

Rethinking Comparison in Archaeology

Rethinking Comparison in Archaeology

Edited by

Ana Vale, Joana Alves-Ferreira
and Irene Garcia Rovira

Cambridge
Scholars
Publishing



Rethinking Comparison in Archaeology

Edited by Ana Vale, Joana Alves-Ferreira and Irene Garcia Rovira

This book first published 2017

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Copyright © 2017 by Ana Vale, Joana Alves-Ferreira, Irene Garcia Rovira
and contributors

Credits for the Front Cover Artwork:

Author/Copyright Holder: Joana Alves-Ferreira

Name of image: "*Where is the Nymph*"—Montage exercise on original
Polaroid's taken at the archaeological site of Castanheiro do Vento
(Vila Nova de Foz Côa, Portugal) at the 2009 excavation season.

All rights for this book reserved. No part of this book may be reproduced,
stored in a retrieval system, or transmitted, in any form or by any means,
electronic, mechanical, photocopying, recording or otherwise, without
the prior permission of the copyright owner.

ISBN (10): 1-4438-7285-7

ISBN (13): 978-1-4438-7285-0

TABLE OF CONTENTS

PREFACE	vii
CHAPTER I.....	1
Comparison as a Way to Travel in-between the Dis-Articulations of the Past <i>Sérgio Gomes</i>	
CHAPTER II	13
The Art of “Endangering” Bodies: A First Movement on <i>How to Read What Was Never Written</i> <i>Joana Alves-Ferreira</i>	
CHAPTER III	40
Looking Around Differently: Taking the Arts Seriously <i>Stephanie Koerner</i>	
CHAPTER IV	74
Comparing in Archaeology through a Quantitative Approach: Dealing with Similarity and Dissimilarity Issues <i>Katia Francesca Achino, Stéphanie Duboscq, Berta Morell Rovira, Joan Anton Barceló Álvarez and Juan Francisco Gibaja Bao</i>	
CHAPTER V	90
Comparing the Incomparable: The Chalcolithic Walled Enclosures of the Iberian Peninsula and Beyond <i>Ana Vale</i>	
CHAPTER VI.....	108
Let’s Walk on the Wild Side! Comparing Sites in the Landscape <i>João C. Muralha Cardoso</i>	
CHAPTER VII.....	129
Nothing Compares to You.... Comparison of Small Scale Sites <i>Andrew May</i>	

CHAPTER VIII	138
Comparison as an Approach to Study Decontextualized Artefacts: A Perspective about its Potentialities and Limits <i>Andreia Arezes</i>	
CHAPTER IX.....	157
Comparative Perspectives on the Cultural Perception and Mediation of Risk and the Collapse of Complex Societies <i>John Walden</i>	
CHAPTER X	179
Comparison <i>Vítor Oliveira Jorge</i>	
AFTERWORD.....	191
Comparing Comparisons <i>Julian Thomas</i>	
CONTRIBUTORS	206

PREFACE

This book is about comparison and comparative exercises within archaeology. Archaeology compares objects, features, sites, landscapes, general plans and drawings, and processes or concepts, in order to interpret the material of the past. To question comparison is to question the complex and perhaps paradoxical relationship between the singularity of all archaeological material and the possibility of it being similar to something that allows comparison. How can we deal with the differences of what seems to be similar? Although comparative exercises are used or applied implicitly in a large number of archaeological publications, they are often uncritically taken for granted. This book intends to think about the limits and potentialities of the comparative exercise itself.

To re-think comparison is also to question the production of knowledge in archaeology. How can an archaeological object be defined? Is it a static material or an emergent form? How can we compare the processes of formation instead of finished forms? To question comparison in archaeology is also to think about the nature of the archaeological record itself, and the archaeological interpretative practice. How can we compare fragmentary contexts or fragments of material relationships? Or study an archaeological site with no immediate relationship to others? How are we to approach an object without context? Do studies of comparison exclude contextual approaches? And how does archaeology deal with time? Are the units in comparison contemporaneous? How can we work with other dimensions of time, like memory, when comparing sites or objects? And what insights can the comparison between present and past material contexts bring to the discipline? These and other questions will be discussed throughout the book, and new approaches and methodologies will be addressed. Some papers will propose new ways of looking at this, new correspondences and new ways of creating relationships between materials and images. Also, new methodologies to improve our analyses and comparisons are proposed.

