14-15). This raises the larger issue that the maintenance of infrastructure can be an immense cost on societies because the larger cities become the harder it can be to maintain the efficient, or even adequate, functioning of this infrastructure. A recent report from the McKinsey Global Institute (Dobbs et al, 2011), the research arm of a management consultancy firm, highlights this point. The report states that contrary to popular belief it is not the world’s very largest cities that are the current drivers of global economic growth. Rather, what they identify as “middleweight” cities (those with a current population of less than ten million) are estimated to generate half of the total global GDP growth within the next 15 years (Dobbs et al, 2011: 10). Part of the reason for this is put down to the problems of managing the expansion of cities. As the report states:

“Large urban centers are highly complex and demanding environments that require a long planning horizon and extraordinary managerial skills. Yet many city governments are not prepared to cope with the speed at which their populations are growing. Without skillful planning and management, cities run the risk of diseconomies—such as congestion and pollution—starting to outweigh scale benefits” (Dobbs et al, 2011: 12)

As another McKinsey Global Institute report outlines (Cadena et al, 2011), this
phenomenon can be seen in Latin America, where the top ten largest cities have historically seen economic growth rates higher than the national average. These growth rates, however, have been falling as problems of congestions and poor planning hinder the functionality of Latin America’s largest cities (Cadena et al, 2011: 14-15) (Figure 5.4).

Figure 5.4 Slum in Rio de Janeiro (UNHABITAT)

The issue of managing the infrastructure of cities is a particularly topical one considering the growing concerns over environmental destruction, particularly in relation to the current debates over climate change. The sustainability of
urbanism has become a hotly debated topic. As Dodman (2009: 185-186) notes, cities are often blamed for environmental problems, which is frequently put down to the high level of consumption of resources and production of wastes that occur in urban areas, as they require both resources from outside their boundaries and extra-urban depositories for their wastes (Satterthwaite, 2011: 1763). For example 78 percent of carbon emissions, 60 percent of residential water use and 76 percent of wood used for industrial purposes are consumed and produced within cities (Grimm, 2008: 756). These are immense materialities. Urbanism, however, might actually have the potential to play a pivotal role in the reduction of current rates of environmental destruction:

“...high densities and large population concentrations can also bring a variety of advantages for meeting human needs and for environmental management. “Economies” of scale, proximity and agglomeration mean that it is cheaper to provide the infrastructure and services needed to minimize environmental hazards; the concentration of enterprises means that it is less costly to enforce environmental legislation; and the relative proximity of homes and businesses can encourage walking, cycling and the use of mass transport in place of private motor vehicles.” (Dodman, 2009: 185)

Dodman (2009) and Satterthwaite (2010) have shown that per capita emissions of greenhouse gases may be lower in cities than the average for the countries in which they are located. In general, however, the emergence of well-planned cities in which some of the benefits outlined in the quote by Dodman can be exploited is precisely what we are not seeing in most of the rapid urbanization taking place around the world. As noted above, a huge proportion of the growth in urban areas is occurring in the unplanned slums of the developing world, whilst the developed world is facing the phenomenon of low-density ‘urban sprawl’. Sprawl is often associated with negative outcomes, such as higher infrastructure costs, greater automobile use and higher fuel consumption due to greater trip lengths (Chin, 2002: 2).\(^{16}\) Therefore, it still remains unclear whether the potential benefits of urbanism can be fully exploited. What is clear, however,

\(^{16}\) It needs to be noted that there is an ongoing debate about what the term ‘urban sprawl’ actually refers to and whether or not the overall consequences of this phenomenon are positive or negative (e.g. Chin, 2002; Galster et al, 2001; Wolman et al, 2005).
is that contemporary urbanism is a crucial factor in whether or not we can achieve any sort of environmental sustainability.

Yet, the environmental impact of urbanism is not restricted solely to the consumption and production of resources and waste. Urban areas also produce distinctive ecologies as their particular physicalities impact upon energy and water exchanges and airflows. For example, the combination of direct anthropological emissions of heat and pollutants means that cities create distinct urban climates. As a result, urban areas are almost always warmer than surrounding rural environments (on average 1-3°C warmer but air temperatures can by more than 10°C warmer under appropriate conditions) (Grimmond, 2007: 83). The implications of this phenomenon of ‘urban heat islands’ are significant as they may exacerbate heat-waves that have the potential to cause thousands of deaths, as occurred during the 2003 heat-wave in Western Europe that is estimated to have killed 35,000 people (Souch and Grimmond, 2004: 599). This phenomenon may also become more of a threat as climate change accelerates.

Overall, it is abundantly clear that urbanism is generating a number of outcomes that require efforts to more fully comprehend the processes we are witnessing today. However, urban areas have been impacting upon societies for about 5,000 years and because of this we have an extensive record of situations and outcomes to compare with the contemporary manifestations of urbanism.

5.3 The Role of Archaeology

Archaeologists have long been interested in the processes of pre-modern urbanism, epitomized by Gordon Childe’s work on the ‘urban revolution’ (Childe, 1950). As mentioned in the introduction, a number of archaeologists, who have been engaged in the study of urbanism from a large-scale perspective, have argued that pre-modern forms of urbanism constitute a resource with which to examine contemporary urban development. The work of Michael Smith and Roland Fletcher will be examined in this section.
If we are to adequately comprehend the phenomenon of contemporary urbanism we need to place the processes we are observing today in the context of the patterns of urbanism that have occurred in the past, rather than treating contemporary patterns as somehow separate. The archaeologist Michael Smith (2010) has made this point by arguing that the study of past processes of urbanism can be useful in shedding light on modern urbanisation. For example, Smith identifies three aspects of contemporary urbanism, the particulars of which are currently debated by urban scholars, that he argues could potentially be illuminated through the study of earlier urban areas, namely urban sprawl, informal settlements and urban sustainability. Smith notes that scholars of modern urbanism have often treated these issues as purely modern phenomena, which is at odds with what the archaeological record suggests (Smith, 2010: 231). By utilising the archaeological record as a source of information we can comprehensively expand our data set on urbanism, and by doing so, provide ourselves with a perspective from which it is possible to see that many aspects of modern urbanism have long-term precedents. Yet, as Smith notes, archaeologists have yet to undertake the conceptual or methodological work to be able to fully realise the potential for archaeology to increase our understanding of modern urban issues (Smith, 2010: 229). There is, however, research being conducted that examines in more detail how archaeological knowledge can be applicable to contemporary issues.

