WORLDS IN MINIATURE

Contemplating
Miniaturisation in
Global Material Culture

Edited by **Jack Davy**
and **Charlotte Dixon**

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Contributors

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Dr Jack Davy was the collection manager for North America at the British Museum for many years, before completing a PhD studying miniaturisation among the Indigenous communities of the Northern Pacific coast of America. He currently works for the University of East Anglia on the Arts and Humanities Research Council project *Beyond the Spectacle*, which examines Native American interventions in Britain.

Cliff Swallow retired in 2009 after a career in electronics and project management working in the defence sector and air traffic control. He started building model boats about 20 years ago, attracted by the aesthetics and design functionality of sailing boats, and found it a therapeutic exercise to relieve the stress of a high-pressure job. He now works as a volunteer at the National Maritime Museum Cornwall, carrying out model-building and model restoration.

Pat Howard has a degree in economics, and after a spell as a boat-builder, he joined a manufacturer of touring caravans to install management systems, and ultimately bought the company in the late 1970s. He spent the remainder of his working career, until retirement, leading this team to become the market leader the company is today. Now that he enjoys retirement with his wife and family, a significant part of Pat's week is spent volunteering for the National Maritime Museum Cornwall, part of which is with the museum's model-making group. Model-making in many forms has always been a part of his life; indeed, his working career of designing, making and selling touring caravans was really just a form of miniaturisation of family homes into towable boxes!

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Dr James Lyon Fenner was awarded an Arts and Humanities Research Council-funded Collaborative Doctoral Award at the University of Nottingham in 2014 for a project shared between the Geography Department at the university and the Science Museum, London. His doctoral research was based upon the 'British Small Craft' displays within the Shipping Gallery of the Science Museum and investigated the stories behind the collection and individual objects displayed. He now works as a Portfolio Manager at the AHRC (now a partner in UK Research & Innovation).

Henry Milner is an architectural model-maker and artist specialising in Reconstructivism. His works are included in the permanent collections of the Stedelijk Van Abbemuseum Eindhoven; the Pushkin Museum of Fine Arts, Moscow; the Science Museum, London; and the River and Rowing Museum, Henley. His works have been exhibited in the Hermitage, St Petersburg; Museum Sztuki, Lodz; the Kunsthaus, Graz; and the World Fair in Beijing. The show 'Utopia Ltd' at the Gallery of Russian Art and Design in London was dedicated to his constructions. His website is at https://henrymilnerltd.wordpress.com/.

Dr Susanne Küchler is a Professor of Anthropology and Material Culture at UCL. She has conducted ethnographic fieldwork in island Papua New Guinea and Eastern Polynesia over the past 25 years, studying the modular, composite image in relation to political economies of knowledge from a comparative perspective. Her work on the history of the take-up, in the Pacific, of cloth and clothing as 'new' material and 'new technology' has focused on social memory and material translation, and on the epistemic nature of pattern. The question of the return to the object and its theoretical and methodological imperative is the central theme of her forthcoming work, which follows publications on *Malanggan: Art, Memory and Sacrifice* (2002); *Pacific Pattern* (2005) and *Tivaivai: The Social Fabric of the Cook Islands* (2009).

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1
What makes a miniature?
An introduction

Jack Davy and Charlotte Dixon

Miniatures – small objects that resemble larger ones in some form – are ubiquitous, produced and distributed by societies across almost every part of the world. Examples can be found in archaeological examinations of communities as far back as the earliest of human artistic cultures, and ethnographic assemblages worldwide. We find, and have found, them alluring, enticing and exciting. We are inevitably drawn by their haptic appeal, for there is an intrinsic desire to play with these tiny objects, to manipulate and rearrange them and to imagine ourselves, impossibly, inside or alongside them.

These tiny objects contrast powerfully with a range of other scales, both human-sized and gigantic. They are always at play through scale and mimesis, turning the tables on those who observe them and interact with them. For example, drivers on the M5 in Somerset pass a 12 metre-high willow man erected by Serena de la Hay, against which it is us who appear to be the miniatures. Such experiments in relative scale illustrate the dissonance that lies at the heart of miniaturisation, for within their intrinsic appeal is an understanding that they are not quite of our own reality, being reliant on abnormal scales and dimensions of knowledge that can be hard to grasp and which go beyond a mere reduction in size. As giants can make us miniatures, so miniaturisation can make us giants; at the Eiffel Tower in Paris, you will encounter small models of the Tower sold as portable souvenirs beneath the very arches of their huge counterpart. It is this dissonant concept of miniaturisation, of scale and mimesis and our fascination with the relatively tiny, that forms the focus of this book.

The idea of *Worlds in Miniature* developed through a series of cross-disciplinary workshops held to compare and discuss the subject of miniaturisation, funded by the Arts and Humanities Research Council. This was initially intended as a one-off event in 2014, but it became apparent that scholars from diverse disciplines and countries were researching miniaturisation via a variety of theoretical approaches, and that there was an urgent need to develop a platform to enable ideas and theories in this important area of material culture studies to be shared and discussed. One workshop thus expanded into a series, and this volume draws together some of the papers and ideas discussed at these workshops to present a partial but illustrative narrative of the study of miniaturisation across human history through a number of approaches and disciplines.

This book explores the ever-present phenomenon of miniatures and their specific intelligible dimensions as they appear in a range of temporal, environmental and social contexts. By presenting diverse case studies, the book illustrates the wide reach of miniatures and, most importantly, it demonstrates the key finding of the workshops: that miniaturisation was not a static event that occurred only in one community at one given time. Instead, miniaturisation is an artistic and technical process that has occurred in many places, in many contexts and for many reasons, and each time it occurs it displays a number of similarities and significances that render it an effective, near-universal method of human communication. By drawing these studies into one narrative for the first time, this book demonstrates the position of miniatures as a crucial component of the interdisciplinary field of material culture studies.

The process of miniaturisation

Since people first began to develop art, understood as the imaginative process involved in material culture, they have made items in miniature. From the start these items have not been restricted to actual physical presences; the 40,000-year-old Lion Man of Hohlenstein, for example, stands as testimony that miniatures have been reliant more on imagination than reality since the earliest days of human material imagination (Cook 2013: 30). In the millennia since, miniaturisation has spread to almost every place where humans have produced art. The results are the miniatures themselves, and how they operate. Even after their initial contexts have been lost, people have kept miniatures on hand, despite their confusion of affordance and scale which renders them so often

disconcerting, imposing new meanings on old things. This phenomenon, termed here miniature dissonance, lies at the heart of why miniatures are so often poorly understood (Davy 2018). For some this is frustrating – a curator once complained that miniatures 'find their way to museums, just where they ought not to be, as generally, with a few exceptions, they are devoid of all scientific value' (Porsild 1915: 233) – but for scholars it is a poorly understood trove of otherwise often unpreserved historic data.

Miniaturisation is often characterised as a process in which an entity, a thing, moves from large to small (Phillips 1998: 91; Knappett 2012: 99). This book, however, suggests that this is often a misunderstanding. It contends that miniaturisation does not start on a big scale at all; it starts on a huge one. For the Makah of chapter four, a miniature canoe does not begin with a large canoe, but with almost inconceivably complex, social, technological and demographic movements during the process of colonisation. For the Ancient Egyptian craftsmen of chapter three, their miniatures start not with livestock, or pottery, or boats, but with everyday intra- or inter-communal transactions and a diverse array of rituals.

For much of history, to effectively convey these movements to defined audiences would be nearly impossible through traditional oral or written histories alone; they are too dense, too unwieldy for language to capably distribute to diverse and dispersed audiences. What was required was a vector through which these complex ideologies could be reduced, simplified and directed on a scale with which humans can relate, and often through history the chosen vector has been miniaturisation. An artist takes the idea of something significant, such as a whaling canoe, a pottery jar, a diorama or a boat, and creates an object that imbues, through the miniaturisation process, ideological qualities of the original idea into the miniature in a format designed to appeal directly to its intended audience.

It is this whole sequence, from conception, to selection, to construction, to distribution to intended audiences, that forms the miniaturisation process, and it is this sequence, as it has been practiced by disparate peoples separated by time, distance and basic understandings of the world around them, which is the subject of this book.

This first chapter will seek to establish some guiding principles which might help a reader navigate the case studies that follow. These are not intended to be prescriptive; the author of each chapter has explored not only the physical case study of their subject, but also their own distinct theoretical interpretation. As with any good workshop, these approach the subject from very different directions, drawing on different schools of

academic thought. In places these case studies complement one another and in others they conflict.

We leave it to the reader to consider them on their own merits; for as each miniaturisation is different, so each case study might require a different theoretical framework. Like any widespread material practice, the practicalities of miniaturisation on a local level differ wildly depending on a vast range of factors, and so this chapter, indeed this book, will not claim absolute rules or unbreakable constants for miniatures; rather it will suggest that there is a series of underlying choices common to all miniatures that makes them broadly comparable. When understood, these can help unpick the complex ideologies that lie behind these objects, and the sequence of decisions that have formed an integral part of the miniaturisations that you are about to discover.

We do not claim that miniatures are created for a single purpose. Unlike a more prosaic, mechanical tool, miniatures by nature of their imaginative dimensions are multifaceted pieces of equipment for coping with and changing the world. They are consequently readily adaptable to different or changing circumstances, and engaged in such diverse human practices as education, commerce, worship and experimentation through the powerful engine of human imagination, which can associate alternate realities to physical objects.

Each of the chapters that follow thus addresses questions that arise when items are not just out of scale, but somehow out of reality too. As Douglas Mitcham explains in chapter two with Neolithic and Bronze Age stone monuments on Exmoor, examination of scale is a crucial component of miniature objects, recognising that distortions of scale play a particularly effective role in the miniaturisation process. As Grazia Di Pietro illustrates in chapter three, miniatures from Ancient Egyptian archaeological contexts demonstrate that material and detail need not be precise as long as the miniature can clearly portray a particular mimetic shape. Jack Davy's chapter on miniature canoes from the indigenous Makah people of Washington make clear that it is not just the materiality of the miniature which is crucial to its existence, but the entire process of making and distribution. In an interview, miniature boat-builders Pat Howard and Cliff Swallow discuss the practicalities of miniature-making and the threats to the art from virtual reality and computer simulation. In chapter six Charlotte Dixon explains how an understanding of the biography and purpose of miniature boats from India can help us to interpret them and their connections with the full-size referent.

Christian Sørhaug follows this with a case study among the Warao people of the Orinoco, in which he finds that miniaturisation is one

process by which the Warao have coped with and adapted to ever-encroaching modernity. James Fenner then explores the way in which the Science Museum sought to recreate entire worlds through diorama to communicate to public audiences the technology of certain British ways of life slipping into the past.

In a final interview, Henry Milner explains that experimentation and curiosity are essential components of the miniature-maker's process, that the imaginative combines in miniatures with the practical and communicative. Thus, in her concluding chapter to this volume, Susanne Küchler demonstrates that miniatures can actively disrupt and subvert understandings of the object before an observer, creating an imaginative connection that enables miniature objects to effectively fulfil the purposes for which they were designed. This chapter, taking a theoretical approach to the subject from the disciplines of material and visual culture anthropology, roots this volume firmly within contemporary debates within this discipline, and points to alternative frameworks through which the examples in the preceding chapters might be approached. Ultimately, this book demonstrates the ways in which miniatures speak about and are connected to much broader and more complex movements and phenomena, and are enabled to do so with particular efficacy due to their imaginative and dissonant engagement with scale, mimesis and simplicity.

It is this complexity which this introductory chapter will start to unpick. To be clear, though, we are not seeking to limit miniatures to one class or category of object. In the book, as in the workshops from which it developed, we have always sought to construe the notion of what a miniature may be as widely as possible. Here therefore, we will only look to lay out our thoughts on some simple methodologies by which miniatures can be judged; readers can make their own decision as to whether one phenomenon or another qualifies as part of the category, or can be understood in these terms. This chapter is no more than a guide to what follows, and it is up to individual authors and readers to determine to what extent the localised studies in each chapter coincide with or differentiate from the theories presented here.

What makes a miniature?

There is as yet no scholarly agreement on what it is about an object that gives it essential qualities as a miniature, but for this volume we suggest considering that the physical composition of any miniature must entail three processes: mimesis, scaling and simplification. These have been

metaphorically described as 'elements', the essential building blocks of a miniature which, when operated in combination with one another to varying degrees, achieve an intended result with a defined audience (Davy 2015). By taking these three elements in turn, and to varying degrees, any object purporting to be a miniature can be studied and its ideologies can begin to be understood. Although different terminology and philosophical underpinnings are used in the ensuing chapters to discuss the phenomenon of miniaturisation, all of the case studies that follow engage directly with these three elements.

Mimesis

Mimesis is an imaginative activity that facilitates replication, which allows the replica, the miniature, to '[draw] on the power of the original, to the point whereby the representation may even assume that character and that power' (Taussig 1993: xiii). It is this element that enables miniatures to 'epitomize, echo and reverberate meaning captured in and associated with other objects, while creating new meanings of their own' (Foxhall 2014: 1). Mimesis self-evidently requires a prototype: a prototype from which the miniature can be drawn and which the miniature must, in some capacity, resemble. This notion of a prototype is described by Alfred Gell as 'the entity which the index represents visually … or non-visually' (1998: 26). As illustrated in the coming chapters, prototypes can be literally anything imaginable, from standing stones to whaling canoes and surf boats, from oxen teams to staged battles to entire wharf-fronts. Indeed, the imaginative nature of mimesis means that the prototype is entirely unbound by the physical. In 1962 Claude Lévi-Strauss noted, for example, that the Sistine Chapel is a mimetic miniature of the end of the world (1966 [1962]: 23).

These prototypes are capable of being highly misleading because they are essentially skeuomorphic: objects in which a design element from one thing has been deliberately incorporated in another thing with no intention other than to mislead. Skeuomorphs achieve this effect using 'skilful imitation to bend reality' both to resemble another thing and simultaneously to refer to the intangible elements of the entire network of social relations which that thing evokes, without necessarily being materially connected to either one (Knappett 2002: 108–11).

Miniatures, by taking on the form of another object without assuming its function, are skeuomorphically bending reality to create the impression of the prototype, and all its implied semiotic relations, without necessarily requiring the same size, labour, materials or utility,

thereby acting as indexical signs of more complex systems. A miniature is adopting the imagery of that thing and the corresponding networks of relations which created, used and distributed it, for a specific reason.

This observation is significant because there has been a tendency within the study of miniatures to assume that scaling is paramount in the miniaturisation process. Ruth Phillips, for example, has written that miniatures achieve a cognitive effect through 'the reduced scale of the miniature which reveals the attributes of the object it represents with special clarity' (1998: 74), an achievement which, she says, hinges upon the 'precise point on the continuum of miniaturization when its primary function becomes representational rather than utilitarian' (1998: 91).

This assumes that miniaturisation is a continuum from large to small, a notion that this book challenges; we contend that the concept that an artist, a maker, starts the miniaturisation process with a large object and simply shrinks it down is to misunderstand the process of miniaturisation. For as this book demonstrates, miniatures rarely reflect accurate scaling practices, nor do they often present entirely accurate depictions of the things that act as their prototypes.

Instead, they mimetically resemble not only physical things, but also ideas. In chapter three the miniatures do not reflect a particular vessel, but a diverse class of vessels from early Egypt, and those none too accurately; in chapter four the miniatures under consideration do not depict a specific whaling canoe, but a notion of whaling canoes in general at a specific place and time; in chapter six the miniatures do not depict one specific boat but a type of watercraft and a particular method of boat-building associated with those vessels; in chapter eight the miniatures do not attempt a photographic reproduction of a particular quayside moment, but a general, idealised impression of British quaysides at a particular time for a particular audience. In chapter nine, Henry Milner explains that his thought processes in designing a miniature rely not solely on a prototype, but on a series of competing priorities tailored to a specific audience. Douglas Mitcham in particular, in chapter two, has made a very specific study of this problem in relation to archaeological assemblages of miniliths on Exmoor.

We can see therefore that a miniature object that *resembles* a particular thing can simultaneously be a *representation* of something else, something less tangible. As Susan Stewart notes, 'the social space of the miniature book might be seen as the social space, in miniature, of all books' (1984: 41). This dictates that in order to be created, any miniature *must* have an entity to resemble or it is meaningless; it demands a prototype from which the miniature can be drawn, but it does not automatically follow that something which is representative must look like

the thing it represents, or that something that bears mimetic similarity must represent the entity it resembles. This raises the possibility of a miniature object holding the potential to operate as a synecdoche: an object that is 'a part of culture which recapitulates the whole' (Gell 1998: 161), a representant of a far broader and more complex prototype, such as a set of ideas, histories and conversations only tangentially connected with the mimetic origins of the miniature.

Scaling

Scaling has sometimes been taken to be the principal component of the miniaturisation process; Carl Knappett wrote of 'miniaturised' objects that 'a change in scale may not affect their form, but it does affect their function … [that there is a] loss of function with reduced scale' (2012: 99). This assessment requires an assumption that a miniature object is simply a reduced form of a prototype, that a miniature starts life as a full-sized entity and is then scaled down into the miniature, which consequently represents that thing. This reduction may be affected through mathematical proportionality or a more informal reduction 'by eye', but the scale always gets reduced. We suggest, however, that beyond a downward trend, the scale of a miniature object need not be even notionally relational to the prototype at all, as long as the iconic relation between miniature and prototype, the association, is preserved in the miniature.

Scaling operates in collaboration with functionality: a miniature by its nature cannot be created or used for the same purpose as the prototype. In such a case it would merely be a smaller entity, not something skeuomorphically designed to resemble something larger, but which is intrinsically different from that thing. Miniaturisation as a process is therefore dependent not on the relationship between utility and representation, but on severing that relationship. We contend therefore that an artist creates a miniature object with its own predetermined functionality, making use of the idea of the prototype only.

Since a miniature exists with a functionality entirely independent of its prototype, different priorities emerge during production. If a miniature is reliant only on the image of its prototype and the consequent network of relations, it does not need to consider the full functionality of the prototype, only those parts which the particular process specifically demands of it. Thus, miniature watercraft, for example, might need to sail but not carry cargo; a miniature basket need not be appropriate for actually holding substances; and a seafront scene depicted by a miniature

diorama need not have ever actually existed. Abandoning adherence to functionality immediately allows the artist to conduct imaginative experiments with proportion and resemblance.

The effects that deliberate manipulation of functionality in miniatures can have on a society can be profound. During the First World War, for example, European nations produced toy soldiers which 'were no mere luxury products; rather, they inculcated the progress of the war in children's minds, instilling national feeling, honesty and patriotism' (Hastings 2014: 421). Similarly, during the early twentieth century in the United States toy banks were made which were deliberately designed to reinforce racial segregation through play (Barton and Somerville 2012: 63), allowing children to set up separate 'white' and 'coloured' counters at small banks.

Miniatures can, through reduced scale and ease of manipulation, replicate specific social activities through the relationships carried by their prototypes, rendered accessible and even ostensibly harmless by their diminutive size. In this capacity they reinforce normative social behaviours through active interaction, especially with children, and can, in these examples, manipulate their audience into supporting a violent or prejudicial social phenomena by making it appear harmless and mundane. They are a medium through which adults have sought to influence children into perceiving and interacting with the world in a method the adults deem to be 'socially useful forms of interaction' (Sutton-Smith 1986: 119). This is a 'process of engendering an attachment and sentiment for particular ideals that they will take with them into adult life', and which will re-emerge in markedly different contexts as childhood games become instead serious experimentation with cosmology and technology (Sillar 1994: 52–3).

Simplification

The final element is simplification: that miniatures can be less detailed, less complex, than the object they resemble as they are only 'partial representations, which simplify the complex observations by the selective elimination of detail incidental to the[ir] purpose' (Clarke 1972: 2). The series of choices by which detail is reduced are ultimately some of the most important in miniaturisation (Kiernan 2014: 46).

It is simplification, even more than mimesis or scaling, that provides insight into the ideologies imbued by the original artist. This is because the range of decisions is wider, occurring on several levels. Firstly, the miniature has been simplified, to some extent, and is divorced from the context

of the prototype. While a prototype is usually surrounded by the environmental and mechanical contexts of its indexical relations, the miniature usually is not (Davy 2015: 9).

Secondly, there is considerable physical simplification in the minutiae of a miniature's appearance; if functionality of the prototype is severed during miniaturisation, then many of the mechanical requirements of that functionality can be safely omitted as well. For example, do the wheels on a miniature car rotate? If they do not, if they do not need to, then the material affordances that promote locomotion can be abandoned. If they do, then they must be incorporated or adapted for the reduced scale of the miniature. Similarly, the rigging on the miniature boats discussed in the interview in chapter five does not need to be able to function by adjusting the sails in the way that it does on the full-size vessels they depict, but it is important that they look 'right'.

If simplification allows us to observe what has been eliminated to draw conclusions about a miniature, then it also allows us to observe what has been retained. Thus, if certain functionalities have been recreated intact, conclusions can be drawn about the purposes of the miniature. For example, in chapter two the miniliths of Exmoor have retained certain ritual qualities of their larger cousins, even as they shed much else; and in chapter six the Indian model boats have maintained the patterns of construction found on the full-size vessels despite exaggeration of scale. Whether by omitting or retaining certain details, it is this elemental examination that provides direct insight into the intentions and ambitions of the original makers of miniature objects.

That this fact is too often misunderstood was glaringly highlighted in a recent exhibition at a major museum, in which lead miniatures of Egyptian papyrus barges were erroneously described as 'identical to the [full-sized] barques' (Goddio 2016: 182–3), even though in everything except vague iconic relation, from material to design to decoration, this was palpably not the case (Davy 2018: 12).

Simplification is not only a physical affordance; it also applies to the cognitive aspects of the construction process. Considerable effort in design and production – almost all of it totally divorced from the type of activity involved in the design and construction of the prototype – goes into the mechanical processes of miniaturisation. Details considered extraneous to the miniature's function and thus removed from the design are examples of the 'distorted dimensionality' common to miniature objects (Foxhall 2014). This use of simplification suggests that in most cases the miniature is not, and cannot, precisely replicate the prototype, even if it successfully replicates partial aspects of the prototype.

A miniature watercraft, for example, cannot be a functioning vehicle, a miniature pot can never be a functioning vessel, a miniature diorama never a bustling waterfront. They are instead a repurposing of their prototype's identity for the miniature's representative task. Even in cases where miniaturisation is perhaps an attempt to duplicate the functions of the miniature's larger prototypes, it is legitimate to question to what degree the simplification of the process has altered function as much as form. Thus, the actual goal of the process of a miniaturisation may be unrelated to the prototype itself, merely utilising the qualities of the prototype for entirely separate reasons.

It should be clarified that simplification here refers only to the miniature itself, not necessarily its construction process; some miniaturisations are noted as more complex and time-consuming in their creation than their prototypes, requiring a greater level of technical skill (Porsild 1915: 233). The construction of a miniature may be entirely divorced from that of the prototype unless, again, such similarities are required by the artist for the miniature's function. It is therefore unsurprisingly common for artists to express relish at the challenge a successful miniaturisation can pose to a skilled practitioner of the prototype (e.g. Phillips 1998: 75; Furst and Furst 1982: 87; Sørhaug, this volume).

Simplification in design can therefore lead to simplification in interpretation of wider and significantly more complex concepts through the miniature as an accessible medium. A miniature that utilises reduced complexity can form a more intimate link with its audience to embody or exemplify ideological concepts more strongly than its prototype and in a more approachable manner, often defying easy understanding and encouraging intimacy. The chapters in this book will attest to the ways in which these concepts can be recognised and the messages within miniaturisation decrypted through an assessment of the relationships combined within the affordances of the miniature objects in relation to the contexts of their creation.

Models and miniatures: understanding the difference

An endemic problem in this area of the field of miniaturisation studies is the complexity of differentiating miniatures and models due to terminological problems stemming from Enlightenment conceptions of art and the prevalence of museum seriation as a method of categorising objects. Early museum anthropologists, working with Indigenous ethnographic collections in conspicuously European museum institutions,

often attempted to use Indigenous-made models in ways that conformed to European understandings of these objects as a category, thus blurring any distinction and obscuring non-European intentionality in the object. A classic example is the collection of American curator Frank Cushing's replicas, effectively full-size models, as a way of 'bringing order to' the Zuni cultures on display at the Smithsonian in the late nineteenth century (Isaac 2010; Isaac 2011), although examples are so widespread that this can be considered a sector-wide problem (Davy 2018). This activity allowed non-European miniatures to operate in ways that allowed institutions and curators to create narratives of Indigenous communities which conformed to non-Indigenous cultural expectations and consequently to inform non-Indigenous colonial narratives (Wintle 2015).

This has inevitably led to the frequent conflation of the terms 'model' and 'miniature' as interchangeable synonyms, and consequent confusion about the definition of each word. As a result, the word 'model' is frequently used uncritically for a miniature, resulting in an assumed but incorrect identification of all miniatures as 'models'. For example, the anthropologist of the North Pacific Martine Reid once complained that 'canoe miniatures, [were] often wrongly identified as canoe "models" in art catalogues' (1987: 222), implying that to do so was a category error in the assessment of non-European miniature objects. James Roy King also identified this situation as problematic, noting that models and miniatures 'have much in common but much that sets them apart; models are intended to be deliberate representations of the full-sized object while miniatures are "folk" art, intent on preserving the resemblance to the prototype without the attendant requirement for detail' (King 1996: 18–21).

Some scholars have attempted to clearly differentiate models and miniatures and hold, for example, that 'models are not selective, but keep all detail. The latter on the other hand, i.e. miniatures, do involve a process of abstraction, such that some details are deliberately excluded' (Knappett 2012: 100), while miniatures are differentiated as less scientific and more a method of 'bringing order to things and facilitate our encounter with the world' (King 1996: 17). Others maintain that a model is a representation or depiction that explicitly exemplifies an idea or theory in a physical format, as a process of intelligibly realising a structured concept, in a way to which, they imply, a miniature may not automatically conform (Morgan and Morrison 1999: 3; de Chadarevian and Hopwood 2004: 1). Some studies have gone further, stating that 'models cannot be treated as inscription devices that visualize invisible substances. Instead, their purpose is to gather a number of things – human and nonhuman

actors, and their concerns, requirements and disputes – and to "accommodate" them into objects that can be subjected to design experiments' (Yaneva 2005: 872).

Common to these interpretations is the idea that models are specifically scientific devices developed as proportional scale representations, such as those commonly produced in the fields of architecture and structural or maritime engineering, as a way of controlling and examining processes in 'manageable spaces where otherwise unruly phenomena could be directed at will by expert reason' (Schaffer 2004: 72). Miniatures, however, are more generally considered an ill-defined but broader category with fewer 'scientific' restrictions.

It is clear that there is substantial crossover; many models are self-evidently also miniatures, but perhaps miniatures are not automatically models in this very specific scientific context. This is particularly the case when considering examples that appear beyond the European Enlightenment context, in which models have a defined pedagogical role, to recognise that when leaving Western artistic contexts, a 'reduction in scale is not necessarily a reduction in significance' (Mack 2007: 71); and to caution that 'reduction can have negative connotations if it is taken as the minimisation of some ideal maximum' (Townsend-Gault 2011: 39). It would be a mistake indeed to believe that Indian boat-builders, Native American artists, Ancient Egyptian craftsmen, or Warao souvenir-producers have the same notions of miniaturisation as British maritime architects or museum designers. This book responds by positioning European scientific models as only one category within the broader field of miniaturisation, developing an identity for miniatures as a near-universal phenomenon dependent upon, but methodologically divorced from, specific contextual understandings of their origins.

In highlighting this debate, however, we fully acknowledge that terminology in this field is not set, and that judgements on the appropriate usage of 'models' and 'miniatures' are still fluid. In this book we have not dictated to the authors which definition to use, preferring to permit them, and their readers, to decide which term may be the most appropriate in each context in which they arise.

This long discussion of the elemental components of miniature objects has been presented as a lens through which a reader of this book might view the case studies presented in the following chapters. During the case studies, we invite the reader to consider what the miniatures resemble, the mimetic choices demonstrated by their prototype; the scale at which they have been created; what on the miniature has been simplified from the prototype; and finally the relationship between scale and

prototype in relation to audience, for when properly executed, a miniaturisation can awe an audience, such as the young Alfred Gell forced to 'pay tribute to dexterity in objectified form' to a matchstick cathedral, even as he was ironically surrounded by the building that the miniature depicted (1992: 47). Finally, we invite the reader to consider what has been reduced in complexity, what choices the artist has made in which details to extract from the prototype, which to retain, which to distort, and which to discard. It is within these decisions that miniatures appear to us and affect us, and it is through consideration of such affordances that they can be studied.

Audience

So far, this chapter has considered miniaturisation as a cognitive and technical process in which miniatures are created. What should be clear, however, is that all of these processes of creation are entirely dependent on the distributive component of the miniaturisation process: what happens when miniatures circulate. Understanding audience is crucial for two reasons: firstly, the decisions made by artists in the miniaturisation process are directly informed by their expected audiences. Secondly, miniatures have a habit of circulating far beyond their anticipated audiences, unexpectedly reaching people never intended by the original creators and being changed by the encounter.

In localised settings, such as Ancient Egyptian economic systems, it is relatively easy for an artist to be assured that the audiences for their miniatures are operating within the same context as that within which the miniature was created, and that the meanings within the miniature are consequently being translated as intended.

However, many miniatures do not remain within localised environments and communities; instead, they can tap into regional and global trading networks and be rapidly disseminated around the world, as is the case with the 'suitcase art' of the Warao and boat models from India. In this context their original purposes fade from memory as the people who made them disperse over generations until those who remember their message no longer remain, such as with the Exmoor miniliths.

Yet miniatures do not stop representing something as time goes by and audiences and context change. As illustrated in chapters on the miniliths of Exmoor and the models of Ancient Egypt, miniatures made to represent certain, very specific, things torque over time to represent other entities or ideas. As miniatures circulate, and their audiences

change, their messages alter, so their powers inevitably shift without input from the original creator. When denuded of their original context, imaginative objects can have interpretations imposed upon them by new audiences, often formed through fundamentally different ways of interacting with the world. As a miniature's essential affordances remain the same, and because the societies into which they move after their initial audiences disperse have their own miniaturisation traditions, miniatures can go on representing for thousands of years, forming new links never dreamed of by their creators, with audiences unimagined.

When objects circulate in their original communities, they can alter their state and thus their power through direct agency. Gradually these objects fall out of their original systems of circulation and into new systems. As miniatures move from their original contexts to new environments, they take on new interpretations ascribed by new audiences, particularly when travelling long distances between disparate peoples. The most pertinent example for this volume is when these objects enter a museum environment: the Ancient Egyptian models become representatives of Egyptian craftsmanship rather than of the diverse transactional or ritual purposes for which they were originally created; the *masula* boats sit in museum stores in the UK detached from their Indian contexts and at risk of disposal as their very significance in the collections is questioned. Even the dioramas at the Science Museum, made for museum environments, shifted over decades as audience expectations and interpretations of them changed.

This process is sometimes considered to be quite violent; when material culture enters new systems, such as the museum environment, it can be 'torn out of context and exhibited, along with its kin, as simply the trappings of an unfamiliar culture' (Holm 1986: 133), perhaps 'there to be dead and never enjoyed again' (Ivey 1967: 60). For miniatures, participation in this seriation process is especially disruptive, given prevailing understandings that 'miniatures everywhere also serve needs that are quite separate from … practical considerations' (Phillips 1998: 88). They thus do not fit within established hierarchies of artistic seriation, and in their new museum contexts they have 'acquired novel meanings that privileged Euro-North American categories and ways of knowing over their local significance' (Glass 2010: 181–2).

Audiences therefore impose their own interpretations and prejudices onto miniatures. It is the purpose for which they were made. However, once miniatures are beyond their original contexts, this imposition does not stop. This in itself is not a problem; all objects circulate. The issue arises because miniatures are dissonant; they are generally not simply

scaled down versions of a prototype. It is thus dangerous to attempt to treat them as if they were scientific models: one could not take the proportions of a Makah canoe, a *masula* surf-boat, or an Egyptian barge and simply scale them up to learn more about these prototypes without an uncritical eye. They have all been simplified, be it through size, scale or features. They have been designed for a specific purpose, often removed from the prototypes' purpose and function, and targeted at a particular audience. This does not mean to say that miniatures can never be used to help us understand a larger entity that it might represent, but it is critical to understand and acknowledge the fundamental changes that have occurred through the process of miniaturisation and after, and to be cautious and aware of this before interpreting these minute objects.

Miniaturisation has proven to be, for us, an endlessly fascinating subject. In this book there are case studies illustrating how peoples throughout time and all over the world used miniaturisation. They each present the theoretical approaches that the authors felt best suited the material at hand, all linked by the elemental connections of mimesis, simplification and scaling before specific audiences. By their imaginative, skeuomorphic qualities, by their ability to survive when larger things have not, and by the curious and continual effort to portray them as exact models of their prototypes when they are anything but, miniatures open doors into not only the worlds of geographically and historically distant peoples, but also their minds. They do so in ways that objects reliant on mechanical reality, dependent on rules, simply cannot. They are creations of the imagination, and it is through imagination that miniatures act as bridges to concepts unattainable through other means.

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2
Exmoor's minilithic enigma
Exploring the impact of miniaturisation on human engagement with stone in Later Neolithic and Bronze Age Britain

Douglas James Mitcham

The archaeology of Exmoor's little-known prehistoric landscapes includes a distinct array of small stone monuments which have been described as 'minilithic' (Burl 1993: 88). These features are situated within an isolated upland area of the United Kingdom's south-west peninsula, and have previously attracted only limited research interest (e.g. Grinsell 1970, chapters 2–5; Riley and Wilson-North 2001, chapter 2; Gillings et al. 2010; Tilley 2010, chapter 7). This apparent oversight towards Exmoor's minilithic enigma is symptomatic of a tendency to draw heavily on evidence from what have been thought of as 'core' regions in terms of the building of megalithic monuments in British prehistory, but such large-scale structures are not ubiquitous in all regions.

Typically, regions with large prehistoric monuments that are visually striking and highly visible have tended to attract the notice of antiquarians and subsequent generations of archaeologists. These areas have often, therefore, had long traditions of investigation and research in earlier archaeological discourse (e.g. Salisbury Plain). This situation is unfortunate because Exmoor's Neolithic and Early–Middle Bronze Age landscapes have a distinctive character that is worthy of far greater attention and have much to offer to debates concerning monumentality and miniaturisation. They also provide an opportunity to explore these themes within the context of a regionally distinct prehistoric community. In recent years a more concerted interest in studying Exmoor's sites has emerged, as part of a growing concern with regional narratives of prehistory. This has, for example, focused on the group of five

stone settings at Lanacombe; the stone circle, row and cairn complex on Porlock Allotment; and various further stone settings and other features on central Exmoor, for example at Furzehill Common and East Pinford (Gillings et al. 2010; Gillings and Taylor 2011a, b; Gillings and Taylor 2012; Gillings 2013; Gillings 2015a, b).

Exmoor's prehistoric landscapes are typified by the concerted use of extremely small stones to construct a variety of monument configurations, including standing stones, circles, rows, settings and cairns such as those in Figure 2.1. Some elements of Exmoor's prehistoric landscapes could thus aptly be described as 'worlds in miniature'. Intriguingly, however, a variety of more conventionally sized barrows and cairns are also present, some of which are large, visually prominent features in the landscape, as illustrated in Figure 2.2. This juxtaposition of scales represents an important characteristic of Exmoor's landscapes. Small stone

Figure 2.1 Stone F of East Pinford stone setting with a 30cm scale. Photo Douglas James Mitcham.

monuments are not unique to this area, occurring more widely than has perhaps been generally acknowledged in the literature concerning prehistoric monuments in Britain and Ireland, as well as elsewhere in the world (cf. Gillings 2015c), such as the Khirigsuur monuments of the Mongolian steppe (see Wright 2007 and Gillings et al. 2010: 315). However, here, both an extreme focus on using very small stones and the character of the stone settings themselves would suggest that a distinct regional tradition of monument-building was taking place on Exmoor in the Neolithic and Bronze Age periods.

This chapter explores the potential impact of miniaturisation in the construction and use of Exmoor's miniliths. Rather than thinking of these structures as miniature referents to their larger megalithic counterparts, I argue that scale reduction – in reference to a variety of entities including the human body, other stones within the settings, and local landscape features – is crucial to understanding them. This chapter will first briefly introduce Exmoor's landscape and monuments and provide an overview of the theory and methods used. It will explore interpretative issues with small stone monuments and examine the impact of miniaturisation on Exmoor. Finally, it outlines the conclusions and wider implications of the study in the context of thinking about monuments and miniatures.

Figure 2.2   Longstone Barrow, a Bronze Age burial mound on Challacombe Common. Photo Douglas James Mitcham.

Exmoor: Landscapes and monuments

Exmoor National Park is home to quite substantial, if rather disjointed evidence of landscapes of the late third and second millennia BC, the later part of the Neolithic and the Early (*c.*2300?–1500 BC) and Middle (*c.*1500–1200 BC) Bronze Ages in the UK. It covers an area of some 686 km², within North Devon and West Somerset, with the surviving evidence of prehistoric features largely, although not exclusively, concentrated in the higher areas of remaining open moorland (Riley and Wilson-North 2001: 1, 24). In addition to the stone monuments, Exmoor's landscapes also feature many hundreds of large Bronze Age barrows and cairns, clearance cairns and field banks, an Early–Middle Bronze Age field system and associated structures, Middle and Late Bronze Age house platforms and hut circles, co-axial field systems and enclosures, although very few features have any direct dating evidence (e.g. either artefactual or absolute) associated with them (see Grinsell 1970; Riley and Wilson-North 2001: 20–54, 182; Gillings et al. 2010; Gillings 2013; see Mitcham 2017 chapter 5 for an updated review). These areas today are characterised by large expanses of purple moor grass and heather, are largely devoid of tree cover, and are situated beyond the areas that have been previously enclosed and improved to create grassland pasture (Riley and Wilson-North 2001: 1, 4–5). The paleoenvironmental evidence would suggest that a semi-open landscape existed during the Early Bronze Age with open grassland in the highest areas, with some significant surviving areas of woodland within and around the coombes, although this is admittedly a complex set of evidence which exhibits considerable local variation (Fyfe and Davies 2011: 18; Fyfe 2012: 5, 2768–71; see Mitcham 2017: 33–6 for a summary). The remoteness of Exmoor from any major cities perhaps explains why the prehistoric landscapes here are rarely visited, and partly why the archaeology has been greatly understudied. However, the extent of the survival of prehistoric field monuments as surface features in these areas of open moorland (never subjected to modern ploughing) makes this region one of national archaeological importance. The topography consists of uplands with low flat-topped hills rising to *c.*450 m OD, frequently incised by narrow, steep-sided coombes. These are cut by fast-flowing streams that weave across the landscape; this is a world defined by the topography of coombe and plateau.