This book started as a session held at the Theoretical Archaeology Group (TAG) in Manchester (December 2014), the theme of which provided the title for this book. We would like to thank the authors, who although doing their research in different parts of the world, spent time to

contribute in such a generous and professional way to this book. We specially want to thank Julian Thomas for taking on the role of discussant and for his final comments; we would also express our deepest gratitude for all his support to this project. In addition thanks must also go to Ian Parker Heath, Julia Roberts and Andrew May for editing some of the chapters here presented. Finally deepest thanks go to Cambridge Scholars Publishing for their assistant and patient collaboration.

Ana Vale, Joana Alves-Ferreira & Irene Garcia Rovira

CHAPTER I

COMPARISON AS A WAY TO TRAVEL IN-BETWEEN THE DIS-ARTICULATIONS OF THE PAST

SÉRGIO GOMES

Introduction

Fragments and links

Archaeologists focus their study on material evidence. Archaeological inquiries allow the turning of material evidence into traces of the past, i.e., into material entities in which we can recognize a set of temporalities dealing with past human practices. Each trace invokes the temporalities in which it became part of a past world; came to be hidden, forgotten or preserved between worlds; and, at last, gets re-enacted within the archaeologist's worldly experience. In exploring such temporalities, archaeologists create different frames for the evidence and explore how they work in the construction of knowledge about the past. The frames act as a junction of meaningful relationships which, once linked to the evidence, assist in constructing its intelligibility.

In this process of framing the evidence we also discover that it holds a “fragmented meaning”, in the sense that, no matter how many formulations we try, there is an incompleteness asking for new frames. In fact, by constructing the intelligibility of a past trace we also find its incompleteness for tracking the past. An incompleteness which, in the words of Laurent Olivier (2011: 186), makes us

“realize that history, understood as a process that generates meaning from vestiges of the past, is not based on the reconstruction of a series of events or of archaeological facts over time. History is memory creation. What is to be deciphered is located between the fragments.” (OLIVIER 2011: 186).

The discovery of such incompleteness is the matter of archaeology itself. The experience of this incompleteness is translated into a redrawing of questions and methods toward the establishment of new articulations between the fragments from the past and expands the possibilities to create their memory. Through these articulations, in which we try to decipher the space between the fragments, we play with frames and evidence to produce some sort of “archipelagos of fragmented meanings”, whose shape is a contingent answer to incompleteness. Within the strategies required to produce these shapes, we may find comparison as a tool to explore the articulations between fragments. Comparison is a way to put things side by side, to look for the fissures within the “fragmented meaning” of evidences, to assess how they relate to each other and imagine ways to travel in between the dis-articulations.

Dis-articulations and Comparison

In the last paragraph, I used the term “dis-articulation” in order to describe the sort of relationships we create by doing archaeology. I used this term because I want to argue that archaeology is a practice created from the experience of the articulability of entities. For example, by studying the stratigraphy of a site we try to systematize the stratigraphic relationships between evidence in order to produce a unified view, which we might shape as a linear sequence or as a rhizomatic structure, depending on the kind of articulations we create. In the same way, we may develop different articulations while studying a site’s artifact collection: we may study pottery in order to create a typology that will open the possibility of comparing the collection we are studying with the collections from other sites; or we may study the pottery and lithics in order to recognize patterns of association within different kind of materials and assay its articulation with a specific kind of structure. Archaeology is then a practice of imagining possible articulations between material evidences and discussing how those articulations can be used in the process of knowing the past. The experiencing of the articulability of evidence makes us cross different scales of analysis and, in so doing, we are opening up the possibilities of understanding how those traces circulated under the dynamics of “past worlds”. I will return to this question by presenting how the sociologist Hugo Zemelman discusses articulability as a method to analyze, engage and transform the evidence we are studying and I will consider the role of comparison in this dynamic.

At the core of the practice of imagining possible articulations between material evidence there is a constant use of comparison as a way to critically