An example of the study of urbanism as a large-scale and long-term phenomenon, from which we can gain insights applicable in a contemporary setting is provided by Roland Fletcher (1995, 2009, 2010, 2011). Part of that work has involved investigating the relationship between settlement size, population density and how long urban areas have persisted. For example, when the durations of the great compact agrarian-based Imperial capitals from their known commencement to their eventual sack or abandonment, are compared to their areal extent, it is evident that the maximum duration of occupation decreases as the size of the urban area increases (Fletcher, 2010: 278). It is important to note that this is only a boundary constraint as cities of any size may have short
durations. As the size of the city increases, however, the maximum time-span over which it can last becomes progressively shorter. Interestingly this boundary constraint does not apply to low-density dispersed agrarian-based urban areas, such as the Maya city of Tikal (1st to 9th Century CE) or the Khmer urban complex of Angkor (9th to 16th Century CE). These settlements lasted for much longer than the largest compact cities, despite their immense size (Angkor covers approximately 1000 square kilometers), suggesting that compact and dispersed urban settlements endured in different ways and for different lengths of time due somehow to their physicality (Fletcher, 2010: 478). As Fletcher notes, this is of concern in relation to modern urbanism for a number of reasons. First, patterns of low-density urbanism make up a significant portion of contemporary urbanisation:

“...the current trend of industrial urbanization world-wide is towards low-density dispersed patterns—the conurbation and megalopolies of the industrialized world and the desakota—the rapid urbanization of densely populated rural areas—of the industrializing world.” (Fletcher, 2010: 478)

While regions with compact and relatively small cities have shown a remarkable resilience in adverse conditions, as shown by the recovering of European and Japanese cities to extreme damage in the 1940s, it is problematic whether this applies to large-scale and/or low-density cities (Fletcher, 2010:478). Indeed, as outlined in the previous section, large cities can create their own internal frictions. The great agrarian-based low-density cities of the Classic Maya period in Mesoamerica, the Anuradhapura and Pollonaruwa urban centres of Sri Lanka and the Khmer city of Angkor were all associated with long periods of abandonment of their core metropolitan regions (Fletcher, 2010: 478). Therefore, an understanding of what led to the abandonment of these low-density cities and the surrounding regions may be of significance in relation to understanding the long-term sustainability of modern forms of urbanization.

Fletcher notes that a number of factors likely accounted for the eventual abandonment of these low-density settlements, including a commitment to massive infrastructure and a tendency to substantially alter the landscape for
agricultural purposes. All of the low-density cities mentioned above created immense infrastructural works, such as the extensive baray (artificial bodies of water) of Angkor (Figure 5.4). The extensive use of infrastructure, however, produces the risk that a community will become dependent on its proper functioning and will be locked into the inertia produced by its magnitude. For example, Mayan cities such as Tikal and Copan relied on the construction and maintenance of large artificial water reservoirs, which allowed for a supply of water to be kept for the four months of the year in which there was no surface water (Lucero, 2002: 815). Lucero (2002: 820-821) argues that decreasing rainfall as a result of climate change resulted in these water management systems failing. The majority of populations moved away from urban areas abandoning the political elites who no longer possessed the inducement of a constant supply of water to bind the population to them. Minor settlements that did not rely on such extensive infrastructure did not suffer the same fate and were largely unaffected by what was occurring in the larger cities (Lucero, 2002: 819-822). A reliance on extensive infrastructure can pose a threat to a community especially if the infrastructure is only operational under certain conditions. As Fletcher notes:

“…this infrastructural inertia and dependency opens the possibility that an altered, anthropogenic landscape combined with climate change could create irreversible operational failures that would cascade through the fabric of the dependant community.” (Fletcher, 2011: 303)

In addition to this issue of infrastructural inertia, these low-density cities extensively modified their landscapes for food production. For example, extensive land clearing took place around Angkor and Mesoamerican cities, which were also likely to have reduced biodiversity through a reliance on certain crops, while in the Dry Zone of Sri Lanka, many of the main rivers were extensively modified for rice production (Fletcher, 2011: 306-307). These landscape modifications had the potential to seriously damage the economy of the cities, for example, due to the activities and external processes such as land clearing and climate variations which may have placed stress on water management systems, dams, field banks and terraces through the impact of
extreme fluctuations in water flow, sedimentation and erosion due to severe climate change (Fletcher, 2011: 307).

Figure 5.5 Greater Angkor, 12th Century CE (from Fletcher, 2011: 299)

Both of these issues are of great concern in relation to contemporary urbanism as we currently rely on massive amounts of infrastructure and the extensive modification of the natural environment to provide us with food, housing space and other resources. The nature of contemporary urbanism and its reliance on such resources is creating a whole host of environmental problems, including soil erosion, salinity, loss of biodiversity and climate change (see Chapter 6). However, as Fletcher notes (2010: 480), we cannot rely on simplistic analogies between earlier cities and contemporary forms of urbanism. There are obviously a number of differences between agricultural and industrial forms of urbanism that need to be considered, such as the substantial amount of the food and
resources consumed within modern cities that are not obtained from the immediate surrounding environment, but are imported from greatly dispersed locations. In the pre-industrial world the low-density city of Bagan (8th -13th CE) obtained its rice from valleys 50-200 km away and not from its local area. The Burmese urban system did not suffer a heartland collapse (Fletcher, 2011: 309-310), perhaps indicating that sourcing food from beyond the immediate environment may be beneficial. What we require, however, is a detailed investigation into both contemporary urbanism and its pre-modern manifestations to grasp the applicability of any comparisons made between the two.