The presence of stone monuments on Exmoor was recognised as early as the seventeenth century and from the outset it was the small stone monuments – comprising single and paired standing stones, stone rows, stone settings and stone circles – that captured the emerging antiquarian

interest (e.g. Camden 1701 [1607]: 38). Of particular interest were the stone settings, which consist of a series of upright stone arrangements in various geometric and non-geometric forms. The former includes parallelograms (rectangles), triangles and L-shaped and quincunx forms, whilst the latter encompass vague linear groupings, or more seemingly random spreads (see Chanter and Worth 1905 and 1906; Grinsell 1970, chapter 4; Fowler 1988; Quinnell and Dunn 1992; Riley and Wilson-North 2001: 27, 29; Gillings et al. 2010, 297–300). Whilst this notion of geometric regularity has come under robust critique in recent years (e.g. Gillings et al. 2010: 298–9; Gillings 2015b: 29, 91–7; Mitcham 2017: 14–16), it has still provided an important entry point for discussions of the potential meaning of these structures (e.g. Tilley 2010). Typically, the upright stones range in size from circa 50 cm, to 10–20 cm in height, often being *c*.20–40 cm or less (Riley and Wilson-North 2001: 23; Gillings et al. 2010: 297; Tilley 2010: 309; Mitcham 2017: 161–2, 210–11, 272–4, 329). Some of the smaller stones at *c*.10 cm in height barely protrude above the turf. They are also frequently associated closely with a distinct class of small cairn, *c*.40 cm in height (see Riley and Wilson-North 2001: 24; Gillings 2013: 44–51).

Intriguingly, limited excavation and investigations in recent years led by Gillings has revealed that the stone arrangements on Exmoor have a technology of construction that demonstrates incredible care and attention to detail (see Gillings et al. 2010: 304–8; Gillings and Taylor 2011a, b; Gillings 2015c: 222–7). What has been revealed is a recurrent, albeit quite varied, set of practices on Exmoor involving stone shaping, the frequent use of packing stones or wedges and the careful digging of stone sockets (Gillings et al. 2010: 303; Gillings and Taylor 2011a, b; Gillings 2015b: 11–17 and 2015c: 222–7). These are techniques present at many of the preeminent megalithic sites elsewhere in Britain (see Williams 1988). The apparent small-scale process, or miniaturising, on Exmoor, rather than the enlarging of monuments, provides an intriguing opportunity to explore the impact of processes of miniaturisation on human engagement with stone during the Later Neolithic and Early Bronze Age.

It also raises the question of how this apparent miniaturising tendency should be read. For example, in what sense can these sites be considered as miniature? Are these small standing stones simply miniature versions of larger sites located elsewhere, employing the same construction tropes and methods, or is there a more localised explanation that allows Exmoor's standing stones to be interpreted on their own terms? This chapter examines these issues in the context of monumentality on Exmoor, considering how we should interpret these structures, the impact of miniaturisation and its role in localised traditions of monument-building in prehistory.

Affectivity and miniaturisation

The concept of affectivity, along with aspects of assemblage theory, has much to offer studies of miniaturisation, themes with which my doctoral research engaged (Mitcham 2017, chapters 3 and 4). This work included conducting field investigations of a variety of other types of sites including stone settings on Exmoor such as Porlock Allotment II, which forms the basis of the main case study. Exmoor's stone monuments were interpreted here using the Deleuzian notion of assemblages, with additional ideas drawn from various works concerning the impact of miniaturisation on human experience through the concept of affectivity (DeLong 1981; Stewart 1993; Bailey 2005; Harris and Sørensen 2010; Deleuze and Guattari 2013; see Mitcham 2017, chapters 3 and 4, for a fuller discussion). Assemblage theory can provide us with a framework that allows us to characterise miniaturisation as a process. To summarise, in Deleuzian thought all things, all individual entities, are assemblages, which can join others to form another individual (Normark 2010: 134; Deleuze and Guattari 2013: 295; Mitcham 2017: 41, 49). These assemblages are always undergoing dynamic processes of becoming, with forces of territorialisation working to stabilise them, whilst forces of deterritorialisation are simultaneously trying to disperse them, therefore mediating their interaction with other components (Deleuze and Guattari 2013: 9, 21; Mitcham 2017: 41, 43). If we accept the idea of a miniature entity as an assemblage, we can begin to characterise miniaturisation as a process. I argue that it can be thought of as both a force of territorialisation (a stabilising one) and deterritorialisation (a destabilising one) in the creation of small stone monuments.[1] Assemblages of small upright stones are relatively quick and easy to create, so in simple terms here miniaturisation might be said to be a strong stabilising influence (or territorialising force), perhaps explaining why such a large number (*c*.60) of these stone settings were created in prehistory. Conversely, Exmoor's miniliths are also easily destroyed or reconfigured because of their miniature character, so miniaturisation could also be said to have acted as a destabilising force (or a deterritorialising one).[2]

The second key concept that I utilise is Deleuze and Guattari's development of an idea that originated with Spinoza, that of affectivity, meaning that bodies or things have the capacity to affect other things, as things are also affecting them (Spinoza 1910 [1678]; Merleau-Ponty 1962: 214; Deleuze and Guattari 2013: xv, 304; Hamilakis 2014: 29–30; Harris 2014: 86). This key aspect of Deleuze and Guattari's work has been highlighted recently by Hamilakis, notably that it is not formal

characteristics that define bodies or things, but their capacity to affect, and be affected (Deleuze and Guattari 2013: 304; Hamilakis 2014: 30). Another crucial aspect of this is that the capacities of things to be affected can go unexercised, that assemblages have virtual and actual capacities, and that through their actualisation, all assemblages have this capacity to affect and be affected (DeLanda 2006: 29). I argue that through exploring the emergence and qualities of affective fields and the experience of particular atmospheres, as defined by Harris and Sørenson, this idea of affectivity provides a way of profitably exploring the experiential aspect of assemblages, which I will refer to as their affective capacities, and thereby the particular impact of miniaturisation in the context of Exmoor's standing stones (2010: 153; see Mitcham 2017: 181–2). I also present the idea that the potential for the emergence of quite distinct affective fields was a key characteristic of these dynamic assemblages of small upright stones on Exmoor, a term defined as the relationships between people, places and things through which an emotional response is stimulated (see Harris and Sørensen 2010: 153).

The distinctiveness of these affective fields, which were produced through people's relationships with the Exmoor sites, resulted from the fact that these relationships were different from those found at large megalithic monuments. These led to the emergence of particular expressions of affective fields, known as atmospheres, which were unique and specific: particular emotional worlds occurring in a specific time and place, but which could vary at different times, through the commingling of places, things and persons, only existing through people's apprehension and awareness of them (Harris and Sørensen 2010: 152; Mitcham 2017: 58–9). Harris has recently explored the affective qualities of architecture using assemblage theory at Ardnamurchan in Scotland, whilst Hamilakis has developed a concept of sensorial assemblages (see Harris 2016 and Hamilakis 2014) with both works demonstrating the potential the concept of affectivity has to allow consideration of the experiential and emotional aspects of different entities based within an assemblage theory framework.

Overall, this chapter demonstrates how small things can have powerful impacts and will apply this perspective in exploring the potential use and experience of small stone monuments. These impacts are viewed here as distinct affective fields that could emerge as people lived with, experienced and engaged with the sites, with the potential for highly potent atmospheres to be experienced (Harris and Sørensen 2010: 150, 152). The ultimate aim is to demonstrate how Exmoor's array of lithic monuments, albeit small, played a very active role in the network of

complex relationships that existed between people, materials and landscape in prehistoric Britain.

In summary, these distinct affective qualities made Exmoor's tiny standing stones highly significant in people's lifeways, which, along with their small size, resulted in an entirely different dynamic of human engagement compared to large megalithic monuments. This is important, as because of these differences in the dynamics of human engagement, Exmoor's small stone configurations can challenge conventional understandings of monumentality, which have tended to focus on the raising of very large stone, timber or earthen structures.

The situation on Exmoor was quite different from areas with larger stone monuments. People on Exmoor were often gigantic in relation to the miniliths they assembled and the implications of this need to be thoroughly explored here. This would imply that the practice of building monuments, or engaging with them in Neolithic and Bronze Age Britain, did not necessarily require a large, visually prominent structure, one much larger than the physical size of the people constructing it. Finally, Exmoor's miniliths can also contribute significantly to debates regarding how miniatures and miniaturisation should be defined in theoretical discourse. For example, this chapter argues that a reference to a larger-scale object, or 'real thing' elsewhere, should not always be seen as a defining characteristic of miniaturisation. Instead, it is important to recognise that the relationships between the object and the human body, in terms of size, sense and perception, are of greatest importance in understanding the effects of this practice.

Miniaturisation is a varied and dynamic phenomenon which is most usefully thought of as a relational process. Whilst it can, and frequently does, make reference to larger objects, other places and events, memories and emotions, it would be highly problematic to see miniaturisation as only ever producing a smaller-sized reproduction of a real object that exists elsewhere, especially in the context of understanding prehistoric monuments. With regard to Exmoor's prehistoric small standing stones, this notion is entirely unhelpful and limiting, as Exmoor's small stone monuments are the real entities: there are for example no larger-scale humanly constructed stone settings that are being directly mimicked or modelled at a smaller scale. To apply Bailey's discussion of models and miniatures, for example, the Exmoor standing stones are neither models in the sense that they do not accurately recreate a smaller version of something else, nor are they miniatures if defined solely as a reduced, less detailed, skeuomorphic or partly imaginary small version of something else (2005: 28–32).

The key assumption here is that they *must* represent something else, in some way make reference to an original (2005: 28–32). Instead, whilst accepting that these structures can and do refer to other times, objects, events and places (2005: 28–29), I only partly follow Bailey's perspective in thinking about size reduction in terms of the scale of the human body. What is critical to realise is that there is a diversity in terms of the relations and assemblages, with many different things that any given miniature entity can be entwined with. It is the affective capacities that result from the multitude of relationships they can form that are key to understanding them, not solely their potential to refer to a discrete set of originals or exemplars.

Understanding the small stone enigma

The most important question to resolve with Exmoor's small monuments is how we should interpret these structures. This question will be addressed, before turning to an examination of the impact of miniaturisation on human engagement with stone. A miniature is conventionally thought to be a smaller version or representation of a full-sized object or structure, which generally references a normal or life-sized object (see Bailey 2005: 28–32; Kiernan 2015: 1, 3; see overview of theory and methods). The first question therefore asks whether the monuments on Exmoor conform to these apparent characteristics of a miniature. As noted, the tradition of stone monuments on Exmoor focused on small-scale uprights and structures that are considerably smaller than those usually considered in narratives of Neolithic and Bronze Age monumentality.

Most discussions emphasise the occurrence of monumentality, focusing heavily on better-known megalithic landscapes containing large, visually prominent stone constructions. Most of these employ very large stones, often arranged in circles and rows, as well as individual uprights. As an example, consider the landscapes of Stonehenge and Avebury, which feature prominently in interpretative accounts of Neolithic and Bronze Age Britain (e.g. Barrett 1994; Tilley 1994; Thomas 1999, chapters 3, 7 and 9). On Exmoor, with typical heights of 40 cm or less for standing stones and small cairns, monuments are tiny in comparison to the 2–5 m high megaliths that seem to dominate our accounts.

Whilst ostensibly unique, or at least unusual, it is important to acknowledge that this tradition of stone structures on Exmoor is certainly related to a much wider phenomenon of stone, timber and

earthen monument-building that proliferates across much of Britain during the later third and early second millennia BC. In one sense, then, they could be read as miniature referents to their more familiar megalithic counterparts, or miniaturised versions of larger-scale sites in other regions of Britain. However, this reading of the evidence has severe limitations.

Firstly, there was a widespread tendency to ignore Exmoor throughout the nineteenth and twentieth century, with little sustained attempt to study, survey, excavate or otherwise pay much attention to the stone monuments. The small size of such stone monuments, the apparent lack of substantial house platforms or hut circles, and generally subtle nature of the archaeology, which is often difficult to identify in the field, led to Exmoor being dismissed or treated as inferior to other areas of the south-west, such as Dartmoor or Bodmin Moor (see Mitcham 2017, chapter 2). If we regard Exmoor's stone arrangements as merely referring to megalithic constructs elsewhere, we are simply continuing this tendency to interpret Exmoor's archaeology as somehow of only secondary importance. There is no *a priori* reason why we should interpret Exmoor in relation to somewhere else; instead we should seek to understand Exmoor's monuments on their own terms. Otherwise we risk falling into the trap of concluding that their small size and lack of visual prominence must have meant they were somehow of less significance or importance to the communities that built them.

Secondly, if they are read as simply miniature versions of larger megaliths, we need to explain why this tradition persists and becomes so widespread, even where larger stone monuments could have been built. Exmoor, it should be noted, does have a large number of sizeable barrows and cairns, so substantial monuments of the types other than those under discussion are also present on Exmoor. The explanation for this absence could be argued to be geological, in that Exmoor has little in the way of large or visible surface stone in many areas, consisting of a varied group of Devonian rocks, mostly sandstones and slates (Riley and Wilson-North 2001: 3; Hegarty and Wilson-North 2014: 3–4). This is a quite different geological landscape from nearby Bodmin Moor and Dartmoor, where the granite geology provides ample large stone blocks and dense clitter spreads (Axford 1975; Newman 2011: 5; Hegarty and Wilson-North 2014: 3). However, some large stones, albeit rarely, were erected on Exmoor, such as the 2 m high 'Long Stone'. Furthermore, if this restraint of available resources prevented building large-scale stone monuments, why did people choose not to attempt this, even in the admittedly more limited

areas of Exmoor where much larger stone blocks could have been removed (cf. Grinsell 1970: 12)? Such areas include the exceptionally large rocky outcrops in the Valley of the Rocks, or the large boulders and slabs found eroding out of some of the deeper coombe and valley systems. To give one example, the clapper bridge known as the Tarr Steps, thought to be of medieval date, was constructed from sizeable stone slabs (cf. Grinsell 1970: 12; ENPHER 2018: MSO8673). The reasons for this are likely to be highly complex, and not necessarily purely functional or practical, although the difficulty of extracting such materials might have played a role.

Amongst the stone monuments on Exmoor, there are some examples of size differentiation, suggesting the potential referencing of a larger upright by smaller ones. This is intriguing, because it suggests that in these instances miniaturisation was used as a deliberate strategy, for example at the stone setting known as the quincunx above the River Bray, near to the Chapman Barrows. This hints at a conscious choice to build some stone structures at a reduced scale, especially when larger-scale megaliths were not present and even when larger blocks of stone were available. Rather than reading these structures as simply miniature versions of megaliths we must interpret them on their own terms. They may not have been miniatures according to current definitions (see the overview of theory and methods), but it is the impact of this choice to build on a smaller scale on the act of engaging with certain materials, at a specific point within the landscape, which is important. Perhaps the difference in scale in relation to the human body, with stones much smaller than, rather than much larger than, people, is key in understanding these sites. That is, we should think of the people building and engaging with the sites making themselves giants in relation to the materials of their world.

Finally, if we conceive of miniaturisation as a deliberate process, or a strategy, it could be argued to have had a number of potential impacts or outcomes on the observer. Whether consciously deployed or not in this particular case, the impacts on human engagement with the material world still apply. In this sense, it really does not matter if a strategy of miniaturisation was deployed at the outset on Exmoor. Instead I argue that the consequence of this aspect of their character, whether deliberate or constrained by the available geology, led to a distinct local tradition of stone structures and monuments. For the reasons I discuss below, this distinct tradition persisted and continued, and the small scale was maintained in monumental architecture regardless of raw material availability.

The impact of miniaturisation on Exmoor

The ways in which people could engage with these small stone arrangements is fundamentally different from the megalithic and other earthen monuments known in many areas of Neolithic and Bronze Age Britain (e.g. Scarre 2007; Leary et al. 2010; Richards 2013; Gillings and Pollard 2016). The following discussion explores the character and nature of the affective fields and atmospheres potentially associated with the Exmoor monuments, in order to explore people's potential relationships with, and experiences of, Exmoor's small stone arrangements. In this examination of the impacts of miniatures and miniaturisation I draw on a series of works, the most important being a study of figurines from the central European Neolithic, amongst others (DeLong 1981, 1985; Stewart 1993; Bailey 2005). The key 'impacts' drawn from these works are summarised in table 2.1 (for a more detailed discussion see Mitcham 2017, chapter 4). The more general impacts of miniatures acting as imaginative stimuli, forcing the observer to question them to understand them, and allowing access to different worlds or realities, are well known (Stewart 1993: 54; Bailey 2005: 34, 38). This chapter focuses on three key potential impacts of miniature things, which are to: (i) distort people's perception of time, a less apparent, yet crucial quality; (ii) stimulate imaginative thought; and (iii) draw a participant into the monuments by deploying differences in scale between different stones. The latter technique perhaps coded a meaning into the structures, or referred to other events or places (see DeLanda 2006: 151–6 and Lucas 2012: 200–2 for detailed discussion). The effect of scale reduction in compressing the experience of time was demonstrated by Alton Delong's experiments, which suggested people can perceive time faster in reduced-scale environments. Simply put, this suggested that the smaller the scale of the environment, the greater the sense that time was being experienced faster (DeLong 1981, 1985; Bailey 2005: 36–7).

To date there have been few attempts to use ideas about miniaturisation in interpreting the significance of the actual fabric of the monuments themselves in Britain, although Williams has suggested this idea regarding small standing stones previously (1988: 32–8). Jones, however, has explored the impact of the juxtaposition of scale with regard to monuments and landscapes, seeing scale as a choreography of relations (Nakamura 2005: 32; Cochrane 2008: 144; Jones 2012: 52; Mitcham 2017: 83). This is perhaps not surprising given the dominant place megalithic sites and large monuments play in most narratives of the British Neolithic and Bronze Age periods, but of course, large megaliths were not constructed everywhere.

Table 2.1   The potential impacts of miniaturisation. Originally from Mitcham 2017: 188, with sources indicated.

Impact	Explanation
To stimulate the imagination and allow access to other worlds or realities (Stewart 1993: 54; Bailey 2005: 34).	Miniaturisation can alter the relations between observation and understanding, which encourages thinking beyond what is represented, to experience being drawn into another place (Bailey 2005: 32, 34–5; Stewart 1993: 54).
The qualities of abstraction and compression of something are created in producing miniature things (Bailey 2005: 32).	It can force the viewer to draw inferences in understanding them, allowing multiple readings (Bailey 2005: 32).
Increased potential for engagement (Bailey 2005: 33).	Miniaturisation can have an empowering effect on the viewer making them gigantic, entering personal space (Bailey 2005: 33).
Distortion of people's perception of time (DeLong 1981 and 1985; Bailey 2005: 36–7).	There is a correlation between scale reduction and the compression of the experience of time (DeLong 1981: 682 and 1985: 9). When the scale is reduced people can experience time faster (DeLong 1985: 9; Bailey 2005: 36).

The character of a stone setting, known as Porlock Allotment II, located in West Somerset in the north-central area of Exmoor, is used here to explore these specific impacts of miniaturisation. The site is situated on the upper slope crest of a long sloping hill spur, overlooking the nearby coombes. It consists of four surviving stones in a vague linear group (see table 2.2, figures 2.3 and 2.4). Porlock Allotment II demonstrates clearly why the affective fields, as the relationships through which an emotional response was potentially stimulated, were rather different with these small stone monuments. For example, stone A is just 32 cm high by 25 cm wide and could have been easily carried, moved around and manipulated (see table 2.2). Indeed, the small size of many of the stones used at Porlock Allotment II meant that they could easily have been erected by a single individual or only a few people. The affective fields produced here were defined by this dynamic,

where people could engage with the sites in a much more active and direct way on an individual basis than would have been possible with a group of large standing stones. Of course, the latter would require much greater levels of communal effort and organisation to move and raise them. In contrast, the arrangements of small stones could fairly easily have been manipulated by a single person, allowing potentially radical alterations to the structure of the monuments, or perhaps even their complete or partial removal to other locales. The level of interpersonal engagement with the sites that was possible implies that the relationships through which particular atmospheres (i.e. affective fields) were generated were different from those arising from large megalithic sites. The second important point here is that because people were much larger in comparison to the standing stones, they would literally have towered over individual stones, bringing into play the powerful affects that miniatures and reduced-scale environments can have on human cognition (see table 2.1).

When people constructed and engaged with Porlock Allotment II, they may have experienced a sense of time compression. I suggest that the atmosphere experienced by people at this site may have involved a particular intensity of thought, distorting their perception of how long they had been exploring the stones, potentially adding a sense of disorientation and confusion to this atmosphere. The stones here acted as a highly powerful stimulus to the imagination, forcing them to question and explore the meaning and significance of the stones. This experience perhaps helped people to resolve everyday concerns, to contemplate particular issues and explore alternative understandings of the world (Stewart 1993: 54; Bailey 2005: 34, 38; Mitcham 2017: 190; see section five).

Table 2.2   Stone size data for Porlock Allotment II. From Mitcham 2017: 186; Quinnell and Dunn 1992: 60.

Stone	Height	Width/length	Thickness	Note
A	0.32 m	0.25 m	>0.1 m	–
B	?	0.45 m	0.28m	Partly turf covered
C	1.06 m (c.0.8 –1 m when upright?)	0.34 m	Not clearly measurable as now recumbent	Clear erosion hollow, former upright
D	?	0.6 m	0.3 m	Flat, embedded
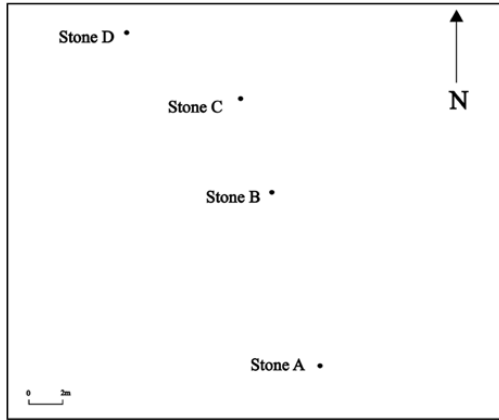
Figure 2.3 Plan of Porlock Allotment II stone setting. Produced by Douglas James Mitcham.

Figure 2.4 Stone C of Porlock Allotment II stone setting. Photo Douglas James Mitcham.

Finally, the juxtaposition of scales at this site is crucial. Porlock Allotment II appears to be situated within a subtle band of stone clitter and shallow outcropping rock, which is typical of a number of the Exmoor stone settings (see Gillings et al. 2010). This suggests that outcropping stone may have been seen as a highly potent medium in the

landscape, which needed to be negotiated with and attended to through the raising of small standing stones within such areas (Mitcham 2017: 190, 337). This site also displays another intriguing characteristic, in that it incorporates stones of differing size. This practice, which is known more broadly at megalithic monuments in other regions, might further imply that miniaturisation was also being deployed on Exmoor *within* the tiny stone arrangements. This is significant because the fabric of these monuments then actively draws attention to this difference. Those experiencing the site are forced to question and interpret what this mixture of smaller and larger stones might mean; perhaps at Porlock Allotment II the smaller stones were placed here because of an expectation that stone was continually emerging from these highly significant spaces in the landscape. Recent evidence has revealed that an active process of stone decommissioning and re-erection was taking place on Exmoor at some sites, for example at Furzehill Common I, and at Porlock Stone Circle, with stones seemingly deliberately removed and carefully laid out in a recumbent position ready for to be reset (see Gillings and Taylor 2011b: 3–5; Gillings 2015a: 11–17). Perhaps even the movement of smaller stones between settings at different times was commonplace. At Porlock Allotment II, the sense of miniaturisation comes from both the placement of upright stones within a larger area of subtle outcropping stone clitter and from the deployment of smaller stones alongside larger ones. A final sense of miniaturisation and scale reduction is provided here by the way such small set stones blend into the landscape, lacking any real visibility from a distance, seeming to flow with the contours of the landscape; blending in, rather than standing out.

Discussion and conclusion

The evidence suggests an evolving local tradition on Exmoor of creating arrangements of upright stones that allowed individuals or small groups to explore relationships between stone and landscape in a highly dynamic, engaged fashion, and on a uniquely personal level. This is a rather different dynamic from the large numbers of people and resources needed to configure megalithic structures. The act of raising standing stones, circles and rows is part of a much wider cultural phenomenon in the late third and early second millennia BC in Britain and it has recently been recognised that within this repertoire small megaliths are more widespread than current narratives suggest (Gillings 2015c: 210). Exmoor's stone monuments

can therefore be seen as referencing a wider socio-cultural phenomenon, but not as superficial miniatures of large-scale sites. The creators are associating themselves with at least one aspect of a set of ideas which has wider currency, in creating these small monument forms, but are also exhibiting a highly distinct local identity of their own, especially through the distinctive stone settings. The stone settings specifically, appear to have no direct parallel outside Exmoor at present.

The varied and powerful impacts of miniaturisation, as suggested in the previous section, provide the key as to why this tradition of small monuments persisted on Exmoor, even where it was not limited by geology. It would explain the variety of monument forms, particularly within the group referred to as settings, allowing experimentation and deployment of this action for many different purposes. The scale of the individual megaliths shaped the engagement that individuals had with materials, with the tendency to miniaturise allowing small groups and individuals to tap into the power of these practices and explore a variety of beliefs, and thoughts about themselves and the world around them. To illustrate this, I have shown how specific impacts of miniaturisation, such as distorting people's perception of time, stimulating the imagination, and drawing in the viewer, may have been deployed at Exmoor's minilithic sites, such as Porlock Allotment II. The setting of stone appears to have been deployed as a technique in many different contexts and situations, in response perhaps to significant events in people's lives and to mediate between other worlds and powers. This latter reasoning may have been particularly important in the context of a society heavily dependent on animal herding and potentially small-scale cultivation in a marginal upland landscape. In such an unpredictable environment, the success or failure of prehistoric farming regimes would have been strongly influenced by seasonal differences in weather and climatic conditions. The assembling of small standing stones therefore could have been intended to influence or engage with the forces that might have controlled such cycles, with the technique of miniaturisation deployed to create and manipulate relationships with such otherworldly powers at specific points in the landscape.

Importantly, the sacred and profane should not be separated: this practice of material engagement was entirely a part of people's world, and in that worldview it was a rational response, an action to achieve something with an expected and tangible outcome for those involved. Therefore the stone settings should not be thought of as part of exclusively ritual landscapes, heavily zoned and devoid of human action. The impacts of miniaturisation, and the resulting potential for the minilithic

sites to be reconfigured, could explain why such variability in form is evident particularly with reference to the stone settings. This was a vibrant local tradition, but one that was entirely embedded within people's everyday experience of landscape, materials and animals.

In terms of the global significance of miniaturisation, Exmoor's tiny standing stones have interesting implications. The most significant is that they question the divide between portable objects and monuments, as fixed structures in the landscape. At times some of Exmoor's miniliths may have been treated like portable objects and moved around, manipulated and explored, whilst at other times they were set in upright groups in the landscape. This suggests that a fluid relationship existed between objects and structures. Size is important in reading their significance, in that their physical size and weight influenced how people could have interacted with them during their creation and use. However, there was not necessarily any simple correlation between building monuments of greater physical size, with an increased complexity of design and labour input, and significance per se. As we have seen with Exmoor's miniliths, their small size led to some very powerful characteristics. Arguably the most important implication of this work is that small structures can also provoke the impacts associated with miniature objects, and that by exploring these qualities we can explore the meaning and significance of small landscape structures in new ways.

Finally, it is also important to remember that communities will not all have followed the same set of beliefs and traditions, so to some groups, these acts of monumental construction and use deploying miniaturisation may actually have been of little interest, whilst to others they were very important. Thus, in terms of understanding miniaturisation in global perspectives, it is important we do not assume miniaturisation and miniatures in all their forms are always of high significance in different societies and cultural contexts, lest we risk simply perpetuating a self-fulfilling argument. To avoid this, we must consider both why it might be significant in a particular case, and why not in others. We must show a willingness to explore the wider nature of the society and cultural context in question, to understand the deployment and significance of miniaturisation, be it high or low.

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Notes

1. In order to maintain clarity when considering the impacts of miniaturisation in later sections, further explicit discussion of processes of deterritorialisation or territorialisation has been omitted. They are included here to make clear my explanation of how miniaturisation fits into an assemblage theory framework.
2. In fact, the stone settings' miniature character continues to contribute to the destabilisation of these fragile assemblages right up to the present day. Around one tenth of the stone monuments were destroyed in the twentieth century alone (Quinnell and Dunn 1992: 4).

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3
Miniaturisation in early Egypt

Grazia A. Di Pietro

Ranging from humble clay figurines found in prehistoric graves (inter alia Hartung 2011) to votives accumulated in temples (inter alia Bussmann 2010), or temple foundation deposits (Weinstein 1973), to wooden models depicting, in astonishing detail, almost every aspect of life and activities to serve the dead in the afterlife (inter alia Winlock 1955), miniatures represent a form of material culture production that characterised Ancient Egypt for millennia. The origin of this practice and especially its role outside the funerary realm in early Egypt are nonetheless poorly known. Beside a few preliminary studies (inter alia Swain 1995), the major characteristics of miniatures, their functions and their contexts of use have never, to date, been fully scrutinised. Although specific categories, such as figurines, have long drawn scholarly attention within the archaeology of early Egypt (Ucko 1968; Stevenson 2017), these have not been contextualised into the wider body of early Egyptian '*worlds in miniature*'.

The purpose of this chapter is to fill this lacuna and to provide an overview of the practice of miniaturisation in Ancient Egypt in its formative stage, the period during which some of the most distinctive features of Egyptian civilisation developed (see Stevenson 2016 for an introduction to the period). More specifically, it draws from the results of a study stemming from the analysis of a collection of miniatures excavated at the late prehistoric settlement of Zawaydah, Naqada (*c*.3500–3100 BC), and is extended to include evaluation of a broader range of coeval assemblages and find contexts. A total of 545 miniaturised objects retrieved archaeologically from settlement sites of both the northern and southern part of the lower Nile Valley (Lower and Upper Egypt, respectively) have been considered for the present study. The relevant sites date to the following

phases of what is defined comprehensively as the 'Predynastic': Neolithic/
Badarian (*c.*4400–3800 BC), Naqada I–II (*c.*3800–3325 BC); Naqada IIIA–B
(Protodynastic; *c.*3325–3085 BC; see Stevenson 2016: 424).

Based on this large corpus of data, the main features and potential
meaning and usage of the earliest miniatures in Egypt, their social con-
text and change over the course of time have been elucidated. Details of
the methods adopted, analyses performed, results and potential signifi-
cance of this investigation are discussed in the following sections.

Methodology

As I enquired into the elements of the world that were being miniatur-
ised in early Egypt, a major part of the investigation required tracking
the physical characteristics of miniatures which could provide informa-
tion about the ways in which they were being produced (technology) and
rendered (mode of representation), as well as their relationship to their
full-size prototypes. Overall, the results from this research illustrate the
disparate choices involved in the process of miniature-making in this spe-
cific study area. In-depth analysis of the context where miniatures were
found and, wherever possible, of their association with other elements
of material culture alongside pertinent cross-cultural comparisons have
been used to try to decode some of their meanings and functions. Poten-
tial evidence of social actors and social categories connected with the
practice of miniaturisation in early Egypt has been gleaned from inherent
features of the miniature objects themselves and, again, from the anal-
ysis of their archaeological context. Finally, limited funerary data and
presence-absence data of miniatures in settlement contexts have enabled
the tracking of potential changes in this material culture over time.

While other publications within this area of study have focused
on specific categories of miniatures, such as anthropomorphic (Ucko
1968; Stevenson 2017) and zoomorphic figurines (Anderson 2007),
the present work considers all elements of the early Egyptian miniatur-
ised world, with only a few exceptions. This is a common approach in
studies of other regions in their pre- and proto-historic periods (inter
alia Marangou 1992), and is primarily aimed at putting each miniature
category into context and elucidating the character of each through
comparison and contrast with homologous miniature finds. In addition,
figurines themselves have also been more recently redefined as minia-
tures (Bailey 2005: 26−44), and so their separation from the rest of
these figural forms should be transcended.

The results of the investigation reported in the present chapter originate from my PhD research at the University of Naples 'L'Orientale', Italy, which was completed in 2011 (Di Pietro 2011a). As part of this research, I conducted full documentation and a re-examination of archaeological material excavated by an Italian expedition at the site of Naqada (Zawaydah), in the 1970s and 1980s (Fattovich et al. 2007). This material includes a number of clay miniatures, which for their concentration at the site and association with other specific classes of artefact have very few parallels in other coeval settlements excavated to date. A preliminary description of these objects has already been published (see Di Pietro 2011b) and another study contextualising this assemblage within the practices of use of models and miniatures in the Predynastic period in Egypt has also been conducted and published (Di Pietro 2011c).

Since then, I have undertaken a more systematic review of all of the evidence concerning miniaturised artefacts that have been retrieved from sites within the geographical area and temporal span under investigation. A sample considerably larger than in previous studies has been taken into account and new questions have been posed of this material, such as considering whether there is any evidence of change in the practice of miniaturisation over time. The data collected have been assembled into a database and specific elements have subsequently been inspected with regard to their proportion within the relevant assemblage and considered for further analyses (e.g. presence-absence statistics). Whilst a summary of the data and results from this investigation are reported and discussed in the next two sections, the criteria used for the selection and exclusion of the data themselves are briefly outlined here.

Data concerning miniatures recovered via excavations and surveys from settlement sites of both Lower and Upper Egypt have been taken into consideration for the present research.[1] From north to south, these sites are: Tell el-Fara'in-Buto (Von der Way 1997), Sais (Wilson et al. 2014), Tell Ibrahim Awad (Van Den Brink 1989), Tell el-Farkha (Chłodnicki et al. 2012), Merimde-Benisalâme (Baumgartel 1965; Eiwanger 1984, 1988, 1992; Rowland and Tassie 2017), Maadi (Rizkana and Seeher 1987, 1988, 1989; Badawi 2003; Hartung et al. 2003), Mostagedda (Brunton 1937), Badari (Brunton and Caton-Thompson 1928), North Spur Hemamieh (Caton-Thompson 1928; Friedman 1994), Abydos (Peet 1914), el-Mahâsna (Anderson 2006), el-Amra (Hill 2010), Zawaydah, Naqada (Di Pietro, in preparation), 'South Town', Naqada (Baumgartel 1970), Khattara sites (Friedman 1994), El-Tarif (Ginter et al. 1998), Armant (Mond and Myers 1937; Ginter and Kozłowski 1994), Adaïma (Midant-Reynes and Buchez 2002), Hierakonpolis, desert settlement

area (Hoffman 1982; Friedman 2009), Nekhen, Hierakonpolis (Di Pietro personal database), Kom el Ahmar, Hierakonpolis (Needler 1984; Cleyet-Merle and Vallet 1982), Nag el-Qarmila (Gatto 2014), and Elephantine (Kopp 2006) (see Figure 3.1).

Following the initial focus of research on the miniatures from the settlement area at Naqada (Zawaydah), one of the major objectives has been exploring how these artefacts may have been used by early Egyptians in their daily life. As a consequence, material found in cemeteries has been excluded from this data collection, although results from some recent studies about miniatures in funerary contexts have been included in the following discussion. In addition, miniaturised objects recovered from many temple deposits of early Egypt (inter alia Bussmann 2010) have not been considered for the present study. Although temples were located within settlements, they usually included offerings that have been accumulated over the course of centuries and whose chronology
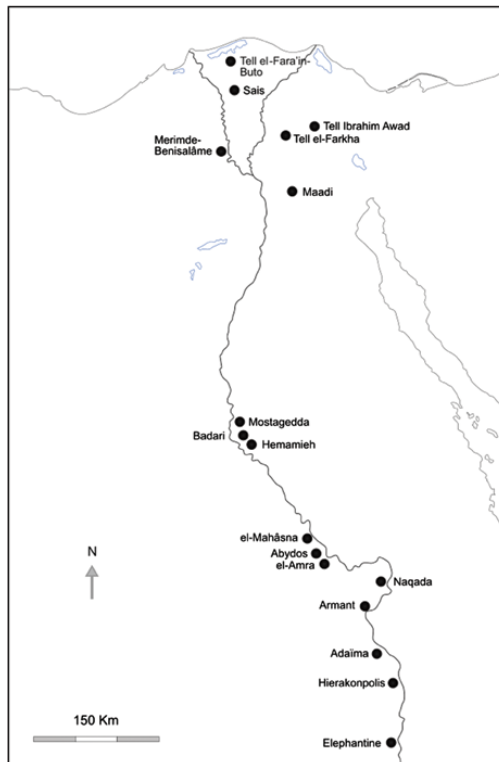
Figure 3.1   Sites mentioned in the text. Compiled by G.A. Di Pietro.

is very difficult, if not impossible, to define. Nonetheless, a few collections retrieved in temple areas, but dated more tightly, are included in the corpus under examination (e.g. Tell el-Farkha). Amongst the miniaturised material that has been excluded from the corpus are figurines in a very fragmentary state or figurines for which an attribution (human vs. animal) is impossible to make. Figurines that are found attached as embellishment to other objects, for example ceramic vessels, have not being considered. Finally, other three-dimensional figurative items, such as tusks (cf. Stevenson 2017: 65) or pendants, as well as two-dimensional figurative artefacts such as slate palettes reproducing various animals in small scale, are not included in the corpus.

Overall, by adopting the aforementioned criteria a total of 545 miniatures have been identified. Of these more than half (n=306; 56% of the total) are miniature vessels, 28% are figurines (111 are miniature representations of a range of animals and 40 are anthropomorphic figures) and 16% (n=88) are miniature boats.

Before presenting in more detail the results of this study, it is necessary to highlight some limitations of the present work, mainly related to constraints posed by the literature used in this chapter.

Firstly, of the sites considered, not all archaeological materials recovered through excavation have been published. For example, for a number of sites only data about their ceramic repertoire, which usually includes miniature vessels, is known (e.g. Khattara sites; Friedman 1994). For other sites only data about their small finds, which can include a variety of miniatures, is available (e.g. el-Mahâsna; Anderson 2006). As a consequence, the full miniature assemblage from the foregoing sites remains unknown and all figures reported within this study may increase with the final publication of relevant reports.

The largest of the four groups identified, miniature vessels, requires a more detailed introduction, because within the published accounts of ceramic material available for the sites under review, 'miniature vessels' have only rarely been characterised as a distinct ceramic form (Friedman 1994 is an exception). The relationship of miniature vessels with 'normal-scale' vessels as well as the distinction between a 'small vessel' and a 'miniature vessel' often remain problematic. For the purpose of the present work, very small vessels that either have been called 'miniature vessels' (usually without any explicit definition) in the pertinent publications or vessels that appear *considerably* smaller than the bulk of the vessels in use in the relevant sites have been counted as 'miniature vessels'.

Defining the object and the context

Miniature-making choices as reflected by archaeological material of early Egyptian settlements

Of all the objects that the early inhabitants of Egypt utilised, vessels are the most abundant category that appear to have been represented in the round at a reduced scale. The majority of miniature pots are in the form of bowls (57% of 306; n=175), while jars account only for 21% of the recorded assemblage (n=63). A variety of types and subtypes are discernible within these two large groups. Tiny hemispherical pots with a direct rim, rounded base and convex contour are the most common within the bowl group (n=46, see Figure 3.2), followed by deeper vessels, with a tapered body and a direct rim (n=31) and bowls with a slope contour, direct rim and flat or slightly rounded base (n=36). Jars range from ovoid shapes with a rounded base to more tapered forms with pointed bottoms.