address our imagination, not to block it, but to ask about its purpose. Thus, the use of comparison may become a reflexive practice of exploring the meaning of the relationships between evidence. Through comparison we become aware of the similarities and differences of the evidence we are studying. In crossing those similarities and differences we circumscribe “points of comparison”, we create the points through which those individual elements of evidence become a unit of study. For example, let us imagine different individual pieces of evidence: a pot, a flint arrowhead and a bronze sword. Through comparison and technological analysis, we may say that they are made from different raw materials, giving emphasis to their difference. Imagine that each one came from different fills of the same pit, in this case comparison and stratigraphic analysis may also emphasize the differences regarding their deposition. In each case, even if comparison keeps the pot, the arrowhead and the sword as “different entities”, it makes us aware of their singularity regarding “points of comparison”: the raw material, in the first case; and stratigraphic position, in the second case. However, the same “points of comparison” may allow us to discover similarities: technological analysis may inform us that the raw materials used in their production all come from the same region; and stratigraphic analysis highlights that they all come from the same pit. So, in this case, comparison informs us that we have “different entities sharing similarities” which allow us to define a “new entity”. This “new entity”, or the way evidence is articulated within it, allows us to circumscribe new objects of study: the pit and the region or the architecture and the landscape. In both cases, comparison acts as a way to transform the articulations between entities into objects of study, whose circumscriptions entail the redefinition of the starting inquiry by allowing new questions and points of view of the entities we are studying. I will discuss the role of comparison and articulation in the archaeological process by focusing on two topics: the production of the archaeological record, after Gavin Lucas (2012); and the use of analogy on the counter-modern archaeology proposed by Julian Thomas (2004).

Articulability and the Practice of Comparison

The epistemological thought of Hugo Zeman (2011; 2012a; 2012b) tries to pick up the historical and political from the process of knowing, showing how it creates the reality we are living in and how it allows us to work on its limits and possibilities. Thus, his work is about the production of knowledge as a political project, once we no longer produce knowledge to accumulate it but to transform the world in which we are living

(Andrade & Bedacarratx 2013: 31). By taking reality as a construction within which we participate, Zemelman (2012a: 9-10) highlights the difference between fact and event: facts are limited to empirical aspects; events transcend the contingency of a given situation, offering the possibility of transforming the reality of facts. So, his purpose is to create an epistemological position towards the apprehension and projection of reality; in this case, the challenge of the process of knowing is no longer an objectivist construction with a practical application, but a praxis (Ibid.: 12). In order to do so, Zemelman takes a particular reality (a fragment) as a part of an historical horizon (the totality), whose apprehension, rather than being something that could be refitted on such an horizon, is a matter of experiencing the fragment as a unity which is liable to be converted into a field of possible objects of study (Ibid.:13). This movement - transforming the reality into objects of study - sets up the possibility to look at the empiric (the facts) as the raw material of a project and, therefore, as the material for the creation of events which will transform reality (Ibid.: 13-14).

The process of apprehending reality is not like a puzzle, reality cannot be reconstructed piece by piece. Instead, apprehension is about being conscious of the way we engage with reality, with our limits and finitude, and how we can disrupt such engagement in order to recognize it and transform our conditions to act. Apprehension is about the work on the dis-articulation with reality in order to look for a project about the potential of facts. In this sense, the work on the articulability of particular realities is a methodology which, as Zemelman (2003: 445) writes:

“[...] rests on the possibility to create an horizon of meaning full of alternative options. Such a horizon emerges from the fragments and from the particular, being constructed through the necessary links. In terms of methodology, articulability is a way to study the identity of a phenomenon by including it in a broader articulation, transgressing the limits of its starting situation. This will be so on the condition that any phenomenon is part of an articulation, historically constituted, which means that we must consider what is not immediately connected with the phenomenon as a part of its definition. This is a way to address the indeterminate as something that exceeds the limits of a defined situation.” (ZEMELMAN 2003: 445)¹.

¹ Author's translation. Zemelman's text was published in Portuguese: “A articulabilidade assenta na possibilidade de, a partir do fragmentário e do particular, com base em relações necessárias, dar forma a um horizonte rico em alternativas de construção pelos sujeitos. Poderia defender-se, no plano metodológico, que a

The study of a phenomenon's articulability, rather than producing a knowledge based on facts, allows us to grasp the conditions within which it became part of reality, how it changed reality. By being aware of this conditionality, rather than as a sequence of facts, we may find its potential is as an event that might change reality. Articulability may turn facts into events: by analyzing what is not only and directly connected to a phenomenon, but all those elements which share the same historical horizon, can suggest another way of thinking about the phenomenon. An engagement that may disclose the process within which the phenomenon become a set of frozen facts and, at the same time, may open up the possibilities to re-shape it into a more inclusive phenomenon.

Zemelman (2012a: 197-216) suggests the use of "ordering concepts" to define the frame of observation of a phenomenon. These concepts may come from different disciplines or theories where their use entails an explanation dimension that closes the study. However, Zemelman's use is different. He does not close the study with an explanation, rather, the use of different "ordering concepts" is intended to make different orders emerge within the same phenomenon and to explore points of articulation between the orders. Through these points we might re-order the order offered by each "ordering concept", turning the phenomena into a new framework within which we might create new theorizable objects and, thus, new disciplinary objects. The suitability of a group of "ordering concepts" to the study of a phenomenon is measured by its capacity to create multiple points of articulation, allowing the re-shaping of its starting circumscription into a more inclusive and comprehensive frame of observation.