The point of this discussion has been to show that there is an imperative to expand such comparative, large scale archaeological research. Although he provides an insightful discussion on the importance of comparing contemporary urban forms to evidence from the archaeological record, Smith implies that the study of contemporary urbanism is the arena of scholars in disciplines outside of archaeology. This implication is enforced through the scope of Smith’s discussion on the role of archaeology as limited to what conclusions the archaeological study of past urban areas can reveal about contemporary urbanism. I would argue however that we require the archaeological study of contemporary urbanism to compliment the investigations of its earlier manifestations, just as archaeology studies modern garbage. As Smith himself notes, other disciplines consistently fall into the trap of ‘recentism’ and ignore evidence from earlier time periods (Smith, 2010: 230-231). Archaeologists are well trained in studying long-term processes and are best placed to study contemporary urbanism in relation to its earlier forms and in highlighting the differences and the similarities between them. We need not abandon the study of contemporary urbanism simply because there are other disciplines engaged in the research of this topic.17

17 The role of archaeology in relation to other disciplines studying contemporary phenomena is discussed further in Chapter 7.
5.4 Conclusion

This chapter has been concerned with examining urbanism as a meta-category of materiality through a discussion of the outcomes that urbanism generates for contemporary societies. From this discussion it is abundantly clear that there is a moral imperative to study contemporary urbanism. There are serious physical and social consequences associated with the urban areas that we create. However, if we limit our investigation of urbanism to its contemporary manifestations, as many urban scholars outside of archaeology do, then we cut ourselves off from several thousand of years of human experience in negotiating the outcomes of urbanism. Therefore, to gain an in depth outlook on urbanism requires investigating contemporary urbanism in relation to the long-term development of this phenomenon. Archaeologists are best placed to undertake these investigations due to the extensive experience of the discipline in dealing with material phenomenon over extensive periods of time. For these reasons the archaeology of the contemporary past needs to incorporate the investigations of contemporary urbanism, on a large-scale and in relation to long-term processes, as one of its research concerns.
Chapter 6: Discussion – Weaponry and Industry

“Humanity has been taught the sharp lesson that the material is not merely our servant, that it is not merely an epiphenomenon consequent on human intent and action that serves human progress, but is also a factor in its own right whose inertia and energy threatens our daily life...In the twentieth century the West decisively learned that technological innovation was not progressive. Industrial expertise and technology were applied to killing human beings. The debris of Auschwitz, Sobibor and Treblinka was left behind, trapping our rational minds in grief, denial and an agony of unease. The development of nuclear weapons ended the assurance that innovation would serve humanity. Instead, we created a tool which threatens our biological existence.”

(Fletcher, 2002: 303)

6.1 Introduction

For a significant portion of the history of archaeology the discipline championed progressivist models of human evolution. These models propose that a society’s position in a normative hierarchy of development (with European societies representing the evolutionary pinnacle) could be inferred from its technologies (e.g. see Trigger, 2006: 207-209). Although such theories are no longer valid within archaeology, the belief that technological advancement is inherently positive remains widespread within modern industrialised societies. Such perspectives are based on the assumption that the material we create is beholden to human intention. This outlook, however, have been seriously challenged by the events of the last century. In particular, processes such as the horrendous devastation inflicted by the industrialization of warfare and the increasing rate of environmental destruction undermines such progressivist confidences that materiality is the servant of humanity.
The intention of this chapter is to continue the examination of meta-categories of materiality and their outcomes through a discussion of particular aspects of the categories of weaponry and industry. The focus of these discussions will be on highlighting that technological development is not inherently progressive. The discussion on weaponry will also look at the issue of how human communities learn to negotiate the outcomes of their engagement with materiality rather than ‘inventing’ material simply to serve their purposes, a point which is of particular relevance in relation to current concerns over environmental destruction. The issue of environmental destruction will be examined as an outcome of our industrial technologies as well as the potential for archaeology to play a role in assisting contemporary societies in developing strategies to help ameliorate the adverse consequences of materiality.

6.2 Weaponry

Weaponry and warfare articulate, in the clearest manner, the principle of material non-correspondence as articulated by Fletcher (1995, 2002, 2004), in which the material component of community life and the social aspect of verbal meaning and human action can become dissonant. The history of the last century of industrialized warfare, since the First World War, is a clear example of this. As Fletcher notes, this period can be characterised by the gradually increasing control of sociality over the material of industrialized warfare, at least for those societies that produce and use such material (Fletcher, 2002). The First World War represented the horrendous collision between a new form of warfare made possible by industrial mass production and a social life that mostly did not anticipate the horror and tragedy of what was to come. Men volunteered on mass with expectations of grand adventure and that they would be home by Christmas (Keegan, 1976: 216-219). Instead the industrial mass production of the material of war led to stalemate and mass slaughter. Contrary to the ‘lions led by donkeys’ view of the war (Terraine, 1982: 142), the mass slaughter of soldiers was not solely the consequence of bumbling generals but the inevitable result of a particular stage of the technological development of warfare. Machine
guns, rapid-fire artillery and barbed wire created defensive capabilities that exceeded the ability to launch effective attacks. For example, the size and weight of machine guns and artillery meant that their enormous firepower could really only be utilised for defence. As Engan (2006: 4) states: “Until the concepts of fire and mobility could be integrated, the revolution in overwhelming firepower lent impetus almost exclusively to defence”. On the first day of the Battle of the Somme, British forces suffered 60,000 casualties because thousands of men advanced at walking pace towards German machine guns (Fletcher, 2002: 307). It was not until further technical developments took place, such as the introduction of field radios and tanks, that more effective offensive actions could be accomplished, which broke the ascendancy of defence. The development of better field radios was particularly important in this regard. As the historian Terraine (1982: 148) notes: “...it was the sheer inability of commanders and commanded to communicate information and fresh orders that swelled the awful casualty lists of the war”.