Of the objects being miniaturised in early Egypt, boats constitute another conspicuous group. The largest assemblage of miniature boats ever retrieved in a non-funerary context for the Predynastic is the one collected by an Italian team at the site of Naqada (Figure 3.3). This collection, which includes 44 fragments, constitutes an ideal starting point for a closer assessment of this class of miniatures as a whole for the period under review. The heterogeneity of this archaeological material, in addition to its fragmentary state of preservation, prevents these tiny boats from being organised into a strict typology (Di Pietro 2011b: 63, note 2). When their morphological appearance is examined in detail, there is a great deal of variability: boat hulls can be either almond-shaped or with a very slim outline and straight sides (Figure 3.3a and 3.3b, respectively)

Figure 3.2   Selection of miniature vessels found at the settlement of Zawaydah, Naqada (field inv. nos 24, 25, 81, 26; photo G.A. Di Pietro).
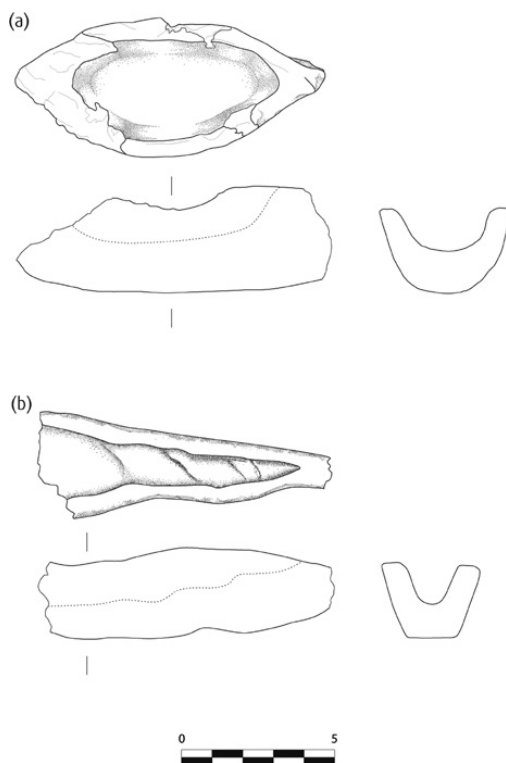
Figure 3.3 Selection of miniature boats found at the settlement of Zawaydah, Naqada (field inv. nos 28, 532a; drawings G.A. Di Pietro and Nadia Sergio).

or have quite a wide beam. Boat bottoms can be rounded or flattened (Figure 3.3a and 3.3b, respectively). As for their extremities, both the high degree of stylisation and the fragmentary condition of such boats hamper the ability, for example, to distinguish which end was intended to be the prow and which one was meant to be the stern. With regard to the shape of the boat extremities, they can be either gradually tapering, or more elongated and converging to a tronco-conical tip or flattened on both sides (Figure 3.3b). Furthermore, most are slightly bent upwards, while a few are curved downwards. The same characteristics, variously combined, can be detected on the majority of miniature boats retrieved from other coeval habitation sites of the Nile Valley.

The realm of representations of animate beings includes zoomorphic and anthropomorphic figurines. Of the recognisable animal species, bovines appear to be the most common subject depicted (46% of the

animal figurine assemblage; n=51). Other species known to be domesticated during the period under review (cf. Lesur 2013), for example ovines and pigs, are rarely represented or at least recognisable in the record: two ovine figures are recorded at Hierakonpolis (inv. nos 58.222, 58.227, Musée d'Archéologie de Saint-Germain-en-Laye; Cleyet-Merle and Vallet 1982: 129), one at el-Mahâsna (inv. no. MAP969; Anderson 2006: 222, 225) and another at Tell el-Farkha (Chłodnicki et al. 2012: 233–4, fig. 35). One pig may be attested at the Naqada settlement area (Di Pietro 2011b: 68–9, fig. 3f). Wild animals are also rare: single statuettes of hippopotami have been identified at Adaïma, Badari, Hierakonpolis and el-Amra (Midant-Reynes and Buchez 2002: 454, 475, pl. 4.23, no. 3; Brunton and Caton-Thompson 1928: 6, 34, pl. xxvii, 5; Needler 1984: 121, 359–60, cat. no. 285; Hill 2010: 325, 356, fig. 5.28). One lion figurine was found at el-Amra and an elephant figurine at Hierakonpolis (Hill 2010: 325, 354, fig. 5.26a–b; Needler 1984: 121, 357–8, cat. no. 283). Although the number of zoomorphic figurines that do not allow any identification is quite high in the assemblage under consideration (31%; n=34), it may be still significant the fact that at a number of non-funerary sites, bovines remain the most prevalent subject depicted three-dimensionally (e.g. sites of Merimde, el-Mahâsna, Armant).

Within the corpus of anthropomorphic figurines, female representations outnumber male representations: 18 of the 40 figurines can be sexed as female, while only five figurines can be categorised as male individuals. Unfortunately, the number of fragments from human figurines whose gender cannot be determined is very high in the corpus (n=17), so that the significance of this specific choice within miniature representations of human subjects cannot be completely grasped. The same difficulty also remains if the whole corpus of figurines, from both funerary and non-funerary contexts, is taken into account (Ucko 1968: 176; Stevenson 2017: 68).

The majority of the described miniatures are made of clays that were locally available to the inhabitants of the Nile Valley (n=530; *c*.96%), either clay containing silt from the Nile River or, more rarely, calcareous marl clay obtained from the desert areas adjoining the valley. After their initial collection or mining, these clays could have been further refined (e.g. through levigation) and mixed with water either alone or with the addition of tempering materials such as sand, crushed limestone, animal dung, chopped straw or other fine organic inclusions. Other raw materials employed for the production of small-sized artefacts in the context under examination include: a variety of stones (basalt, breccia, alabaster and limestone are represented within the miniature vessel corpus; chert

and alabaster within the figurines), ivory and copper (out of which a few statuettes are made).[2]

Whilst there is very little data about the technology of these latter objects reported in the published accounts, miniatures made of clay and information about their manufacture are generally described more extensively in the available literature.

For the miniature vessels, material of the corpus may be sorted tentatively into two major groups: a number of small pots appear to be hand modelled and finished in ways that are analogous to the full-size ceramic corpus attested within the relevant sites; for example they include well-defined shapes with slipped and polished surfaces. A second group of miniature vessels is instead characterised by quite a coarse manufacture, which is sometimes no further refined. Vessels of this latter group are generally only slightly baked or have been baked at low temperatures, in contrast to the corresponding normal-scale vessel assemblage. The incidence of these two major classes varies from site to site: for instance, miniature vessels of the first type are prevalent at Maadi (Rizkana and Seeher 1987: 45–6, 91–3, 99–100, pl. 33–4, 48), while they are rare at the settlement of Naqada (Zawaydah), where they account for less than 5% (cf. Di Pietro 2011b: 66).

Most of the boat miniatures in the corpus appear to have been modelled by hand, usually coated with a thin film of clay or slip and smoothed only slightly. The collection of small boats from the settlement of Maadi, in Lower Egypt, is unique, including a variety of exemplars decorated with red painted motives on a whitish slip (Rizkana and Seeher 1987: 47–8, 105–6, pl. 65–6), while such a decorative choice is known in Upper Egypt only from models recovered from graves (i.a. inv. no. UC10805, Petrie Museum; Petrie 1920: pl. XXIV, 17).

Detailed information about techniques employed in the manufacture of other types of clay miniatures, such as zoomorphic and anthropomorphic representations, is best provided by the study conducted on the assemblage retrieved at the site of el-Mahâsna, which includes no fewer than 34 recognisable statuettes (Anderson 2006: 216–24). Specific features of their surface suggest that these figures were formed in multiple parts that were subsequently joined. Then they were allowed to dry slowly and were further refined by means of a sharp implement. In other cases, the clay body of the figurine was modelled around a stick or a dowel and specific parts, such as the heads, were added separately. The dowel was either removed, as in the animal figurines found at the site under discussion, or was possibly retained as a support of the whole figure, in the case of anthropomorphic statuettes, such as the ones known

from the settlements of Merimde (inv. no. V.196; Eiwanger 1992: 59, 127; pl. 88) and Naqada (Di Pietro 2011b: 67).

In addition to raw material selection, forming techniques, surface treatment and decoration, the final stage of the production of clay miniatures needs to be further scrutinised. The assemblage under review includes a number of miniatures that have been left unfired after their shaping and subsequent refinement (n=39; 7.36%). The highest number of unbaked exemplars is found amongst figurines (n=31; 20.53%), while only 2.33% and 1.14% of miniature vessels and miniature boats respectively are reported to be unfired. These percentages should probably be regarded as too conservative, since for a number of published clay objects it is unreported whether they were baked or not. Furthermore, for the numerous miniatures whose fragile nature or colour suggest that they have been baked at a very low temperature or for a short length of time, the degree to which this firing was intentional or was the result of post-depositional conditions cannot be ascertained.

Other choices involved in the process of miniature-making concern the mode of representation of the objects and beings miniaturised and the relationship of miniatures with their full-size prototypes. In our corpus, strongly stylised depictions of animals, humans, boats and vessels coexist with more realistic representations of the same objects and creatures. The degree of stylisation varies across and within the different categories of miniatures. Some extremely stylised examples are found, for instance, within the animal figurines and, in particular, in the assemblages retrieved at the Upper Egyptian sites of el-Mahâsna and Armant. From these two settlements a number of figurines mainly depicting bovines are known that are characterised by bodies roughly made in the form of a cylinder, with no indication of legs and with only head and horns more fully developed (el-Mahâsna: see Anderson 2006: 222–4; Anderson 2007; Armant: see inv. nos 10207–10213, Manchester Museum; Mond and Myers 1937: 175–6, pl. LV, fig. 6, nos 101–7). More naturalistic depictions of animals with better-defined limbs and some indications of facial features do also exist and have been recovered from other early Egyptian settlement areas (e.g. some figurines from Hierakonpolis: inv. nos 09.889.323–327, Brooklyn Museum; Needler 1984: 121, 357–65, cat. nos 283, 285, 289–91, pl. 77); see Figure 3.4.

Within the corpus of anthropomorphic figurines, as well as extremely rough figures with head and arms rendered by mere projections (e.g. Brunton 1937: 21, 56, pl. 26, 2), more naturalistic and well-proportioned figures are known (e.g. Brunton and Caton-Thompson 1928: 46, 61, pl. liii, 47; lviii, 5; cf. also Stevenson 2017: 79). Elements

Figure 3.4 Terracotta figurine of a cow from Hierakonpolis (10 x 5.8 x 17cm; Brooklyn Museum, Charles Edwin Wilbour Fund, 09.889.323. Creative Commons-BY).

drawn from reality and carefully depicted are not only related to universal physical features (e.g. beard, lumbar dimples), but sometimes also reflect cultural choices, for example body ornamentation in the form of tattoos (inv. no. Mah.IV.1; Anderson 2006: 221, 284).

Intentional stylisation is also a characteristic of most of the boats present in the corpus and, together with the observed lack of standardisation, raises the question as to whether these miniatures were intended as replicas of specific boat types (e.g. boats made of papyrus bundles) or, more generally, if they were meant simply to convey the idea of 'means of navigation'. On the other hand, more accurate three-dimensional depictions of boats are occasionally attested, such as, for example, two terracotta models from the desert settlement area at Hierakonpolis, today at the Musée d'Archéologie de Saint-Germain-en-Laye. The first one, characterised by thin bulwarks and a flattened high prow (inv. no. 58.220; Cleyet-Merle and Vallet 1982: 129; Needler 1984: 386–7, pl. 87, no. 3) has been suggested to depict a wooden boat (De Cénival 1973: 30), while the second one features in the central area of the hull details of what have been interpreted as 'thwarts and shelf', thus possibly mirroring elements drawn from full-size boats (inv. no. 77.754; Cleyet-Merle and Vallet 1982: 144; Needler 1984: 386–7, pl. 87, no. 4 with references).

The dialectic between stylisation and realism is also reflected within miniature vessels of the corpus: the two major groups of pots reported above can also be viewed in terms of different degrees of stylisation. While vessels of the first group, well modelled and well finished, tend to be a more accurate reflection of full-size pots, coarsely made vessels, labelled above as the second group, were possibly just intended to convey the general idea of 'container'. The assemblages of miniature vessels from the sites of Maadi and Naqada (Zawaydah) epitomise this dichotomy. The excavators at Maadi observe that 'Many miniature jars are copies of normal-sized jars … Although the proportions do not always correspond exactly, their close relationship to the normal jars is obvious. Rare types were also copied as miniature vessels…. The miniature bowls also occur in the usual shapes of the normal-sized vessels' (Rizkana and Seeher 1987: 46). Conversely, most of the miniature vessels found at Zawaydah are only a pale reflection of the full-size pots from the same site, not only in terms of their manufacture, but also in their morphology.

Potential meaning and function of miniatures

For most of the individual miniatures presented above their potential meaning and function remain elusive. Regrettably, morphological and technological features of these artefacts, as well as their state of preservation, are only rarely indicative of their possible usage. Furthermore, the majority of the settlement sites where this material has been found have usually suffered severe disturbance over time, so that any analysis of the context of such finds unfortunately provides little insight into the possible use of these miniatures.

Nonetheless, an assessment of the available archaeological evidence can lead us to comprehend at least some of the meanings that such objects may have had and some of the functions that they may have served in our study area. In general, it can be said that miniatures must have played a *certain* role in connection with everyday life of early Egyptians, as well as with their funerary world, since these types of artefacts are found in most sites of the period under review in variable quantities. Following Stevenson's remarks about anthropomorphic figurine use during the Predynastic period, however, it may be suggested that most of the discussed miniature categories were probably 'not widespread and pervasive things of daily life' (Stevenson 2017: 65).

This review of the contexts of retrieval of the miniatures within the Predynastic settlements indicates that most of the miniatures were

probably found in secondary deposits. In such cases, therefore, suggestions about their original context of use and the ways these were possibly being employed remain highly speculative at best.

Amongst the rare cases of *in situ* material there are two miniature bowls reported to have been found as lids on mouths of normal-sized jars, at the settlement of Maadi (inv. nos 1897; E.225; Rizkana and Seeher 1987: 46, 99, pl. 48, nos 11, 21). At the same site, at least one exemplar of miniature bowl is reported to contain traces of a greasy substance, which has led to the suggestion that some of these miniature vessels were used as containers for cosmetics (Rizkana and Seeher 1987: 46). Nonetheless, these may be only some of the functions that miniature vessels may have performed in this as well as in other coeval contexts.

Modern excavation at the settlement of el-Mahâsna has provided evidence of the way another category of miniatures, in this case figurines, may have been used in early Egypt. The excavator at this site has observed traces of pre-depositional wear and abrasion on certain figurines, both anthropomorphic and zoomorphic, and, based on the distributive pattern of the recovered fragments, has suggested that some figurines were intentionally broken and discarded following use. Overall, figurines in this context are suggested to have been utilised as part of rituals taking place within the settlement area (Anderson 2006: 218, 224, 285). A number of figurines retrieved within a cultic-administrative complex, including buildings identified as shrines (Chłodnicki et al. 2012: 176, 207, 233, figs 9, 35), at the Lower Egyptian settlement of Tell el-Farkha, confirm that also in other parts of Egypt such objects may have served a ritual function within settlement contexts, although this use should not be considered exclusive.

Miniature boats may also have served a ritual or cultic purpose in some Predynastic contexts, although evidence from the corpus supporting this interpretation is limited to one exemplar found at the site of Elephantine, in the area of the temple of Satet (Kopp 2006: 75, 142, pl. 31, 491), and the aforementioned boats from Hierakonpolis, recovered in an area possibly to be identified with Locality Hk29A (Friedman personal communication), seat of a ceremonial centre (Friedman 2009).

The miniature material found at the settlement of Naqada, in the sector known as Zawaydah, deserves a separate mention. At this site, in a relatively restricted area, a conspicuous quantity of figurines, miniature boats and miniature vessels have been retrieved. These were associated with a number of small tools and administrative items including counters, seals and clay sealings. In this specific context it is the co-occurrence of the various types of miniatures with accounting

and administrative devices that may help in our interpretation, since this is a recurring pattern of finds especially common in the Near East (Green 1993: 21). The author has suggested that at Zawaydah miniatures may have reproduced objects and beings (boats, containers, people and animals) involved in the range of 'transactions' which took place at the site, based on the administrative material found. Such a miniaturised world may have been used as part of some ritual or ceremonial activity, whose exact character and meaning escape our understanding (Di Pietro 2017: 154).

The foregoing interpretative hypothesis takes into consideration analogous patterns within material culture identified in other cultural spheres as well as the explanations proposed for them. These are well summarised by the following remarks made by David Wengrow with reference to the period of transition from village to urban life in the Near East:

> The processes of shaping, firing and even breaking forms in clay provided a performative language of negotiation in which transactions could take place, lending dramatic weight to the proceedings. The presence of a ritualistic aspect to the conclusion of exchanges is likely, given the apparent absence of other forms of contract and the lack of centralized authority to enforce property rights at this time. Under these circumstances, it might be envisaged that the representation of objects in clay played a role in the conduct of exchanges, particularly those involving high levels of risk and commitment, where the prior negotiation of agreeable terms may have been important. The transport of livestock … over long distances would constitute one such scenario. Depictions of wild animals … in figurine assemblages may, in turn, indicate the promise of carcasses to be taken in the hunt and presented at ceremonial feasts, where new cycles of exchange would have been initiated and existing ones fuelled…. A significant number of female anthropomorphic figurines … may have represented the principal objects of pre-nuptial negotiations, against which animals and easily-portable manufactured goods, similarly represented and enumerated by clay figurines and geometric tokens, were bartered and exchanged (Wengrow 1998: 785).

Although this study focuses on miniaturised material in use by early Egyptians in everyday life, a mention of the miniatures employed in burial contexts cannot be left out of consideration. Indeed, over the whole

Predynastic period miniatures, together with models, occasionally occur as part of both grave furnishings and offerings. In these cases, miniatures must be viewed in the light of early Egyptian funerary beliefs and rituals. It is likely that they acted as substitutes for real objects and beings and were believed to become real by a series of magical processes, so that they could have served the dead in the afterlife. The production and use of miniatures and models in Predynastic mortuary contexts have already been the subject of a few studies. Their flourishing has been attributed to both economic factors (miniatures and models were usually produced in a relatively cheap material like clay) and practical reasons (e.g. miniatures of objects and beings could have been easily placed in the relatively restricted space available in the tombs; also, models of cattle or servants did not require further maintenance after their deposition in the tombs) (Swain 1995). However, in some cases other factors may have contributed to the selection of miniatures as grave goods: for example, miniature vessels associated with infant burials may be seen either as toys or as intentional reproductions of the physical specificity of the dead (Buchez 1998: 99–100). Furthermore, some miniatures, for example figurines representing undomesticated animals (e.g. hippopotami), were probably not intended as substitutes for real animals but may have symbolised ideas and concepts that were important to the deceased, but remain unknown to us (Hartung 2011: 489).

The ephemeral nature of some of the miniatures must also be considered within this discussion about their potential usage. It is probable that miniature objects left unfired or only slightly baked were intended not to be further manipulated after their production. What would have been of importance in these cases was the act itself of making and shaping such artefacts, rather than their interaction with other human beings or their durability. Also, evidence from the funerary realm indicates that part of the miniature offerings were produced very shortly before the burial and were placed in the tomb while still soft and malleable (Hartung 2011: 468, 470) and, paradoxically, it is in this very fragile form that they have endured the passage of time.

Social context of the practice of miniaturisation and change in the miniatures' figurative repertoire

The social actors involved in the practice of miniaturisation in early Egypt, e.g. miniature-makers and miniature-users, and their social categories (e.g. status) can rarely be gleaned from the archaeological evidence available from Predynastic settlements. Nonetheless, the following

considerations can be made based on the inherent features of the miniature objects of our corpus and their context of retrieval.

Well-shaped and well-refined specimens such as, for example, most of the miniature vessels attested at the site of Maadi or items made of materials such as stone or ivory may have been produced by craft specialists (e.g. potters and other relevant artisans), considering the level of skilled work required for their manufacture. For the rest of the miniatures presented here, however, it is impossible to propose any suggestion about the potential makers.

As far as the people who were making use of the range of miniatures described in our study area, 'children' are amongst the most frequently proposed miniature-users, with the objects themselves often being considered as 'toys' (inter alia Hayes 1965: 107; Needler 1984: 335; Friedman 1994: 407). Although the interpretation of miniatures as children's toys is plausible, it cannot adequately explain the totality of the miniature objects under discussion.

For example, rituals thought to have occurred at the site of el-Mahâsna involving the use of figurines are attributed to the local elites and interpreted as a means of legitimisation of the elite position of leadership, based also on other pertinent aspects of material culture (Anderson 2006: 258–60). Similarly, if the hypothesis is accepted that at the site of Naqada (Zawaydah) miniatures were being produced and utilised as part of rituals connected with administrative activity, the local elites, probably controlling the pertinent transactions, should also be seen as the primary miniature-users. 'Elite patronage and elite clientele' are also reflected by the material culture items retrieved at the ceremonial centre in Locality Hk29A at Hierakonpolis (Friedman 2009), from which it is likely that a number of figurines and miniature boats derive.

In the context of early Egyptian shrines and temples, where miniatures have also been found, possibly worshippers (and possibly priests) were the major actors involved in the use of such objects, and the latter are possibly to be viewed as votive items (see Pinch and Waraksa 2009 for an introduction to the Egyptian tradition of votive practices).

Funerary contexts of the period under review remain almost unexplored as a source of potential information on a range of topics relevant to miniaturisation, including for example how miniatures may have been correlated with sex, age, wealth and the status of the owner of the tomb where the relevant objects were being placed. Analysis of the distribution of miniatures and models at the Predynastic Cemetery U at Abydos has led the excavator to the preliminary conclusion that 'models of real

objects made of unfired clay were not intended as "cheap" substitutes in poorer tombs; on the contrary, they seem to have more often supplemented the inventory of the wealthier tombs' (Hartung 2011: 490–1). The analysis of the find context of Predynastic anthropomorphic figurines based on a larger cemetery sample has, instead, offered a somewhat opposite perspective and has shown 'that splendour of grave and the presence of figurines do not necessarily go together' (Ucko 1968: 181). Unfortunately, this latter study does not include new data from modern cemetery excavations and further systematic research is needed to clarify the pattern of use of the various categories of miniatures as grave items and potentially to infer how the relevant social context was related to the miniaturisation process.

A closer examination of the available funerary evidence would also be crucial for elucidating how the practice of miniaturisation may have changed over time in the period under review. The foregoing analysis of funerary offerings at Cemetery U at Abydos has revealed some changes in the repertoire of clay miniatures in this specific context. In particular, standing animal figurines are found in tombs of the early Predynastic period (early Naqada I), anthropomorphic figurines with the head in the shape of a bird were used over the entire Naqada I period, while in later times (Naqada IId) only boat models occur. This chronological distribution seems to be confirmed by parallel finds from other cemeteries, especially in the Abydos region, but the reasons behind this evolution are not completely clear. Furthermore, whether this pattern reflects only local funerary practices at Abydos or wider developments occurring also in the other parts of the Nile Valley remains to be seen (Hartung 2011: 490–3).

Settlement data related to our miniature corpus provide a slightly different picture from the one suggested by the Cemetery U at Abydos. All the major categories of miniatures previously discussed are attested in Lower and Upper Egypt from Neolithic times (e.g. Merimde) and all subsequent stages up to the Protodynastic period (e.g. Tell el-Farkha). The only exception are miniature vessels, none of which can be securely ascribed to Badarian sites or Badarian layers in Middle and Upper Egypt, but they occur in all other stages of the Upper Egyptian cultural sequence as well as in Lower Egypt since the Neolithic.

Presence-absence data pertinent to various subgroups within each miniature category have been further inspected in search of potential diachronic patterns, but very few trends seem to emerge from this analysis. Some possible patterns may involve zoomorphic figurines: for example, the number of sites at which such miniatures occur seems to

increase in the late Predynastic period. Interestingly, the latter is also the stage when the widest variety of recognisable species is attested within the animal figurines assemblage. Regrettably, the number of figurines whose species cannot be clearly identified remains high, so that the significance of this latter trend cannot be properly evaluated.

Discussion and conclusions

The investigation conducted on miniaturised objects retrieved from archaeological excavations and surveys in all known Neolithic/Badarian, Pre- and Proto-dynastic settlement sites of the lower Nile Valley, and whose results have been presented in this chapter, has allowed the elucidation of the origins of a form of material culture production that will continue to be typical of Ancient Egypt for millennia.

    The variety of choices involved in the process of miniature-making in early Egypt has been elucidated by this study for the first time. A relatively wide range of both beings (humans and animals) and objects (containers and boats) were being represented in the round at a reduced scale. Regrettably, the reasons behind specific figurative choices continue to elude us: some of the subjects are suggested to illustrate economic wealth (e.g. representations of bovines; cf. Hendrickx 2002: 276–80), whilst others may have had other symbolic meanings or, conversely, may have been intended to signify actual creatures and objects. The choice of clay as the main raw material employed for the production of miniatures may be due not only to its wide availability and low cost, but also the range of affordances it may have provided, such as, for example, that it could have been manipulated relatively quickly and easily.

    The case study presented allows us to move beyond the traditional concept of miniatures as simple toys. The archaeological evidence suggests that potentially deeper meanings and functions existed which may have connected miniatures with a range of rituals and transactions, along with more mundane uses (e.g. miniature vessels as containers for cosmetics). As a consequence, miniature-users are not only to be found amongst children, but they may also have ranged from ordinary worshippers to the ruling elite.

    Synchronic variation across the Nile Valley has also been clarified by this study: miniature objects may have taken a variety of forms and meanings at different, but coeval, sites. On the other hand, evidence of change over the course of time in the study area and period is still very

limited and concerns the figurative repertoire of miniatures, rather than change in the practice of miniaturisation itself. The latter, along with a number of other relevant aspects (e.g. social context), may be further investigated in the future by expanding the foregoing analyses to the rich artefactual record provided by the Predynastic cemeteries.

Notes

1. Miniature objects acquired from the antiquities market and subsequently published are not considered in the present study. Settlements from which no miniatures are known have not been mentioned in the list of Predynastic sites reported above.
2. With the exception of a few ivory figurines, no other miniatures made of organic materials have survived in the archaeological record of Predynastic settlements.

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4
Miniaturisation among the Makah

Jack Davy

The Makah people, known in their own language as *qʷidičča?a.tx̌*, or People who live by the Rocks and Seagulls (Erikson 2002: 9), inhabit the village of Neah Bay on Cape Flattery, the north-western tip of the continental United States. They are a people shaped by the intersection of long-standing indigenous trade routes, running between the western coast of Washington, Vancouver Island and the Straits of Juan de Fuca.

This chapter assesses the practice of miniature-making among the Makah people through examination of archaeological evidence, ethnographic histories and contemporary fieldwork in Neah Bay, conducted in 2015, to consider Makah miniaturisation as a deliberate communicative material culture process intended to reinforce cultural traditions that are essential to understanding what it means to be Makah, even, or especially, in the face of government repression. It challenges the notion, claimed in some quarters, that 'the Makah today do not have access to their traditional culture or language; these disappeared during their acculturation' (Fleischer 1984: 412), and examines whether, through their particular affordances, miniatures have and continue to operate as intergenerational bearers of culture, ambassadors for the Makah people, and a deliberate mode of resilience and protest at non-Makah colonial interference.

Through this case study, I develop ideas about miniaturisation as a component of communal cultural ownership and transmission, drawing on recent work to develop a theoretical framework based on my own examinations of miniaturisation, which hold that miniaturisation is a multi-part process in which an artist makes a series of culturally informed, individually determined decisions in creating a miniature object which

they then distribute to predetermined audiences to achieve an effect intended from the very conception of the miniature by its creator (see Davy 2015; 2017; 2018). The nature of this effect is different each time, reliant on local conditions. This chapter uses this methodology to explore the importance of miniaturisation among the Makah.

This methodology holds that miniaturisation relies on a combination of elemental affordances of simplification, scaling and mimetic indexicality to effectively influence a defined audience (Davy 2015). Affordances here are understood as the directly perceived properties that give an object structure (Gibson 1986: 133–5), the components of an object's design and construction that grant it the ability to perform the functions for which it was intended. The chapter demonstrates that manipulation of the affordances of the miniature in very specific ways allows miniatures and the wider artistic processes within which they operate to perform as embodiments of ideology emanating from and operating with a community as a 'movement of thought, a movement of memory reaching down into the past and a movement of aspiration, probing towards an unrealized and perhaps unrealizable futurity' (Gell 1998: 258). They are, in this frame, objects that operate not just through the physical dimensions, but through time, drawing on the past to convey information to future generations. That they do this, and the way in which they do it, is entirely dependent on their miniaturised nature.

In this chapter I demonstrate that the specific affordances and techniques of Makah miniatures allow them to operate as catalysts for the historic cultural trajectory of an entire people, connecting with specific audiences to 'exploit innate or derived psychological biases so as to enchant the [audience] and cause him/her to perceive social reality in a way favourable to the social interests of the enchanter' and in doing so portray 'an ideal standard, not to be approached in reality' (Gell 1988: 8), to achieve a psychological effect. In this way, Makah miniatures are acknowledged as complex ideological constructs, not as whimsical or simplistic 'toys for their children and later as curios for white traders' (Roberts and Shackleton 1984: 121), a role to which miniatures from this region have too often been consigned in anthropological literature.

Ozette miniature canoes

Unusually for a Northwest Coast people, whose ancient material culture has so often dissolved back into the forests from which it was made, Makah miniaturisation can be studied in relation to pre-contact

archaeological evidence, for in approximately 1560 an avalanche buried the Makah village of Ozette. When, in 1970, a storm exposed part of the site, it revealed a unique assemblage of pre-contact material culture that demonstrated that although 'the site offer[s] approximately 2,000 years of occupation, relatively little change in either artefacts or faunal remains is evident' (Wessen 1990: 420), which is to say that the Makah society found at Ozette was not significantly altered from that of two millennia before.

Among the Ozette collections arrayed in a conditioned warehouse at the Makah Cultural and Research Center is a body of material that proves beyond doubt that 'the making of models does not seem to have been solely for the White tourist trade, since miniature tools, figures and other objects have been recovered from the Ozette archaeological site' (Renker and Gunther 1990: 426). These collections include a wealth of miniaturised objects: tiny whalebone clubs, diminutive woven hats and even a multi-part kit that can be assembled into a loom for weaving blankets. Among this diverse collection of miniature objects, of immediate interest here, are 15 miniature canoes or pieces thereof, and this substantial grouping allows for analysis that reveals similarities among this corpus pointing to a consistency of design and function. The simplifications at play in Makah miniaturisation at Ozette are consistent enough to constitute a specific material culture practice with a specific social function.

The miniatures are made of local cedar, finely carved and take a range of sizes, from 10 cm to 42 cm long, and, as the example in Figure 4.1 shows, have roughly proportional dimensions in the construction of their high bows and square sterns, marking them as depictions of the West Coast style of canoe, a design common throughout the post-contact period and, despite a break in the mid-twentieth century, still in use by the modern Makah. Most significantly, with a single exception, they have been made in two pieces, with the hull separate from a detachable stern piece. This is how full-sized canoes were and are made, but completely unlike any post-contact Makah-made miniature canoes held in museum collections.

It is perhaps impossible today to be certain to what exact purposes the Ozette miniatures were put, due to the lack of corroborating evidence. However, consistency in their design clearly demonstrates that their carvers required certain features to be present, such as detachable stern pieces, while others, such as a consistent size or scale, were omitted. This demonstration of communal decision making in their construction indicates that they had a regular and acknowledged function in Ozette society, and were not made idly or on a whim.

These miniature canoes were for something, something well understood and likely ancient in nature, although what this function was, whether they were toys as is sometimes supposed or directly pedagogical tools or have some ceremonial significance is now unknown, but their existence and comparable affordances directly illustrate that miniaturisation is a practice among the Makah that has long roots in developed tradition.

Ozette is unique; nothing like it exists anywhere else in the region, and thus there is a sizeable gap in the object record between the miniature canoes of Ozette and first contact with Europeans some 220 years later, during which it is impossible to know how miniaturisation developed, but when Makah miniaturisation again appears in the object record it demonstrates a quite different set of affordances. Ethnographic assemblages from the post-contact period demonstrate that at some undefined point, miniaturisation as a practice changed substantially to focus almost exclusively on depictions of watercraft; the looms, hats and clubs have all disappeared, but the canoes remain. To try to understand why this shift has occurred, it is important to better understand the Makah.

Figure 4.1   Makah canoe miniature, 93.IV.39 (Ozette Collection), Makah Cultural and Research Centre.

The Makah

Before contact the Makah people lived within a system in which their five independent communities clustered around Cape Flattery acted communally through negotiated concordance, refraining from conflict or slave-taking among one another, an understanding known to the Makah as 'Five Villages, One Heartbeart' (Tweedie 2003: 27). It is this solidarity and continuity, and the threats it endured in the post-contact period, that provide the semantic frame within which post-contact miniaturisation has occurred in Makah society.

The Makah were also closely connected with their neighbours, in particular the Nuu-chah-nulth peoples of southern Vancouver Island; linguistic studies indicate that the Makah language is most closely related to the Nitinaht Nuu-chah-nulth language (Renker and Gunther 1990: 422). So similar are many aspects of their cultures that many surveys of Northwest Coast peoples conflate the Makah and Nuu-chah-nulth peoples (Durham 1960; Arima 1983; Black 1999; Coté 2010); Arima writes that 'only the international boundary [between the United States and Canada] divides them into the separate entities' (2002: 82). Not only does this mean that the Makah share practices with the Nuu-chah-nulth which can be studied as joined parts of a broader phenomenon, it also highlights the extent to which Makah have always been closely rooted in ancient Native trading networks and are consequently linguistically and culturally diverse, well versed in communicative practices within and without their mutually supportive Makah communities.

First recorded contact for the Makah came in 1788, and as an existing focal point of indigenous trade, the village of Neah Bay rapidly came to fulfil the same role for European traders, such that the Makah 'early became middlemen in the trade with Europeans' (Taylor 1974: 68). Already known for their high-quality canoe-building, the Makah adapted quickly to European contact, and over the next 70 years thrived economically but suffered severely from disease, particularly smallpox; after an epidemic in 1852 'the beach … was literally strewn with the dead bodies'. This inflicted severe damage on the use of oral history in the generational transmission of knowledge:

> Many of these [dead] people were the bearers of the knowledge, the people whose position in the society was to pass down names, songs, and dances their families held and owned, as well as knowledge of ceremonies, rituals and traditions. Because many of these knowledge-bearers died during the early contact period, the chain

of transmission was broken. If many people within one familial line died, then this family-owned knowledge was lost (Coté 2010: 49).

During the official annexation of the Oregon Territory, later Washington State, a treaty formalised the Makah Reservation in 1855, establishing US government oversight of Makah affairs. In 1863 a residential school catering to the children of the reservation was established to forcibly acculturate Makah children (Renker and Gunther 1990: 422), and many were later sent to boarding schools further afield, including Tulalip and Tacoma, which accelerated the reduction in speakers of the Makah language:

> We used to ask our parents, how come we never got to learn Makah? Their reply was that when they were growing up, they were not allowed to speak their own language … My father … he was speaking Makah to another one of the boys that were in the same barracks … and when he was caught, they took him outside and it was raining. The weather was very bad and they put him in a harness and they had to walk around just like animals … So him and my mom decided they wouldn't allow us to go through that kind of treatment and that we would learn the English (Mary Lou Denney, 1995, in Erikson 2002: 78).

During this period, the most lucrative trade for the Makah was seal-hunting, so that by the 1870s American sealing schooners were regularly operating from Neah Bay (Collins 1996), and 10 years later, Makah hunters had been so successful that many owned their own vessels and hired Americans to navigate them (Erikson 2002: 83). A change of law in 1894, however, outlawed the practice and Native-owned boats were seized, causing the sealing industry to collapse (Renker and Gunther 1990: 428). Many other Makah cultural activities were also outlawed in the late nineteenth century during the drive to assimilation, laws enforced by Reservation agents and police but regularly flouted by the Makah (Coté 2010: 52–7). The Makah were thus forced to continue through subversive means, such as disguising traditional gift-giving celebrations as Christmas parties (Colson 1953: 17), or moving their activities to the remote Tatoosh Island (Erikson 2002: 89). One historian notes of this time that, 'basically, Makahs had a good life until Euro-Americans ruined everything' (Reid 2015: 276).

Of all the indignities and repressions, no loss during this period was more significant to the Makah than the collapse of whale-hunting. For the Makah, captaincy of a whaling canoe was 'the noblest calling' (Arima and Dewhirst 1990: 395), and archaeological evidence demonstrates that whale-hunting practices were active as far back as 4,000 BP:

whale accounted for as much as 75 per cent of the meat intake of the ancient inhabitants of Ozette (Huelsbeck 1988; Aradanas 1998; Monks et al. 2001; Losey and Yang 2007). Taking place between the spring and early autumn to match the migratory patterns of the California gray whale, the whaling season required much spiritual and physical preparation because 'a person was closest to the Creator when he was whaling. Whalers did serious preparation, months of preparation, in their personal, sacred places before they went out to hunt a whale' (Waterman and Coffin 1920: 39; Arima 1983: 40–1; Black 1999: 32).

The level of co-ordination and skill required to take a whale was the physical and co-ordinated product of generations of praxis and years of training and operation as a cohesive crew, and a phenomenally dangerous activity that required days or weeks at sea on the Pacific in an open canoe. Despite this massive risk and investment, whaling was a relatively low-return activity; the best whalers in the early nineteenth century could take only one whale a year in their prime, and that single whale might have required over 50 days at sea and many failed hunts (Drucker 1966: 23).

In the 1920s, with Makah traditional practices forced into secrecy and the gray and humpback whale populations falling alarmingly due to non-Makah commercial whaling activity, the Makah ceased whale-hunting, a process that engendered considerable resentment towards 'Whites' who were accurately 'said to have swept the whale from the seas' (Colson 1953: 123). The loss of whaling, the culmination of a trajectory of demographic collapse, educational and linguistic repression, legal restriction and the loss of the economic independence brought by the sealing industry, marked a profoundly disruptive point in Makah history, but it did not mark the end of the practices that sustained traditional Makah whaling; rather it forced the Makah to explore other avenues to ensure the resistance and survival of their way of life.

Miniaturisation

In the mid-nineteenth century, the Makah and their Nuu-chah-nulth neighbours began to produce high-quality miniature canoes (see Black 1999: 28, 114–15). This practice was a continuation of the pre-contact traditions found at Ozette, but conducted through noticeably different systems of choices made in affordances. Scale, as before, varied widely, and mimesis remained the West Coast canoe design, but what had been chosen for simplification was markedly different. No longer was the stern a detachable piece or the proportions even close to those of the full-sized canoe.

Dimensions fluctuated widely as the carvers sought to emphasise not the vessel itself, but the designs it portrayed. Their exteriors are painted in a series of elaborate geometric shapes with elaborate patterning in red, black and unpainted areas that mark them as imaginative constructs; their patterning does not match any known full-sized Makah canoes recorded in drawings, photographs or descriptions from the period.

On these examples the bow and stern are obviously exaggerated and extended, possibly to make the designs more eyecatching; they bear comparison with Nuu-chah-nulth formline, which emphasises simple, flowing geometric patterns rather than the more figurative formline of the northern coast (Brown 2000), and appears, through the appearance of waves and flukes, to show stylised whale hunts in progress. Unlike the canoe miniatures made by more northerly tribes, the designs on these miniatures are not personal crests and do not resemble the masks and other ceremonial accoutrements of the Makah. Instead these designs are representative recreations of stories, recollections of events and ideas associated with the canoes, oral histories solidified. The Makah preoccupation with whaling, already under threat, is thus imaginatively reflected in the miniature record.