We may use different and contradictory "ordering concepts" at the same time while bounding a phenomenon. This *free employing* of "ordering concepts", by allowing multiples ways of framing the object of study, helps the construction of a reflexive bond between the subject and study object. The use of "ordering concepts" aims to mediate the relationship of subject-object study and convert it into a form of action to

articulabilidade define um modo de construir a identidade de um fenómeno através da sua inclusão numa articulação mais ampla, transgredindo os limites da situação inicial. Isto será assim com a condição de partirmos do pressuposto de que qualquer fenómeno faz parte de uma articulação, constituída historicamente, o que significa que qualquer fenómeno obriga a considerar como parte da sua determinação o que, porém, lhe é alheio. Esta é uma forma de abordar o indeterminado como o que excede os limites de uma situação definida."

encompass the complexity of reality and to challenge the limits of the historical horizon. It allows us to take such complexity and challenge as the raw material to define a frame of questions, points of articulation and objects of study. Moreover, it is through this mediation that the relationship between the object and its project study is remade, so this method is not a question of application but a challenge about how to engage with an object; how to create a relationship subject-object-project that does not attempt an appropriation of facts (and the causality between it) but a dialogue towards the exploration of this encounter as a way to act upon reality (Zemelman 2012b: 123-163). This is a way to discover the potential of the object, to understand the reality of the subject and to discuss the futurity of the project.

By looking at the dynamics of the production of knowledge proposed by Zemelman and thinking about the way we use comparison in archaeological practice, we may understand comparison as an “ordering concept”. Comparison does not entail a specific theory or a disciplinary framework, it is much more a strategy that may be used in order to develop a certain theoretical explanation or disciplinary point of view. Comparison is a practice of apprehension with which we play on the relationship subject-object-project by looking for a way to grasp the points of articulation whose research might produce a new understanding of the evidences. However, this does not mean that comparison is a neutral strategy of approach. On the contrary, it entails our worldly experience, including our disciplinary training, and how this experience sets the conditions in which we encounter and develop our studies of the object. The orders and the points of articulation we create with comparison bring together the prejudices and the expectations created by our worldly experience (Gadamer 1975). Such understanding allows us to critically experience the historicity and potential of our encounter with past materials, it make us be aware of how such an encounter was produced and the possible ways it may be developed. To summarize, comparison as an “ordering concept” is about detaching the material evidence from its frozen facticity and exploring comparison as the results and conditions of events. In this sense, comparison is about the possibility to re-create our apprehension of the horizon of meaning within which our encounter with the material evidences was made possible. Through comparison, we may work on the dynamics of the dialogues we create on such an encounter by exploring the articulability of the evidences towards the projection of articulations that might challenge the, sometimes, unbearable and torpid experience of the incompleteness of the fragments from the past.

Comparison and the Production of the Archaeological Record

We may use articulability as a way to understand our practice as archaeologists: a way to look at how the different tasks we perform and the skills we develop are related, to make their genealogy, to discuss the prejudices and possibilities entailed in their use and to acknowledge the challenges that might transform the conditions in which we do archaeology. Gavin Lucas' (2001; 2012) work addresses this understanding by looking for the articulations between concepts coming from archaeological methodology and theory and how such articulations may reshape archaeological practice. In this section, I aim to discuss how comparison acts through these articulations in the production of the archaeological record.

Lucas (2012) presents the archaeological record “as materiality, as process and as an intervention” (Ibid.: 257). It is the result of a materializing practice that puts together a set of requests made by the intervenients that take part in the process of doing archaeology. By understanding archaeological practice this way, he states that:

“We do not invent or create our data; it is not a fiction of our minds or a social construction. However, neither is it just given. It is produced through the material interaction of an assemblage of bodies and/or objects which are mobilized by our interventions in or on the ground.” (Ibid.: 231).

In this sense, we may imagine doing archaeology as a game of configured forces. The articulation of those configured forces allow the emergence of fragments from the past which become another configured force on the game, allowing new articulations in which other participants will emerge, and so on. In this dynamic, Lucas recognizes the articulation of two material processes: disaggregation and assembly (Ibid. 234). In both cases, the process is about making boundaries based upon the reality in investigation and through these boundaries producing meaningful material-graphies about the past.