By the time the Second World War started the lessons of the First World War were put into practice through efforts to avoid stalemate effected through policies such as ‘blitzkrieg’. New technologies were deployed in an attempt to increase control over the course of battle, such as information technology to crack enemy codes, while radar was employed for both attack and defence (Fletcher, 2002: 307). The process of increasing control over industrial weaponry continues. For example, the use of carpet-bombing during the Second World War was partly due to the inaccuracy of individual bombers. Overall the bombing campaigns of the Second World War inflicted hundreds of thousands of civilian casualties.18 In contrast, today’s ‘smart bombs’ have significantly reduced collateral damage (Fletcher, 2002: 308). In essence, since the First World War,

18 It needs to be noted, however, that the large number of civilian deaths was not solely due to inaccurate bombing methods but also a result of deliberate “terror-bombing” of civilian populations (Elliot, 1972: 138; Fahey, 2004: 438). For example, Stanley Baldwin’s statement to the House of Commons in 1932 expressed part of this logic: “I think it is well for the man in the street to realize that there is no power on earth that can protect him from being bombed. Whatever people may tell him, the bomber will always get through. The only defence is offence, which means that you have to kill more women and children more quickly than the enemy if you want to save yourself.” (quoted in Graves-Brown, 2007: 302). Yet the inaccuracy of Second World War bombers was a significant problem (Fletcher, 2002: 307-308).
industrial societies have gradually gained greater control over the process of industrialised warfare\textsuperscript{19} – a process of negotiation and learning to manage a new material milieu.

\textbf{Figure 6.1} French troops awaiting a gas attack in 1916. Industrial technologies completely transformed warfare (from Terraine, 1982: 159)

\textsuperscript{19} This is not to deny the immense human suffering caused by more modern conflicts or the other tactics that states have that have caused mass death (e.g. Elliot, 1972).
Yet, the uncontrollable and unforeseen outcomes of weaponry continue in the present. An example of this comes from Paul Grave-Brown’s (2007) discussion of the AK-47. Graves-Brown analyses the basis for the incredible ubiquity of the AK-47 in modern conflicts within the broader context of the evolution of warfare. As indicated above, since the First World War, developed country’s militaries have placed an increasing emphasis on cutting-edge technology as the means through which to guarantee victory. Graves-Brown argues, however, that this belief in the importance of a technological ‘edge’ has been its own undoing. The epitome of this is the atom bomb, the exemplification of technological warfare, which has completely changed the landscape of modern battle. The incredible destructive power of nuclear weapons has considerably decreased the likelihood of their use, which in turn has created a context in which non-conventional conflicts of insurgency have become more frequent. Many military forces around the world continue in the belief that ever-superior technology is the key to military victory despite the evidence from such conflicts as the Vietnam War that this is not necessarily the case. During the Vietnam War and the two recent Gulf Wars there were reports of soldiers exchanging their more technologically sophisticated M16s and SA80s (used by British forces in the Gulf Wars) for the less sophisticated but more robust and reliable AK-47s (Graves-Brown, 2007: 300; Chivers, 2010: 324). The wars in Iraq and Afghanistan also highlight this contradiction in technological superiority, where the goals of the United States and its allies, with all their technological might, have been continually thwarted by insurgents with often remarkably primitive weaponry, as seen in the abundant use of IEDs (improvised explosive devices), often using recycled materials (Graves-Brown, 2007: 304).

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20 This article is an important exception to the general focus of the archaeology of the contemporary past on social meaning.

21 This can be seen in the United States and Soviet Union sponsored proxy wars during the Cold War: “The Cold War was not a hot war because the introduction and constant symmetrical refinement of nuclear weapons established a “balance of terror.” While that balance prevented hot war between the superpowers, it aggravat[ed] the general sense of anxiety. The few incidents in which the protagonists faced each other “eyeball to eyeball” were traumatic experiences for practically everyone on the planet. The balance of terror, however, did not deter proxy wars and what came to be known as “low-intensity, protracted conflict.” If the big war never eventuated, violence, in one form or another, never abated.” (Reisman, 1990: 859-860)
The above discussion emphasises that technological development is in no way inherently progressive. Instead, materiality can be seriously dissonant with sociality, with devastating consequences as the slaughter of the First World War has made all to clear. However, what is also evident from the above discussion is that human societies are not locked into a deterministic relationship with their material milieu. Instead, humans can learn to adapt to and negotiate the consequences of materiality. Societies can gradually increase their control over the material. Such an observation provides encouragement that societies can develop the capabilities to ameliorate some of the negative outcomes of materiality. The importance of this is particularly evident in relation to current concerns over environmental destruction.

6.3 Industry

That technological development is not inherently progressive is clearly articulated through the issue of environmental destruction and climate change. The ability to transform the natural environment is a result of our industrial technologies. Although humans have always had an impact on their surrounding environment, the scale at which this can occur has been vastly increased by the introduction of mechanized industrial technologies. Each of the categories of materiality discussed in this thesis are greatly influenced and shaped by the category of industry. Industrial activity forms the products that make up the categories of garbage and weaponry, while in the case of urbanism, industry represents a major factor in the development of the particular characteristics of different urban areas and their vast materiality. Industry generates many outcomes on society as a result of this although the following section will focus on the environmental consequences of industrial technologies.

22 The definition used here for the term 'industry' is: ‘the material means by which a community acquires its subsistence and non-subistence requirements from the surrounding environment’. This usage differs from the common understanding of the term as referring specifically to mechanized industry. However, the focus of this section is on the environmental consequences of mechanized industry.
In 2000, the Nobel Laureate Paul Crutzen and Eugene Stoermer proposed that the impact of humanity on the natural environment has meant that we are no longer living in the geological epoch known as the Holocene as was the scientific consensus at the time. Instead they argued that we had entered the ‘Anthropocene’ – the ‘recent age of humans’ (Crutzen and Stoermer, 2000: 17). As Steffen et al note, the term ‘Anthropocene’ suggests:

“(i) that the Earth is now moving out of its current geological epoch, called the Holocene and (ii) that human activity is largely responsible for this exit from the Holocene, that is, that humankind has become a global geological force in its own right.” (Steffen et al, 2011: 843)

Steffen et al propose the year 1800 A.D. as the start date for the Anthropocene (Steffen et al, 2011: 849), while Crutzen and Stoermer suggest a start date at the end of the 18th Century to coincide with James Watt’s invention of the steam engine in 1784 (Crutzen and Stoermer, 2000: 17-18). What is clear, however, is that both dates correlate the Anthropocene with the beginning of the Industrial Revolution. Before examining some of the environmental impacts of the Industrial Revolution, it is necessary to briefly outline the scale of human impact before this time.