At the same time as these imaginative constructs were being produced, however, Makah carvers also produced miniatures that show that where depictions of whaling were concerned, the Makah could also value a combination of realism mixed with subtle mimesis. Although produced 'by eye' rather than through systematic measurement, these examples more closely approach the proportions of a full-sized canoe, and feature articulated miniature crewmen performing the actions of the culmination of a whale hunt, such as casting the harpoon. These miniatures are different from those decorated with imaginative designs, operating instead as miniature as diorama, a display of a particular moment that was of importance to the carver responsible, the most significant moment in a Makah man's life, the day he took a whale, a day increasingly rare in Makah society. These constructs are archetypes of a whaling canoe and its crew, men respected and venerated in Makah society; their dramatic poses and larger-than-life figures are an indication of that respect. These tableaux, although ostensibly naturalistic, show whalers as heroic figures, proportionally larger than life in pursuit of their quarry.

Although many miniature canoes of both types were made by Makah carvers without direct external influence, some of these canoe miniatures, particularly of the latter type, were directly commissioned from artists and carvers in Neah Bay; one body of such material, for example, was acquired by James G. Swan, who made substantial collections for the Centennial Exposition of Philadelphia in 1884. Swan's intention was to procure

representative collections of Makah material, and he became one of the first anthropologists to commission miniature canoes from Makah carvers in the late nineteenth century (Cole 1985: 13–34), but what he, probably inadvertently, invited the Makah carvers to create was not a simple model, but a vehicle of the preservation of the Makah themselves.

As an example, the largest such miniature canoe, at 413 cm from bow to stern, was produced in Neah Bay around the turn of the twentieth century by the carver and healer Young Doctor. This huge miniature is exceptional in that it appears that Young Doctor made a concerted effort to replicate accurate proportions and decoration. It is decidedly of the latter type of Makah miniature. The bow and stern appear in proportion to the body of the vessel and to its crew, who are seated in the manner of those in a whaling crew, in three pairs of two. All the figures wear clothing made of real bearskin, and the paddlers wear wooden approximations of woven cedar rain-hats. Larger than their fellows are the harpooner in the bow and the steersman in the stern, each holding their equipment at the ready. The naturalistic scene is an illusion: the crew have no lower half, and instead their torsos finish on woven cedar mats laid in the bottom of the vessel, but it is one of the most significant attempts to reproduce an accurately scaled model produced by any carver on the Northwest Coast.

Figure 4.2 Makah canoe miniature, *c*.1905, Young Doctor, National Museum of the American Indian, 068874.

Although not as dramatic as the imaginative whale designs, canoes of this type are decorated with simple red or white stripes on the hull, much as Makah canoes were at the time. These may appear purely decorative to the uninitiated, but are in fact part of an identifying code accessible to knowledgeable observers. The experienced Makah carver Alex McCarty explained this system of identification at interview:

> That makes me think about this piece I found at the Burke. It was a model canoe and on each side of it, it said 'Made by the Neah Bay Indians' inside of the canoe. And I thought for a second and I was like: how can it have been made by the Makah Indians, the Neah Bay Indians? Did they all get together and make this little model canoe? No. It's a particular canoe, it has a particular design from a particular family and so I have studied these pieces and I know just from the model canoes that are at the Burke, there are at least two different family styles that I have been able to follow. And so I hope that when people would see this, they would say 'oh this is, you know, this particular style of canoe that you can trace through my Wyatch family'. Me and my cousin Aaron Parker and then my grandfather Jerry McCarty and then you could tell that our canoes are the same. We paint the same designs on the side of the piece (Alex McCarty, interview 2015).

Young Doctor had a reputation for quality commercial artwork and a strong relationship with dealers; this particular canoe was acquired by the prominent collector D.F. Tozier of the US Revenue Service at some point before 1907, and subsequently sold to George Heye of the American Indian Museum, now the Smithsonian's National Museum of the American Indian, where it remains. The work of Young Doctor and his contemporaries was of course commercial, but it also bore significance as representatives of Makah culture, and of specific Makah families, entering wider American society.

Modern miniatures

After the Indian Reorganization Act of 1934, government supervision was gradually withdrawn from the Makah. Language and cultural programmes begun in the 1960s sought to preserve the Makah way of life and educate future generations, a movement that became associated with the

Ozette excavations and was essential in the opening in 1979 of the Makah Cultural and Research Center (Renker and Gunther 1990: 429), which remains the focal point for the study and preservation of Makah history. Although it was sometimes said of the Makah that 'acculturation is making rapid inroads today and their language and culture are dying' (Taylor 1974: 78), this gloomy prediction never came to pass; improved transport links enabled the Makah to establish a successful tourist industry.

In the late twentieth century, following a resurgence of whale numbers, the Makah applied for a permit to begin whale-hunting once more, and in 1997 were granted a quota of 20 whales, to be hunted over five years (Coté 2010: 135). Eventually a whale was taken, a seminal moment for the Makah commemorated by the whale skeleton hanging in the Cultural and Research Center (Sullivan 2001; Coté 2010: 129–43), an event understood as the Makah 'articulating a traditional future instead of grasping at a long-lost, static past' (Reid 2015: 277).

Modern Makah art is a crucial component of this articulation. As Art Thompson, a carver of the neighbouring Nuu-chah-nulth people, notes: 'If you don't want to do anything else with your hands, do your art, because that's what is going to tell people that we haven't died, and prove

Figure 4.3   Alex McCarty, miniature canoe on sale at the Makah Culture and Research Center. Photo Jack Davy, 2015.

that they're not going to be able to kill us. As long as you are alive and doing your arts, people will know that we're not going away' (Coté 2010: 111). To Thompson, art production is not solely about making money or developing skills, but about using these features of art production as a means of indirectly confrontational cultural resilience.

Cultural continuity and the Makah

It was, and remains, essential for the Makah that skills, techniques and designs, whether mechanical or cosmological in nature, are transmitted to younger generations; the transmission of cultural knowledge is an essential Makah practice, as recorded in 1953:

> Among the Makah there exists a body of traditional knowledge held by people who lived at a time when many of the customs were still current. Certain skills now long since passed into disuse for all practical purposes were acquired by older men and women when they were children and youths. They no longer practice these skills or carry out the activities learned, which still form part of their culture in the sense that they at least think of themselves as capable of carrying out the customs, and they are still interested in talking about them and in describing them to all who will listen (Colson 1953: 174).

The pedagogical transmission of knowledge has therefore been a cultural priority for the Makah during the post-contact period. In addition to the lessons described above, much of the Makah learning process was practical in nature, with children learning though observation and praxis as much as through instruction. Part of this practice involved familiarising children with the roles expected of them in adulthood, a system strengthened by the designation of certain roles as intangible hereditary property, such as positions in a whaling canoe. The right to participate in a whaling canoe was hereditary, conferred through the generations by birthright as much as merit, as explained at interview by the master carver Greg Colfax:

> Your position in the canoe was determined by your father, if your father was a harpooner, you were a harpooner, if you were behind him, you inherited your spot. It didn't change. So in any one whaling

canoe, you had ten, fifteen, twenty generations of knowledge in each position and that was the only way to accomplish it, it was that dangerous (Greg Colfax, interview 2015).

These 'generations of knowledge' were not biologically conferred. The skills, expertise and bodily attributes required for each position had to be attained, and miniaturisation was an important medium through which this transfer of knowledge across generations, from past to present to an unknowable future, could be achieved.

Descriptions of Makah childhood seem to corroborate the role of miniaturisation material within this pedagogical impulse: training for whaling crew positions, for example, began at a young age, such that 'each of the crewmen has been training since youth, when he raced around in a miniature canoe, and threw toy harpoons on the beach' (Sullivan 2001: 47). Playing imaginative games in this way is a common feature of traditional Makah childhoods; elder Helma Swan recalled making fishbone horses and kelp cars and playing hide and seek among the small canoes made for children (Goodman and Swan 2003: 64). These canoes are therefore, in the Makah context, more than 'toys for their children', being conceived as deliberate pedagogical tools, their role within the development of Makah children explicitly understood by the Makah, as carver Spencer McCarty explained at interview:

> And in the beginning of whaling there was a story about a man that seen thunderbird, and he went to thunderbird's house and thunderbird had a small canoe, maybe this big, and it had all the ropes and lines and harpoons and paddles in there that would need. And he gave it to that man and flew him home and set it on the beach in front of his house and in the morning it was big. So they would have a small little canoe to tell that story with. And then I have a canoe, it's about this long, that was my toy when I was a baby and it has all the harpoons and stuff in there because my grandfather wanted me to be a whale hunter, even though at the time we weren't whale hunting, he still passed the teachings down (Spencer McCarty, interview 2015).

Miniature-making and distribution within Makah society is, and was, a conscious part of an intergenerational educational culture in which the miniature objects are pedagogical catalysts of knowledge transfer, passing ideological information from elder to youth and encouraging play

that would teach the techniques and teamwork necessary for complex operations, such as whale-hunting, and encourage physical development oriented towards the same goal.

Scaling canoes

Makah carvers did not and do not ignore scale; it is important for the miniature canoes they make that the dimensions *look* right, but precise accuracy is not a priority: when questioned on scaling techniques, Alex McCarty acknowledged that the process in his work has 'been by eye… I hadn't thought about scaling'. This is most pronounced in the brightly coloured and imaginative designs of the mid-nineteenth century and among modern Makah carvers of miniatures, but the dimensions even of the more naturalistic Makah miniature canoes, generally about two to four feet in length, are out of proportion. The bow and stern are too large, the central body of the canoe truncated. Alex McCarty observed this in the study of a miniature canoe he himself had produced, stating that the 'nose and the stern are definitely exaggerated'.

These miniatures are therefore certainly not technical models in the European sense, made to preserve the exact dimensions of the canoe type. Rather, they preserve the broad shape of large-scale Makah canoes without employing the boat-building techniques, not the precise affordances required for their large prototypes. They do not, in summary, preserve, represent or illustrate the specific architectural skills and knowledge of Makah boat-building through practical translation. This is not to say, however, that they are unrepresentative or without practical application.

Miniatures as praxis

In his two decades studying and producing Makah art, Alex McCarty has noticed an affordance of Makah miniature canoes that speaks to a priority for these miniatures quite different from that of their canoe prototypes. As noted, they were not blueprints for canoe construction; Makah carvers learnt, and still learn, by pedagogical praxis rather than theoretical study. Makah carvers do not learn to carve by looking at miniatures, they learn by making them. In coming to this realisation, McCarty has thus identified miniature canoes as an essential component of the canoe-carving apprenticeship process. As he demonstrated to me at his workshop at Evergreen State College, Makah wood-carving consists of a system of

standardised cuts made using a system of standard tools to which each carver, once technically proficient, is at liberty to make minor adjustments to create their personal style; Makah carving as a style is a systematic, interpretable and replicable skill. McCarty went on to demonstrate, based on experience of more than a decade producing miniature canoes, that the actions to carve anything else in the Makah art form are all components of the carving process required to create a miniature canoe. He demonstrated this range of cuts in front of me, including straight slices to form the interior of the bow segment and curved grazes to give the hull its graceful, bird-like profile, as demonstrated in Figure 4.4.

Miniature Makah canoes therefore operate as practical learning devices through their very construction. At interview Spencer McCarty also acknowledged this incorporation of pedagogy into the miniature, noting that early in his career he 'made miniatures for probably four years,

Figure 4.4   Alex McCarty demonstrating carving techniques on a miniature canoe, Evergreen State College, Olympia, WA, 2015. Photo by Jack Davy.

little masks, little canoes, little totem poles' partly for commercial reasons, but also because 'if I learn how to make it small then I'll have learned how to make everything'. Makah miniatures therefore play an active role in the tactile praxis of artistic development. These objects operate as tools in a creative educational process and can, once made and no longer useful in the preservation and passing forward of techniques, also be sold, so that 'in the meantime my name will get out there and my art will get out there and people will say 'Hey, this guy is pretty good at carving'. Spencer McCarty also notes that if the carver is not skilled enough to complete the carving, the investment of time and effort will be less severe than on a larger object: the miniature 'won't take time if I wreck it and have to throw it away'.

This conclusion may imply that that shape of the miniature is irrelevant: a carver could just make practice cuts into a block without that block requiring a canoe as a prototype at all, but this is not the case among the Makah. Whether a practice piece or not, when Makah carvers learning their trade make miniature objects, especially canoes, their cuts and designs are not random, but instead follow a systematised carving tradition. Thus, the Makah miniature operates within a pedagogical technical training process, during which the affordance of process results in a miniature as a by-product. This miniature, the physical result but not the final ambition of the practice, is a depiction of a larger object reliant not on scaling for its importance, but on the technical practice required for its production. These miniatures, however, are recognisable objects for a purpose, and just as they pedagogically communicate with carvers, teaching skills in their construction, so they can communicate with another audience, convey another message, one directly reliant on the mimesis, the scale and the choices of simplification to create an ideological artefact with a message that is discernible, if subtly, to observers. They embody in their design a specific ideology, one that transmits to distant and future audiences a collective understanding of what it means to be Makah itself.

Canoes that float

To understand how a miniature, particularly a miniature canoe, operates as an ideological vessel, some of their peculiar affordances must be examined, exploring how the carver incorporates some elements of the prototype canoe and dispenses with others as required. For the Makah there is one affordance in particular that is of specific importance, a feature identified by Alex McCarty during his extensive study of Makah miniature canoes in museum collections: Makah miniature canoes float. Not

only do they float, but McCarty noted at interview that 'every one of my little models that I make, I make sure that they float proud, that they have a nice presence in the water and then when you push them they take off and they float straight', that is, every Makah miniature canoe is designed to float as part of the construction process. When he was training, he was taught 'if you're gonna make a model canoe, it has to float, otherwise carve something else'. To a Makah, whether you plan to drop your miniature canoe into the water or not, the miniature must float like a canoe, otherwise there is no point making it. Unless you can incorporate this one vital affordance of the prototype, crucial to full-size canoes and ostensibly pointless in miniature, your miniature cannot be an effective ideological communicator.

Floating seems to be so important to Makah miniature canoes that other features are secondary; for example, in keeping with many other miniature canoes produced on the coast, many Makah commercial miniatures have flat bottoms to facilitate their display in the home; although full-sized Makah canoes often have flat bottoms to facilitate movement through shallow waters, the style and design differences between the miniature and the full-sized are marked. However, even these flat-bottomed miniatures, made for shelf display, are designed to float true – indeed, the extra thickness provided by the base gives them ballast to remain upright. Such miniature canoes are proudly acknowledged to have made significant journeys for their small size: Spencer McCarty recalled that 'my son's [miniature canoe] went down the creek and to the ocean and never come back' and Alex McCarty recounted that

> [Aaron Parker] told me that he sold one of his model canoes to a family on the East Coast and he said they lived on a flood plain and so one season their house got flooded. They had to evacuate and the whole bottom floor of the two-story house was flooded almost all the way up to the ceiling. But not quite, you could see the water line. And so everything was destroyed in the house, except for his canoe. He said his canoe floated proud, he said all the hunting gear was still in it. It floated around the house and it landed in the centre of the kitchen. And it was completely intact. Perfect (Alex McCarty, interview 2015).

Thus, when these canoes are sold or given away, they travel long distances, and among unfamiliar waters. There are few better or more powerful images of the Makah to distribute to the wider world than one

that speaks of their great history as hunters of whales. The constancy of canoes in Makah iconography, ritual practice and everyday life grants them a status as an index for Makah identity; without them there are no trade routes and no sealing (on which Makah prosperity was founded), and most importantly, there are no whale hunts. Without the canoes, there are no Makah. In creating and distributing miniatures of these canoes, therefore, Makah artists draw on the status of the canoe as an icon of the Makah and of specific families and canoe lineages both to preserve knowledge for future generations of carvers and to represent and present their culture symbolically to the wider world. The ability of the miniatures to float, to perform physically the metaphorical act for which their prototypes are famed even when all other affordances have been simplified from the prototypical canoes, and to do so in alien environments before strange audiences as ambassadors of Makah culture, is a unique affordance, and one that reveals the representative qualities that drive and compel these miniatures.

Miniatures as pedagogical and communicative actors

Makah miniaturisation is an historic material culture technique to which contemporary miniature production is linked through cultural continuity; indeed, the nature of Makah miniature-making seems a textbook example of Alfred Gell's consideration of the single, distributed object recapitulating processes of cognition, drawing on a past through a turbulent present to communicate with an unknowable future.

The miniatures of Ozette, a common and sophisticated item in the community, are the essential foundation of the study of this material culture tradition, demonstrating miniaturisation as a substantial pre-contact practice. The subsequent ethnographic record clearly illustrates that although the nature of miniaturisation as a process altered significantly, the production of miniatures continued, transculturally modified but intact, each miniature reflecting, through the choices of mimesis, simplification and scale, the ideological priorities of the carver who made it.

The craft continued, so that in the 1880s Swan had no difficulty finding willing and skilled carvers to produce the miniatures he required for the Centennial Exposition and modern carvers continued to produce them for sale in significant numbers; the Makah enthusiasm for the canoe in miniature form remains undimmed, such that it becomes possible to chart the roles that miniatures have played within the 'longer Makah strategy to craft a traditional future' (Reid 2015: 278).

The material culture evidence demonstrates an ability on the part of the Makah both to work with realistic portrayals of miniature canoes and to explore more adventurous, imaginative avenues, incorporating features that indicate that they have a deeper association with an understanding of what it means to be a Makah.

Firstly, they enact, through the process of making, all of the cuts required for traditional Makah carving. In this, the technical processes of miniaturisation become as significant if not more so than the final product. The ostensibly facile appearance of the miniatures provides a subtle pedagogical vehicle for passing on traditional knowledge with the acceptance, even the encouragement, of the oppressive authority otherwise opposed to the transmission of cultural knowledge. This is supported by acknowledging that miniatures are usually the first things that a young carver will make, and the making of miniatures is explicitly understood as crucial in the preparation process for making both a larger vessel and a professional carver.

This pedagogical functionality operates despite the consciously exaggerated scale within miniature canoes; in fact, it may operate because of this feature. Consider the mimetic depictions of whaling vessels, which were once the highest-status canoe design among the Makah and conferred the greatest respect. Even as whaling became less and less practised, carvers continued to make whaling canoe miniatures that featured dioramic depictions of the whaling process, exaggerating the shape and design of the vessel. In these cases, it is the image of the vessel that is of paramount importance, not scaled accuracy that is of greatest significance.

Makah carvers consciously learn through practice the techniques of their forebears by performing the same actions, recapitulating the cognitive processes and simultaneously disseminating information on canoe usage and symbolism both within their community and to the wider world; in this they are truly 'a movement of aspiration, probing towards an unrealized … futurity' (Gell 1998: 258). Miniature canoes, even though they are designed out of proportion to their larger counterparts, are all intended to float, to make journeys. The miniatures travel, and wherever they go they act as ambassadors for a resurgent Makah identity, which had remained hidden, but was not defeated, during the years of official repression and economic depression. These miniatures explicitly operate as physical agents of the continuity between the Makah of Ozette and those of the present, a single coherent distributed object sustained by the praxis of their construction and of their affordances, which operate as part of a process of miniaturisation for pedagogical purposes knowingly exported to diverse, sometimes alienated audiences to speak for the peoples from whom they come.

Acknowledgements

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5

Interview with boat model-makers, Cliff Swallow and Pat Howard

Cliff Swallow, Pat Howard and Charlotte Dixon

This chapter is an interview conducted by Charlotte Dixon with the boat model-makers Cliff Swallow and Pat Howard. Cliff and Pat are both volunteers at the National Maritime Museum Cornwall where they make models in an active boat-building workshop that forms an open display at the museum. Through this interview the chapter provides an insight into some practical elements and experiences of working at a reduced scale. The interview was carried out at the National Maritime Museum Cornwall on 26 June 2018.

How did you come to make miniatures; how did you get into making models of boats?

Cliff: For me, it was desire to have a model boat. Sailing boats, not radio-controlled boats. I love the lines, I love the aesthetics of model sailing boats and I wanted to have one but couldn't find one that I could afford to buy. Therefore, being fairly good with my hands I thought the answer was to make one, and that's how I started. [With] a bit of research on the internet I found firms that were selling model kits and bought a kit of a J Class Endeavour. That was, for me, how it started.

I have been making models for about 15 years, maybe a bit longer. Maybe 20 if I'm honest – probably longer than I like to admit. Also, once I had started and built the first one, I enjoyed the process of building models, as well as the end product. I worked in a high-stress environment, I was a Programme Manager for Air Traffic Control, [at] CAA, building Air Traffic Control centres. It was a very stressful environment. I found that model-making was a great way of relieving that pressure in the evenings and at the weekends.

Pat: I suppose I can go back to the age of about six or seven, walking in the City of London and seeing model ships in insurers' shipping companies' windows. Huge, most wonderful intricate steamships. I've always had a fascination for the sea, and ships that sail on it by the power of sail, but I can remember very clearly looking and being interested in how, for instance, some model-makers use pins and nails to set stanchions up to make it appear like a stanchion with guide wires etc. As a young man yes, I made Airfix and plastic kits by the ton and thoroughly enjoyed it. I would have been in my early twenties when I started making half models and model boats and it seemed to have come in phases. In my twenties, then in my forties there was another return to model-making and latterly, a couple of years ago, with the National Maritime Museum Cornwall, working with Cliff and coming back to model-making. Probably something to do with age and it's easier to make models than perhaps to sail in them at times – although we do try and do both. I think that covers it – love of the sea, and that fascination with miniaturisation early in life. I can remember clearly walking along Fenchurch Street and just looking at the scale. Today, I look out across Falmouth Bay and my head cannot get the scale of a big supertanker moored in the bay there, a small fishing boat, a sailing dinghy.

Do you know, as a rough estimate, how many models you have made?

Cliff: I guess mine must be about nine or so at the moment – some of my own and some that I have built for the museum. So about nine or ten.

Pat: I'm probably coming from a different perspective in that a lot of my earlier models would have been half models. They are quicker and simpler. Cliff is talking about very intricate models with very fine detail, but my earlier models would certainly have been half models which are simple to make. I also made toy models for nephews and grandchildren etc. So greater numbers yes, but far less intricate than the models Cliff's talking about. Intricacy is coming to me later in life.

Can you describe some of the boat model projects that you have done that have been the most important to you, or that you have found the most interesting or the most significant?

Cliff: I have two examples. One was the first model I ever made – a sailing boat, mainly because it started the whole process of model-making which I enjoy. It was making that first model that made me realise that I could do it and it was an enjoyable process and I liked the end product. So, that was

Figure 5.1   Model of the *Flying 15* made by Cliff Swallow with a model of HMS *Bounty* in the background. Photo Charlotte Dixon.

fairly important, or significant anyway. The second one would be my model Flying 15. It was my own boat and one that I'd loved sailing and racing for nearly 20 years, I loved the boat and I loved the aesthetics. Being able to make a reasonable model of it was very satisfying and I still love the boat, I still think it's a beautiful-looking boat. So, those were the two for me.

Pat: I go back to making toy model boats for my nephews, when I would probably have been in my early twenties. They were spritsail barges, Thames barges, which I was familiar with, but I made them such that they had a hold and the sprit could be used to unload and load, so it could be used as a crane. I thoroughly enjoyed making those, as I say nothing as intricate as Cliff's, but they were little working toy models. I then found it fascinating to make half models of boats from different parts of

Figure 5.2   Half-model of a Yarmouth lugger made by Pat Howard.
Photo Charlotte Dixon.

the country, which demonstrated how a Lowestoft trawler working in the shallower seas of the North Sea needed a more plump bow to give lift over short waves. Whereas a similar-size boat made in Brixham dealing with the Western Approaches, a longer sea, had a much finer entry into the bow. Just to look at the difference between them, because they would have been used as a basis for a boat-builder to show to his client and say 'can we take a bit more off the forefoot or shave a bit off here or a bit more around here' and they would then slice it and use it to take the lines to make the full-size boat. I found that fascinating.

Can you clarify what kinds of boat models you make, and have made?

Cliff: Well mine have progressed. I guess like most I started off with fairly simple kits [and progressed] to more complicated kits, and most recently I've been building scratch models [built from scratch]. So, I have gone through various stages to get to where I am now. They tend to be scratch models now.

Pat: If you go back there are the toy models and then the half models from solid, then the first kit model which was a Billing's kit of a fishing boat which I've still got at home. Then, latterly, a scratch model which was a Looe boat, designed by Alan Pape, and now I'm back to a kit of more complex standards which is going to be HMS *Pickle*.
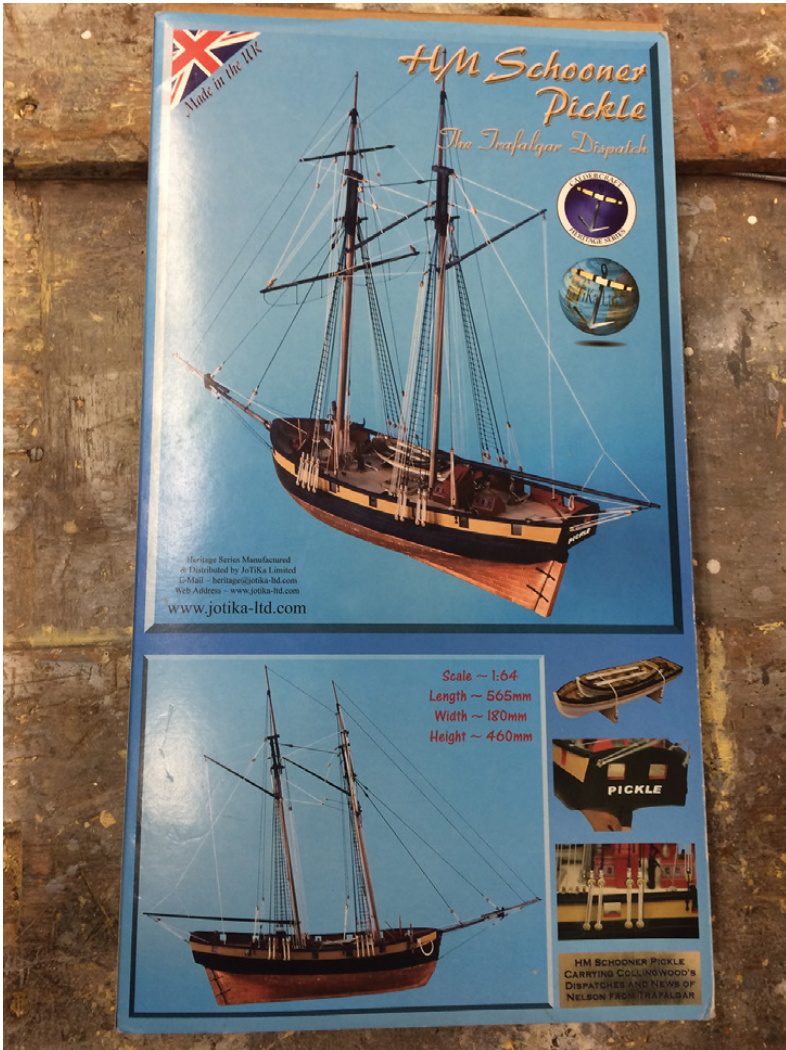
Figure 5.3   Model-making kit of HMS *Pickle*. Photo Charlotte Dixon.

What do you think are the key considerations in planning and making a model?

Cliff: Two things again for me. One is what do you want to get out of the model? A key factor is why: why are you bothering to do it? What do you want to get out of it? I think the other one for me is always about scale. Pat and I have many conversations about the appropriateness of scale in models, and I think it can make quite a big difference to the end product so I think it becomes very important. So, it's why are you doing it and what scale you are going to build it to that I find quite key factors. I'm not sure we ever came up with an answer to the one with scale!

Pat: Cliff's absolutely right. It would be good to have a constant scale that you work to, so every boat related to the boat you did before and the one after, but as he quite rightly says we haven't found a scale that works and does that. I would say the purpose of the model you are about to start making is crucial, you've really got to want the end product because you are going to put in a lot of time to get to that point.

I quite like the thought of a model demonstrating a purpose, whether it is a geographical or a functional use. I love looking at different shapes of boats and saying 'why did they do that there and it is different here' – modelling helps you to understand these differences.

As we were talking about the dedication to wanting to see the finished product, do you know how long, roughly, a model would take you to make?

Cliff: It can take a long time. A few examples, I guess. Bounty was, I admitted to five years and about 600 hours, but I suspect in honesty, it was probably more than that. I think the five years is right but I think the timescale, the hours might have been a bit higher. Curlew, well that's been about three years or is it more than that now? Yes, it probably is. Again, a long, long time. A few hundred hours but spread over a long period of time. Partly, the reason is I was restoring a house in the middle of it so the house tended to take priority. So, they can take a long time. The Flying 15 took probably about 18 months. The J-Class, the first one I built, was probably only about three months. So, it varies quite enormously depending on the complexity of the model, and how much time and effort you want to put into it. It isn't a full-time occupation for me, it's a few hours a week, especially when I had young kids.

Pat: I think that comes back to the fact that you really have got to want to do it, because that length of time, and the rate of development over that time is, at times, so slow that you can't see it happening before your eyes. So, I think you need to be totally committed to the end product. And that is probably the difference between myself and Cliff. I admire his dedication. I probably want to see something more quickly and, therefore, I've chosen a path with my models. The half models are, in truth, simpler.

Going back to the question of scale, do you tend to work to scale or is it sometimes a more imaginative process? Also, do your models tend to reflect specific boats or are they more general?

Cliff: Mine are all scale models and they do reflect specific boats. What I build are scale models of existing boats because I am quite interested in having records of the boats that we build. But I do have a sneaky interest in just

building abstract sailing boats. Not particular sailing boats, but I think it's almost [an] artistic-type view that it will be nice to be able to translate whatever makes the model so attractive into something much simpler and less like an existing model but an abstract art form if you like, but I have never managed to do it yet. I don't suppose I ever will.

Pat: Scale is crucial. Everything I have made has been to an overall scale. I use the word overall because I think you have got to look alongside boats of similar scale, but even the Thames barges I made were to scale. The hull shape, the length, the beam, the draught and everything would have been to scale, the height of the rigging. But within that I used licence that the fittings I made to make it work weren't to scale because they were going to be operated by a seven- or eight-year-old little chap and I was probably more concerned about safety and him not poking his eyes out on the mast and what have you, and so I put a stopper thing on the top of the mast, which obviously wasn't on a Thames barge. Overall scale was crucial. With other models overall scale is crucial but I have taken licence within that at times.

Cliff: I think we all do to a certain extent.

Although I understand that every model you make is different, can you tell me a bit about the process of model-making, from the initial idea to how you reach the final product?

Cliff: I think it begs the question as to what sort of model you are talking about here. There are various different types of models. First of all, there is a construction method or type of model which Pat's half models form a part, or whether they are solid timber models, solid hulls, or whether they are plank on bulkhead, and they vary. Clearly, if you are building a scale model of an existing boat and you wanted it to be an exact replica then you have to go through the process of taking the line drawings, producing frame drawings, making the frames, planking and rigging it. Or, if you are building a model from a kit, they tend to be bulkhead models, so there's not that many bulkheads and they tend to come already cut, but you have still got the planking to do so it's quite a process getting that set up.

Solid models are a different exercise yet again because you are shaping a solid lump of wood, not building frames. Then you have the half models which are like solid models but probably sandwich built. There's various different approaches depending on what you are trying to get out of the end product and what sort of model you are building. Mine tend to be, generally, either plank on frame or plank on bulkhead models and certainly the scratch models I've built – Curlew, Flying 15 – were from the line drawings and plans, with frames and planking.

Pat: Again, you come back to you've really got to want know what the end result purpose is. I mean, Cliff's *Bounty* stands as a beautiful model and you look at it and you can imagine the full-size *Bounty* and the journey they undertook in it. The half models are very much comparatives and so you have two or three and you look and you say well, geographically why is that shape developed in this part of the country and other shapes developed elsewhere. So, there's got to be a reason for the end model and, I believe, comparatives are quite important which comes back to that idea of a constant scale as Cliff alluded to earlier. I've got in my mind a series of Shackleton's *Endurance* at its different stages being crushed by the ice, through to them getting onto Elephant Island. Again, we've just finished the *Titanic* lifeboat [full-size] with the museum, we did the *Bounty* boat full-scale beforehand, a few years ago we had the James Caird which was a similar-sized boat which was Shackleton's boat. I'd like to make models of all three of those and compare them, same scale, and look at them because they all did remarkable journeys and I'd love to just look and marvel at the comparatives of them – whether I ever will or not is a different matter. So, scale and knowing that purpose for the end result is important.

You both go on full-size vessels and work alongside boats that are being built in the Museum workshop. In your view, how does making a miniature boat differ from constructing a full-scale vessel? How might you have to adjust or adapt the tools and materials, for example?

Cliff: Well Pat does actually work on full-size boats which is more than I do. I would say, I mean the techniques, broadly, are similar, but the tools and the methods are totally different. I mean, I tend to build my models with about four tools, broadly that's all I ever I seem to use: a scalpel, a pair of tweezers, a small fine saw, some sandpaper is usually pretty much it. I sometimes use an electric drill I have to say. Whereas they would just be no use on the real boat at all; they are just for fine, fine stuff.

I think the process is very similar – you have to start with the frames and gradually build the model up and put the planking on. So, it's different. For me, there is not a huge read across between the two. I don't believe my modelling skills would allow me to build a real boat. The other thing for me is tolerances: that the odd millimetre gap, or tolerance on a real boat is pretty good, you know, they fit nicely, they look nice. That sort of gap on a model looks totally ludicrous because of the scaling. In real terms that millimetre might be two or three inches: no boat builder is going to build a boat with a three-inch gap in the planking. So, it is more demanding in terms of tolerances to make it look right. The other big advantage with models is that they don't have to work.

Pat: I think I slightly disagree with Cliff, I think there is more commonality between the making of a model, certainly a plank on frame model, and a full-size version. You can still steam your frames! The interesting thing is that it will be different wood: model-making requires a far closer-grained wood. And so, we will have walnut planking and such like and I've never heard of a full-size boat having walnut planking! But you need that fine-grain wood to work on the tighter curves of a model, whereas larch or an oak is a common full-size boat material. So, the materials can differ and as Cliff quite rightly said the stresses and strains the model is going to be put through will differ: if it's a static display model then yes, the fixings don't have to be anything like as tough as a boat that's going to go and brave the Western Approaches. But, a model that you are going to sail, whether radio-controlled on a lake or you are going to float, yes you are going to take account of the stresses.

So, making a full-size vessel and making a miniature version of a vessel might require some similar processes, but would you say it is a different skillset?

Cliff: I would say, probably, a different mindset.

Pat: Yes, I'll go along with you there.

Cliff: I was going to do some repair work on a model of a super yacht. I suspect the [boat-building yard] commission a model of that yacht to give to the owner. They are £20,000 a time these things. So, somewhere there is a model-making organisation that makes models of these yachts but their motivation on model-making is very different: they are purely commercial. So, I doubt if they have got quite the same motivation, but some of the models they produce are beautiful. I mention it because I was watching a television programme about manufacturing super yachts, and towards the end they said we commission the model for the owner and it was a group of people – [it took them] six months. But, they were using incredibly sophisticated tools – they were using CNC programme milling machines and drilling machines to produce the artefacts for these model boats, from the actual drawings for the boat. So, it's a whole different concept of modelling, and they are charging £20,000 a time for these models. It would be for the owner to have at home when he's not on his boat so he can say 'that's my boat'.

Pat: Whereas in that half model world, you are looking for handling different water. [For example,] a fishing boat wants to carry as much fish as it can, and if it goes out for a seven-day fishing trip it wants to bring back

as much [as it can, so as much] carrying capacity as possible is important to it and so that is a determining factor with the shape or working from a half model hull.

Cliff: They were very often always about getting the hull shape right because they didn't really have the drawing skills and they didn't have computer modelling, so to try to refine the hull shape and the lines of the hull they would often use half models to develop hull shapes, based on previous experience, until the shape looks right, then lines were taken off it and it would be built.

We have a half model here of one of the pilot boats … A guy building pilot cutters used that half model to take the line drawings for his new Falmouth pilot cutter.

How do you think people interact with models of boats you have made? For example, in the Museum boat-building workshop where you have got the models on display that you might be working on, how do you see visitors interacting with them, or how do you see children interacting with toy model boats at home?

Pat: Very few people are not excited by looking at a model and I think one of the things with the *Bounty* exhibition was that lovely model where they had little people on and I know when I saw that, that every model I make from now on [will include people]. I think it helps the looker to interact and say, 'ah now I understand, I can see the size and scale of it'. I cannot imagine a time when people aren't intrigued by models, to look at them and be fascinated.

Cliff: Yes, I think that's true. I think people are quite fascinated by seeing what is basically a real large ship which you can't see and being able to see it and touch it. I mean most people like wood. So, I think there's a certain element that people are drawn by the aesthetics of the models, but also the fact that they can see the intricacies of the way the rigging works and how they are put together, which they normally can't see because they're too big or they're not around. But also, I think people take a view about how much time and effort goes into making one and they find that a bit staggering. So, it's various interactions. Very few people can walk past without stopping and looking or saying something.

Pat: To use that modern word, it's mindfulness in action! You've got to be very mindful to want to build a proper model.

In my business of caravan manufacture we used modelling then, especially in the transition from aluminium to GRP and ABS plastics on

aerodynamic shapes as well as layout shape and for making a model for wind-tunnel testing. This is again following the ship half model line: it's using a model to represent something. Although they didn't put it in a tank, the half model, the owners' eyes would know the shape that he wanted to get the flow through the water; the caravan model would be put into a chamber with smoke streams to see what happens around the corners etc. And, sorting the layouts of a caravan so that you can look at it and see people using the kitchen, the bathroom, the beds, the dining area and what have you.

So, in the caravan business you very much used models as a functional aspect?

Pat: There was a period where we certainly used models to determine future construction, shape of a caravan, layout, weight distribution etc. A drawing is good but again if you go up to the next level of a three-dimensional model you can look at it and see and imagine someone using it, living in it. So, those three elements – aerodynamics, weight distribution and habitation were, at different times, covered by model manufacture.

And that would go on to influence how you would develop the full-size caravan?

Pat: Very much so. If you think of the tow ability of a caravan on the roads, you're dealing with a dynamic at speed that a boat never travels at, or very few boats travel at that speed. Wind tunnels for seeing what happens, but weight distribution and setting up and using a model to measure that and to test, yes was most certainly done.

Cliff: It would be interesting to see, from the future, now that computer modelling is so sophisticated, to what extent that will kill model-making. I suspect it's going to take out a whole heap of model-making. I mean, [in] this day and age you probably wouldn't build a model would you, to look at the aesthetics of a caravan.

Pat: Not the aesthetics.

Cliff: Or for the aerodynamics you probably would build a computer model.

Pat: Yes.

Cliff: And for the layout you would use virtual reality-type models and wander around. So, I suspect that computer-generated modelling is going to kill a whole raft of model-making.

Pat: Good point. 3D printing again for aerodynamic testing in a wind tunnel, that would be a logical path, but again that takes away the need to make a traditional model. I mean for the shapes we used to make for the fronts of the caravans, they could have been made out of plaster, playdough, anything mouldable that you could then put the smoke screen streams by.