The boundaries we create during disaggregation and assembly have different, but articulated, purposes. Disaggregation is about the decomposition of unity, so the boundaries of the sub-unities coming from this process record the place and the relationships they had while working as a unity; in this way, disaggregation not only allows the separated study of sub-unities it also ensures its analysis as part of a major unity. Lucas presents the excavation as a process of continuous disaggregation made

through “acts of circumscription and separation” (Ibid.: 237) within which the archaeological record (the data) is produced. Assembly is about the composition of new-unities, so the boundaries coming from this process have the purpose of explaining the operation behind the aggregation of independent unities and, at the same time, explain the order of the archive that is being produced during this procedure. For example, by combining in the same box the bags of sherds coming from different deposits of the same pit but, at the same time, setting them apart from the lithics coming from the same context, we are creating a unity whose aggregation is related to an hierarchy of factors, at the top of which are aspects related to the preservation of the sherds. In this sense, assembly is also made through “acts of circumscription and separation”, but in the process of disaggregation those acts create boundaries invoking the configurations of something ciphered by a set of processes that we aim to understand, while in the case of assembly these same acts create a set of unities – or “archive” – that we use in order to create the conditions to decipher the previous configurations.

The archaeological process is made through “acts of circumscription and separation” and the archive resulting from those acts, this means that with “acts of circumscription and separation” and the archive we continually shape and re-shape the archaeological record. These actions and its archive are a way to work on the articulability of evidence, in the sense that they are made by the definition of articulations. The archaeological record is then a matter of reifying the order of materialities. In this process it must be highlighted that the role of comparison, as an “ordering concept”, allows:

- a) To manage the de-composition entailed by the act of digging, allowing the “solid unity” to be split into a set of articulated sub-unities (stratigraphic unities, artifacts, samples and the like);
- b) To track the entities that compose the archaeological record of a site and cross their orders to create articulations that were not seen during the excavation;
- c) To include the analysis of data coming from different sites; the operability of this inter-site analysis rests on the points of articulation we might create in the process of comparing the archives of the different sites;
- d) To look for the articulation between the archaeological entities and entities coming from processes outside archaeology to create a more inclusive perception of archaeological data.

Comparison opens up the field of observation of the evidence we are studying, multiplying the ways in which we may engage with the “archaeological economy”: the products resulting from the archaeological interventions and the way they circulate (Lucas 2012: 231). We may say that through comparison we grasp associations between evidence that was not initially clear and create a dialogue with evidence that was not in the archaeological process. So, comparison is about expanding the boundaries of the archaeological process, the re-creation of the products resulting from it, and the re-designing of the circulation of archaeological entities. Comparison activates the articulability of the evidences we study and, by doing this, it expands the articulations we may create with evidences and, thus, form a continuous re-shaping of the archaeological record/process/materiality and the growth of the “archaeological economy”.

Comparison and Ethnographic Analogy

In the last section I referred to how the practice of comparison can call unfamiliar entities into the archaeological record and make them a part of the process of doing archaeology. The use of ethnographic analogy is an example of how comparison allows us to create a dialogue between different disciplines and different empirical data, bringing new entities to the investigation of past material evidence. In this section I will focus on how Julian Thomas (2004) suggests the use of ethnographic analogy in the process of understanding the difference of the past (Ibid.: 238-241), and how comparison, as an “ordering concept”, may act on the production of articulations that might help us to apprehend it.

The work of Thomas on archaeology and modernity discusses the paradox under which we develop our study of the past:

“archaeology has been made possible by modernity, yet that it is our position in the modern world that makes it difficult for us to comprehend the distant past.” (Ibid.: 241).

Archaeology as a science of cultural difference is a matter of how we can recognize, through past materials, the difference of the Past. In this sense, when Thomas discusses the way we use ethnographic analogy in the production of knowledge of the past, he points out that we are creating a relationship between three participants (Ibid.: 241):

- the first one, the Past, is a temporal unity, which we make present by the archaeological record;

- the second is an ethnographic entity, a spatial unity, that is offered by another discipline;
- and finally, the third is the archaeologist itself, an historical, finite and disciplinary agent facing two different realities whose dialogue may allow a better comprehension of the distant past.

By placing the archaeologist as the third element of the process of doing analogy, Thomas is taking into the process a reflexion that is needed in order to explore all the potentiality of analogy. This reflexion looks towards the order within studies of archaeological and ethnographic evidence, allowing us to see under which articulations that evidence was made and compared. This reflexion is about the nature of the data we are studying and how it allows us to critically relate it to data coming from other disciplines in order to make the difference of the Past emerge.