Every human society has an impact upon the environment which is related to its technologies. The hunter-gatherer societies of the Paleolithic did not sustain large populations. Yet they did establish human communities across the majority of the terrestrial biosphere and their environmental impact was greater than would be suggested from their population size, as their sophisticated tool use allowed for the revolution of hunting and gathering practices (Ellis, 2011: 1012). For example, the use of fire allowed hunter-gatherer societies to engineer ecosystems (Smith, 2007), while Palaeolithic humans may have played a role in the extinction of megafauna in the late Quaternary through hunting and providing competition for resources (Koch and Barnosky, 2006). Despite these impacts, hunter-gatherer societies influence the environment in ways that occur naturally. For example, both extinctions and enhanced fire rates are triggered by naturally occurring events. However, agriculturally based societies did produce
impacts new to nature. This can be seen in the replacement of native vegetation with domesticated plants and animals whose evolution is controlled by humans through technologies such as selective breeding (Ellis, 2011: 1013). New and expanded industrial activities, which were made possible through the outcomes of agriculture, also allowed for large-scale environmental impacts which had been unseen previously. For example, there is evidence that suggests Greek and Roman lead and silver mining and smelting activities polluted the troposphere of the northern hemisphere with lead from around 500 B.C. to 300 A.D. (Hong et al, 1994).

It is the beginning of the Industrial Revolution, however, that undoubtedly represents a fundamental transformation of the capabilities of humans to change the natural environment. The immense increase in the amount and availability of energy through the greatly expanded exploitation of fossil fuels and the expansion of mechanized technologies allowed humanity to engage in new activities, while vastly expanding and accelerating existing ones. An example of the former was the introduction of the ability to create fertilizer by synthesizing reactive nitrogen compounds from unreactive nitrogen in the atmosphere, a highly energy intensive process. An example of the latter can be seen in the vast increase in the conversion of natural ecosystems into agricultural land (which has occurred since the initial emergence of agriculture) through the use of mechanized land clearing technologies (Steffen et al, 2011: 848). Between the years 1800 and 2000, the human population grew from around one billion to six billion, energy use increased approximately 40-fold, economic production by 50-fold and the fraction of the land surface devoted to intensive human activity rose from around 10 percent to between 25 and 30 percent (Steffen et al, 2011: 848). This great expansion of human population and activity (Figure 6.2) has led to a corresponding expansion of humanities environmental impact (Figure 6.3). The issue of climate change is currently the most well known of humanities global-scale impacts on earth-systems. However, as Steffen et al note (and can be seen in Figure 2):

“...climate change is only the tip of the iceberg. In addition to the carbon cycle,
humans are (i) significantly altering several other biogeochemical, or element cycles, such as nitrogen, phosphorus and sulphur, that are fundamental to life on the Earth; (ii) strongly modifying the terrestrial water cycle by intercepting river flow from uplands to the sea and, through land-cover change, altering the water vapour flow from the land to the atmosphere; and (iii) likely driving the sixth major extinction event in Earth history.” (Steffen et al, 2011: pp. 843)

Clearly, the scale of humanities impacts on the natural environment as a result of industrial technologies is immense. Concern over these impacts is reaching such a level that the threat of societal collapse is discussed in both popular media and in the academic world (see Chapter 7). Archaeology can assist in providing a perspective on whether or not such concern is warranted.

Examining the archaeological record provides ample evidence to justify serious concerns about the possible consequences of large-scale environmental change. As mentioned in Chapter 5, extensive landscape modifications are likely to have been a factor in the abandonment of the great low-density agrarian-based cities. More specifically, recent research (Buckley et al, 2010) has examined the role of climate change in the abandonment of Angkor. The society based at Angkor was dependent on the annual monsoon flooding of Cambodia’s lowlands to support a vast and complex agricultural system. However, climate reconstructions based on tree ring data, indicate that Angkor experienced decades-long droughts interspersed with intense monsoons in the 14th and 15th Centuries CE (Buckley et al, 2010: 1). The drought periods were of a severity to have impacted Angkor’s water supply and agricultural activity, while there is evidence that intense monsoons damaged water management infrastructure. As a result, shifting climatic conditions were likely to have been a contributing factor to the eventual abandonment of Angkor (Buckley et al, 2010: 3). As this example shows, climate change and environmental destruction have had dramatic consequences indicating that our present situation requires serious engagement.

However, as well as providing warnings from the past, archaeology can also provide possible solutions to contemporary problems such as environmental
destruction. Guttman-Bond (2010)\textsuperscript{23} has provided a discussion of a number of ancient agricultural techniques that have the potential to provide sustainable alternatives to destructive modern agricultural practices. For example, wetlands are generally considered to be an obstacle to agriculture today. However, in the 1960s archaeologists uncovered extensive remains of wetland farming systems in Bolivia. A team of archaeologists recreated these wetland farms using traditional, pre-industrial farming techniques in a five-year experiment. The team’s crop of potatoes yielded ten metric tonnes per hectare, exceeding the yields of the modern farms in the region (Guttman-Bond, 2010: 356-357). As Guttman-Bond notes, modern industrial agriculture often privileges mechanization, monoculture cropping, pesticide and artificial fertilizer use as the means for increasing crop yields. These methods, however, are associated with negative consequences such as soil erosion, loss of biodiversity and crop yield plateaus (Guttman-Bond, 2010). That modern industrial agriculture practices are at the very least problematic is indicative of the overall observation that technological development is not inherently progressive. Furthermore this example illustrates the significance of large-scale, long-term archaeological perspectives in not only acknowledging this point but in addressing the inherent problems involved in societal interactions with industrial material. What this archaeological focus offers is the ability to negotiate contemporary effects of material on society through a broad scope understanding of materiality in context.