Cliff: But I suspect that, I don't know whether they can do that now, they won't even have to put them in wind tunnels, they will just be computer-generated wind tunnels for doing aerodynamics. I'm pretty certain Formula 1 stuff is done on a computer-generated model in this day and age. What will happen to modelling in the future? The building of models for real-world testing will diminish and it will all be on computers. So, I guess modelling will eventually come down to only static display types, people who want to build toys basically, not the commercial imperative.

This question relates to one of the previous ones: what would you say are the components of miniatures that differentiate them from larger objects?

Cliff: Scale without doubt. Getting the scaling right. Pat was referring to using very fine-grain woods for models that you wouldn't use on a real boat. The reason is the scaling looks right, the grain looks right. If you had real-world gaps or real-world events on a model they wouldn't be right. So, it's all about scaling and perception: it doesn't have to be right, it has to look right.

Pat: I can't add to that, that is spot on.

What do you think is key to a successful miniaturisation? Are there particular aspects of the process of model-making that are essential in making an object that depicts a boat at a reduced size?

Pat: Relevance, I suppose. For example, Cliff's *Bounty*, the fact that it has a provenance in the name *Bounty* and what happened to *Bounty*. When that person you talked about is walking by and how they interact with a model, if they just saw a wooden model of an old Whitby Collier of the 1780s or something, it wouldn't pull them half as much as if this was the *Bounty* that Fletcher Christian kept and set dear old Captain Bligh and his 19 other crew members adrift from the boat. The fact that it's got a provenance and a story associated with it, I think, enhances its value. Would you agree with that, Cliff?

Cliff: Yes, I think so. It's the same with Curlew. It's got a provenance and history which adds another layer of interest.

Pat: And the fact that we've got the full-size *Curlew* here, the fact that *Curlew* was five years in South Georgia, which is a bleak place, and where that boat has sailed and here it is still sailing and Cliff's brilliant model of it, which again isn't just the *Curlew*, you can actually see the method of construction because he has left it open on one side and you can see the frames and planks. I think that's a brilliant facet of that particular model, people look at it and the story is there. I think that's the wonder – good provenance.

Can you tell me more about the model you showed me in the workshop and building it alongside the full-size boat?

Pat: Before we did the gig for Help for Heroes and the wounded servicemen, the plan had been to make the Alan Pape 23 ft fishing boat, built in Looe in 1963. The idea was that the full-size boat would be being built in the workshop and the model boat which I was building would be built alongside it. Because, for health and safety reasons they couldn't walk around and climb in the full-size boat, they would actually be able to see the model being built. When there was no one in the workshop the model would still be in construction and they could see it being framed the same as the full-size one. So, yes it was a bridge from the would-be consumer through to the large boat. In the end, however, it was decided that the full-size Cornish gig would be built instead.

Cliff: We've got a model.

Pat: Yes, we've got a model and so it ended up with just the model and not the full-size boat. We did the gig instead. So, that's how my 23 ft [boat model] got finished and then the gig was built in the workshop.

Cliff, you mentioned how the full-size *Curlew* was outside when you were making a model of her and you were able to go and have a look and see if it looked right, can you tell us about that?

Cliff: Yes, Pat mentioned we actually have Curlew on the water and so we were sailing her in the classics. So, having a real boat, as I did with the [Flying] 15, having a real boat to go and measure bits of, take photographs of, helps a lot in finishing the boat. It doesn't really help with the lines of the boat because you need the line drawings for that. I mean you can look at it but how you actually get it to look like that is really tied up in the line drawings, you need those. But, for the rig, the layout, the way it's operated, having the real boat is a huge advantage: you can get it right. Whereas, for some stuff you are just taking a punt, well this is how we rig a

boat of this sort so we'll rig it like that – it may or may not be real. But we know with Curlew, broadly, it's real. In theory you ought to be able to put the two together and see it but I've taken a few liberties with Curlew: it's not painted for instance. Curlew was sheet finished at some point to reinforce it, which I haven't put on, so there's a few liberties. The deck layout is pretty good.

Figure 5.4   Cliff Swallow's model of the sailing boat *Curlew*. Some of the planking on one side has been omitted to show how the boat was made with a series of frames. Photo Charlotte Dixon.

Figure 5.5   The full-size *Curlew* under sail in Falmouth in 2005.
©National Maritime Museum Cornwall.

Is there anything else that you would like to say about model boats and the process of making them in a miniature form that hasn't been covered?

Pat: I don't spend enough time on model-making, but it does transport me back to my youth. There aren't many times when I'm not fiddling and working with a model, when I'm not transported back and I can walk down Fenchurch Street in my mind again or I can go to Greenwich

Maritime Museum and their models. To me scale was fascinating and I find every time I look at and am involved with models, I'm transported to a younger time, which is not an unpleasant experience. In the same way I look out on the water and I can't get my head around the scale of a ship moored out in the bay and the *Curlew* sailing past and a *Flying 15* sailing next to that. The fact the same-size people are in each boat always amazes me and I think, how can that possibly be! Which is a whole new concept of time through modelling them. It does transport me back to an inquisitive, youthful time and I quite enjoy that.

Cliff: That isn't my take. I mean for me it's just really enjoying the aesthetics of sailing boats. I just love the concept of the refinement. A wooden square-rig sailing boat today looks very ancient but actually they were the epitome of sophisticated engineering and advance application: many long years of evolution to arrive at something that worked like that, given the materials that they had to hand and the knowledge. I just enjoy that understanding or feeling or being able to at least begin to understand some of the evolution and aesthetics of sailing boats.

Pat: Yes, I think the half models are a classic demonstration of that.

Figure 5.6   Cliff and Pat holding models they have made in the boat-building workshop at the National Maritime Museum Cornwall.
Photo Charlotte Dixon.

Cliff: The evolution of hull shapes.

Pat: Yes, and as you quite rightly say over a great long period of time the energy that was put into developing that. When you look at a boat or a model representing that boat, the thought and energy from centuries before that's gone into it is remarkable. Certainly, models have a way of encapsulating that development to that point in time. [We can see that with] your *Bounty*, with the *Flying 15*, with *Curlew*.

6

Miniaturising boats: the case of the Indian *masula* surf boat

Charlotte Dixon

Models of watercraft from the Indian Ocean region, from East Africa through to Western Australia, are commonly found in museum collections in the United Kingdom and other parts of Europe. These intricately handcrafted and highly detailed objects, predominantly dating from the nineteenth and twentieth centuries, depict a wide range of watercraft in miniature, from rafts and outrigger canoes to large plank-built sailing boats; yet they are rarely displayed and poorly understood.

This chapter attempts to introduce the idea that the miniature, depending on its context, has the potential to reveal physical attributes of the referent, of the larger object it represents. This is a concept that is often overlooked or dismissed. It will thus offer a new insight and approach to the study of model boats. Focusing on a selection of models, it asks why they were made and collected and considers how they fit in with the wider global phenomenon of miniaturisation and collecting as a material culture practice at the height of British imperialism. It strives to demonstrate how these objects can be viewed beyond their aesthetic value; that they have the potential to help us to understand watercraft and maritime cultures from the past. Ultimately, it aims to raise awareness of the potential of these objects and to demonstrate Stewart's notion that 'a reduction in dimensions does not produce a corresponding reduction in significance' (1993: 43). To achieve this the chapter asks three key questions: why have boats been miniaturised, how can we interpret them and what can they tell us?

Models of boats in museum collections should not be underestimated; they have considerable value as evidence for traditional boats, boat-building techniques, maritime cultures and collecting (Dixon 2018).

In this study 17 models made from planks of wood stitched together in a highly detailed manner have been identified from India. These miniature objects share particular stylistic traits and demonstrate a high level of precision in the way they were fashioned and joined together. They have been identified as depictions of the *masula*: a boat used along the shores of eastern India. These models, which have, until now, been little studied, will form the case study for this chapter.

Ethnographic studies of the full-size *masula* will firstly be introduced in order to summarise briefly what is known about these vessels and to provide information that can later be compared with the models. This section does not aim to discuss technical information about the vessels in detail, but serves as an introduction to the full-size *masula* before investigating their miniature counterparts. The models will then be introduced and their contexts discussed, including their purpose and who collected them. Comparisons can then be drawn between the two sources (ethnographic data and models) to ascertain how much information the models can reveal about the *masula*. It will endeavour to demonstrate how these objects can be used in studies by maritime archaeologists, ethnographers and museums.

The *masula*: an introduction

> These boats are most singularly constructed; they have the appearance of a rude barge, are flat-bottomed and without timbers, the planks being sewed together with line made from the outer coat of the cocoa-nut, and caulked with the same material (Caunter 1834: 3).

Masula, also known by a variety of names such as *massola, massoolah* and *padagu* (Hornell 1920: 174; Kentley 2003: 120), largely became a standardised term used by Europeans in the twentieth century (Kentley 2003: 121). These vessels were one of the first sights many Europeans travelling by ship to Chennai, the capital of the South Indian state of Tamil Nadu that was formerly known as Madras (Hancock 2008: 9), would have observed during British imperial rule. It is perhaps not surprising then that descriptions of these vessels, such as the above description in 1834 by the British Reverend John Hobart Caunter who lived in India for several years, appear in eighteenth- to twentieth-century European accounts of the region. These vessels would have been one of the first points of contact, and travelling on them one of the first experiences for a visitor to

southern India, as described below by the British painter William Hodges upon his travels to India in the eighteenth century:

> From the ship a stranger is conveyed on shore in a boat of the country, called a Massoolah boat: a work of curious construction, and well calculated to elude the violent shocks of the surf, that breaks here with great violence (Hodges 1783: 4).

Masula boats were commonly used in Chennai (Madras) to transport passengers and cargo from ship to shore before the construction of breakwaters (Edye 1834: 8). These vessels were described and documented by travellers and early ethnographers from the eighteenth to twentieth centuries. For example, a description and image of the '*massoola*' by Thomas Bowrey, a British trader in the East Indies in the seventeenth century, was published by Temple in 1905; John Edye, a British shipwright, published a plan and description of a '*masula*' in 1834; Admiral Pâris, a French admiral who systematically drew scale plans and recorded watercraft from around the world, published images and a description of the '*masula manche* or *chelingue*' in 1841 and James Hornell, a seafaring ethnographer, recorded descriptions and images of the '*masula*' in 1920. These descriptions often refer to the construction of these vessels and their use. Folkard, for example, explained how the exposed Madras coastline, without any harbours or breakwaters for protection from the rough seas, was difficult to approach in a vessel of 'ordinary construction' but the 'massoolah' boats 'of grotesque appearance and curious construction' were adapted to approach the rough surf (1906: 447). This adaptation refers to the construction of these vessels. Edye described how these boats were made from a series of wooden planks that were sewn together (see Figure 6.1) to make it pliable in the rough surf, and they were flat-bottomed 'for the purpose of taking the beach in the surf, when European boats cannot approach it' (Edye 1834: 8).

Descriptions, photographs and drawings from the nineteenth and twentieth centuries in particular support the idea that the *masula* boat was used in the surf and constructed with wooden flush-laid planks (joined edge to edge rather than overlapping) sewn together using rope made from the outer fibrous husks of coconuts (known as coir). This varies from the nailed or dowelled European vessels from the time: the *masula* boat was flexible due to its sewn construction whereas European vessels were of comparatively rigid construction. *Masulas* seem to vary slightly in terms of the number of planks used to construct the vessels and the way in which they were stitched. For example, Bowrey (Temple 1905), Edye (1834) and Pâris's plans (1841) and drawings show that the

Figure 6.1 Photograph of a *masula* boat at Madras (Chennai), Tamil Nadu, taken by Nicholas & Company during the 1880s. © The British Library Board. Photo 406/2(40).

stitches form a criss-cross pattern over a layer of wadding (padding used to help waterproof the joins) outboard of the vessel, with stitches forming a pattern of vertical lines inboard. However, photographs (Figure 6.1 for example, and images documented by Hornell 1920) show this pattern was reversed: the stitches formed a vertical line pattern outboard.

More recent studies of these vessels in the late twentieth century describe how the boats varied across different regions in India and how they have changed over time in terms of their use (Kentley 2003: 120–66). Kentley identified three different types of *masula* boat – those from the northern, central and southern sector, spanning much of the length of the east coast of India (Kentley 2003: 136). Kentley described the northern-sector type as originating from Puri in Orissa to Andhra Pradesh. These were mainly used in beach seining, a form of fishing with large nets. The vessels were made from five planks either side sewn together in a criss-cross pattern over wadding of dried grass both inboard and outboard (Kentley 2003: 141–2). The central-sector *masula* boats from Andhra Pradesh used for beach seining were made from six planks of wood either side. Kentley also recorded boats made from four planks used as small fishing boats in this region. The criss-cross pattern of sewing over

dried grass is outboard on vessels in this region with a series of vertical stitches inboard (Kentley 2003: 142–51). The last group of *masula* boats identified by Kentley are those from the southern sector, from Kavali in Andhra Pradesh and down to regions in Tamil Nadu including Chennai and south of Pondicherry. These *masulas* were recorded as being used for beach seining and were formed from six planks either side, although they vary in size depending on location. The fastening technique used on these vessels differs from the other sectors. The stitches between the planks form a criss-cross pattern with the seams covered in coconut coir and topped with dried grass inboard. Outboard the stitches from a pattern of unconnected vertical bars like the boat shown in Figure 6.1. The end posts are secured with stitches forming a criss-cross pattern both inboard and outboard (Kentley 2003: 151–9).

From Kentley's fieldwork conducted in the 1980s, along with other ethnographic sources, it is clear that the term *masula* does not cover one single boat type: these vessels varied in their form and construction depending on their use and location. The use of these vessels also seems to have changed over time. The construction of harbours meant *masula* were no longer required as a medium to access larger boats from the land and vice versa. When Kentley conducted fieldwork in the 1980s these vessels were mainly observed to be employed in seine fishing. At the time, Kentley reported an '80 per cent reduction in the number of *masulas* in Madras from 1960 to the mid-1980s' (Kentley 2003: 129), a decline mainly attributed to the introduction of mechanised trawlers.

This is a common issue that has also been observed in other regions around the Indian Ocean: in Sri Lanka, for example, the introduction of new materials such as outboard motors, nylon cordage and fibreglass resulted in a decline in the construction of traditional wooden outrigger canoes (Devendra 2011). Furthermore, the tsunami in 2004 that hit the shores of many regions around the Indian Ocean, including India, caused great devastation. In addition to the loss of over 10,000 human lives as well as homes and businesses, fishing communities in regions such as Tamil Nadu lost considerable numbers of boats and fishing nets (Murty et al. 2006: 751). It is now not known how many, if any, of the traditional wooden *masulas* are currently being built and used.

While this section has not gone into great detail about the technical features of *masula* surf boats from eastern India, it has introduced these vessels and the studies available about these boats. There are still several gaps in our understanding of these vessels; gaps that miniature representations of these vessels might be able to help us understand.

Miniaturising *masula* boats: models in museums

In this study 17 models depicting *masula* boats have been identified in nine different museum collections in the UK. These miniature objects are all highly detailed in form and the manner in which they have been constructed and joined together. They have been made from a series of wooden planks that are flush-laid. To fasten the planks together holes have been bored in the wood with thread passed through from one side to the other, resulting in sewn edges.

The models are flat-bottomed with wooden posts at either end. They have a series of wooden beams between the top two planks connecting the sides of the boat. Some have wooden pins, known as thole pins, protruding from the top plank, or strake, to pivot oars on. In addition, there is decking at one end of the models and an awning or space for an awning on some of the models for cargo and passengers. Some of the models are decorated with paint, but others have been left in their natural wooden state or coated in varnish (see Figures 6.2 and 6.3).

While all the models were made in, and collected from, India, the records for 13 of them specifically state that they originated from

Figure 6.2   Model of a *masula* boat used in the surf in India, *c*.1890. It is a flat-bottomed boat made from wooden planks stitched together. Approximate length is 625 mm. National Maritime Museum collection (inventory number AAE0046; © National Maritime Museum, Greenwich, London).

Figure 6.3   Model of a *masula* boat from Madras (Chennai), India, acquired in 1869. It has been painted red, has a number '3' painted on either end, contains oars and an awning and seating area that has been dismantled. It measures 640 mm in length. British Museum collection (inventory number As.5869.a © The Trustees of the British Museum).

Madras (Chennai), on the south-eastern coast. We know Kentley identified different forms of *masula* boats in different parts of India in the 1980s (2003). It is interesting then that the models, where specific locations are known, were all from Chennai – in the southern sector. This could be due to the nature of the use of the *masula* boat as a cargo and passenger ferry prior to the construction of a harbour in Chennai, making them crucial aids for European travellers to reach the shores of Chennai, and also due to the colonial presence and importance of the region at the time (Hancock 2008: 9).

One limitation when working with museum objects is that we are reliant on the information kept in museum records. It is often the case that specific dates of production are not known or recorded. We do, however, often know when objects were collected or acquired by an institution. Of the 17 models identified two do not have any dates recorded and two simply state they were from the nineteenth century. For the rest, the earliest recorded dates are shown in Figure 6.4 and range from the 1840s

Date the *masula* models were made, collected or acquired into museum collections

Figure 6.4 Earliest recorded dates the *masula* models were made, collected or acquired into museums. Compiled by Charlotte Dixon.

to the 1930s, with the majority dating from the mid- to late nineteenth century: a time of British colonial rule (Lloyd 1996: 426–33).

It is clear that detailed models of *masula* boats were made and collected from India, mainly Chennai, in the nineteenth and early twentieth centuries and were brought back to the UK before entering museum collections. They all share particular stylistic features and attributes that will be discussed when analysing the models in later sections. The question now is why they were collected and what their purpose was.

Why have *masula* boats been depicted in miniature and why were these objects collected?

Museum objects have long and often complex histories. Each object has its own narrative, or biography, taking on new meanings and uses with changing contexts (Kopytoff 1986: 66). Models of Indian boats found in museum collections are unlikely to have started their lives there. They would have been deliberately made, then at some point collected and transported overseas, eventually ending up in a museum in the UK. It is these narratives, the biographies of things (Kopytoff 1986: 64–90), that can impact our interpretation of these miniature objects. The reason for their production and acquisition can help us to understand the purpose

of the models and why these boats were represented in miniature. This, in turn, can be indicative of how representative they are likely to be of a full-size vessel and what kind of information we can learn from them. Unravelling and collating the collection histories of these small objects also has potential to help us to understand wider concepts of cross-cultural interactions and the colonial collecting of miniatures.

Collecting, defined by Pearce as 'the gathering together of chosen objects' (1995: vii), is not a recent activity. It can be traced back to prehistoric (Pearce 1995: 8), ancient Roman and Greek civilisations for example (Belk 1995: 22; MacGregor 2007: 1; Rutledge 2012: 8). The way in which objects have been amassed and used has, however, changed over time. The models of *masula* boats were collected in the nineteenth and twentieth centuries, a period Pearce described as 'classic' collecting (1995). This was a time of industrialisation, imperialism and 'scientific revolution' (Pearce et al. 2002: xiii), which impacted collecting practices. It was this period that saw exhibitions held on a national and international scale showcasing collections from around the world to demonstrate progress and the colonial endeavour. Jasanoff described how Britain used collecting at this time to 'reinvent itself, to define its sense of imperial purpose' (2005: 10).

Two of the *masula* models were made to be displayed at international exhibitions held in London. Although large-scale exhibitions had started to materialise in Europe towards the end of the eighteenth century, it was not until the mid-nineteenth century that an 'international exhibition movement' (Hoffenberg 2001: 1) emerged. This was instigated by the success of the Great Exhibition of the Works of Industry of All Nations held at the purpose-built Crystal Palace in London in 1851 (Greenhalgh 2011: 26). This exhibition was designed to show the state of development around the world (Great Exhibition 1851: 4). It used a system of classification to showcase various industries and included several models of items that were too large or costly to display and transport to London, such as models of buildings, carriages and boats. The official catalogue remarked that models of particular boats were commissioned and made for the purpose of presentation at the exhibition (1851: 909). These models seem to have been made by local boat-builders in dockyards alongside full-size vessels and were made to depict technical miniaturised versions of the full-size vessels that could not themselves be exhibited.

Following the success of the Great Exhibition, which attracted over six million visitors (Greenhalgh 2011: 26), there was a rise in international exhibitions around the world, including the South Kensington

International Exhibitions. These exhibitions were held in London in 1862 and then each year from 1871 to 1874, with the aim to be a 'centre for the enhancement of science and trade, of research into the exploitation of empire, and a place where the population could receive education and culture' (Greenhalgh 2011: 57). Miniature depictions of objects from around the world, particularly from British colonies, that were too big or costly to be transported and exhibited were commissioned for the exhibition and made by locals to be displayed as educational tools for visitors to South Kensington. One of the *masula* models is recorded as having been made in Madras (Chennai), India for the fourth of these exhibitions – the South Kensington International Exhibition, 1873. This model, now housed in the Science Museum (inv. no. 1929–1083), was described in early museum records as a 'Masoolah boat … open boat with oar for landing in the surf' ('4,942' India Museum Slipbook, an original inventory from the former India Museum held in the Victoria and Albert Museum archives). This model is highly detailed in terms of its configuration, painted in red, black and white, and contains figures demonstrating the propulsion of the vessel. As this object was made and displayed to educate an audience about this form of transportation the high level of detail is not surprising: it was commissioned for pedagogical purposes.

Another model of a *masula* boat was commissioned for the British Empire Exhibition held at Wembley in 1924. This exhibition aimed to encourage peace following the First World War, to showcase progress and, as the official guide stated, to show that Britain was 'still the supreme manufacturing country' (British Empire Exhibition 1924: 9). This model, now in the Horniman Museum and Gardens collection (inv. no. 24.298), shares similar physical traits and a similar level of detail as the model made for the South Kensington International Exhibition, but it has been painted black. As these objects were specifically made to depict full-size watercraft and their technological details, they might indeed be able to reveal information about the Indian craft these miniatures represent. Comparisons with ethnographic records of *masula* boats later will help us to understand if these models are precise scaled-down versions of these vessels or if there are elements that are unique to the models.

While two models were commissioned for display, five were systematically collected by individuals, such as anthropologists and colonial officials, in the nineteenth and early twentieth centuries. The archaeologist, anthropologist and lieutenant-general Augustus Pitt Rivers, for example, systematically collected objects from around the world and organised them typologically to educate visitors to the

collections and to 'illustrate his theory of the evolution of culture' (Bowden 2004). Among the 30,000 objects Pitt Rivers donated to the University of Oxford in 1884, which were to form the founding collections of the Pitt Rivers Museum (Petch 2010), were models of *masula* boats from India (inv. nos 1884.81.42 and 1884.81.43). These models, again, are highly detailed in their configuration. Pitt Rivers aimed to use his collections for public education (Bowden 2004). With this in mind it is likely Pitt Rivers would have wanted the models he both made and collected to relay accurate information about the full-size object, building or site. The *masula* models could, theoretically, have been realistic depictions of their full-size counterparts.

The philanthropist and tea trader Frederick John Horniman similarly systematically collected objects from around the world in the nineteenth century, including a model of a *masula* boat, which again is highly detailed. Unfortunately, the collection of seven of the *masula* models has not been documented in museum records. This can be attributed to early museum entries and a lack of standardisation in the data recorded. In addition, in some cases, the objects have moved across different institutions over time, adding to the complex biographies of these objects. Other models of boats, however, were commonly collected as souvenirs. This sporadic form of acquisition involves collecting objects as memorabilia of a personal experience (Pearce 1992; Stewart 1993; Pearce 1994; Pearce 1995) and could explain why some of the *masula* models were acquired. It is interesting to highlight here that all of the models discussed in this chapter have been fashioned and joined together in a very precise stylised manner, including those collected as souvenirs.

Masula boats, in their miniaturised forms, have complex histories: they were not simply made and collected for one reason. Some were intended to function as educational tools, others for entertainment value and still others as evidence of an individual's travels, of different cultures and technologies. It is these histories that can help us to understand how likely these objects are to represent actual full-size boats, or if they were purely stylised as aesthetic models symbolic of a type of boat, tradition or region that is devoid of the technical complexity of the full-size original. Technical models made for exhibitions to educate about technologies used around the world, for example, could be interpreted beyond their artistic value. The high level of detail used in their construction is not a coincidence; they were made to be representative of a real boat, to showcase local traditions and boats used in India in the nineteenth and twentieth centuries.

Practical aspects of model-making

There can be fundamental differences in the production process of a full-size item compared to its miniaturised counterpart. Working at a reduced scale can require different skills and tools, a notion that was discussed in the interview with model-makers in chapter 5. For example, building a full-size boat can require tools such as saws and hammers, large timbers and physical strength from the builder. However, a reduction in the size of the finished product, such as a model boat, can require different tools, a steady hand, patience and different materials. Foxhall observed that 'in many cases ... reducing an object to a miniature scale increases the technical difficulty of making it' (2015: 1). The production of a miniature thus presents different challenges from producing a full-size item.

When using models as evidence for full-size objects it is imperative to be aware of the differences that could be presented. For example, 'frequently those who craft miniatures are selective in the features they choose to emphasize or to represent clearly' (Foxhall 2015: 3). This links to the concept of miniatures undergoing a process of simplification, and to Mack's ideas about using models to erase physical defects (2007: 12). It is important to consider that certain features on a model may be omitted, simplified or exaggerated, or the proportions distorted. Nevertheless, models are still recognisable as being smaller versions of a larger entity (Foxhall 2015: 2). They are representative and therefore have the potential to reveal information about aspects of material culture we might otherwise know little about.

It is also important to acknowledge that reducing the size of an object alters its function. For example, a boat is built to be used on water, functioning as a watertight mode of transportation. When the size of a boat is reduced, the intended function changes too. Although a model may still be able to be used on water and could potentially be watertight, a significant reduction in the size means it can no longer function by transporting people. Instead the model has the ability to take on different and new meanings. It might serve to be symbolic of a culture, a time or place. It may be used during funerary or religious practices, as a learning aid or for entertainment. The interpretation of models must therefore take these 'other' potential meanings and functions into consideration. Philip Kiernan discussed how there are limitations with using miniatures as direct evidence for the past but these could be avoided 'if we pay attention to the different modes of representation that they

employ' (2015: 56). This mode of representation, why the models were made and collected, is consequently an important part of the methodology used to approach miniatures to understand full-size objects, in this case boats.

What models can tell us about full-size *masula* boats: a comparative analysis

Although the models of *masula* boats have all been individually hand-crafted, they share some common characteristics. They all depict wooden flat-bottomed, frameless, flush-laid plank-built boats that have been fastened together using a sewn technique. They have stem (front) and stern (back) posts and the majority have crossbeams supporting the structure of the model. Thole pins (wooden pegs used to enable an oar to pivot) are tied to these crossbeams. Furthermore, all of the models contain six planks either side of the keel plank. Ethnographic studies, accounts and images show that these were common traits found on full-size *masulas*, although the number of planks varied by region, suggesting that the models, even those with unknown origins, were from southern India (Kentley 2003: 136–58). The design of these vessels, with their stitched planks resulting in a flexible boat and its flat base, enabled the full-size version to approach the surf and to be beached when other, more rigidly constructed and keeled boats could not (Edye 1834: 8).

When considering the overall form and features of these miniature vessels, comparisons with ethnographic studies of these boats and photographs indicate that the general form, layout and features on the models seem accurately to depict those found on full-size *masula* boats. For example, a *masula* model from Chennai (then Madras) was acquired by a T.E.J. Boileau, judge of the Madras presidency, in 1849. This model is now in the British Museum's collections (inv. no. As1849,0904.1). It has a seating area covered by an awning at the stern, crossbeams acting as thwarts (seats), thole pins with oars, a pennant and a steering oar (a larger oar or paddle used to steer a boat). It also contains miniature figures that demonstrate how the boat was used and it is brightly painted in red on the exterior and white on the interior of the hull. The photograph of a *masula* boat in Madras in the 1880s (Figure 6.1) shows a similar picture. There is a covered area towards one end of the vessel, presumably used as a shelter for cargo and possibly passengers. We can assume this is the stern as there is also an individual holding a steering oar at this end.

The crew seem to be seated on the crossbeams with oars in their hands, there is a pennant and the vessel appears to be flat-bottomed with six planks (or strakes) either side, stem and stern posts and it is beached. It would seem, from such comparisons, that features found on this model represent those found on full-size *masula* boats. This can be supported by evidence recorded in studies by Edye (1834), Pâris (1841), Kentley (1985; 2003) and McGrail (2001), for example, as well as other pictorial depictions such as photographs and drawings.

Despite the high level of detail and form of the models, there do appear to be some discrepancies with their overall dimensions when compared with ethnographic sources. The drawings and photographs of *masulas* in studies and accounts of these vessels appear, relative to their length, narrower than the models: the models are considerably wider. Furthermore, the spacing between the stitches on the models and their overall size is considerably exaggerated resulting in elongated and fewer stitches overall (this can be seen in the examples shown in Figures 6.2 and 6.3). This could be a result of the process of miniaturisation and physically working at a reduced scale. The stitches used on full-size *masulas*, for example, were used to hold the planks together and dried grass or coconut wadding would make the seams watertight (Edye 1834; Kentley 2003). Reducing the size of these objects changed their purpose: they were no longer intended to function as passenger and cargo ferries on water or to be used in seine fishing, but instead became representative of a larger entity. Moreover, the practicality of working at a reduced scale, where different tools and skills are required to stitch the components together, may have resulted in the exaggeration of the stitches. It can be considerably challenging to stitch the wooden planks together with tiny stitches that are close together and to include a layer of wadding. By elongating the stitches, the model-maker has still construed the concept of the construction technique, the sewing pattern and the use of wadding, without using a precise scale. Even the models made for international exhibitions reveal exaggerated stitches, yet the method of sewing is very precise. The model-makers and curators were still able to educate visitors to the exhibitions about construction and the use of sewing techniques to construct flexible boats. Another theory is that the stitches were exaggerated purposefully on the models to highlight that this was a key feature of these boats and a construction technique that differed considerably from those used on contemporary Western vessels. The fact these boats were sewn together may have resulted in intrigue and appeal for Western visitors to India and could help to explain why these vessels were

miniaturised for a souvenir market. Finally, these discrepancies could tie in with the notion of the simplification of miniatures. Assembling a model with a small number of large stitches would have been a much simpler method of construction than stitching the wood together with a large number of precisely scaled-down stitches.

Whilst it can be observed that the size of the stitches has been exaggerated on the models, it is important to acknowledge the high level of detail and accuracy that has gone into the construction of these objects. Kentley observed how there was some variation in the stitching technique used in vessels in different regions in India, where *masula* boats from the northern and central sector of India used linking cross-stitches both inboard and outboard, but those found in the southern sector only used this method on the interior, with vertical bars on the exterior of the hull (Kentley 2003: 120–66). The models identified in this research all seem to reflect the *masula* from southern India, a notion not only supported by the museum records and the number of planks used to construct the models, but also in the way they have been stitched together. The models have been assembled with linking cross-stitches inboard, which form a criss-cross pattern, with a layer of coconut fibre (coir) wadding over the seams of the planks and under the stitches for waterproofing. This pattern is similarly seen on the exterior, as well as the interior, of the stem and stern posts, which Kentley described as a feature of these southern sector vessels (2003: 157). Outboard, on the planks, the stitches form a pattern of vertical bars and on the top strake the planks are 'half-sewn', producing stitches that look like connected 'N's inboard (Kentley 2003: 158–9). Although the stitches are not to scale, they do reflect an accurate depiction of construction: the way full-size *masulas* from southern India were built is portrayed with close attention to detail in their miniaturised forms.

In addition, several of the models contain oars or thole pins and a large steering oar. Kentley observed how *masulas* were rowed and steered with either a steering oar or handheld paddle (Kentley 2003: 159). It would seem that models do not only have potential to inform us about the overall configuration and construction of the *masula* boat from the mid-nineteenth through to the early twentieth centuries, but these miniature objects can also be studied to help us to learn about propulsion methods before the use of the outboard motor. As two of the models contain an arrangement of miniature people, we can also use these objects to understand in what way these boats were used and the potential configuration of the crew.

Finally, seven of the models are painted. Decoration varied among these full-size surf boats and where they were built but it was fairly common for some of the planks to be painted and for the inclusion of numbers or an oculus (eye) to be painted either side at stem and stern (Hornell 1920: 174; Kentley 2003: 162–3). Painted models that were built to accurately depict full-size watercraft, such as the models made for the South Kensington International Exhibition in 1873 and the British Empire Exhibition in 1924, have the potential to inform us about the use of different decorative techniques in Indian boat-building. These models have been painted in variations of red, black and white and often contain a number at both ends.

Wider significance of models and their interpretation

Models of boats, when studied in conjunction with other sources, have the potential to be used as evidence for the full-size watercraft they represent. It is starting to become apparent in this chapter that models can be made for a range of different reasons, and this can be indicative of their accuracy as miniature depictions of larger vessels. Some model boats can indeed be highly accurate depictions of watercraft in terms of their overall form, features and construction. These miniature museum objects that have been little studied to date should therefore not be overlooked as potential sources to help us understand watercraft around the world, some of which may no longer be built or used. While these small objects have considerable potential in helping us understand the physical attributes of a larger entity, their ability to help us go beyond the physical and to start understanding broader meanings and significances on a global scale should not be underestimated.

We can start to ask questions of these objects, such as why these particular vessels were chosen to be depicted in miniature when other Indian vessels seem to be less commonly represented, or completely omitted, in museum collections in the UK. What did they mean to the model-maker and what did they mean to the collector? Furthermore, these models were produced at the height of British colonialism; they were produced by locals and collected or commissioned by Westerners. They are thus a product of cross-cultural encounters and exchange. Wintle's work on objects from the Andaman and Nicobar Islands revealed how objects collected at a time of British imperialism have the potential to inform us about the wider colonial endeavour, about cross-cultural exchange and the lives of people in local communities (Wintle 2013: 1–3; 2015). Models of *masula* boats,

as well as other models, could help to provide insights into these broader issues. The process of miniaturisation thus does not limit an object and the information it can reveal; the miniature can instead carry with it new meanings and biographies that can help us to understand wider issues and narratives on a localised, or even global, scale.

Conclusions

Miniaturisation is a process that has occurred throughout time and space for varying reasons. Miniatures and models have the capacity to take on new meanings and functions, to make the impossible possible and to serve as small, portable three-dimensional depictions of a larger entity. The depiction of watercraft in a miniature form has been popular, not only in ancient funerary practices (such as Egyptian burials), but also as educational tools and for entertainment. The collection of miniature boats was not only an act of the past but is also still a popular activity today: you can go on holiday and find models of boats on sale as souvenirs, for example. These objects, in their miniaturised form, clearly have a strong intrinsic appeal.

This chapter argued for the role of the miniature in understanding the physicality of the referent by showing how models can be used to understand physical aspects of watercraft. It asked three main questions: why have boats been miniaturised, how can we interpret them and what can they tell us? Delving into the objects' collecting histories proves there is not a single answer about why boats are miniaturised. Historically they have been made for a range of reasons – to educate, to entertain, for their ability to imbue emotion and memories, for their portable nature, as toys or as cultural or religious symbols to name a few. This chapter looked at models of the Indian surf boat, the *masula*, as a case study. This revealed that some of the models were specifically commissioned to be displayed at exhibitions as technical representations of full-size watercraft. Others were collected systematically as portable depictions of watercraft in local cultures. These models were made not simply as pieces of art, but to showcase local watercraft and technologies. They have the ability to encapsulate a microcosmic world of watercraft.

The method used to interpret model boats considered not only the physical objects themselves but also their contexts and other sources, where available. It is imperative to study an object's wider narrative and biographies when this information is available in the museum record as this can be indicative of how likely the model is to depict an actual

full-size vessel as well as to identify any biases in the production and collection of the models. For example, if a model was commissioned, what was its purpose? Furthermore, the models should not be studied as standalone evidence if this can be avoided, but explored in conjunction with other evidence for the watercraft such as ethnographic accounts, drawings and photographs of boats. When used alongside ethnographic studies the models of *masula* boats can be used as supporting evidence. There is not, however, an abundance of published studies available about this particular type of watercraft. The most extensive fieldwork about these vessels was conducted in the 1980s yet the models mainly date from the mid- to late nineteenth century. Models can consequently help to fill in gaps in our understanding of the *masula* boats before detailed systematic studies were conducted.

The models of *masula* boats have the ability to reveal information about the overall form, features and construction of the full-size boats. There are, however, discrepancies with the scale of the models that must be considered when using them as evidence for watercraft. This is interesting as by exaggerating or excluding features, such as the exaggeration of the stitches used to join *masula* models together, a model-maker is able to make sure certain information or emotions are relayed through the minutiae. Moreover, by changing the context and scale of an object, miniatures have the ability to capture the imagination of the onlooker, to portray the impossible and to imbue emotion (Dixon 2018). When looking at models of the *masula* boats it is difficult not to notice the sewn pattern – this practice and technique of traditional boat-building in India has been successfully portrayed to the onlooker regardless of scale.

To summarise, just because a boat has been miniaturised does not mean that it is any less significant than a full-size vessel. It has the potential to take on new meanings, to tell us about the boats they depict and to reveal information about their contexts and colonial narratives. These small objects, therefore, should not be underestimated: they can be highly significant sources for understanding maritime traditions and boat-building practices as well as the wider practice of model-making at a time of imperial endeavour.

Acknowledgements

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7

Composing Warao indigeneity and miniatures
A human–nonhuman working group

Christian Sørhaug

A young Warao man approached me, asking if I wanted to buy a miniature *balahoo*. He held up the boat model, and praised his own work. Several other people standing around also started commenting on the model. Most agreed that it was well built (*nona yakera*), the miniature *balahoo* sculpted from balsam wood, usually painted blue and red and sporting a miniature 75hp Yamaha outboard. This miniature represents one of the most desired items for any male Warao. The *balahoo* is a small wooden boat made for fast travel up and down rivers; it is the Warao version of a speed boat. Equipped with a real 75hp Yamaha engine (the most common engine model in the delta), the *balahoo* can make the trip from the missionary village of San Francisco de Guayo to the state capitol Tucupita in between four and five hours.

Although in the beginning these miniatures annoyed my anthropological sensibilities, given that there is no tradition among the Warao for making miniatures and these pieces on offer were made for a tourist market, I soon began to think through the objects (Henare, Holbraad and Wastell 2007). The Warao, an indigenous population inhabiting the Orinoco delta in eastern Venezuela, live a relatively isolated existence, but globalisation now impinges on this indigenous population as missionaries, government officials, tourists and traders interact, trade and live in and around the delta. The Warao number about 25,000, and are the second-largest indigenous group in Venezuela; the majority live in the littoral zone on stilted houses, built along the banks of the Orinoco, and subsist for the most part on fish and tubers, supplemented by some game

Figure 7.1   Young man with model *balahoo*. Photo Christian Sørhaug.

and sago. Contemporary Warao also buy supplies from local stores with their own money or via government funds.