In explaining the potential of ethnographic analogy, Thomas writes:

“[The] most important role of ethnographic analogy lies not in filling in the gaps in our knowledge of prehistoric societies but in troubling and disrupting what we think we already know. This kind of analogical argument is not aimed at establishing a testable hypothesis about what the past was like. Instead, it takes a measure of presumed similarity between two contexts as a starting point and asks: *what if* it was like this? In other words, it sets up a kind of analysis in which we work through the implications of an initial act of defamiliarisation.” (Thomas 2004: 241, original emphasis).

The purpose of analogy is not to build bridges to the past, but to be more aware of the gaps and to use it as a way to assess similarities that can be found in ethnographic parallels. The recognition of affinities between contexts produced by archaeology and ethnography is not an end, but a starting point to ask about its singularities. A singularity experienced by the encounter between the world that produced it and the world that enables archaeology and ethnography to study cultural difference. In this reflexion of how modernity allows thinking about difference, we play with the main purpose of Zemelman’s articulability: thinking the same phenomenon in different ways. It is at the crossroads of different ways to think about evidences that we may find the “defamiliarisation” needed to expand what can be said by a similarity. It is this “defamiliarisation” that we expand to think differently about the Other we call Past and, in doing that, experience its difference.

We may take “defamiliarisation” of similarities as an act towards extending the limits in which we may think about the past through its material traces. This is on the condition that we take difference not as a substance, which can be identified and ordered amongst other substances, but as an articulation. The shape of an articulation is made by the crossing of different orders, so by studying the way those orders became articulated we may apprehend the conditions we need to change and the diversification of the mediums we might use in dialogue with the past. Comparison, as an ordered concept, has a role to play in the use of ethnographic analogy, in the sense that it allows us to create parallels between archaeological and ethnographic data, to look for its dissemblance and convergence, seek points of articulation, recreate fields of observation and objects of study. Ethnographic analogy produces similarities, or facts limited to its empiricity (Zemelman 2012a: 9) that need to be unfolded in order become events and transcend its contingency (Ibid.). Comparison, as an “ordering concept”, is a way to unfold the orders of the empirical, is a way to disarticulate the similarity that allowed the creation of the ethnographic parallel and to work on its “defamiliarisation”.

Final Note

At the beginning of this text I wrote that in doing archaeology we produce “archipelagos of fragmented meanings”, whose shape are the answers we give facing the incompleteness of the fragments from the past. We study these fragments in order to trace their temporality, re-creating the ways their memory can be experienced (Olivier 2011). This is a process of creating the conditions to dialogue with the Past, aiming to understand its difference (Thomas 2004). A process developed through materialising practices producing the materials to shape such dialogue (Lucas 2001; 2012). I tried to apprehend this dynamic through its articulability (Zemelman 2003; 2012a; 2012b and 2011) aiming to discuss the role of comparison. I argued that comparison may be understood as an “ordering concept” (after Zemelman (2012a: 197-216). A contingent, precarious and expectant way to explore the articulability of archaeological entities in order to re-create the ways we can think through them. In this sense, comparison becomes a way to travel in between the disarticulations of “archipelagos of fragmented meanings”. A journey where the incompleteness of the fragments and the elusive difference of the past haunt us with material whispers yet to dis-articulated.

Acknowledgments

I would like to thank the Foundation for Science and Technology (FCT - Portugal) for funding my research and the Centro de Estudos em Arqueologia, Artes e Ciências do Património (CEAACP) for all the support. I would like to thank Ana Vale, Irene Garcia and Joana Alves-Ferreira for the comments on previous versions of this text and Julia Roberts for editing it.

Bibliography

- ANDRADE, L. and BEDACARRATX, V. “La construcción del objeto de estudio en la obra de Hugo Zemelman: apuntes introductorios.” *Folios: revista de la Facultad de Humanidades* 38 (2013): 15-34.
- GADAMER, H. G. *Truth and Method*. London: Sheed and Ward, 1975.
- LUCAS, G. *Critical Approaches to Fieldwork Contemporary and Historical Archaeological Practice*. London: Routledge, 2001.
- . *Understanding the archaeological record*. New York: Cambridge University Press, 2012.
- OLIVIER, L. *The dark abyss of time. Archaeology and Memory*. New York: Altamira Press, 2012.
- THOMAS, J. *Archaeology and Modernity*. London: Routledge, 2004.
- ZEMELMAN, H., “Sujeito e Sentido: considerações sobre a vinculação do sujeito ao conhecimento que constrói”, in *Conhecimento Prudente para uma Vida Decente*. “Um discurso sobre as Ciências” revisitado, (org.) Boaventura de Sousa Santos, (Porto: Edições Afrontamento, 2003): 435-446.
- . *Los horizontes de la razón III. El orden del movimiento*. Anthropos Editorial: Barcelona, 2011.
- . *Los horizontes de la razón I. Dialéctica y apropiación del presente*. Anthropos Editorial: Barcelona, 2012a [1992].
- . *Los horizontes de la razón II. Historia y necesidad de utopía*. Anthropos Editorial: Barcelona, 2012b [2003].