6.4 Conclusion

The aim of this chapter has been to discuss particular aspects of the material categories of weaponry and industry. Both these categories highlight the potentially devastating consequences of materiality and reinforce the observation that technological development is not inherently progressive. The

\textsuperscript{23} Guttman-Bond’s article is of particular importance as it was published in an issue of the journal \textit{World Archaeology} that contained research on the applicability of archaeology in a contemporary setting (Schofield, 2010). Yet, it was the only paper that took a long-term perspective in relation to materiality.
discussion of weaponry, however, also outlined how sociality can gain some ascendancy over materiality. The importance of this point is that it emphasises that we are not trapped in a deterministic relationship with our material, but have the potential to develop greater control over it. The scale of humanity’s impact on the natural environment is an urgent example of the need to develop such control. As outlined by Guttman-Bond and in previous chapters, archaeology potentially has a very important role to play in assisting contemporary societies to manage their material.

Figure 6.2 Increasing rates of change in human activity since the beginning of the Industrial Revolution (from Steffen et al, 2005: 132)
Figure 6.3 Global-scale changes in earth's systems as a result of the dramatic increase in human activity (from Steffen et al, 2005: 133)
Chapter 7: Conclusion

"The night had been close with many mosquitoes. Consequently, I slept poorly and had a frightful dream. It seems I was in Tokyo after the great earthquake and around me were decomposing bodies heaped in piles, all of whom were looking right at me. I saw an eye sitting on the palm of a girl's hand. Suddenly it turned and leaped into the sky and then came flying back towards me, so that, looking up, I could see a great bare eyeball, bigger than life, hovering over my head, staring point blank at me. I was powerless to move.

"I awakened short of breath with my heart pounding," Michihiko Hachiya remembers.
So do we all."

Richard Rhodes – recounting a nightmare by Dr. Michihiko Hachiya who was wounded in the world's first atomic bombing (Rhodes, 1986: 747).

7.1 Material Interconnectedness

The division of contemporary materiality into the categories of garbage, urbanism, weaponry and industry is of course simply a convenient separation of interrelated phenomena. In reality, each of the categories discussed interact with and impact upon the others. The production of garbage is inherently linked to our industrial technologies and the large populations of urban areas create massive amounts of garbage, while industry creates weaponry and influences the development of cities. While it is often necessary to separate each category to facilitate investigation, it is also important to consider the interaction between each category. A particularly stark example of the interconnectedness between material categories is illustrated in the transformation of warfare due to new patterns of urbanism. Contemporary forms of urbanism can be seen to be
influencing warfare in two main ways. First, as Graham (2005: 170-171) argues, modern urbanization is increasingly reliant on technologically managed infrastructure, this “cyborg urbanization” can result in small disruptions and disablement having massive, cascading effects on the life of cities. The targeting of infrastructure to initiate a process of “demodernization” is particularly being used by the US Air Force as a means to put pressure on civilian populations in an era when the direct bombing of civilian areas is no longer a possibility (Graham, 2005: 175-177). Secondly, however, there is a countervailing tendency in modern warfare that is being created by the growth in slums and informal settlements around the world. As Captain Troy Thomas notes, rapid urbanization in developing countries results in “a battlespace that is increasingly knowable since it is increasingly unplanned” (Thomas, 2002: 58). The type of military strategy outlined by Graham becomes obsolete in such a setting as these urban areas consist of “informal, decentralized subsystems in which primitive or adaptive technology dominates” and where “no blueprints exist, and points of leverage in the system are not readily discernable” (Thomas, 2002: 62). Warfare fought in cities of the developing world is predicted to become the norm as Peters states:

“The future of warfare lies in the streets, sewers, high-rise buildings, industrial parks, and the sprawl of houses, shacks, and shelters that form the broken cities of our world. We will fight elsewhere, but not so often, rarely as reluctantly, and never so brutally. Our recent military history is punctuated with city names—Tuzla, Mogadishu, Los Angeles, Beirut, Panama City, Hue, Saigon, Santo Domingo—but these encounters have been but a prologue, with the real drama still to come.” (Peters, 1996: 43).

Although, this is perceived as predominantly a future phenomenon, it has a rather grim precedent. The intense fighting that occurred in shattered industrial cities during the Second World War, which the battle for Stalingrad epitomized, is a sobering reminder of how the massive material framework of cities impacts upon the course of warfare. The rubble of Stalingrad transformed the battlespace into an obstacle course of building material (Fletcher, 2010: 471-472). As Fletcher describes:
“The demolition of Stalingrad made its defence more effective. The battle devolved into teams of a dozen or more men hunting their prey through the ruins. By mid-November the Soviet 62nd Army held ground only a few hundred metres wide along parts of the east bank of the Volga. Shielded by brick and concrete and concealed in a bizarre wasteland a minuscule Russian defence group could hold off their enemy for days, suffering and inflicting awful casualties.” (Fletcher, 2010: 472)

The manner in which warfare is being transformed by the materiality of urban areas is just one example of how the material categories discussed in this thesis are interrelated.