Given the swampy habitat of the delta, all transportation is by canoe. The myriad rivers and water channels make other forms of transportation impossible. Thus fishing, tending gardens, hunting, gathering berries or any other household chore implies using the traditional canoe, or other types of boat. In this aquatic environment possessing a canoe or boat is so imperative that the Warao word for a person without a canoe is the same as for a poor person (Heinen and Henley 1998–9). When offered the miniature *balahoo* I asked the young men if they would want such a commodity object for themselves, and many said they would – if they had the money; one man said that he himself had bought one and had it on a shelf in his house. I obtained similar answers in other settings; in my interviews with young men, the desire for a *balahoo* with an outboard engine is a persistent desire. As the Warao entangle with a global world, new desires and dreams are made (and unmade) and become visible through, among other things, miniatures. The philosopher Donna Haraway asks how 'becoming with' is a practice of becoming wordly (2008: 3). She is interested in grasping with the entanglements of multiple beings and their emerging world-making efforts. Here I am interested in exploring how the Warao are becoming with miniatures, and how this affects their own world-making efforts. I argue that miniatures are more than

just good things to think through. The argument in this chapter is that miniatures enact Warao world-making efforts, or worldings. I engage, in examining this phenomenon, with the broad field of science and technology studies and its subfield of actor–network theory, which have convincingly argued against the hegemonic scientific view of one reality/one world and many representations of this reality/world. Rather, they have argued that reality is a phenomenon arising in multiple, albeit sometimes connected, versions.

Shifting the gaze from the universal belief that there is one world, and that science is the universal language to discover this one reality, Bruno Latour suggests in his 'An Attempt at a "Compositionist Manifesto"' that we rather try to build a common world from a universal relativism, which acknowledges that the world is composed of 'utterly heterogenous parts that will never make a whole, but at best a fragile, revisable, and diverse composite material' (Latour 2010: 474). The composition of this common world demands an alternative view on how we humans become with our material surroundings, in which 'We need to have a much more material, much more mundane, much more immanent, much more realistic, much more embodied definition of the material world if we wish to compose a common world' (Latour 2010: 485). The miniature *balahoos* and other examples of miniaturised objects are one way in which contemporary Warao are doing and performing world-making efforts that sustain and continue their way of life. From a compositionist perspective, we need to explore how things are put together, while retaining heterogeneity; what is the composure of a gathering; how do humans and nonhumans decompose as well as compose relations? These are some of the questions that will be examined in this chapter on the composition of Warao indigeneity and miniatures.

Mario Blaser follows some of the cues from the science and technology field when he suggests that the turn to ontology, the study of reality and what is real, could be a fruitful way of exploring indigeneity in a globalised world: 'The problem space can be characterized as the dynamics through which different worlds or ontologies bring themselves into being and sustain themselves even as they interact, interfere, and mingle with each other' (Blaser 2014: 55). The indigenous Warao and their encounter with external others creates changes in what it means to be Warao, but Warao indigeneity and agency does not need to be analysed as lost, or somehow less Warao, because of changes in their indigenous composition. Rather, it could be productive to analyse changes in the material repertoire of the Warao as an extension and elaboration of their ability to act in a changing world. For the philosopher Jane Bennett, who is also

inspired by Latour in her exploration of *Vibrant Matter* (2010), agency does not reside in any one place, body or human intentionality. Agency is a question of hubs of relations and cooperation: 'The locus of agency is always a human–nonhuman working group' (Bennett 2010: xvii). Here I suggest that miniatures and Warao indigeneity form a particular working group that emerges as the Warao interact with significant others. Of course, miniatures hinge on the existence of an external 'other', but at the same time, this does not mean that we need to conclude that all difference is lost and we are now all 'modern'. Rather, it is a question of reinventing 'Waraoness' in a different way.

This chapter starts by discussing relations between indigeneity, craft-making and performance of gender in a globalised world. 'Third gender' is a particular identity configuration among the Warao, and the chapter demonstrates how, even given changes in handcraft practices, these particular gender configurations continue. I discuss the ontological status of reality and the concept of an all-encompassing modernity. Though miniatures are an innovation among contemporary Warao, they still create a site for differentiation. I will then describe the purifying mechanisms inherent in the conservation practices of museums, which work to protect the non-Warao story of an all-encompassing modernity. Lastly, I argue that the composition of the miniatures–Warao working group engages a global conversation with tourists, and should be understood as an attempt by the Warao to communicate to outsiders something about themselves. My research questions are therefore: how do the miniatures align with Warao indigeneity? Should we simply analyse the miniatures as a symptom of modernity, and thus conclude that the Warao are hybrid moderns, or could we imagine a situation where the Warao are becoming with miniatures, and thereby construing new identities and visions of themselves in the world?

Composing and negotiating indigeneity, craft-making and gender performance

Siri encountered me at the *hoisi*, the walking bridge that connects all the households. He said that I had to come home with him, because he wanted to give my mother a gift. When we came to his house, he opened a wooden box and showed me some miniature baskets he had made out of *hau*, palm fibres. He said that my mother could attach these small baskets to her car rear view mirror as decorations. He had recently been to the state capital Tucupita, and there he had seen a taxi driver with

something similar hanging from his rear view mirror. That my mother a had car at all was considered testimony to her affluence, something the villagers considered rather impressive.

Siri was a *tidawena*, a 'twisted woman', a Warao term used for homosexuals and feminine men as a 'third gender' that can be expressed both through *tidawen* (males performing female identity) and *nibora-wena* (females performing male identity). Of these, the most common third gender are the *tidawena*. Though these gendered identities are performed in various ways, one common practice is the insistence that they only know how to perform typical female craft-making activities. The Warao distinguish three major areas of *a nona* – crafts; *hau a nona* – palm-fibre crafts, *sehoro a nona* – basketry and *wahibaka* – canoes. As a *tidawena*, Siri would often boast about his abilities in making *hau* baskets or weaving hammocks, while in the same breath he would say he had no knowledge of how to make a canoe.

Indigeneity concerns processes, in this case gender identities and craft-making, for self-identification and reinforcement of political rights. Ethnic group identity, however, is not a question of possessing certain essential traits or primordial heritage, rather it is a question of relations and construction of boundaries (Barth 1969). The establishment of the Warao as a singular ethnic group has gained momentum through the growth of the Venezuelan nation state, as well as through international indigenous rights movements.

For example, less politically interested Warao often remark that indigenous Warao groups along other rivers are different, speaking, marrying or practising shamanism differently. The term Warao is also often used to refer broadly to indigeneity itself, in contrast to the Hotarao, white-creoles. The multiple meanings of the word 'Warao' depend then on its usage in various settings; often the phrase '*oko Warao*' is used with pride, called upon when a Venezuelan Hotarao mistreats, downplays or tries to subordinate other Warao people. For the Warao, *oko Warao* reflects great pride and strong emotion in contrast to the Hotarao peoples, who often find excuses to downplay, scorn or cheat Warao of their fair share in trade or in the distribution of government resources. Olivier Allard, for example, writes about the bureaucratic anxiety Warao experience when they are working to obtain government funds from their more powerful counterparts, the Hotarao (2012). Villagers are anxious about giving away their individual name, as they suspect they will be misused and taken advantage of, while at the same time they need to engage with bureaucratic processes to become entitled:

> The Warao act (drawing up lists or filling out forms) in order to be the cause of the Creoles' acts (i.e., their release of a flow of wealth). This elicitation of the latter's acts is proof of their efficacy – they have compelled others to act with them in mind – and of being Venezuelan citizens capable of using bureaucratic techniques in order to do so … The anxiety surrounding writing documents can therefore be read as the fear that, by being prevented from acting themselves, the Warao would be deprived of the opportunity to cause Creoles to act with regard for them – or rather they would be confined to previous technologies of persuasion, such as direct attempts to evoke compassion (Allard 2012: 249).

Warao indigeneity emerges in a particular power-field where their ability to act hinges on their ability to negotiate and renegotiate various situations. For example, Siri's innovations made possible an attempt at connecting with my mother through some miniatures he made for her. The contemporary indigenous populations of the Latin American lowlands are witnessing rapid changes in their surroundings as cities and urban centres experience almost explosive growth. Resource exploitation of the environment, and capital expansion, create effects that reach into even the remotest corners of the rainforests. Although, as mentioned earlier, the Warao live a relatively isolated existence in the Orinoco delta, they engage in trade, travel to cities, sell produce to markets, acquire government funds and intermarry with white-creoles. The very fabric of reality in a globalised world has become something different for the Warao.

The changing circumstances of Warao existence and surroundings makes relevant discussions concerning the status of 'one reality'. The philosopher Hilary Putnam claims that there has been a confusion among academics and philosophers that we humans are confronted by just one reality. Aligning himself with the philosophical position of Ludwig Wittgenstein, which argues that the reification of general terms like 'reason', 'meaning' or 'reality' has given rise to philosophical puzzlement (1997), Putnam says that the puzzle of the word 'reality' is that it has been conceptualised as one reality. Putnam argues instead that reality is something we constantly negotiate.

> The notion that our worlds and life are constrained by a reality not of our own invention plays a deep role in our lives, and is to be respected. The source of the puzzlement lies in the common philosophical error of supposing that the term 'reality' must refer to a

single super thing, instead of looking at the ways in which we end-
lessly renegotiate – and are forced to renegotiated – our notion of
reality as our language and our life develops (Putnam 1994: 452).

Humans, Westerners as well as Warao, constantly renegotiate the terms
of our existence and whatever we find to be real. As I have argued in pre-
vious studies, Amazonian anthropology has tended to underestimate
or ignore the importance of nonhuman nonanimated goods and their
importance in constituting and construing indigenous lives and soci-
ety (Sørhaug 2012; 2014; 2016). Though some crafts undergo changes
through entanglements with significant others (missionaries, traders
and tourists), as demonstrated through the miniatures, the performance
of gender through these crafts is still an important site for identity pro-
duction; Warao indigeneity, craft-making and gender performance are
closely entangled. The Warao have a range of rituals and everyday rou-
tines that differentiate female and male. For example, women are iso-
lated from the rest of society during their menstrual periods, and there
are certain types of knowledge that are privileged for men and not women
and vice versa. These gendered patterns can be observed in everyday life
through greeting ceremonies, in which women will greet other women
and ignore the men, and men can do the same, especially among a large
group of people. Among the Warao, the performance of gendered iden-
tities like 'manhood' or 'womanhood' is connected with craft-making; for
example, men make canoes while women make hammocks.

A general concern in the academic discussion of tourism and glo-
balisation has been its all-encompassing homogenising force: everyone
and everything tends to become standardised. People's consumption
of the same products all over the world erodes the unique cultural
qualities of local life. At the same time, I argue that global forces like
tourism and their ensuing markets recreates and recomposes gen-
der patterns among the Warao. Though craft practices among the
Warao undergo change, gender relations are still performed through
craft-making. Changes in the environment provide new materials that
become integrated in Warao craft practices. The Warao environment
no longer consists only of rivers, skies, forest plants, trees, reeds, palm
fibres, lianas, spirit-people and other ethnic groups, but also rubbish
heaps, streets, factories, cities, industrial glue, nails, machetes, axes,
adzes, synthetic fibres, plastic materials, migrants and tourists. With
these additions to the Warao environment, a craft-maker could, for
example, mix strips of plastic in between the palm fibres, thus adding
colour to the artefact.

Inspired by Donna Haraway's insistence that no partner pre-exists acts of relating, and that the human condition is always about becoming with others (2008), I suggest that the Warao also become with, among other things, their crafts (Sørhaug 2012). Even though the craft practices change, this does not mean the Warao are becoming 'modern' but, rather, that they are becoming Warao somewhat differently. The performance of gender, as Judith Butler suggests, is an innovative public affair, reliant on both convention and invention (1988: 86). By extension, gender conventions are always performed in various ways, elaborating and altering the conventions through innovative performances. Warao craft-making is, in itself, a bodily convention, or corporeal style, that is constantly innovating. Men could make miniature canoes, paddles or *balahoo*, while women and *tidawena* could make small *hau* baskets. Thus differences in gender are not eradicated, only created differently.

Encountering miniatures and an all-encompassing modernity

As part of my doctoral work, I planned to curate an exhibition in Oslo featuring ethnographic items collected from the Warao. Adaptation to the ecological conditions of the Orinoco delta by the Warao has resulted in a series of specialised handcrafted artefacts: the Warao build their dwellings on stilted houses to stay clear of the diurnal tides, and the thousands of rivers, creeks and channels serve as infrastructure for the villagers, who traverse them with their canoes. Bogs, swamp forest, mangroves, palm clusters and underbrush make it almost impossible to move over land. Among the common handicrafts the Warao compose through living in this environment are canoes, paddles, sieves and manioc presses. My plan at this stage was rather simple; about six months into my second stint of fieldwork in 2007 I started asking people to make handicrafts for me to bring back home to the Museum of History, University of Oslo. I also tried to follow the making of the items, so that I could document the processes and use the data in my thesis.

Sometimes we would travel for hours in a canoe to get to the places where certain special reeds grew, but most of the time people would show up in our house with items for me. When the objects I had commissioned started to appear in my house, some were revealed to be miniatures rather than full-sized 'normal' artefacts. For example, an *aru huba*, the manioc press that is usually about 1.5 metres long, was only 30 cm long. The *bihi*, a sieve used in making palm starch and

usually about 1 metre in diameter, measured only 40 cm. I was also given *wahibaka sanuka*, a miniature canoe, and small *wakus*, turtle figures made from palm fibres. These miniatures puzzled me, and when I asked the villagers why they had miniaturised the artefacts one of the elders (*aidamo*), named Antolino, gave me a direct answer: 'Because the tourists want them like this' (*tuatane turistatuma bitu obonea*). The anthropologist in me was rather disappointed at being associated with tourists, and so I pushed the question further. Antolino gave me a rather literal explanation of why I had received what I term 'suitcase art'. He said, 'The things will fit in your luggage' (*tai bitu hi boloso eku yakera abaya*).

It is important to point out here that the Warao are no newcomers to inter-ethnic trade. Situated in the delta, they have been part of a vast inter-ethnic trade network involving ethnic groups such as the Arawak and Carib for hundreds of years (Heinen and Henley 1998–9). As the Warao have intermingled with other powerful groups since long before colonists and conquerors like Sir Walter Raleigh entered the Orinoco delta in the sixteenth century (2006), they have also been able to re-create themselves. Literature on tourist art and the fourth world has criticised the notion of 'primitive art' as static and authentic, and has emphasised such art practices as open-ended, undergoing constant transformations (Graburn 1976). A more recent critique is presented in *Unpacking Culture: Art and Commodity in Colonial and Postcolonial Worlds* (Phillips and Steiner 1999). The colonial and postcolonial unpacking is concerned with 'othering' and its tendency to regard tourist art and the commodification of crafts, as I first did, as inferior. Disdain for hybrids, a preference for the authentic and commercialisation of traditional arts are some of the reasons the authors discuss for this inferior status. However, as one reviewer notes, even though artists are portrayed as agents, they tend to remain victims (Garrett 2002). In following up on this discussion I find it important to demonstrate how Warao engagements with 'others' through miniatures is a part of their world-making efforts, and not a story of their undoing.

Mario Blaser elaborates on the turn to ontology in his critique of postcolonial theories in what he calls an 'all-encompassing modernity' (2013). The problem he notes with many postcolonial theories is their assumption that there is but one historical trajectory – that of the modern capitalist world system. The miniatures, in an all-encompassing modernity story, would indicate that the Warao have become or are becoming 'modern', thereby losing or having lost what makes them Warao. However, reducing all history to one history about global capitalism

clouds the fact that indigenous peoples all over the world create their own stories in their own way; he is critical of works like Wolf's *Europe and the People without History*, which makes the assumption that there has been only one historical trajectory in the aftermath of encounters with Europe. The fact that other (hi)stories are continuously being created and narrated has been given less importance. Rather, the encounter with the modern world and capitalist system is given an all-encompassing position, rejecting, undermining and subordinating alternative stories. Blaser agrees that the formulation of these stories cannot be told without Europe. However, 'in many cases they can be and are stories in spite of Europe, that is, stories that are not easily brought into the fold of modern categories' (Blaser 2013: 548).

> In other words, all contemporary cultures are modern because they have engaged in transformative interaction with Europe. The problem is that this implies that the encounter with Europe is the single most important constitutive factor in the historical trajectory of any given culture. At best, this can be investigated case by case, not a forgone conclusion (Blaser 2013: 549).

This all-encompassing modernity subsumes cultural difference to history, while contemporary innovations become proof of a globalised modern world. The word 'modern', Blaser claims, 'evacuates radical difference from the present' (Blaser 2013: 549). Local cultural stories and innovations become automatically rewritten as a type of modernity. Following this analytical strategy, which was my first instinct when I encountered miniatures, led me at first to dismiss them as a product of the encounter with a modern world. The strategy of 'sameing' codifies everything contemporary as modern (Blaser 2013: 549). Relativising culture did nothing but subsume the various 'cultures' beneath the science of culture (anthropology), which manages to understand the true nature of differences. Privileging a relative knowledge position re-creates hierarchies, and we risk undermining indigenous world-making efforts.

However, Blaser argues that the turn to ontology redirects our attention to radical difference: that we cannot simply explain through 'culture', but we need rather to admit that we might not have the conceptual repertoire to explain a phenomenon; turning to ontology might force us to develop and rethink analytical concepts. Further, Blaser suggests that ontology is a heuristic device, a tool to rethink our analytical concepts, provoking us to try to understand things that we might not understand (2013: 551). Ontology as a tool to rethink miniatures might then provide

us with a different story about how the Warao engage with 'modernity', and that this relation is not about being assimilated. Rather, tourists, missionaries and Hoterao Venezuelans are other groups the Warao engage with when re-creating themselves. While they certainly have an impact, this does not necessarily translate into modernity.

Composing pure objects with museums

Months after my return from the Orinoco delta, I was standing in the new storage house of the Historical Museum at the University of Oslo. Enormous garage doors, smooth concrete floors, high ceilings, and in front of me – a trolley scaffold covered with silk paper. Conservators and storage workers were dressed in white coats, wearing rubber gloves; the miniatures, among them hammocks, manioc presses, baskets and other ethnographic items, were treated with the utmost care. Before they were allowed to enter the museum storage halls the items needed to be processed through a cold and heat chamber as the conservators explained that should the objects be infested with pests these creatures could destroy whole collections, if left unchecked.

The almost sacred treatment of 'my' objects struck me as peculiar. Until recently these items had been my responsibility. I had followed their journey from production to trade and finally now as ethnographic items. The villagers had cut down plants with machetes and prepared the fibres as basic elements for creating the pieces. The fibres had been woven with competent hands and used to create baskets for transporting fruits or clothes: miniatures for sale to tourists. I had then transported the items 300 km from my village up to Tucupita, the state capital. During the journey the items had been exposed to the elements so that rain and mud had spattered them, and an intoxicated person had fallen over and crushed several of the baskets. The items had lain in the bottom of the boat, becoming smeared with oil and other residues. Some items had travelled in my backpack. The composition of the items had been reconfigured through these situations, but now the conservators' involvement was writing a new chapter in these items' biography. Through conservation treatments like hot and cold chambers they could extract unwelcome participants and thereby ostensibly solidify the object into a certain ideal state.

Conserving museum items can be said to be a form of purification strategy, wherein the items' idealised condition is localised and stabilised. Museum practices in the care for items are first and foremost directed at ensuring their physical integrity (Oddy 1992). One assumption is that the

object's physical integrity is connected with its authenticity, and its ability to convey a message about the people with which it is associated. In her fascinating article 'Observed Decay: Telling Stories with Mutable Things', Caitlin DeSilvey explores the possibility of examining the ambiguous state of potential museum objects (2006). She argues that objects are in a perpetual movement, and claims we need to attend to the diverse stories that unfold with these objects, and how their various states open up different stories. Museum curators and conservators labour to halt decay and ensure that one story, rather than multiple, becomes paramount:

> It is exactly these processes of moldering and disintegration that most conservation practices work to forestall. In conventional terms, in order for the object to function as a bearer of cultural memory it must be held in perpetuity in a state of protected stasis. Acts of counting, sorting, stacking, storing and inventory convert things from the category of 'stuff' to the status of museum object, and as one curator at one Montana heritage site commented to me, 'if it's museum property it needs to be taken care of and preserved forever – that's kind of the responsibility of being in that category'. Conservation technologies slow or halt physical decay, while interpretive strategies present the objects as elements of a static unchanging past (DeSilvey 2006: 326).

However, as DeSilvey points out, strategies to halt decay, to stop the *decomposition*, can themselves destruct alternative ways of remembering the object, since object lives are always in a process (DeSilvey 2006: 324). And this life is not just 'social' in traditional sociological understanding; objects also have biological and chemical lives that weave into the production of social life. The well-established literature surrounding the social life of things generally concerns itself with how humans attribute meaning to things (Appadurai 1986). However, some claim that the *bio* or life – the vibrant vitality – of things or materials tends to be left out of such biographical narratives (Bennett 2010: 57). There is the possibility of rethinking established analytical concepts in the turn to ontology.

The 'biography of things' approach to material culture studies bases itself on establishing a distinction between a human world and a material world, where people attribute meaning to things (Kopytoff 1986; Hoskins 1998; Alberti 2005). The task of the ethnographer in this method consists of reading off the meaning attributed to the thing as it traverses various contexts through which meaning is extracted. Karan Barad formulates

a critique of this representational approach (2003), and suggests a performative perspective, where things and people constantly perform, literally, worlds. In this perspective the world itself is intra-activity, leading to the concept of 'intra-agentiality', where humans' 'sense of being is enacted in the ongoing ebb and flow of agency' (Barad 2003: 817), which is similar to the concept of a 'working group'. Materials, objects, things and miniatures are not on the outside of human worlds. Rather, phenomena emerge in dynamic processes that constantly compose and decompose boundaries, meanings and bodies.

> This ongoing flow of agency through which 'part' of the world makes itself differentially intelligible to another 'part' of the world and through which local causal structures, boundaries, and properties are stabilized and destabilized does not take place in space time but in the making of spacetime itself. The world is an ongoing open process of mattering through which 'mattering' itself acquires meaning and form in the realization of different agential possibilities (Barad 2003: 817).

When mattering itself is mutually entangled with processes of becoming, 'of spacetime itself', we get a somewhat different perspective of the intra-agentiality, or working group, between Warao indigeneity and miniatures. Things and people do not make different orders of things; rather they are mutually entangled. This entanglement does not mean they are the same, but that their boundaries are constantly negotiated and renegotiated.

Analysing the miniatures in relation to Warao indigeneity as a working group, where a heterogeneous assemblage of humans and non-humans are working together to generate a particular configuration, provides us with a different view of this relation. Miniatures can be analysed as intra-agential things, assembled through a gathering of Warao, tourists, money, markets, desires and novel things. Reality, in this version, is not 'out there', to be grasped through cultural representation; rather, 'reality is always in the making through the dynamic relations of hybrid assemblages that only after the fact are purified by moderns as pertaining to either nature or culture' (Blaser 2013: 552). However, in the conserving acts of museums, decomposition processes are halted, and an idealised version of the object is presented. The hybrid workings of the assembled thing become hidden, and alternative (hi)stories rejected, hidden or occulted. For example, on a recent fieldwork project, my foster mother explained to me that she would not add colour to hammocks for sale to tourists (this statement was contrary to my experience in previous fieldwork). She had talked to a tourist, who said that tourists like things

Figure 7.2   Coloured *hau* fabric drying on a line. Photo Christian Sørhaug.

natural (*bitu natural*), and that implied that she should not use chemicals to colour the hammocks. However, the other villagers from whom she made hammocks would get colours. Thus, adding the component of *turistatuma*, the tourist-people, to the objects sold to a tourist market changes the composition of the object. My foster mother's engagement with global capital expansion of this type causes her to alter the handicraft production process in order to attract buyers. My foster mother is renegotiating a (small) part of her own reality, and how to become in it.

Composing a conversation with tourists using miniatures

When I stopped by to see Pedro, who was making a basket for me, he said he wanted to give me a gift – *nobeanaka*. The basket was a *torotoro* – a rectangular storage box (often used by shamans for their paraphernalia). He was wearing only his shorts, squatting over the basketry, using one foot to hold the basket firmly while adding new pieces. Beside him was a small knife which he used to cut off the edges of the reeds as he was weaving them into the basket. Pedro stopped, took a drink of water and sat down beside me. We started talking and I asked who had taught him how to weave baskets, and he responded, '*ma nobo ine inaminae*' – 'my grandfather taught me'. Then Pedro went on to talk of how many tourists

had bought his artefacts: '*ma bitu ina era naruae*' – 'my things have travelled to many places'. Tourists had come to his house and bought his *a nona* – his artefacts; an Argentine, a Frenchman, a North American and a Colombian had all bought his crafts and taken them back to their countries. Pedro was very proud that many people from other countries had taken an interest in his *a nona*. He clearly identified with his crafts; they were things he was involved in becoming with.

Pedro insisted on giving me the *torotoro* as a gift. The crafts I was commissioning would have to be owned by the Museum, and I had to pay for them, but Pedro would have no talk of selling me anything, saying this was a *nobeanaka* – a gift – from him to me. Pedro, my senior in several ways, was acutely aware of the asymmetry of the gift; providing me with a gift while others worked for me making things for money was one way of establishing his seniority. Pedro was well versed in the difference of gift-giving versus market exchange and money transaction, and seemed interested in enrolling me into a long-term exchange relation rather than a short-term exchange (Parry and Bloch 1989). At the same time these gift exchanges also created a friendship. As he has given me gifts, so have I been giving him gifts. The relation-building character of the gift exchange has created a lasting relation between us.

According to Blaser, the turn to ontology directs our attention to indigenous people's world-making efforts, or worlding, as he calls it. Here he allies himself with Annemarie Mol's concept of enactment (Blaser 2013: 552). Annemarie Mol claims that reality emerges through objects, rather than being a reality we discover. 'If an object is real it is because it is part of a practice. It is a reality enacted' (Mol 2002: 44). Miniatures, then, are one way the Warao are engaged in world-making efforts:

> Worlding is a contested, arduous, and not entirely coherent process and never takes place in a vacuum without connections to other ways of worlding. Yet the connections do not cancel their radical differences. Radically different worlds are being enacted in front of our noses, even if they now involve computers and the Internet, along with older (which does not mean unchanging) other nonhumans. And while they might be taking place in front of our noses, these enactments are not spectacles geared to achieve the ulterior purposes that our categories allow us to imagine (control resources, political positioning, and so on). They are doing worlds themselves' (Blaser 2013: 558).

The question then is, how can we scale the issue of the indigenous Warao now catering to the tourist industry? We can up-down scale

Figure 7.3   Warao boy with a miniature boat. Photo Christian Sørhaug.

the issue: the miniatures are a product of the global tourist indus-
try, where local indigenous people are forced to cater to the desires
of the rich. Or we can down-up scale: miniatures are a product of
Warao ingenuity, a strategy to cope with global forces being forced
upon them. Thomas Hylland Eriksen suggested a third path – side-
ways scaling, that is, a scaling that does not force us to analyse the
situation as either/or, but rather both. Sideways scaling is described
as 'typically nested' and 'operates on various systemic levels' (Eriksen
2016: 149–50). This could be interpreted as an effort to decentral-
ise our analytical efforts and to 'flatten out the world' (Latour 1996).
Eriksen suggests that scaling sideways could be one way to establish
global conversations concerning inequalities and global connections.
Tourism and the global connections they create could be a 'shared
template for talking about humanity not mainly at the level of the
community, but on the global scale' (Eriksen 2016: 68).

However, tourism does not just create templates for communica-
tion. Where John Law suggests a material semiotics (2007), the minia-
tures could be analysed as engaging in a global material semiotics. This
is a conversation in which both tourists and Warao participate; to con-
verse is to be with another (*conversari* in Latin means 'to live with', and
resonates with the common world). Scaling the miniatures sideways
requires that we do not impose *a priori* any hierarchy or asymmetry.
Pedro is also engaging in an attempt to side-scale the conversation: he

Figure 7.4   Miniature Warao baskets and other ephemera. Photo Christian Sørhaug.

did not formulate the tourist as better or worse, just different. Warao miniatures are recompositions of handicrafts built to establish a dialogue with a significant other, the *turistatuma*, not just to be sold for cash (though that is also important).

As an anthropologist who at first disregarded and disliked the miniatures, I have come to see them as part of an interesting global conversation within which the Warao participate. Miniatures give texture to this global conversation, and scaling the conversation sideways might be illustrated with a case in which a colleague and I met with some medical students who wanted to provide a helping hand to the Warao in the area where we had both carried out fieldwork. We were sitting in my hotel suite, overlooking the skyline of Caracas. The students had done their obligatory medical practice in the lower Orinoco delta. They told us that they wanted to give aid to the Warao through a medical programme and assist them with improving their quality of life. One of their programmes would be to establish an online shop where they could help the Warao sell their handicrafts. However, they worried that their intervention would create undue changes in Warao culture: would catering to a global tourist market damage the integrity of Warao cultural identity, one of them asked. They saw the Warao need for engaging in commercial transactions, and at the same time were troubled by creating effects that would alter Warao cultural identity.

As we (anthropologists) had both conducted extended fieldwork with the Warao, we did not share their worries. Living in the Orinoco delta the Warao have been at the hub of inter-ethnic trade since long before colonisation. We had seen the degree to which the Warao are eager participants in trade and applicants for government funds, and we did not worry that the intervention of these students would have a negative impact on Warao culture as such. Rather, as we were both acutely aware of the contemporary condition of the Warao in 2017, we knew the locals would welcome any assistance they could get, as food, medicine, tools and other necessities were scarce.

Recomposing miniatures and indigeneity through working groups

Decomposing the common world, where (hi)story is formulated as a modern world clashing with nature and traditions, leads to *recomposing* a common world as a phenomenon that is constantly emerging from heterogenic parts that are partially connected, and might provide us with a different perspective on indigeneity in a contemporary global setting:

> It is time to compose – in all the meaning of the word, including to compose with, that is to compromise, to care, to move slowly, with caution and precaution. That's quite a new set of skills to learn: imagine that, innovating as never before but with precaution (Latour 2010: 488).

Composing with seems to echo Haraway's *becoming with* (2008). To compose innovations with care, compromise and caution seemed to be what these students intended, and this seems to me to be the common world we might consider. Composing a common world is not creating a unified nature and universe. Rather, a common world, as I understand it, is an emergent world constantly unfolding through various human–nonhuman working groups. And here we need to create grounds for a conversation where indigenous people can be together on their own terms, without absolutely bifurcating distinctions between nature and culture, subjects and objects, modern and non-moderns. Latour turns our attention to the Greek word *eikos*, which has given rise to the two central differentiated concepts 'economy' and 'ecology' (2010: 488). *Eikos* for the ancient Greeks indicated household management, while the term 'ecology' was introduced in the nineteenth century as a way of understanding the

interplay between organisms and their environment (Haeckel 1866). Composing the common world is a vision in which we leave the utopia of economy, and start searching for the undiscovered ecology.

So how do we create a common world without creating common frames of reference and purpose? Though Pedro was interested in selling and talking to and reflecting on his encounters with tourists, he did not say he wanted to become like them, or be them. He is nobody's fool, and it would be wrong to understand him as such. Of course, he is not in a good position to negotiate price, and is more or less at the mercy of the traders who resell the items. However, Pedro and his wife can simply choose not to make items for the tourist market; they can instead decide to be economically productive in a different way: to build a bigger garden and grow more produce, maintain their house – or even to do nothing. They can live without, though of course their desire for goods remains. To Pedro, Venezuelan youths coming to visit and giving assistance to their fellow citizens would be a welcome effort, but it should not be confused with the idea that the Warao are becoming Westerners or 'moderns'.

We should then not analyse miniatures as an example of dissolving or eroding contemporary Warao indigeneity. Rather, miniatures are involved in the possibility of recomposing Warao 'radical difference' in their encounter with others. Warao agency is partially made possible through miniatures; through these tools the Warao redefine and renegotiate their own reality to communicate with the powerful others with whom they relate. Miniatures have become a source for money, making it possible to buy things in shops and markets. Assemblage theory, from which the idea of a 'working group' stems (Deleuze and Guattari 2004; DeLanda 2006), is a question of relations between humans and nonhumans alike. The unfolding of a global conversation that is going on through miniatures is not simply about turning the gaze towards the things themselves. Rather, it concerns how things are performing and enacting with humans. We should thus analyse the miniature–Warao relations as a working group, directing our attention to how the Warao are becoming with tourists and miniatures, co-constituting each other, while at the same time enacting radical difference.

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8

A sense of scale
The miniaturisation of boats and maritime landscapes at the Science Museum London, 1925–63

James Lyon Fenner

> There is growing realisation of the importance of attempting to make the display attractive to the eye: attractive in a double sense, i.e. drawing the eye to that which is essential in an exhibit and also attracting the visitor by the beauty of the presentation (Science Museum Documentation Centre, Board of Education files Ed 79/180, Report for the Advisory Council for the Year 1952, 36).

These words are taken from a Science Museum report written in 1952. It describes the reasoning behind the museum's use of dioramas – three-dimensional modelled scenes – utilised in showcase displays for new galleries within new buildings on its postwar South Kensington site. The British Small Craft exhibit is one such set of dioramic displays. Set within an ocean liner-themed gallery, the British Small Craft exhibit was the brainchild of the curator William O'Dea and was installed in 1963 as part of the Science Museum's new Shipping Gallery (Figure 8.1). Until the gallery's closure in 2012, it comprised a sequence of 20 showcases containing models of British coastal fishing boats arranged primarily by geographical region. Many of the displays included accessory models and landscape settings, including human figures and painted backdrops. The majority of the craft displayed were acquired well before 1963 – some were collected during the 1930s while others can be traced back even further to the International Fisheries Exhibition of 1883 (Fenner 2014).

Figure 8.1   Portland Lerret in its 1963 showcase in the Shipping Gallery. Inventory 1938–461. Scale 1:16 (© Science Museum/SSPL).

Researching the miniature at the Science Museum

This chapter focuses on aspects of my doctoral research, an AHRC collaborative doctoral award shared between the Geography Department at the University of Nottingham and the Science Museum London that focused on the miniature world of the British Small Craft boat models and displays. Following the Shipping Gallery's closure in 2012, the aim of this project was to produce a historical and cultural geographical account of these British Small Craft displays held within the Science Museum. This chapter considers the former British Small Craft displays as an illustration of a vernacular marine regional world of miniatures set within a national science museum. As models and displays, they capture the variety of fishing and pleasure craft that populated the coastal and inland waters of the British Isles while also symbolising the curatorial identity of the museum during the period (Fenner 2014). Tracing the ownership and manufacturers of some of the models and the work of diorama artists, this chapter will highlight the nuances and processes behind these miniaturisations. In doing so it also draws on the unique, alluring aesthetics of this mimetic medium – where the eye 'is the critical organ' in the viewing of these dioramic scenes, allowing a visitor to have temporary ownership of a miniature world removed from reality (Haraway 1984: 24; Nahum 2010: 179). Through the museum's boat models and

displays, this chapter speaks to wider debates surrounding the miniature world – the complexities, deceptions and subtleties at play in the manufacture, scaling and implementation of these miniature maritime worlds.

Through this story of the British Small Craft displays it will delve deeper into the miniature dioramic worlds created at the Science Museum, tell the rich narrative of dioramas at the institution, explain how they were manufactured and show how O'Dea's curatorial vision became a reality. In doing so, using some of the displays from the British Small Craft Exhibit by way of example, it will highlight the rich dioramic display heritage at the museum and a sense of scale both in terms of the models themselves and the modelled displays that accompanied them. The chapter will also stress the exhibit's geographical presentation of regional areas of the British Isles on a national stage – playing into the museum's thinking at that time that science and engineering should include vernacular historical maritime technologies alongside modern and contemporary developments. Moreover, it reinforces the importance of the miniature in museological displays – deceiving, informing, intriguing and entertaining the viewer; drawing them ever closer into the narrative of a particular museum's gallery space purely through their three-dimensional designs and inclusion of perspective.

What is a diorama?

Jane Insley describes a museum diorama as 'a form of 3D model, showing a scene, an event or a landscape, which has been commissioned for a particular exhibition purpose' and explains that there are two main forms (Insley 2008: 27). First there are 'painted models', which are scenic backgrounds that give context to actual scale models; and second there are 'modelled paintings', which are complete modelled scenes. 'Owing to the skewed perspective that often characterizes modelled paintings, objects that appear free-standing may not, in fact, remain upright outside this type of diorama' (Insley 2008: 27). The challenge for the artists and craftsmen involved in producing dioramas, Insley suggests, was to go from a life-sized foreground scene to the distant horizon in a matter of a couple of feet.

Insley also refers to Karen Wonders' research on habitat dioramas, although she strongly disagrees with Wonders' belief that scenes showing technological or human activity 'fail to arouse the *trompe l'oeil* effect that is the aim of the habitat diorama' (Wonders 1993: 17). Insley argues that Wonders has missed an important distinction between these two categories. 'If habitat dioramas aim to trick their audience with an illusion of reality,

dioramas containing human subjects do not. More often than not, their purpose is not to deceive but to convince' (Insley 2008: 27). Although Insley may have a point here, it is difficult to fully appreciate, as historic human-subject dioramas do deceive viewers with the blending of perspective and distances of the modelled foregrounds and painted backdrops. In my view both habitat and human-subject dioramas deceive and convince the viewer in equal measure: the one producing the *trompe l'oeil* effect of a live animal, the other recording a historical event accurately in miniature form.

As the displays of the British Small Craft exhibit varied in size, style and composition, in my doctoral research I gave close attention to their designs and layout. The displays, which contained modelled scenes and partial scenes, were divided between three categories: complete dioramas, modelled foreground landscape scenes and painted backdrops.[1] The complete dioramas were displays that made a complete three-dimensional scene out of part or the entire space of each showcase – this incorporated a modelled foreground scene and painted and modelled backdrop, which blended into each other to create the desired perspective and distance effects. The modelled foreground displays depicted scenes with no backdrop, usually focusing on a specific boat model in the corner of a showcase. Some other showcases, however, did not contain modelled foregrounds, consisting only of the model(s) set in front of a painted backdrop.

Yet the research went beyond this simple categorisation of the dioramas. The displays as visual objects were embedded in a much broader theoretical debate concerning iconography, symbolism, imagery and visual methodologies. The analysis of the displays combined the visual (the displays themselves) with the textual (the archives), giving a better understanding of the geographical knowledge at play. As argued by Daniels, DeLyser, Entrikin and Richardson, the study of the Science Museum Small Craft displays provided 'a mixed medium of image and text, designed for telling as well as showing, plotting time as well as space, including making and remaking the terrain of cultural memory' (2011: xxvii).

However, the imagery and visuality of these museum displays could also be considered from a geographical perspective, as they depict British modelled landscape and coastal scenes. As suggested by Daniels and Cosgrove, 'a landscape is a cultural image, a pictorial way of representing, structuring or symbolising surroundings' (1988: 1). Cosgrove explains that landscapes are not intangible but are also reflected in many material forms and on many surfaces: 'in paint on canvas, in writing on paper, in earth, stone, water and vegetation on the ground' (1988: 1). Therefore, in order to understand built landscapes like these museum

dioramas, 'it is usually necessary to understand written and verbal representation of it, not as "illustrations", images standing outside it, but as constituent images of its meaning or meanings' (Daniels and Cosgrove 1988: 1). From a methodological angle, studying these dioramas as miniatured landscapes opens up opportunities for further meanings, 'depositing yet another layer of cultural representation' on them and engaging in notions of iconography – the historical examination of symbolic imagery (Daniels and Cosgrove 1988: 1).

Indeed, these British coastal museum displays as visual iconographic representations of landscapes were viewed by museum-goers as images that contained 'layers of meaning that include[d] their formal aspects, their cultural and socio-historical references, the ways they ma[d]e reference to the images that precede[d] and surround[ed] them, and the contexts in which they [we]re displayed' (Sturken and Cartwright 2009: 42). Before providing some examples of the dioramas and the models of the British Small Craft exhibit, this chapter will tell the story of how the miniature world came to the Science Museum.