CHAPTER II

THE ART OF “ENDANGERING” BODIES: A FIRST MOVEMENT ON *HOW TO READ WHAT WAS NEVER WRITTEN*

JOANA ALVES-FERREIRA

The “Principle of Montage”

“*Comparison* of other people’s attempts to the undertaking of a sea voyage in which the ships are drawn off course by the magnetic North Pole. Discover *this* North Pole. What for others are deviations are, for me, the data which determine my course. – On the differentials of time (which, for others, disturb the main line of inquiry), I base my reckoning.”

[N1, 2]

*This work has to develop to the highest degree **the art of** citing without quotation marks. Its theory is intimately related to that of **montage**.*”

[N1, 10]

Walter Benjamin ([1982] 1999: 456; 458; emphasis added)

“Through its images the *Mnemosyne Atlas* intends to illustrate this process, which one could define as the attempt to absorb pre-coined expressive values by means of **the representation of life in motion**.”

Aby Warburg ([c. 1926-9] 1999: 277; emphasis added)

This is an uncanny beginning. It begins with the *ghost story* of a never ended Atlas and with a book that was never written. This is a beginning as from the still *nameless* experience; from a still *nameless* writing. This beginning is a *ghost story for truly adult people*¹. It is the story of how to gather and to collect history’s artefacts at the level of its concealed traces of daily life, at the level of its *refuse*, taking form in its *ghosts*.

¹ This enigmatic expression was once used by Aby Warburg to define his *BilderAtlas Mnemosyne*, quoted in AGAMBEN [1983] 1999: 95.

The Image and the *Readability* of History, after Walter Benjamin and Aby Warburg

From Aby Warburg's *Mnemosyne Atlas* and Walter Benjamin's *Passagen-Werk*, there is a whole analogous and concrete space to be unfolded. Since both constitute tangible and similar spaces of confrontation, configure themselves through the tensions found between monuments and documents, mapping and animating anew the tension lines between image and text. Between Warburg's immensity and Benjamin's epic patchwork, there is a constellation of infinitesimal worlds in miniature. So that such small worlds configure the experience of a whole *cartography of strangeness* (Foucault [1967] 1984).

Atlas, as in the mythological metaphor of the Titan who carried the weight of the world on his back, gave its name to a visual form of knowledge. We all know what an Atlas is. We have all surely consulted one at least once. But have we ever 'read' one? An Atlas is a device where a whole multiplicity of things is gathered through *elective affinities*, following Goethe's own expression. It is hard to imagine anyone reading an Atlas in a sequential order as if reading a novel or a scientific paper. Page by page, from the beginning to end. Experience shows something else, argues Didi-Huberman ([2011] 2013): that we often use the atlas in two articulated ways. We begin by searching for some concrete information but, once attained, it is easy to let ourselves wander its many paths and possible directions². In this sense, it may be said that the experience of the Atlas is an *erratic* one. The Atlas performs a sort of game – one about which Benjamin had already written³ – in which the scattered pieces of the world are gathered, as a child or a ragpicker would do. Thus, by entailing such a double gesture and, especially in its condition as a visual form of knowledge – which implies, on the one hand, an *aesthetic paradigm of the visual form*, and on the other, an *epistemic paradigm of knowledge* – the Atlas *bring together things outside of normal classifications* and, undermining de facto the paradigm's canonical forms

² See DIDI - HUBERMAN [2011] 2013: 11-21.

³ In this context, we are thinking specifically of some Benjamin's writings such as: "Toys and Play" and "Old Toys" [1928], "Excavation and Memory" [1932], "The Storyteller" [1936], "On some motifs on Baudelaire" [1939], "Charles Baudelaire: a Lyric Poet in the Era of High Capitalism" [c. 1937] and, finally, "The Arcades Project"[1927- 940].

and even its conditions of existence, draws from those affinities a new kind of knowledge (Ibid.:11).