7.2 Sustainability and ‘Collapse’

Combined, these material categories are having a profound effect on both human societies and the natural environment. Concern over these impacts is leading to serious questioning of the long-term sustainability of contemporary industrial societies. These concerns are most often expressed in relation to the issues of anthropogenic climate change and environmental destruction in general. Apprehensions have reached such a level that the possibility of societal collapse is being discussed as a distinct possibility, or even an inevitability, if we do not change our current practices (e.g. Costanza et al, 2007; Linden, 2006; Flannery, 2005). One of the notable and contested discussions of this possibility has been provided by Jared Diamond (2005) in his book Collapse: How Societies Choose to Fail or Succeed. Diamond proposes that the instances of societal ‘collapse’ in the past provide an important lesson for contemporary societies. Diamonds assertion, however, that societies ‘collapse’ has been challenged by a number of scholars in the book Questioning Collapse (McAnany and Yoffee, 2010) which is an explicit rebuttal of Diamond’s work. Questioning Collapse challenges Diamond’s claim that societies choose to fail or succeed and argues instead that the instances that Diamond examines as cases of societal collapse are actually much more indicative of human resilience.
Overall, *Questioning Collapse* provides a cogent critique of a number of flaws in Diamond’s book. There is a problem, however, with McAnany and Yoffee’s assertion that societies are characterized more by resilience than collapse in that it runs the risk of playing down the potentially devastating consequences of various kinds of social transformation. There is a serious need to research the processes of such transformations with the aim of trying to understand their causes and outcomes. This is particularly important in a contemporary context where notions of resilience run the risk of downplaying any necessity to critically examine the potential consequences of our current practices. If it is possible to identify potential hazards for a community through the detailed investigation of its material framework, which an archaeological perspective would focus on, then there is a moral imperative to engage in such research. The necessity of such research is emphasized by a cursory examination of current industrialised societies which indicates that they may in fact be more susceptible to sudden and devastating breakdowns in economic, social and political organisation. An increasing reliance on advanced technology and infrastructure, as mentioned above, accounts for this potential vulnerability. A number of authors have made this point (e.g. Graham, 2005; Graham and Thrift, 2007; Leslie, 1999). Graham and Thrift (2007) provide an example of our current reliance on technology:

“...in May 1998, the failure of just one satellite terminated the operation of 80 percent of all US pagers, disrupted ATM and credit card transactions systems, interrupted emergency health-care communications systems and brought chaos to the complex, Just-in-Time systems in place in health-care systems” (Graham and Thrift, 2007: 9)

Additionally, the capacity of industrialised societies to change the natural environment greatly surpasses that of non-industrialised societies. While it was previously possible for communities to migrate from areas that no longer had the ability to sustain them, the increasingly global scale of environmental transformations, such as climate change, may mean we are less able to escape the consequences of what our material is doing. Of course we need more than a cursory examination of the current context to draw any substantial conclusions.
about our reliance on technology, the consequences of anthropogenic environmental change or any other matter. What we need is a commitment to vigorous investigation of our contemporary situation, considering materiality in studies that incorporate long-term and large-scale context to provide appropriate perspective. Although the need for archaeology to play a role in such contemporary investigations has been discussed throughout the preceding chapters, this issue now requires further explicit examination. This is particularly important considering that an interest in contemporary manifestations of the material categories discussed in this thesis is shared by a number of other disciplines.

7.3 The Role of Archaeology

With the occasional exception of a few authors in the field of history (e.g. Keegan, 1976), archaeology is the only discipline that consistently engages in the study of the material categories outlined in this thesis, in the past. This changes, however, when we move into the contemporary period where a myriad of other disciplines and professions also study aspects of these categories. For example, urban geographers study urbanism; sanitation engineers study waste management and garbage; and environmental scientists are interested in consequences of industry. The academic and professional research that is already occurring in these areas raises the question of whether archaeology has a role to play in the study of these categories of materiality in a contemporary context. There are two main reasons for the necessity of an archaeological approach to contemporary materiality that does not restrict itself to the study of ‘social’ meaning. These reasons both stem from the particular nature of archaeology itself, namely an emphasis on the material and a long-term perspective.

As Olsen (2003: 89) states: “Archaeology is, of course, the discipline of things par excellence.” This focus on the material makes archaeology an important asset in the study of contemporary phenomena despite the fact that other disciplines may also be engaged in similar work. Indeed, archaeology has the potential to act as a
corrective to research that does not share such an emphasis on materiality. The specific focus on materiality (rather than on verbalized meaning) allows access to a whole realm of information that is often overlooked. This point is clearly made through the work of the Garbage Project. For example, as discussed in Chapter 4, the Garbage Project’s landfill excavations revealed the actual volume of space occupied in landfills by plastics. Their data contradicted the findings of other research that relied on records and estimates rather than the physical make-up of landfills themselves. The fundamental importance of such a material focus is based on the ability of the material record to contradict what people say or think they have done and also to reveal completely unanticipated insights. Again, the work of the Garbage Project illustrates these points. For example, the disjoint between what people said they were consuming and throwing out and what actually appeared in their garbage illustrates the importance of studying the material as a record of what actually occurs rather than human declarations and perceptions of reality which may be mistaken (Rathje and Murphy, 1992: 70-71). Additionally, the Garbage Project’s findings that more of a particular product is wasted during shortages of that product highlight the completely unanticipated insights that may be provided by investigating materiality. Thus, because of the undeniable importance of studying materiality, archaeology has a crucial role to play in a contemporary research setting.

The second feature of archaeology that makes it indispensible as a method of research, particularly in a contemporary context, is a long-term perspective which has been a fundamental aspect of archaeology through its history as a discipline. Many other disciplines lack a time-depth perspective on the subject of their research. Michael Smith has criticized this short-term perspective through the concept of ‘recentism’. As he has articulated in relation to urbanism:

“Recentism describes the situation in which historical scholarship on social topics focuses increasingly on later and later periods, ignoring earlier epochs...This kind of limited-perspective, recentistic, scholarship not only hinders comparisons between ancient and modern cities, but it can also preclude our discovery of cycles, trends, and other temporal patterns over long periods of history.” (Smith, 2010: 230)
Short term thinking is not restricted to the academic world. Many other professions (including, perhaps most worryingly, politics) think in terms of specific, short-term timeframes, which are often related to the particular demands of their job. Witmore has strongly argued this point:

“Archaeology, I suggest, has never been more relevant than here in the twenty-first century. This is because we find ourselves in a period pervaded by very short-term thought. Politics, economics, engineering, none of these professions thinks in terms longer than four, ten, maybe twenty years, at best fifty – the next election, the next fiscal year, the next innovation – and yet they are determining our global futures.” (Witmore, 2007: 548)

One of the central points made in the recent book by Diamond and Robinson (2010) *Natural Experiments of History*, is that the whole of human history consists of a series of ‘experiments’ in the organisation of societies and their interaction with the natural and material world. These ‘experiments’ are a source of invaluable experience as they cannot be replicated. From an archaeological perspective we can investigate the outcomes of the interaction of past societies and their material milieu and apply the insights from the results of this interaction to the study of our own material framework. Of course, this is not to say that because something has happened in the past it will happen again, but as outlined above, there are many similarities between our current situation and the experience of past societies. An example of this can be seen in current debates over the nature of low-density urbanism (or ‘urban sprawl’). As stated in Chapter 5, Smith (2010) identified urban sprawl as being a contentious issue for current urban scholars. Some scholars even view patterns of low-density urbanism as purely a modern phenomenon dependant on automobiles (Smith, 2010: 231). The main debate is, however, whether or not sprawl is a desirable form of urbanism. Yet, evidence from the archaeological record clearly indicates a number of falsities within these debates. The existence of low-density urbanism for centuries in the pre-modern world negates the assumption that it is a phenomenon restricted to the modern period and also rules out the assertion that urban sprawl is simply dependant on mechanized transport (Fletcher, 2009:}
15). The issue of the desirability of low-density urbanism is more vexed because although agrarian-based low-density cities could persist for centuries beyond what compact cities were capable of (Fletcher, 2010: 478-479), they were also associated with a long-term process of macro-regional abandonment, especially and somewhat ominously, in the context of severe climate change (Buckley et al, 2010). Therefore, as mentioned in Chapter 5, this requires detailed investigations into both pre-modern and contemporary forms of low-density urbanism so as to allow for a clearer picture of the possible outcomes of these forms of urbanism in a contemporary setting. What this example highlights in general is the danger of ignoring the history of the interaction between humans and materiality. Essentially, what this accentuates is that the archaeology of the contemporary past must incorporate a long-term perspective within its investigations of materiality.

A final point needs to be made in relation to Olivier’s quote at the start of this thesis. Essentially, Olivier’s call for contemporary archaeology to be an archaeology of the short-term is based on the assumption that we cannot foresee the consequences of the activities of the contemporary period. It is only with the benefit of hindsight that we can understand past processes. When investigating social meaning then this is of course true. We cannot predict the social meaning humans will ascribe to materiality in the future. Because of contemporary archaeology’s current focus on social meaning Olivier’s statement makes perfect sense. However, the inability to make future predictions does not apply to investigations of material in the same way. Alan Weisman’s (2007) book *The World Without Us* clearly illustrates this point. Weisman investigates what would happen to our material (cities, garbage, infrastructure etc) if humans suddenly vanished. Ecological processes and the physicality of material allows Weisman to predict the gradual breakdown of our material and the removal of all traces of human existence millions of years into the future. Weisman clearly illustrates how the physical properties of materiality results in predictable outcomes of its existence. What archaeologists need to investigate is what these physical properties mean for human societies.
Both an explicit concern for examining materiality and a long-term perspective is essential if we are to fully comprehend the nature of contemporary societies in terms of the way in which materiality provides a framework for our potential futures. When we consider the immense impact of materiality on both community life and the environment, there are serious concerns for the future. Hunter-gatherer communities have persisted from the Palaeolithic into the present day, whilst modern industrialized societies have existed for little more than 200 years. The persistence of industrial societies will depend on their ability to negotiate, adapt and control their material frameworks. Therefore, a moral imperative exists to seriously consider the future trajectories of societal change, whilst learning from the thousands years of experience in negotiating the outcomes of materiality. An archaeology that has a large-scale perspective on contemporary material is an essential tool. To ignore this moral imperative would be to neglect our responsibility to manage the material potency of contemporary human societies.

7.4 Summary

The aim of this thesis has been to argue that the archaeology of the contemporary past should adequately incorporate an alternative approach to conducting investigations into contemporary materiality. I seek to show that the research of large-scale categories of materiality, such as garbage, urbanism, weaponry and industry, fit within the current concern of contemporary archaeology to undertake a morally engaged archaeological practice. The moral imperative to investigate entire categories of materiality stems from the fact that the material component of community life generates its own outcomes. These outcomes are necessary for us to comprehend as fully as possible if we are to have any chance to avoid the negative consequences with which they are associated. This outlook differs from the dominant approach currently taken by the archaeology of the contemporary past which is mainly concerned with the moral project of using the archaeological record as a means to expose social inequality and the marginalization of subaltern groups. While this is important research, it does not
investigate the impact of the material itself and tends to marginalise such studies. Though some archaeologists engaged in the study of contemporary materiality have sought to examine what the material does, they have not been applied a sufficiently large-scale and long-term perspective on the times spans over which the impact of materiality becomes evident. Instead, the archaeology of the contemporary past, as a whole, remains primarily concerned with the investigation of social meaning. A few archaeologists, including Michael Smith, Roland Fletcher and Bill Rathje, have offered a long-term and large-scale alternative approach.

The current growing concern about the sustainability of contemporary societies suggests that our ability to consciously engage with the outcomes of our material milieu will greatly influence our ability to develop long-term trajectories of social and environmental sustainability. This is particularly important as a number of the suggested remedies to current problems (such as geoengineering to manage climate change) which rely heavily on material components will themselves have long-term consequences and are in need of critical examination. Archaeology has a key role to play in studying what our current material framework, and the material we are in the process of creating, is doing now and the impact that this material will have on our future. Archaeology is the best placed discipline to develop the long-term and large-scale perspective that we require and possess the critical focus on the material. There is therefore a moral imperative for undertaking these investigations, because, as this thesis has sought to argue, our material matters.
References


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