Dioramas and landscape in miniature at the Science Museum

> In each of the boat models for the Children's Gallery, made to show the evolution of the built boat from the log, one or more human figures were placed to give the scale and also to show the method of working the boat; the success achieved suggests that the addition of similar figures to some of the models in the main galleries would enable the public to appreciate more readily the size and purpose of the boats represented (Science Museum Advisory Council Report 1931).

This extract is from the Advisory Council Report on the opening of the Science Museum's Children's Gallery in December 1931. The new gallery, as Bunney explains, 'was a combination of working models showing scientific principles in action, such as time measurement and lifting apparatus, and dioramas showing the development of subjects such as transport and lighting', which included the use of some small boat models (Bunney 2010: 197). Far from the traditional display techniques of glass cases, this was the first sign 'of new approaches and influences' within the museum towards methods of exhibiting (Nahum 2010: 178).

For the Science Museum, the display method changes came in the 1920s. Andrew Nahum explains that during this period 'retail window

dressing and shop display techniques became an admitted influence on Science Museum exhibits' (Nahum 2010: 178). Insley has discovered that the twentieth-century use of dioramas in South Kensington dates back to 1924 (Insley 2008). For the next three decades, headed by Raphael Roussel, a studio of independent artists supplied and served the Science Museum with a series of dioramas to help illustrate many new galleries. It is amongst these artists, after 1945, that the dioramas, modelled scenes and painted backgrounds of the showcases of the British Small Craft exhibit were created. Insley surmises that the appeal of dioramas to visitors is 'the lure of the brightly lit miniature in a darkened room' (Insley 2008; Nahum 2010: 179). Nahum takes this further by affirming, 'There is something intriguing and quite mysterious in the encounter with a model which we empathise with but do not fully understand' (Nahum 2010: 179).

Ludmilla Jordanova alternatively suggests that 'the idealisation present within a "model" indicates clearly a kind of longing that is implicit … in models as material objects' (Jordanova 2004: 448). Nahum simply concludes that 'our viewing of a model whether as child or as adult, allows us to "own" the scene briefly in a way in which we are powerless to do in the real world' (Nahum 2010: 179). Therefore, the appeal and extensive use of dioramas by the Science Museum during the interwar period and later 1950s lay 'partly in the human attitude to small things, coupled with an appreciation on the part of curators that this [wa]s a strongly emotive way to provide context for items from varied types of collections' (Insley 2007: 200).

Therefore, the miniature can prove to be, in museological terms, a powerful method and tool of museum display. The importance of the miniature is highlighted by Stewart: 'There are no miniatures in nature; the miniature is a cultural product, the product of an eye performing certain operations, manipulating, and attending in certain ways to the physical world' (Stewart 1984: 55).

Thus, by the postwar years, 'museum exhibitions began to be held on subjects which would have been inconceivable to many curators of a previous generation' (Lawrence 1994: 73). As a consequence of shop window influences in the 1920s, 'the association with prominent architects and designers with the Festival of Britain made it evident that the bar had been raised [at the Science Museum], and that design was now an almost expected component of modern display' (Lawrence 1994: 182). It is visits to Sweden, by O'Dea and Welbury Kendall (the architect of the Science Museum's new extension Centre Block), that gave inspiration to the Agriculture Gallery and those that followed it, including the group of six dioramas created for the chemistry collections and installed in the

Figure 8.2   Raphael Roussel touching up his Medieval Ploughing diorama in 1953. It was classified by Insley as a 'modelled painting' (Insley 2008) (© Science Museum/SSPL).

Gas Gallery that opened on 25 May 1954 (Lawrence 1994: 180–1; Insley 2007: 200). Albeit within the small-scale context of the museum's displays, this Swedish visit, and the subsequent galleries and display designs produced as a result of it, are emblematic of the broader influences of continental modernism at work in Britain during the period. It was within this wider continental modernist design setting of the 1950s and 60s, and specifically in these various dioramic projects within the museum during the period, that Roussel and his art skills came into their own. Roussel was instrumental in the many dioramas that framed the Agriculture Gallery, including the Medieval Ploughing scene (Figure 8.2).

O'Dea, the new Centre Block and the postwar Science Museum

The Sailing Ships Gallery's story can be traced back to November 1930, when William Thomas O'Dea began his career at the Science Museum. Born in 1905, O'Dea had a background in electrical engineering.

On 15 December 1936 at the Science Museum he opened a temporary exhibition entitled *Electric Illumination*. As David Rooney explains, 'bright, brash and brilliant, the exhibition was a deliberate attempt to popularise the latest products of industry and technology in an interactive, hands-on display that promised, according to Lord Rutherford, the nuclear physicist who gave the opening speech, to be "of great interest not only to scientists, but to every man, woman and child"' (*The Times*, 16 December 1936, quoted by Rooney 2010: 158). Young O'Dea's work here hinted towards a new form of curatorship – displays that both entertained and informed visitors.

After the Second World War, the Science Museum was 'well-nigh desperate' for new buildings (Parsons III 2010: 78). Salvation came to the Science Museum in the form of the Festival of Britain. Festival organisers approached the museum in the hope of gallery space for their exhibition of science. Described as a 'tonic to the nation' by the director, the festival aimed to boost the stricken national morale of postwar Britain, reflecting on the country's heritage whilst also promising the public glimpses of the technological and scientific advances of the future (Addison 1985; Conekin 1999; Anderson 2007: 107).

After five months, in September 1951, the Festival of Britain ended, leaving the Science Museum in full possession of the partly completed new Centre Block. Its first permanent gallery in the new building was the Agriculture Gallery. Influenced by the display techniques and methods of O'Dea, the gallery was the first to have dioramas 'deployed on a major scale' since their introduction into the institution in the 1930s Children's Gallery. As David Rooney writes, 'O'Dea … had maneuvered his way through global and local politics to get his world view stamped indelibly into the bricks and mortar of the Science Museum.' O'Dea's curatorial signature was also translated and 'stamped' onto the 'bricks' of the Sailing Ships and Aeronautic Galleries in the 1960s (Rooney, 2010: 167).

In September 1955 O'Dea set out his plans for the new gallery in a document titled 'Proposals for the Display of Sailing Ships and Small Craft in the New Centre Block'. As the gallery would feature a central display area complete with a mezzanine level, O'Dea proposed outward-facing display windows in this 'island space' with schemes in place 'for the treatment of groups of fishing vessels in scenic settings' in dioramas ('Proposals for the Display of Sailing Ships and Small Craft in the New Centre Block', September 1955, SMD Ed 79/144).

For the purposes of O'Dea's Sailing Ships Gallery, of the display cases depicting dioramas and other artwork, these were executed by

at least three individuals: Mr Gordon Whatman, Mrs Jenny Clements and Roussel's protégé Mr Dunstan Mortimer. In an article of the period Gordon Whatman explained the method and processes by which the dioramas were constructed. In order to achieve 'a new concept of display techniques' it had to be agreed at the planning stage that:

> If any progress in museum display was to be made it was essential for the designer to deviate from the conventional, and produce a series of technical displays, well lit, easily maintained and of high instructive value' (Whatman 1963: 1).

Whatman further argues that this required a 'flexibility, objectivity, and an "un-museum like" approach, based upon the logical needs of the models' (Whatman 1963: 2). The first stage was a general discussion concerning a particular group of boat models. From these discussions it was concluded that 'whenever possible, the boats should be placed in front of settings associated with dressed figurines of the period and constructional details shown in photographs' (Whatman 1963: 2). Alongside the many initial consultations with museum staff, the next stage was to 'construct a scale mock-up of the proposed exhibit' with a scale of 2 inches = 1 foot, made, in three dimensions, predominantly out of cardboard, as shown in Figure 8.3 (Whatman 1963: 2). The advantage of these mock-ups was that:

> It enabled extensive experiments to be made with lighting, eye levels, covering materials, positions of labels, etc, without associated loss of time in alterations on the full size display (Whatman 1963: 2).

Once the design was agreed upon, the completed mock-ups were sent directly to the craftsmen in the museum's workshops.

> This method proved very successful, the craftsman scaling up from the original, translating it into blockboard, and always being able to refer back to the completed display in model form. This system disproved the necessity for working drawings and allowed the craftsman to solve his problems in his own individual way, provided, of course, he kept to the original design of the exhibit but enabled the creative momentum to be sustained even at the constructional stage (Whatman 1963: 2).

The resultant degree of efficiency of this system was clear:

Figure 8.3 Jenny Clements and Gordon Whatman making the cardboard mock-ups for each of the displays of the Sailings Ships Gallery dated in the early 1960s. Notice the variety of display mock-ups already constructed above them on the shelves and also the advertising poster for the gallery in the background. Image courtesy of the Science Museum curator Jane Insley. (© Science Museum/SSPL).

> This co-ordinated channelling from the initial idea to the completed display enabled seventy-four settings to be finished with a minimum of site alteration (Whatman 1963: 2).

However, Whatman concludes that the success of the 'gallery project' was 'the direct relationship to the close dovetailing of the group consisting of: Head of Department of Sailing Ships, Research Assistant, Workshops, Art Assistants and Designer' (Whatman 1963: 2).

After two years of construction and installations, the Sailings Ships Gallery was opened to the public in March 1963 with the Aeronautics Gallery following soon after in July. In a preview article in the *Sunday Times* it was announced that:

a war against boredom is being waged at the Science Museum …
Instead of row upon row of glass cases, planes are suspended in
mock flight from the roof of a hangar … and ships and boats are dis-
played in the form of real ocean-going liners. The man who is wag-
ing the war is a 58-year-old Lancastrian keeper at the Museum, Mr
W.T. O'Dea. He considers the traditional museum in Britain 'awful'
(*Sunday Times*, 3 February 1963).

For O'Dea, the 'war had been won against boredom' as the new gallery
boasted a rich array of objects on display that were linked to all elements
of the historical and contemporary marine that was in the name of science
and technology. Bar the British Small Craft models, in the central display
area foreign craft, yachts, sailing warships and ancient craft in miniature
form representing a variety of time periods and nationalities were also
exhibited in a mixture of dioramic and painted-backdrop displays.

The displays for the British Small Craft exhibit varied in scope,
scale, design and geographical coverage. They showed some of the com-
pleted dioramas accompanied by images from specific coastal locales
that influenced their design and construction. Some dioramas were just
foreground pieces without any backdrops or modelled backing, such as
the Norfolk and Suffolk and Peter boats and Dobles displays (Figure 8.4).

While some displays were complete modelled foreground scenes
and painted backdrops, others depended solely on the foreground mod-
elling to create eyecatching and dynamic nautical images. The Medway
Doble model in Figure 8.4 is a good example. Here the fisherman is lean-
ing over the side of his boat on the mud flats of the Kentish river, tak-
ing out the last of his catch from the 'wet-well'. A seagull watches from a
mooring post, eagerly awaiting the chance of snatching a fish. The date
and creator of this scene are unknown but what is certain is that achiev-
ing the correct scale proved just as difficult in making these scenes as
it had been to make the boat models initially. As O'Dea's curatorial col-
league William Bathe, in a conference paper on the new gallery given in
1961, explains, in some cases the museum resorted to drastic solutions:

In this display showing small craft of the Thames estuary there is
a realistic setting for the Medway doble model and as the scale of
this model is very different to that of the other two a scale human
figure and a sea gull are included. I might add that there was some
argument about the size of a sea gull and the Museum illustrator
ended up in the Natural History Museum with a stuffed sea gull to
measure (Bathe 1961).

Figure 8.4   The Medway Doble model in its modelled landscape foreground scene complete with fisherman and gull. When creating such scenes, scale was just as much a difficulty as when manufacturing the models themselves. (© Science Museum/SSPL).

The issue of scale was not solely relevant to the dioramas; it also proved challenging in the creation of the boat models themselves. Prior to O'Dea's 1963 Shipping Gallery and the dioramas, the Science Museum's boat model collections were expanded in the 1920s and 30s thanks to the curator Geoffrey Swinford Laird Clowes. Laird Clowes joined the museum in 1924 and was placed in charge of the ship and boat model collections. As the report announced on Clowes's appointment:

> This will enable more work to be carried out on the group of collections illustrating Water Transport, which have for long past constituted too heavy a charge for a single museum officer (Science Museum Advisory Council Report 1924, 1925).

For the next 13 years until his untimely death in 1937, Laird Clowes expanded the ship and boat collections, culminating in an exhibition of British Fishing Boats in 1936, which was preceded by temporary exhibitions on Rafts, Canoes and Boats (1931), British Fishing Boats and Coastal Craft (1932) and Native Boats (1933) (Follett 1978: 123; Morris and von Fischer 2010: 318). It was Laird Clowes's tenacity and technical knowledge that ensured the high quality and correct scale of the boat models that came into the museum's collections – from commissioned work, auctions and donations.

The model of the Brixham trawler *Valerian* is a prime example of the challenges brought on by the making of something miniature. Depicting

the original full-size vessel built in Devon in 1923, the model was made and presented to the museum by the owner: Mr T.N. Dinwiddy. As a letter to Dinwiddy from Laird Clowes states, 'you may decide to undertake the making of a scale model of a Brixham Trawler. I sincerely hope that you will do so, for I need not explain to you how much I regret that this Museum contains no satisfactory representation of one of those splendid boats among its large collection of models of British Fishing Boats.'[2] In a much later letter from Dinwiddy to Laird Clowes, the former suggests the *Valerian* – 'one of the big sloops' – as the best typical example (Dinwiddy 1933). In that time he was able, as he puts it, 'to measure and record her lines – working in a sea of anti fouling paint!' (Dinwiddy 1933). It is from these line drawings, as a frame of reference, that it was possible for him to build the model.

During the making of the model, in later correspondence, Laird Clowes was helpful in recommending certain materials and techniques to have the eventual desired effect on certain features of the model. In a letter dated 19 March 1934 he suggests that Dinwiddy use water paint over oil, use a particular type of cordage for the hull and for the sails, and 'use the fine linen which has been sold in great quantities under the name of aeroplane linen' (letter from Laird Clowes to Dinwiddy dated 19 March 1934).

Clowes went on to explain the methods used for dyeing sail canvas to the right colour by re-dyeing and washing the fabric. The importance of scale also came into the construction process, with Clowes insistent on his preference of a scale of '1:24 as being the smallest in which all details, both of hull and of rigging can be properly shown' (letter from Laird Clowes to Dinwiddy dated 17 February 1933). This shows firstly that Clowes was very knowledgeable about different boat types and modelling, but more importantly that his authority and expertise as a curator extended beyond the physical boundaries of the museum. In the case of the commissioned making of the Brixham trawler model he could give precise instructions about how the model should be made and what it should look like. The question of scale here and for other models was of the utmost importance for Clowes. As James Roy King observes, 'scale can enter richly into the experience of both the viewer and the creator of the model ... A very small scale will blur detail or render detailing impossible, and too large a scale may commit the modeller to a level of detailing impossible to carry out in reasonable time' (King 1996: 12). Two years after he began work, Dinwiddy confirmed that the model was complete, and it was accessioned as a gift into the museum's collections on 25 February 1935 (SMD Nominal File 4494/1/12, 1935).

There are other examples where the importance of scale to Laird Clowes was crucial to the successful making of a model commissioned by the museum. From the file of correspondence associated with the Norfolk Wherry model, a clearer, more powerful narrative of scaled modelling and methods of manufacture emerges. In a letter dated 28 June 1927, a Mr Leonard Walker replies to Laird Clowes:

> I have been making enquiries regarding a model of a wherry. A Mr Darby of Oulton Broad [Yacht Owner and Agent] who did my houseboat also builds models and he could get in touch with a certain Mr Hall at Reedham … who has a model and possibly drawings which Mr Darby could borrow to make a model wherry for you if you still require one (letter from Mr Leonard Walker to Laird Clowes dated 28 June 1927).

It transpires that Laird Clowes is delighted at the news, and in his response he details the specific requirements for the model:

> What we want is a model of a trading wherry of as early as possible, untouched by later outside influences. As those which I have seen are about 50 ft. long, a model on a scale 1:24 (half an inch to a foot) would suit us best, but it would be kind of you if you would impress on Mr. Darby that accurate scaling in all proportions is of the first importance to us (letter from Laird Clowes to Mr Leonard Walker dated 29 June 1927).

The reference to 'untouched by later outside influences' is interesting here. It not only gives an indication of Laird Clowes's degree of personal knowledge, but it also implies that he wishes to have an exact model that will be a true representation of that particular boat type for that particular region and environment. He concludes with more specifics, saying:

> A properly framed and planked model is most desirable, but failing that we might consider a model with a block-hull, although in that case it would probably not be worth going in for a model on a larger scale than 1:48 (half an inch to a foot) (SMD T/1927–822).

As with the Brixham trawler model, the notion of scale is very prominent here, with Laird Clowes knowing the right measurements and proportions for the model to be as accurate as possible. Although Laird Clowes insisted on the scales 1:24 and 1:48 for models commissioned and other gifted or

loaned models entering the museum, the range of scales within the collection differed considerably depending on the type of craft being represented.

The manufacturing method of the model is also of interest here, as it indicates the two main possible techniques of making a boat model either from one block of wood or plank by miniature plank, strut by strut, built the same way as the original full-sized vessel. The Norfolk wherry model, made at a scale of 1:16, was later accessioned into the collections in September 1927 (SMD Nom. 2616/1/1).

Conclusion

In May 2012, after nearly 50 years of being open to the public, the Shipping Gallery was closed to visitors. The closure set in motion the gradual removal of the entire contents of the gallery to make way for a new communications gallery – Information Age – which opened in October 2014. The British Small Craft models were among 1800 objects decanted from the space and are now stored in the Science Museum's storage facilities in Kensington Olympia. During the removal, objects and their displays were professionally photographed and their individual computer database records were updated. The photographing of the displays was particularly important, as the backdrops and dioramas were not registered inventory objects like the boat models themselves. Consequently, with concerns over health hazards such as asbestos and lack of storage space, the backdrops and dioramas were destroyed, leaving the photos as the only lasting tangible evidence of their existence in the showcases, making my research all the more valuable and important.

Before the objects were removed from the space, a virtual three-dimensional map of the gallery was produced. Using the latest 3D point-cloud scanning technology in collaboration with ScanLAB Projects and UCL's Digital Humanities teams, the space was scanned. During the gallery's removal the team took 275 laser scans of the space, creating two billion precise measurements. Using just 10 per cent of the extensive original raw data from these scans, a 3D virtual tour video was published online in July 2013, giving the visitor an intangible fly-through experience of the gallery (Figure 8.5).[3]

Narrated by the then Curator of Time, Navigation and Transport, David Rooney, the video flies through the gallery, giving the viewer a guided tour of the virtual exhibition space. The tour is augmented by some highlighted examples of prominent objects from particular aspects of the gallery space that had been on display, giving a true sense of the
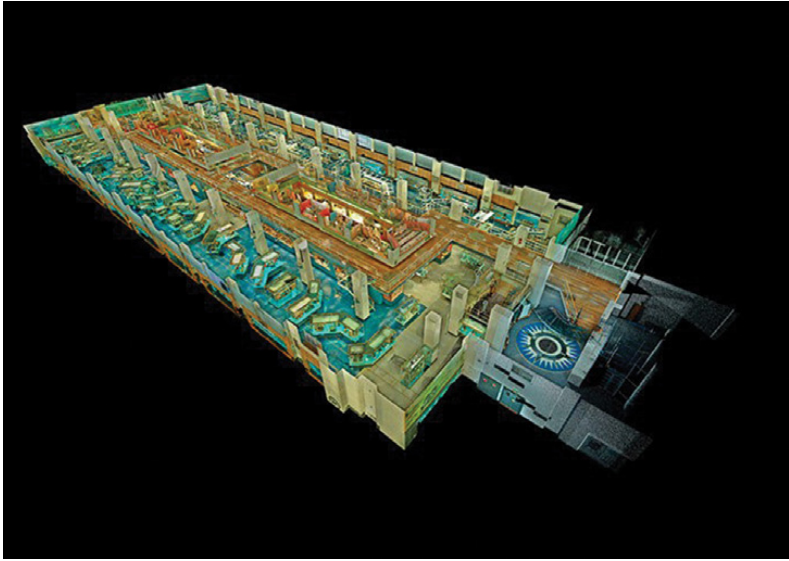
Figure 8.5 Still from the virtual tour of the Shipping Gallery showing the whole of the exhibition space in intricate detail. The gallery was laser scanned before the 1,800 objects were removed, making a digital video tour record of one of the Science Museum's longest-serving exhibition spaces. See http://www.digitalartsonline.co.uk/news/motion-graphics/science-museum-reveals-3d-model-of-shuttered-gallery/, 2013. (© Science Museum/SSPL).

range and variety of the Science Museum's extensive marine collections. As Rooney explains in the introduction to the video, the pioneering nature of the project meant that the scan has presented the space 'in an entirely new way. A unique permanent record of a unique historic exhibition.'

Later, the video pans left along the linear stretch of British Craft displays on the main floor of the space to show some of the models and dioramas. Rooney explains in the voice-over that the gallery was not just about big oceanic liners and warships; it was also about showing 'the anonymous handmade boats people used around the world just to get by', in other words small craft. Concluding the point, Rooney goes on to say that 'by making these models, we were trying to preserve a lost way of life'. Focusing on the ship's figurehead in the centre of the gallery, Rooney reflects that 'at its heart this gallery was all about people', a sentiment that is certainly illustrated through the internal and external discussions surrounding the design of the gallery, the history

of aspects of marine engineering and the model-makers and donors involved in the expansion of the British Small Craft exhibit. At the end of the video Rooney explains that the gallery presented old and new marine technologies for 50 years. Going back to the 3D display methods and techniques proposed by O'Dea in the 1950s and 60s, the video and the new laser/computer technologies used in its production resonate with Rooney's final words: 'I can't help thinking that if my predecessors had access to this sort of kit they would have done remarkable things with it. I can't wait to see how this technology develops. These guys have made a time machine.'

The virtual world created by the laser scans and video is a modern testament to the gallery, showing the exhibition space's past vibrancy, range of objects, marine-themed mediums of display and commitment to showing all aspects and developments of maritime engineering, old and new. The fly-through tour encapsulates a new nostalgic rhetoric for the gallery, one that gives a lasting image of a long-serving permanent exhibition. The video commemorates the passing of the gallery while looking forward to the museum's future, with new collections on show and the space being transformed 'to make way for some new stories'.[4] In some respects the video also successfully combats the continuing issue felt within museums, as observed by MacDonald, in that they 'labour against their own physicality' (MacDonald 2002: 30). The sweeping, gliding nature of the virtual camera through the gallery space breaks through this barrier and partially alleviates the notion that 'the objects and architecture of museums do not lend themselves to the visions of science or of the visitors that museum staff wish to materialise' (MacDonald 2002: 30). Through their technological advancement, the scans are themselves a new form of public display of science, creating a virtual world that epitomises scientific progress while harking back to older museum methods of exhibition.

Although the Shipping Gallery closed in 2012 with its contents placed in storage, and despite the destruction of the dioramas, the institution's dioramic heritage – its crafted miniature worlds – live on in images. They are remembered in photographs and in a new three-dimensional form – as laser-scanned images in a virtual tour. Through its execution, the tour hints towards new methods of display in museums. While O'Dea could be seen as the vanguard of a new form of curatorship, with expansive ideas for exhibition design through the dioramas and themed galleries of the 1950s and 60s, this virtual tour could be seen as the modern equivalent of a diorama – capturing to scale images of historical scenes through lasers and computers instead of paint, wire meshing, plaster, metal and wood. Thus, it creates a digitised miniature world displayed within a virtual video tour.

In a similar sense, each 1960s British Small Craft showcase had a dual purpose: not only as instructive showcases for the visitor, but also as displays that would also 'attract the eye and raise spirits' (SMD Ed 79/180). The Science Museum's own reports express succinctly how miniature worlds like the Portland Lerret diorama (Figure 8.1) 'fulfil the function of placing the science or industry in its native scene, and at the same time giving the imagination wings to take it out of the Museum gallery' (SMD Ed 79/180).

Notes

1. As opposed to the showcases, which just displayed the models with the minimal visual accompaniments.
2. SMD Nominal File 4494 Letter from Laird Clowes to Dinwiddy dated 17 February 1933.
3. ISee the Science Museum's webpage for the 3D point-cloud model video of the Shipping Gallery, July 2013 https://www.youtube.com/watch?v=gDTbFhFZl9I (seven minutes duration), accessed 22 October 2017.
4. Jane Insley, pers. comm., 2012. Miscellaneous document found in curator's office. Recorded tour guide script on the new Sailing Ship Gallery, author unknown (possibly O'Dea), exact date unknown but likely to be March 1963; Rooney's video narration, 2013, 6 min. 27 sec. from the beginning.

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SMD Nominal File 4494 Letter from Laird Clowes to Dinwiddy dated 19 March 1934.

SMD Nominal File 4494/1/12 Confirmation of Brixham Trawler model's accession into the collections.

SMD T/1927–822 Extract from a letter from Mr Leonard Walker to Laird Clowes dated 28 June 1927.

SMD T/1927–822 Extract from a letter from Laird Clowes to Mr Leonard Walker dated 29 June 1927.

SMD T/1935–155 1930s Science Museum label for Brixham Trawler (Inventory No. 1935–155).

SMD Z-150 Box 1A, Report of the Advisory Council for the Year 1924, p. 6.

SMD Z-150 Box 1A, Report of the Advisory Council for the Year 1931, p. 32.

9

Interview with Henry Milner, architectural model-maker

Henry Milner and Jack Davy

This chapter presents an interview conducted by Jack Davy with Henry Milner, an architectural model-maker, on 23 May 2018. The interview was conducted in Milner's workshop to discuss the topic of miniaturisation and practical aspects of model-making.

I want to start with the obvious question: how did you come to make miniatures, how did you get into this line of work?

I'm a model-maker, and I guess, in essence, models are generally classified as miniatures, but miniatures are obviously a slightly interesting title as they are referred to as a smaller version of something, whereas models don't necessarily [require that].

So, the way I got into it is that I studied Industrial Design at university and I was a bit disillusioned with doing another Walkman for Sony, that kind of design, which seemed a bit purposeless. But I enjoyed the workshop there very much and I enjoyed making models of the products that I was designing.

Then something happened where, through my disillusionment, I found a company called Intermediate Technology, a charity, who do works for the Third World; I suppose [before the advent of the field of] green design, [this was already] green design. I worked for them for my degree dissertation. That was to build models of working products in the Third World that were miniaturised, and that was quite interesting. I then became interested in smaller-scale versions of products, working models of crop dryers or methods of getting welding temperatures up that actually worked.

The models were toured around the countries that they were needed in, and the locals would sit around the models with an Intermediate Technology individual who would be able to pass on the information on how to build these things. So, I guess that would be how I started making miniatures.

How did this develop into what you do now?

I ended up enjoying the workshop a lot, enjoying the materials, enjoying materiality and the function of different materials. I then took on contracts with Intermediate Technology and I built more things for them, before setting up my own company building models, and my largest client base, or regular bread-and-butter work, was architects. They want miniatures of all their buildings for a variety of reasons, and I've been running since.

Can you describe some of the projects that you have done that have been the most important to you or that you have found the most interesting or significant?

There are various types of importance. There are projects that I have done that have helped large developments to pass through general planning laws and to get built. They have been exciting to be involved in, because

Figure 9.1 Henry Milner in his workshop, 2018. © Henry Milner.

they are often signature architectural pieces, changing cityscapes and changing the face of London and other places.

Then again there is another importance; I do quite a lot of historical models, buildings that were and have gone, or have never been. Some of those are in major institutions around the world for the public to look at. So that I would consider to be quite important as well, because you are retaining information in 3D form that isn't extant.

I do also build practical models; I have done things for museums that guide impaired people which again, it might be a model. For example, for Henley River and Rowing Museum I did a tactile map to indicate the Henley Regatta to people who are visually impaired. They could be classified as models as well, as they are scaled versions of the river, for example. So, there are very different points of importance in the work that I do.

What about for you personally?

Well, for me, I just enjoy materiality so much. What I do like to do is try and tread in the footsteps of people gone by, authors whose work is perhaps lost; that is quite enjoyable. To look at dusty photos and try to recreate their constructions. I do that a lot with Russian constructivism. Hanging at Norwich, at the Sainsbury Centre, at the moment is Tatlin's *Letatlin* which is a glider. I wouldn't call this a miniature, as it's a full-scale model, but it is a very enjoyable thing to do as it brings, to the public, here and now, the actual shape and form of a product that is no longer around.

What do you feel are the key considerations in the process of planning and making your models?

They are either projects undertaken by me personally, or they are by a client, and so you usually have to take the client on board. As a result, their considerations rank very high in the process. If it's an architect they may want a model for a very specific reason; it may be just a white massing model to indicate how it's going to fit with its environment, or it might be a highly detailed model which they want to use to market the building itself. So, satisfying clients' demands is the large consideration, and then add to that my fascination for materiality.

I absolutely love different materials so the more that I can utilise them in the best way that they serve in a model, the better. For example, I did a model for Watts Gallery of Mary Watts's mortuary chapel. Mary Watts specialised in pottery or clay works and large, large castings of her clay works are in this mortuary chapel that she designed. So, when I did

a miniature of it, I worked in clay and fired clay because it just seemed to be appropriate: that kind of appropriateness is what leads me.

Then there is functionality of the material. At small scale things either need to be stronger or weaker than at large scale. Joints get much, much smaller so then you are choosing your materials very carefully so that they have the required strength, because especially if it's a mechanical model, it needs to work.

Do you always work to scale, or is it sometimes a more imaginative process?

For me, scale is a very, very useful parameter and I quite like parameters. I even design a few things myself but I still like parameters as a builder, and scale is quite nice that way. It tends to be one of my headings to start up a project, and I have done things bigger than they are, but in general they are to scale. In nearly all my paid client work the brief would be necessitated out of scale of some description. If it wasn't a commission, I'm not too sure how much scale plays a role, other than obviously if you're scaling something down, it is far more tangible and portable to take to places.

When you are scaling do you use precise measurements or do you do it by eye or other means?

It's all very precise and I think that's part of me as well. A bit like Michelangelo could do perfect circles (and that's no comparison in any way, by the way!), after a while you start to become very precise by nature and so the way you look at drawings would be less fluid and more precise. Representation are naturally drawn with careful measurements alongside.

Although we understand that every model you make is different, could you tell us a bit about the process of model-making, from being commissioned to the final product?

Depending on whether the architect is dead or alive, or if the plans exist or not, then we are looking for source materials to build from. If it's a new commission for a building that is going on in the city and the architects approach me, then obviously they are sending me all of their architectural design package, which isn't necessarily tailored to me in any way, it's just the same design package that would go out for tender for the engineers.

If the building is no longer around and we are trying to do a representation of it for a museum or something, we are still looking for as much source material as we can find. So, we are looking for blueprints

or whatever can be found, and if they can't be found then photographs, black and white photos. I spend a lot of time sometimes on projects taking photographs, scanning them into computer programmes and then extrapolating sizing from them. In a live situation an architect would send me drawings, I would then spend ages and ages going through the drawings trying to redraw the product using materials that I have. That process allows me to understand the architecture, because sometimes the architecture is very complex: it might look simple from the outside but quite often it's belying quite a lot of complexity due to its location or its neighbouring a building.

When you start work on the model itself, how does that process work? Is there a particular way you start, a particular way you process it, or does it depend on the specifics of the model you are making?

I think it always starts at [the] quote [stage] because that is always an exciting front to the project. In order for me to provide a professional quote that works, I need to have built the model almost in my head. So, if someone says 'how much will this be, Henry?', I need to be able to give them accurate pricing.

The only way I can actually do that is by sitting down quietly and building the product, so by the time the project is on I almost have an understanding and a rapport with the client with regard to what type of project we are talking about, what type of end result they want. We are kind of understanding what it is being made of already and then [thinking] around my tooling and my capabilities here. A lot of work can be now replicated with convenience through a laser cutter or 3D printer. Those elements can then be understood early, and that's how I'm going to do it, so therefore I'll spend all the time on the computer preparing the files.

You have talked about materiality. How important is the use of original materials, or is it more about the purpose of the model rather than the relationship to the original?

It depends a bit. There is a kind of plasticisation of buildings, where the end result might be a very squeaky-clean version of what is actually going to be there. That happens quite a lot if you go into a large tower of residential buildings in London and you want to buy one of the flats; then they might show you a model. That model would be highly developed – relatively 'toy town' I would like to suggest, or highly coloured, a bit like the model railway

set-ups. It is not necessarily the way I would choose for a lot of models, especially if they were going into a gallery or to a museum scenario.

Sometimes I would choose a more stylistic approach because it is more accurate to the ethos of the design. Frank Gehry famously has models made of blocks of wood and chunks of glass, and I think they are a great representation of his thought process through the shapes that exist rather than a squeaky-clean marry-up of everything. I do like that approach. Often, I'll suggest to a client one approach or another, and it just depends where it goes. There is work of mine going into the Royal Academy soon for the summer show [model of Google's HQ for Thomas Heatherwick in the Royal Academy's 250th anniversary Summer Show, 12 June–19 August 2018]. Again, it's not really through me: the client will approach me and it will either get accepted or not. There the clients may well say we want something a little bit more stylistic, rather than squeaky presentation.

With rebuilding things that are in the past, that have been and gone, it is a slightly different journey because that's a very exciting conversation with the dead original author as to how they built something. That's really quite interesting, to try and stick with their materiality because you are trying to show what this thing was like. You learn a lot when you're working with materials. You'll learn why, perhaps, the original author used that material as you are using it and why it couldn't be any other. That is quite fascinating.

You mentioned model railways – do you have thoughts on the relationship, if any, between what you do and recreational modelling?

It is a very creative way of humans expressing themselves. Personally, I enjoyed Lego a lot as a child and really liked it as more of an engineering tool to build things – I never really followed the instructions. You do when you start, but then you play with it. Airfix and model railways I didn't get that much involved with, but I did build a Sopwith Camel once and that was fun. That was with balsa, so you're sanding balsa. I think I enjoyed that again because of the materiality and it was a very beautiful product when it was finished.

Something like Airfix is, by nature, a kit. It is designed as a kit so that the consumer can end up with a product that is as slick as is possible. The kind of work that I do naturally doesn't have kits. So, I am going back to how you create the shapes, [asking] if there is a radius on the front of something, and how do you create that radius? If there is a connection here, how do you create that connection? So, [in this case] there is a slightly different thing [between professional model-making and

recreational modelling] that is being taken. However, a lot of the processes that are involved [in one] can be passed onto the other.

So, I would say it is slightly different, but there are techniques and gluing techniques that are similar. I would say, inherently, they come from a slightly different background. One is to replicate something you know very well with a kit that is there to get to a final product. The other, especially if I am going on a journey with somebody's piece of work that no longer exists, it's more about a journey and learning about the materiality.

Can you tell me about the differences in approach when you are making a small-scale model as opposed to the larger than scale model (the gigantic)? How, if at all, does your approach differ between those two concepts?

It does differ, but not for obvious reasons. The most obvious case I could state was when I had to do a window section of Grenfell Tower and that was for a very specific reason. My dimensions and materiality were very important in that respect, in that they needed to be followed accurately because the model is going to be used to determine some things around the tower.

That was a kind of one-on-one replication of what existed. Another large-scale model that I've done was one to one, so real-life scale, the Narkomfin Apartment in Russia for the Royal Academy exhibition on Russian art. That was my upscaling of an architect's maquette, so I built it all in card but at one-to-one. So, then I had to control how this was going to look like card and be a card model at such a huge scale. Normally you would be doing the opposite, which is how to represent something at small scale. The method that you would choose around all these things is really [impactful] on how successful the end product is going to be.

We've talked before about the passage of information through time in Inuit boat-building, about the scaling, and there may be multiple scales in one project, and I think that might be to do with how to pass on information of how a joint might work. Naturally as you're reducing scale, it gets very difficult to make operable joints.

I have just done a very complex bit of architecture for an architect that looks very difficult to hold together in real life, but as you scale down, actually the engineering works in my favour. Structurally many things work better as models, and if you just said I'm going to design this model and upscale it, you probably will face some quite interesting engineering problems.
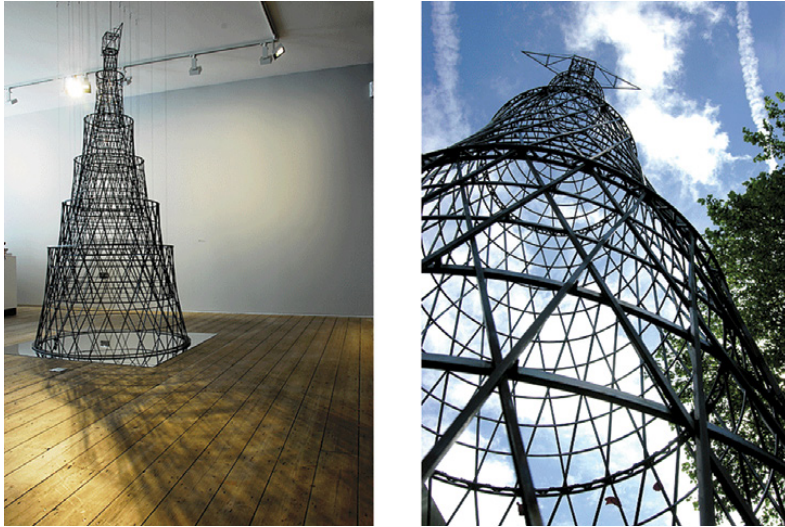
Figure 9.2　Comparison of Shukhov Tower, Moscow, with Milner's miniature. © Henry Milner.

But jointing is an issue; if the jointing is very important to see how it worked, then you have to be very, very, very careful on how you scale things down. If it isn't important and it's got some sort of surface finish over the joint, then you just choose whatever is the most sensible at the time and that will be to do with your adhesives. Acrylic is an exceptionally useful product for making very small-scale things that are relatively rigid and stiff and then it'll be how to glue those together and how to finish them.

Equally, I use metals. I did a 1:30 scale version of a radio tower in Moscow which involved 10,000 brazing joints. Brazing two bits of metal together is a very strong way of getting it together with very little jointing.

How long did it take to do 10,000 braising joints?

I think that project ran for about two to three months. That was quite interesting. I like to make architectural models that would [be used by] an architect [through the lifetime of a building project so we go through] planning, get them through planning and design changes, maybe sell the model, maybe sell the building, we're talking perhaps a couple of years of use. I like to make sure they last at least a decade or more, whereas the Science Museum wanted something that was going to be on permanent display for 40 years: so, again, it's all to do with longevity.

You talked about clients and your engagement with clients in the creative process. When you are making a model, how much are you considering the audience's relationship with it, and how does that affect the work that you are doing?

If I have the ability to have any input on that in the project it's important to me. There may be a client who comes and says, 'you are going to do it like this and that is that', and that's a commercial body of work to undertake and they make the call on that end finish. Usually, since I've been running on my own, I like to have a big input with the client and usually they will take on board my views to a certain extent, listen to me and make decisions. It is very much about how beautiful the end product can be.

Maybe there is a bit of ego in there as well, I'm not sure. You are wanting people to go into a museum and look at something and there is nothing nicer than looking at a really intricate model and, if you are allowing people to spend a passage of time looking at something and being in awe of it, that is a great thing.

You mentioned making a model at Henley for the visually impaired; when you are making a model for a specific audience like that, how does your approach differ from the pieces that go in other museums or to architects, for example?

Again, it is just end result – what the model or miniature is for. In that case speak to your target audience. I researched that particular project through the RNIB. The RNIB gave me interesting documentation on academic concepts of colour. So, for the visually impaired, what colours are going to be the most useful?

We were talking about a representation of Henley Regatta, which means a representation of that particular stretch of river and showing particular points on the river that are relevant for the race so that the visually impaired would gain satisfaction from understanding the race. So, in that particular instance it was important to have a very tactile model that could point out the areas along the river where specific things happened, i.e. where the start and the finish were, or particular elements of the race were.

That particular model was something that they could walk around the museum with and so it acted as a kind of trolley that rolled along the museum with them. It flipped over to give them a more tactile experience as to how hulls of the boats were made at the time and what materials were used to make clothing over the years. That is a good example of a miniature that needed building to very specific parameters.

Figure 9.3 Thames miniature for Henley River and Rowing Museum.
© Henry Milner.

It strikes me that many of the models that you make are made to be looked at, whereas this is one that is made to be touched. When you are making something that is designed to be touched rather than just looked at, does it change your approach and if so, how?

I suppose that is a question of longevity. I certainly know with the museums that, more and more, the laser beams and ropes [protecting displayed objects] are being removed and I have been commissioned to do works that don't have any protection. When I have suggested that a particular element might be fragile, or how to design for that environment, the answers from museums have been either that this will be relevant to [determining the] staff on hand for protection, or, if they can, they would prefer more interactivity to be built into the model.

So, you might change the materials you are using to be more robust?

More robust, yes. The problem with miniatures is they are quite difficult to clean if they are detailed, and so there is always an element of touch which would be needed, whether it be by a cleaner or by the public. The more the people can interact with it the better in my opinion.

When you are making something on a whim you say it is because it is something that interests you rather than a particular commission. What audience do you have in mind when you are doing that?

I do my own personal stuff but I guess that is a bit separate, it isn't really out in the [public] domain as it were. But I will go out and actively search for products that I feel as if I would enjoy doing in a selfish way. So, I would enjoy doing that, it satisfies my needs of build[ing] and I think it is something I would like to see in the world, and other people would appreciate. Then, being in a modern world, and with bills to pay, I actively seek commissions that way. So there is always somebody who acts as a client, as it were, and if I'm lucky, I get as much control as I can over those things. Those would be more about trying to recreate lost pieces. I do enjoy the aspect of recreating a lost building, or a lost construction, or even a lost model.

Impossible buildings are exciting to me: things that haven't been built because they are too complex or too expensive and no models ever existed, and I might just try that out because maybe it *is* an impossible building. There is a lot of utopian architecture. Also quite fascinating is the idea of buildings that just never existed: they may have come second place. Every building is almost a competition and so it is nice to see that. I have often thought it would be nice to have a show of a part of London or another major city where you showed it with second best or number two in the competition, because it would be a very different place.

To take this one step further, what is your experience of the effect on you during the process of making miniatures and envisioning and developing them? Do you find that you are constantly developing your understanding and experience of the field as you make them and how would you describe that?

I guess your skillset is built up through experience and working with things, and I like to test everything, I like to push the boundaries on certain things. There are institutions out there who are just making presentation models for a specific market. That would be very much more a factory set-up where one individual works on the computer and produces something, and the next individual works on whatever machine it might be and then out it comes, it gets finished in the same specific manner.

But I prefer to be far more fluid and to play with as much as I possibly can. Just my fascination with materials requires me to do that, and then every time I see a new project, depending on my body of experience which is being built upon, I might think of a different way or how to go

about something or remember a grand failure or whatever it is that drives you to what decisions that might want to make with that piece. I have always been quite homogenous in that I feel the best products are ones that show their construction and the materiality that they actually were born with or were made up of.

Do you ever go and watch people observing the models?

Yes. Not really as a comparison with my models, but Sir John Soane's Museum is just the place to go and stare. Equally, down at the National Maritime Museum I have always had a fascination with timepieces.

Again, it's nothing to do with telling the time, it's to do with the materiality of those products. I guess I'm just like a lot of other people in that I love to look at how things are made, and it's an inherent part of human interest: to really look at things. Especially if they do something quite interesting, to try to understand when you look at miniatures. They are fascinating, even if it's a miniature painting or portraiture; or there are people who make extremely 'micro' small pieces of art. I think we are always interested in that kind of thing. I definitely do enjoy going to see works.

When you are there, do you watch other people interacting with miniatures as a way of thinking about your own work?

Yes. I love the Science Museum as a place and it's always nice to see a gang load of four- to seven-year olds picking things apart in their mind for the first time and looking at things and that is fascinating. They are actually learning as they are looking at things, and then of course anybody who is visiting the museum is really trying to engage with the product. An exhibition display piece is serving a big purpose, whether it be a miniature or an original artefact.

What do you think of the components of the models, of the miniatures, that specifically differentiate them from the larger entities that you are drawing on? Where is the essential difference in the model from the entity it is based on?

Well, we could talk about a commission for a 1:100 bit of architecture, or the architect to promote the building. You are not going to be building that out of steel or glass, you will be building it, generally, out of plastics, clear acrylics for the glazing.

Then, if you visited a model shop, of which there are a few good ones in London for model supplies, you'll find that they have stock materials.

The latest big project that I did involved quite a lot of truss work and I ordered in a lot of T-section I beams, H columns at scale. That is interesting, they were in brass. So, that gives you a little bit of a palette already of the materials that you might use for something and then you need to make up materials for the vast majority of things. The invention of the laser machine for engraving and cutting acrylic plastic really changed things quite considerably in architectural model-making because you are able to engrave lines: whether it be for panel separation on an elevation or spandrels or glazing frames, you are able to draw them in the computer, pass it on to your laser-cutter and then have those engravings going on and then mask and spray relevant areas.

That is not like the real building. If somebody shows me a part of the architecture is a wall with fenestration in various parts, made of a certain panelling, that would be framed up in reality, and the glazing put in and the panelling applied, whereas I might make that as a laminate of maybe three pieces of acrylic. The middle one might be clear, the external one might have the void for the windows and have the engraving for panel separation, and the interior might be all white, again with voids for the windows. So, you design it around how your end model was going to go together. Again, that would be relative to the scale. You would also be removing detail that wasn't relevant to that scale, so you would be removing a lot of filigree from areas if there was such stuff. Then, as you get bigger and bigger in scale, you are trying to put in as much more as you can.

Wood is used a lot in models and has been for years and years and years. It has got a very honest end result and it's quite useful, I think, for architects politically, as it doesn't tell a panel of an architecture association or the local council what the end colour is going to be. It doesn't have to give that result. People warm to wood; it is very comfortable. So, you might represent a lot of buildings, that are obviously not wood, in wood for a model.

What do you think are the key components of a successful model, of a model that you really feel has achieved what you set out to achieve with it?

I think maybe the answer is something that sets out what you actually need to achieve. If it's a model for a museum then you are chatting to the curators at the museum. A hierarchy at the start with regard to what they want for the model and then you see the satisfied public coming to see the model and really actually showing that bit of mechanics or that particular element or just that iconic building and that really coming away with people.

If it's for an architect, on a particular model again it's achieving what you set out, which might just be, 'can we have a massing of that in that cityscape so we can go to planning and see if we can get away with having a tower that big, or a tower that small, a shape a little bit odd', and coming away with the model having done that work for the architect, having worked. Obviously, you have to pay for models and you want something in return and sometimes they inform the decision on how a building changes in its architecture. A happy client, is that the right result? Whether it be a corporate client or whether it be a viewer at a museum, somebody who actually gets it.

Are there any particular examples of your work that we haven't already discussed where you feel you really, really achieved something?

Often I try to have a conversation with the clients after the model's done its thing, to see if it's still working, and often architects are saying 'I love that model for whatever reason', and I have been approached by people who wish to use the model for other reasons, just politely I guess, to see if I want to be involved. I had to do the British Telecom Tower, the BT Tower, or the Post Office Tower as it was in the late 1960s when it was built, and [the model] then went on display to show people how that iconic tower was [designed].

The interesting thing is that that building was built to carry a lot of telecommunications paraphernalia which is being removed, and has been removed, over the years of course as it upgrades. So, the skyline of it is actually a little bit different. In actual fact, I don't know what the situation is now, but there was a bit of a wrangle with regard to the listed status of the paraphernalia. There were large entities on that, microwave horns and all sorts of strange things, that were wished to be brought down, but actually had a kind of skyline preservation order. So, I built a model of it as it was. That is useful for people to see so it was very successful [in enabling people] to see what actually happened there and what the building does now, which is similar but the technology is completely different.

Is there anything you think would be a good example to talk us through the specific process of the model in question?

This one is fun. This is Kazimir Malevich: it's Arkhitektons. I think over the past decade or so reconstruction of entities has hit a new phase where it's not really described as fakery, which is not belittled anymore, it's more
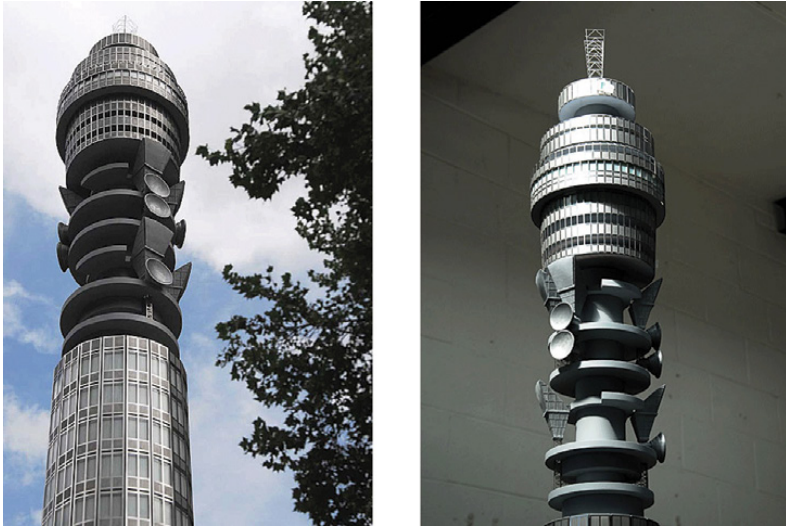
Figure 9.4   Comparison of British Telecom Tower, London, with Milner's miniature. © Henry Milner.

used as a discussion point. In the, I think, 1970s, the Pompidou Centre received several trunks of plaster pieces which nobody really knew what it was, and I got photos of those trunks. From some archive footage of a show that Malevich had [in the 1930s], there were these Arkhitektons, and then in the 1970s there was this trunk of bits. I'm yet to see the actual trunk but I have very detailed photos.

I was then able to kind of assume that some of the bits of plasterwork maybe formed some of the pieces in the photos. So, I took the 1930s photos and reconstructed for the Royal Academy these Arkhitektons. That was a great success and great fun to do because it was kind of answering a bit of a mystery from history. Usually it's the painted art, or it used to be the painted art, which was so important and so discussed and so written about in academic work.

So, the real success in that was that we were able to recreate this original room of the 1930s exhibition. We had nearly all the original Malevich paintings hung and then of course I was aware of this box of bits and so I recreated the actual Arkhitektons that were in that exhibition and they were re-exhibited. That was just very enjoyable, and I would consider it quite a successful combination of academic research and model-making because people were able to walk around for the first time and see the importance of these Arkhitektons.

Is there anything about what you do that we haven't discussed that you feel is important to talk about?

What is interesting as a maker is it's a job that has been going forever. For hundreds, thousands of years there are people who make things, and I find that really quite interesting because when I'm reconstructing or trying to build these impossible things from the past, you end up having a dialogue with the original author. That transcends the time periods, and sometimes I'll find some other maker that I'll chat to about a particular piece and they have maybe had a go at some other pieces or they have done some of the same techniques. So, it is a language that is very hard to pass on to other people, but makers over the years have always been doing the same kind of things. That is quite interesting because it's a career, a hobby, a pastime that people have been doing for hundreds and thousands of years. That's quite difficult to verbalise somehow: it's a fascinating subject.

I'm doing work at the moment where I'm repairing a model boat that a savant built over 100 years ago. I'm working on this individual's piece and I'm doing the same things. It's quite fascinating: I'll be laying out particular parts of the boat on paper to replicate certain pieces and then I might turn one of his original pieces over and see exactly the same replication: you are doing the same thing as the person. It connects you with people who aren't around any more because a lot of their work is there so you are going back over their work.

Can you tell me more about the boat?

This is fascinating because this is restoration really, but I have had to rebuild some of this using my intuition. It shows you how destroyed things can be. This piece is by this chap called Pullen, who was a member of an institution for the disabled which has now been taken over by the Museum of Disability at the Langdon Down Centre (Down being where the name of Down Syndrome came from).

At the time, in Victorian times, the inmates, as it were, were kept within the institution and this chap Pullen was very good at making models and woodworking, and he did copies of various famous boats at the time and some of his work even made it to the Great Exhibition in 1851. This piece I was asked to restore and put back to life. He did fantastical boats, he did this amazing boat for Queen Victoria to ascend to heaven in after her death and this particular piece was thought to be fantastical, but I think there was a far more practical reason behind it.

It is known as the four-barge boat. It has these odd sails on the top which obviously rotate but couldn't possibly power the vessel. The Victorian write-ups were a bit belittling of him and said he didn't know what he was doing and they thought it [was] powered [by] turned elements underneath. But, again, a paddle moving round and round isn't going to move a boat forward. So, after some thought, and only engaging with it as a maker and only being able to engage with the actual product, I was able to think a little bit more about this. I believe that a constant wind right in the middle won't blow them either, it won't turn the sails. So, I think that these sails are actually practical and they move backwards and forwards, not necessarily turning around, with whatever prevalent wind there is.

These move these paddles underneath which, in my opinion, are actually dredging paddles. They basically just turn the water and I think that this is a barge that was dragged behind a boat, hence it having two rudders and two buoys to attach to, bits that are pulled that ropes are thrown over, or pulled by horses along a waterway to dredge. My personal opinion is that perhaps it was used in the City of London when important sailing vessels were coming in. If you've got a sailing vessel with all of the cargo on it, whether it be spices or whatever it is at the time, this would maybe run before them just to make sure that it got safely to its berth, or even just to make sure, because things were being offloaded, if they didn't land in their berth before tax and customs got to it. I think these ran. Its design, whether it worked or not, is an actual practical thing. This is a practical model, it is a model that actually worked in a tank. We can tell that because it has a bit of glass in, and the bit of glass shows the ones in the distance. I think that this was presented by Pullen to people in a water tank.

Do you do a lot of restoration?

It is something I'm fascinated by, but it didn't come by design. It came more in an 'oh wow that's an absolutely amazing product' and somebody's saying, 'oh well do you want to work on it for a bit?' Then the restoration is more exciting to me because I'm having a conversation with Pullen in this case. All of these elements were smashed and they are all in a shoebox and when you turn them over you will see his little markings saying, this one's number four. When you go to the turn, the piece that it goes on to, there's your little four and lo and behold it doesn't fit on number three: it only fits on number four!

So, these are conversations you're having with someone from years ago, [like], what is this for? Well, it is obviously a rudder but how does it operate and what are these for? Only working with it allows you to understand that

pins went in here and I think this is to stop prevailing winds, so if it is out in the water this actually holds it more or less in a position or location. Playing with these things and working on them teaches you so much more about them. You see at the bottom there at the keel, there is a big piece of metal put in – so obviously this was a working model, which nobody knew about before. So, we learn some things from restoration.

Do you feel directly connected to the history of your field? To thousands of years of model-making?

You are directly connected to that and you are thinking those same things that that person was thinking, which is very personal. You're making the same decisions, and you're thinking exactly the same things, not only as other makers but also as architects if you are doing historical architecture. They are areas that are never seen but are actually still alive in there, like little secrets. You might see that the same drawing work you are doing now, today, was being done however long ago: that's interesting.

10
Some thoughts on the measure of objects

Susanne Küchler

For a long time we have readily accepted that the miniature, the monumental and the corporeal reveal a common human concern with dimension, direction and distance. The measure of a human-made object is strangely reassuring as it is not random, and yet although it is never accidental, the relations, ideas and intentions that coalesce into the sizing of artefacts are neither easily reconstructed, nor do they tend to be fads that go in and out of fashion.

Take, for example, books published in Germany, which tend to be of palm size, fitting easily into the pocket of men's jackets or the handbags of women: larger books fitting into mass-produced bookshelves only gradually took over in the postwar period. French publishers appear to have a predilection for mid-sizing and uniformity, with the quality of paper and binding serving as the main factors of distinction. Just slightly larger than a hand, they want to be carried in the hand, visible to all, and shine as equals in the uniformity and beauty of their spines when arranged in the bookshelf. The most uniformly sized publications are still produced by publishers in the English-speaking world where thickness as well as enlarged size require a book to be placed on the table or in both hands to be read. More vertical than horizontal in shape, books that invite reading rather than scanning with the eye distinguish themselves from so called coffee-table and also children's books that are decidedly horizontal in the directionality of their shape. Globally oriented publishing houses have created a new standard for the sizing of books, yet this does do little to undo honed actions and inter-subjectively intuited expectations that are deeply wedded to our relation with books.

Egocentric, anthropomorphic and relative, the spatial relations that are tempered by our relation with books are certainly relations that we can call 'corporeal'; mimetically books reflect a concept of measure we can independently verify via analogous props that can be held, carried and placed in a manner recognised as appropriate for a generalised 'natural' body. Yet humans make objects of a measure that is not relative to the body, but where the measure itself is the important element, one that is referential not to an external prototype that can serve as its substitute, but to an idea that we struggle to name and to identify as immanent to the measure itself (see Davy, this volume: chapter 4). It is with these measures that this essay concerns itself, contributing to the study of miniature artefacts presented in this volume with some theoretical thoughts on the similarity and difference between the monumental and the miniature and their methodological implications.

While there is surprisingly scant systematic thought on the matter of scale, the size of objects has always attracted attention when it is beyond human proportion, i.e. larger or smaller than a corporeal perspective would suggest. It is to the assumptions of how measures on either end of the spectrum work and what they do in society and culture that I turn my attention in this essay, in the hope of situating the significance of the collection of essays and also to contribute to the much-needed theorisation of scale beyond the corporeal frame. I argue that scale beyond the corporeal frame of reference works as a representational trope that derives its impetus from a desire to model ideas of spatial and temporal relations immanent within the object of measure yet not denoted by it, and to communicate these to others. As conceptual tooling for deductive reasoning, artefacts whose scale has no reference in the body are what Davy and Dixon rightly call in the introduction to this volume 'skeuomorphic' models par excellence, adopting the form and look of a prototype while representing something altogether less tangible. By demanding a prototype and yet severing any relation with it, the measure of the object itself can be managed as information. As representations, objects beyond the scale of the body therefore call up not what can be known independently, but what is inseparable from making, repairing and caring, recalling actions whose intuitive recognition and understanding relates persons to one another empathetically and passionately.

The importance of the model as instantiation of operational thinking has been described by the anthropologist Anthony Wallace (1978) in his historical ethnography of a small town in Virginia in the years of transition to industrial machine-based production. Wallace argues that in order to understand how the understanding of the machines was

transmitted to create the *esprit de corps* of mechanists, we need to real-ise that machines did not reference verbalised concepts or things that can be known via bodily experience alone, but that they relied on the operational qualities of machines themselves to be turned into visual and tactile information. 'The thinking of the mechanician in designing, building and repairing tools and machinery had,' so Wallace described, 'to be primarily visual and tactile and this set it apart from those intellec-tual traditions that depended upon language, whether spoken or written' (Wallace 1978: 237–8). The model or drawing of the machine at a size substantially smaller than the machine was vital to allow the product of the mechanician's thinking to be communicated in order to ensure that his colleagues had approximately the same visual experience as the mechanician operating the machine himself.

What Wallace describes here is the importance of sharing the understanding of sequence among those working with and repairing machines, an understanding that drew on skills of mapping temporal and spatial relations, such as letterwriting, honed in pre-industrial times. The argument here is that operational thinking and the understanding of sequence are crucial to the analysis of the monumental and miniature, and their intricate relation to one another. The absence of theoretical treatment of scale beyond the body is chiefly a result of the mistaken application of a theory of objectification that emerged in the later part of industrialisation against the background of the human body, the body natural, in its relation with the machine. The conception of objectification as substitution, drawing attention to the capabilities of the body natural, played a leading role in the emerging theory of labour, with the concep-tion of objectification as sequence having receded into the background, to be eventually forgotten. The understanding of sequence or operational thinking manifest in objects, such as machines, draws people together as a social body, whereas objectification as substitution differentiates and thus separates the body natural from the social body.

In this paper I draw on examples taken from ethnographic and art historical case studies that show how very large and very small artefacts make manifest operational qualities that underpin the social body in the sense of making, repairing and caring for social relations in ways that proceed and are communicated without words. The chief aim is to show both that in the monumental and the miniature, measure itself is a key element in objectification, and that to understand the role of measure and its often hidden reference to sequence, we have to abandon received understandings of objectification that have put the body and the ego-centric, relative and transitive perspective centre stage in analysis. I thus

argue that by drawing out the alternative understanding of objectification as sequence, we are able to understand when and to what effect measure itself is foregrounded in ways that can shape the quality of both the monumental and the miniature. How the measure works and what it does as tooling of an aesthetics that feeds less on referencing conceptual reasoning than on intuition and deduction (Simmel 1916/2005: 17) is the question of this collection of essays, and my concluding thoughts will make reference to this body of work.

Beyond the body natural: The workings of the social body

The scale of an object that is made to measure is seemingly nothing but the obvious and yet far from straightforward by-product of what the anthropologist Christopher Pinney has called 'corpothetics', a corporeal and material poetics that can develop around images (Pinney 2001). Scale is a relational concept, as the measure of the artefact is defined by its relation to another one of equal or different measure or, in the words of the historian Carlo Ginzburg (2001: 149), the effect of a 'literal and metaphorical distance' between artefacts and between the persons for whom they serve as substitute. Extemporising on distance across nine essays, Carlo Ginzburg explores how distance, measured corporeally, is deployed strategically to project and effect recollection, devotion and idolatry. Crucially, from a methodological point of view, the argument goes that distance makes the identification with the emotions of living persons impossible, permitting artefacts or narratives to be endowed with an air of factuality and neutrality. Furthermore, the amplification of distance in artefacts and narratives allows time to be mapped across generations, rather than marking the biographical lifespan of persons. By surpassing the mortal lifespan of persons, distance accentuated either visually or narratively will thus have moral connotations.

Distance, and its underpinning conception of the body natural as central to objectification, is a much-deployed heuristic device central to modern historiography (Brewer and Sebastiani 2014). Other disciplines, notably art history and anthropology, have unwittingly adopted the uniform relevance of the corporeal for understanding objectification. This paper will take issue with the assumption that distance as heuristic device reflects the workings of objectification. This is because, while spatial distance may indeed mediate a subject's corporeal relation to

objects, thereby allowing objects to stand in for subjects, corpothetics as measure is not logically coterminous with the workings of objectification (Maniglier 2013). In fact, the spatial logic underpinning the conventional usage of objectification, with its egocentric, relative and anthropomorphic conception, can equally well give way to thinking that envisions objects as standing in not for subjects in space, but in time, enabling a conception of its sequential flow and a recollection of its stoppages as biographical and or epical events (Gell 1992). This replacement of spatial with temporal concerns in objectification explains, I will argue, the difference in scale resulting in the monumental, with the miniature allowing complex ideas underpinning the monumental to be made tangible and relevant to imagination.

Objectification framed as substitution allows objects to stand in for subjects, marking the biographical lifespan of persons and serving as index of relations between persons and persons and objects in the manner outlined by Alfred Gell (1998) in his use of Piercean semiotics in the analysis of artworks. The other less well-known understanding of objectification in which artefacts stand in for temporal sequences relating persons and persons and things, marking stoppages that permit the strategic intervention in biographical or genealogical relations thus mapped, was used by Gell himself in his analysis of both Marquesan artworks and Marcel Duchamp's oeuvre. The argument advanced here is that the monumental and the miniature alike demand an analysis sensitive to ideas and intentions that resonate with this other sense of objectification. The difficulties this other sense of objectification creates for a corporeal theory of image-making explains why such usually precisely measured artefacts continue to fascinate scholars and collectors alike as they resist any analysis that is assuming the corporeal subject to be central to representation.

An example of the fascination that the monumental has attracted is the classic essay by the art historian Michael Fried (1983) on the work of Gustave Courbet, whose four monumental paintings have been associated with the advent of realism. One of the paintings, entitled *The Burial of Ornans*, took Courbet most of the spring of 1850, being 6.5 metres wide by 3 metres high, with more than 40 life-sized figures. Breaking with the conventions of visual drama, the scale of the painting was initially explained as enabling Courbet to exclude the beholder from the scene of representation. Examining this proposition, Fried dissects the structure of relations making up the compositions, the serpentine path followed by the mourners, the slightly skewed orientation of the open grave, and the exact location of certain figures, and, noting the biographical context

of the burial depicted, refers to the brute material presence simulating a confrontation underscored in previous analyses of the painting whose visceral paint substance emphasises the 'aggressive presence' of personages akin to a history painting.

Without going into the detail of Fried's analysis of the painting, pitted against its previous interpretations, Fried's own hypothesis is significant here as it struggles to reconcile the geometry of relations immanent to the painting's composition with the semiotic intent ascribed conventionally to the medium of the painted canvas: the figures in a procession move laterally across the painting, with the proportions of the figures underscoring their visual and conceptual merging, prohibiting the separateness of individual personages. Rather than being the product of an additive composition reflecting society metonymically, that is referentially, the painting brings to bear upon the beholder an internal structure emphasising the blurring of distinction and its felt, imagined, movement that was also thematised in Courbet's earlier landscape paintings, which call on the viewer's imaginary journeying in a 'measured' and 'comprehensive' fashion (Fried 1983: 650). The monumental scale is said by Fried to enhance the proximity of the viewer, merged in fact into a single entity with the painting, anticipating and modelling the relationship between painting and painter-beholder that determines the composition of the painting itself. Scale, proportion and multiplication work here as index of an idea of relation that allows continuity to be mapped as temporal sequence. Received notions of representation that are grounded in an epistemological tradition insisting on the aesthetics of distance are called into question as radically as are analogous distinctions between subjects and objects. I would add to Fried's interpretation the suggestion that Courbet makes manifest in his monumental paintings what was about to disappear, much like Walter Benjamin in his essay on the storyteller, calling attention to a modality of objectification whose workings could only be recalled aesthetically once it ceased to capture how relations work in the real world. That is, the ideas underpinning the operational qualities of social body and the societal work put into making, repairing and caring for its operational qualities had achieved a beauty calling for representation the moment they had given way to the concerns over the mortal body of man whose substitutability had become paramount to the political economy of the industrial world.

Not that Courbet would have been aware of this, but the collecting of supersized artefacts from all corners of the world and their storage in then newly created museums is a striking indication of the aesthetic that the monumental assumed as the concern over the social body receded in

the Western imagination. The arrival of the material culture of the south coast of New Guinea, in the late nineteenth century a British protectorate, in the British Museum is one such example (Knauft 1993). Giant masks, known as *hevehe*, were taken from equally monumental houses built by the Elema along the seashore as index of individuals' positions of rank within a regional exchange system that spanned several distinct cultures and language groups along the south coast. *Hevehe* masks were individually owned and transmitted, yet unlike the ritual artefacts of neighbouring cultures they evoked only hazy ancestral associations, their main aim being to embody individually through design, name and scale the political authority of the owner, won through large-scale exchanges of foods, pigs and shell valuables (Williams 1940). The individual prestige that accrued to participants in the *hevehe* ritual cycle motivated increasingly large and diverse prestations and increasingly long periods of preparation. This process of augmentation of temporal sequence as key to the objectification of persons was both facilitated by and reflected in the enormous size and elaboration of the masks, which were made across several stages over the course of many years (Knauft 1993: 206). The scale of artefacts measured the longevity of *hevehe* cycles that carried the weight of a complex system of gerontocracy, as the death of the elder owning the masks and other ritual artefacts led to the temporary cessation of work on the *hevehe*, with this delay in the ceremonial cycle serving only to further intensify its scale and longevity.

The spatial and temporal scale of the *hevehe*, as artefact and ritual complex, was thus a trend fuelled by the social and demographic effects of a gerontocratic political economy whose workings depended on mapping relations in images whose monumentality and temporally extended production articulated the idea of a social body that extends beyond the lives of its mortal subjects. An interesting comparison could be made with the ritual artefacts described by the medieval historian Ernst Kantorowicz (1970) which were made for the burial rituals of kings in England and France of the fourteenth and fifteenth century, when wooden figures, fed and tended to in parades like the king himself, enabled the dissociation of the office of kingship from the mortal body of the king, enabling the idea of the modern state as consisting of a social body whose temporal duration independently of the body natural became its primary defining quality. Carlo Ginzburg uses this example to draw out the qualities of representations that are non-referential, recalling what cannot be known or verified independently of the representation itself and which nevertheless evoke mimetically what can only be recalled (2001: 63–4). What the idea mimetically referred to in the wooden replica of the king

is less clear in Ginzburg's analysis as he concentrates on the single figurine rather than on the monumental pageantry of which it would have been an incremental part. More to the point is the historian Krzysztof Pomian (1990), who argues that objects that do not have a referent in something that can be independently verified straddle with their mimetic quality the visible and the invisible. What he calls 'semiophores' or linking agents have come to fill our museums and none perhaps fulfil the task of calling to mind the operational qualities of societies made manifest in objects as well as the monumental statues or canoes that so manifestly index ideas beyond their formal mimetic properties.

Among the many studies focusing on monumental objects, most have questioned the temptation to assume a correlation between size and complexity of society and scale (Adler and Wilshusen 1990), stressing that the mode of constructing large-scale public works usually takes place in discontinuous stages and by accretions over long periods of time without any evidence of a bureaucratic organisation or mechanism serving the maintenance of the work over time. Recent research on the monumental stone structures of Rapa Nui shows such conceptual coherence across all scales of architecture and structure on the island, which points to consistent and complex ideas that informed the carving, repairing and placing of megaliths over many generations (Hamilton 2013). Research points to cosmological ideas indexed by the positioning of the stone figures facing the setting sun, the direction of travel of the souls of the dead, and thus possibly mapping a sequence of actions that underpinned the ritual restauration of Rapa Nui society and of its place in the cosmos.

An intriguing example of a study that does attempt a comparable analysis of carved stone megaliths is the early twentieth-century work on Yap stone money, described by the American explorer William Henry Furness III during his two months' visit to the Micronesian island in 1903 (Furness 1910; Martin 2015: 2–5). Describing Yap's complex society, with a caste system, slaves and competing fraternities, he offered an intriguing explanation for one of his most perplexing observations. The Yap, he concluded, had an economy based on money in the form of large, solid and thick stone wheels, called 'fei', ranging in size from 0.6 to 3.5 metres. Although 'fei' were used to secure transactions, the stone wheels, taken from quarries by canoe from islands outside Yap territory, were rarely or never moved. This is because rather than serving as quasi-commodities in barter-like exchange, they served to make manifest the potential for future transactions of the household. The measure of a stone wheel thus denoted not a relation to a hypothetical set of commodities that could be purchased with it, as they were not mere stone coins

of an unusual size, but instrumental to a temporally structured system of credit and clearing – 'a tangible and visible record of outstanding credit the seller enjoyed with the rest of Yap' (Martin 2015: 12).

If temporal reach and sustainability of credit were made manifest in the Yap stone wheels, their immobility and inalienability are logical consequences, as was brought to our attention by Annette Weiner's ethnographically informed reading of Georg Simmel's treatise on money (Weiner 1994; Simmel 1978). Georg Simmel had argued that the value of objects is relative to the speed of their circulation, with increased velocity being associated with reduction of value and potential loss, whereas immobility is associated with durability and transcendent value. What is interesting about Georg Simmel's reasoning is that he reminds us that the immobile and the mobile, the monumental and the miniature, are logically inseparable and complement one another in their capacities and effects. There are many examples of societies where the monumental and the miniature reference one another, Yap stone money being just one, as it also features tiny stone wheels threaded together to form strings of varying length. Another well-known artefact tradition which similarly produced artefacts in monumental and miniature measures is American Indian art (Phillips 1998). The art historian Ruth Phillips argues that the miniature came to play a prominent role among the tribal areas of the Northeastern Woodlands when they exploited the changing constructions of Indian-ness between 1700 and 1900 – changes that led to the consolidation of colonial power (Phillips 1998: 74).

While it may very well be the case that the explicit production of miniatures of everyday artefacts as toys or as souvenirs was an answer to an emerging new market, this explanation is countered by the anthropologist Claude Lévi-Strauss, who argues for the miniature (or the virtue of reduction) to serve as the universal type of a work of art that permits the viewer to see around an object, holding its geometric properties in mind by reducing its complexity, undercutting the resistance the objects offer to understanding: 'Being smaller the object as a whole seems less formidable. By being quantitatively diminished, it seems to us qualitatively simplified' (Lévi-Strauss 1966: 23–4). The overt simplicity of the miniature enables it to be intuitively and inter-subjectively understood without drawing on prior knowledge or memory, an argument advanced by Roland Barthes (1984) and Walter Benjamin (2002), who argued for the miniature's cancelling out of remembering as a precondition for its active role in conditioning play. If the miniature makes manifest not a prototype that can be independently verified, but ideas of operational qualities indexed by the object mimetically referenced by the miniature,

and if the sequences that underpin these qualities are already manifest in monumental forms, why would people take the trouble to make a miniature? It is to this question that the papers in this volume have directed their inquiry, and it is to these essays that I now want to turn in my concluding thoughts.

Made to measure: Sharing operational thought

The argument I have advanced so far pitched the monumental and the miniature in opposition to the corporeal by arguing that both index operational thinking, which demands the objectification of sequence, rather than classificatory thinking, which demands the objectification of a thing or concept the object stands in for, and that they, rather than referencing prototypes that can be known independently, reference qualities via quantity. The emphasis on operational thinking and thus on the sequencing underpinning actions that intimately relate persons to one another was developed via the example of the mechanician whose professional relations as a social body depended upon the transmission of the temporal mapping of actions that enabled the making, repairing and caring for machines.

The idea that aesthetics indexes the 'working' and 'doing' of artefacts within nexuses of relations, rather than social values that exist independently of them, is derived from Alfred Gell's (1998) now classic exposition of art inspired by his knowledge of the anthropology of Oceania, where operational thinking and its manifestation in the sequencing of artefacts informs both ritual, the recuperation of the social body over time, and exchange, where temporally extended sequences of prestation allow for the expansion of credit and kin networks across time and space. Making artefacts that relate to one another while referencing relations that are immanent rather than extrinsic is a symptom of objectification as sequence, and it is thus logical that the artefacts made to 'work' by illustrating operational thinking should exist as an assemblage, in the form of fractions, projections or diminutions of one another. Oceanic anthropology is full of examples of artefact corpuses whose assemblage displays operational thinking underlying the management of complex systems, be that a complex ecology that imposes temporal sequences upon people who try to sustain life via a distributed mode of land rights and activities, a complex genealogical system regulating land rights and the organisation of cooperative actions in a hierarchical society, or a complex ideology of power in otherwise strictly egalitarian societies. Quantity, measured exactly and referencing the concept of number

even when there does not appear to be one, is here a statement of quality and key to the transmission of information about ideas that words cannot capture.

The papers in this volume illustrate this argument beautifully and I was struck that almost every paper dealt with boats and their miniature complements as well as ritual artefacts, for boats – and other kinds of vehicles that transport rather less tangible cargo – are the epitome of machinic operational thought directed to making things that work and that can be repaired and cared for with knowledge and skill. In Oceania, boats are even referenced where the visual referent is seemingly not a boat, as in the figures that play a formidable role in funerary practices in which they perform as the canoe for the soul, transporting it to the island of the dead beyond the horizon (Küchler 2002). Again, it is important to note that the miniature does not reference the prototype, but the ideas the prototype denotes.

The idea that miniatures enchant because of the technical skill involved in reduction, often using materials other than the one used for the construction of the prototype, was elaborated upon by Alfred Gell in one of his first essays on the anthropology of art (published in 1992, but written in 1985), and his example of the matchstick cathedral (see the introduction to this volume) has become famous for the self-referential properties of form (see also Gell 1988). In addition to the mimetic relation between the formal properties of a miniature and its prototype, it is the measured quantity of the form and its relation to the material used that triggers deductive reasoning directed at disentangling the sequences of works and tools that have enabled the accomplishment of the task at hand and that are made tangibly manifest in the miniature. The papers in this volume offer valuable insights into how drawings and miniatures were often instrumental to the process of technological advancement in boat-building, driving innovation in form and technique.

The notion that invention requires the miniature chimes exactly with Anthony Wallace's (1978) historical ethnographic observations on the machine inventions driven by machinists who communicated problems to eliminate and improve via miniature copies and drawings rather than verbally. Machines, he observes, 'were not "invented" in complete and finished form; rather, they were the product of generations of collective effort. The paradigms themselves often were never patented, and if they were, the patent was rarely left valid and uninfringed for long; what was patentable was not the paradigm but an improvement' (Wallace 1978: 238). Tim Ingold (2010) draws attention to the ceaseless process of making and unmaking that belies the seeming finality of

form. The role of the drawing and the miniature in this process of invention via remaking allows for intention and inter-subjectively recognisable action, informed by the operational thinking, in the process of invention. Wallace argues that understanding mechanical systems requires a kind of thinking that can only be inadequately expressed in language, with technological information always requiring a reduced manifestation of the object or a drawing to capture and share an experience that is salient to the sequences of making, repairing and caring for a thing that works.

With the help of Wallace's historical ethnography on machinic invention and the formation of professional skill and knowledge associated with the operation and continual improvement of machines, we can see that we have yet another perspective on the miniature and its special relation to a prototype of another equally non-corporeal scale. This perspective recognises the quality of a miniature, namely that it is made to a measure that focuses attention exclusively to the object as quantity wrought out of material with skill drawn from making, repairing and caring for things at a much larger scale. The essays in this volume wonderfully corroborate this perspective, which will provide the foundation for future research into the tangible and visual transmission of operational thought.

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Index

Miniaturisation is the creation of small objects that resemble larger ones, usually, but not always, for purposes different to those of the larger original object. *Worlds in Miniature* brings together researchers working across various regions, time periods and disciplines to explore the subject of miniaturisation as a material culture technique. It offers original contribution to the field of miniaturisation through its broad geographical scope, interdisciplinary approach, and deep understanding of miniatures and their diverse contexts.

Beginning with an introduction by the editors, which offers one possible guide to studying and comparing miniatures, the following chapters include studies of miniature Neolithic stone circles on Exmoor, Ancient Egyptian miniature assemblages, miniaturisation under colonialism as practiced by the Makah People of Washington State, miniature surf boats from India, miniaturised contemporary tourist art of the Warao people of Venezuela, and dioramas on display in the Science Museum.

Interspersing the chapters are interviews with miniature-makers, including two miniature boat-builders at the National Maritime Museum Cornwall and a freelance architectural model-maker. Professor Susanne Küchler concludes the volume with a theoretical study summarising the current state of miniaturisation as a research discipline. The interdisciplinary nature of the volume makes it suitable reading for anthropologists, archaeologists, historians and artists, and for researchers in related fields across the social sciences.

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