There is an image that appears to perfectly suit the Atlas, it is Benjamin’s image of the “reading case” [*Lesenkasten*], as the mediating link for a new kind of writing and of reading, where *the coherence of words or sentences*, and even of images, *is the bearer through which, like a flash, similarity appears* (Benjamin [1933] 2015b: 56-59)⁴. From this, the Atlas appears as an incessant work of re-composing the world, as a resource for observing history, for undertaking its archaeology. Just as in the image of the *board* or of the *tableau* (cf. Foucault [1966] 2005: 41-71), it is meant to *reconfigure space*, to *redistribute it* or, following Didi-Huberman’s impressions, *to dismantle it where we thought it was continuous; to reunite it where we thought there were boundaries* (Didi-Huberman [2011] 2013: 43-62)⁵. Indeed, *to read what was never written*. On the *tableau* is the frame for those small segments of possible worlds in miniature, for its multiplicity and heterogeneity and, finally, the possibility for the readability of its underlying relations. Ultimately, on the *tableau* images *take position* so that, therein, we can discover new analogies, new images of thought. In short, new constellations to come.

“The problem that must be immediately posed to Warburg’s thought is a genuinely philosophical one: the status of the image and, in particular, *the relation between image and speech, imagination and rule* [...]”

Giorgio Agamben [1983] 1999: 102 (emphasis added).

Aby Warburg began the last major project of his life in 1924, immediately after his three-year stay in the Kreuzlingen psychiatric clinic where he recovered from a psychotic breakdown following the events of World War I. Left unfinished at the time of his death in 1929, the *Bilderatlas Mnemosyne* was then, and still is, an essential source for critical knowledge. The *Atlas* consists of sixty-three panels (wooden boards, each of 150 x 200 cm and covered with black cloth), on which Warburg, using metal clasps, added and removed, arranged and rearranged, black and white photographic reproductions of art-historical or cosmographical images, maps, reproductions of manuscript pages along with contemporary

⁴ See also, BENJAMIN [1933] 2015a: 50-55.

⁵ See also DIDI - HUBERMAN 2011b, *Atlas. How to carry the world on one’s back?* Exhibition catalogue, 25 November 2010 – 28 March 2011, Museo Nacional Centro de Arte Reina Sofía, Madrid (Spain), last accessed December 16th, 2015, http://www.museoreinasofia.es/sites/default/files/exposiciones/folleto/brochure1_atlas_en.pdf

images drawn from newspapers and magazines⁶. Warburg's method consisted, in the first instance, of a process of combinatory experiments where each panel was photographed, before another montage was imagined and designed. Each panel was then numbered and ordered most often after a thematic sequence⁷.

At the heart of Warburg's *Mnemosyne* lies a revolutionary and very particular action of historical writing, where Warburg's own formal approaches to the image are crucial for apprehending the horizon of his research concerning the understanding of visual imagery in the wake of Nietzsche's theory of tragedy and aesthetics. As Warburg himself writes in his "Introduction" [*Einleitung*] to the *Mnemosyne*,

"The conscious creation of distance between oneself and the external world can probably be designated as the founding act of human civilization. [...] *Those seeking to understand the critical stages of this process* have not yet made fullest use of the way recognition of the polarities of artistic production, of the formative oscillation between inward-looking fantasy and outward-looking rationality, can assist possible interpretations of documents of the formation of image. *Between imagination's act of grasping and the conceptual act of observing, there is tactile encounter with the object.*" (Warburg [c. 1926- 9] 1999: 276).⁸

⁶ For further information see JOHNSON 2012: 8-20.

⁷ There are evidences for three versions of the *Mnemosyne Atlas* that together comprise more than two thousand images. Warburg's last version contains 971 images (published in the 2000 edition of *Mnemosyne* as part of Warburg's *Gesammelte Schriften*) and the plan would be to complete at least seventy-nine and as many as two hundred panels (see JOHNSON 2012: 11-16); some of the images of the *Mnemosyne* panels, as well as explanations for its thematic sequences, are available at: <http://warburg.library.cornell.edu>.

⁸ "The conscious creation of distance between oneself and the external world can probably be designated as the founding act of human civilization. [...] The full force of the passionate and fearful religious personality, in the grip of the mystery of faith, intervenes in the formation of artistic style, just as, conversely, science, with its practice of recording, preserves and passes on the rhythmical structure whereby the monsters of imagination guide one's life and determine the future. *Those seeking to understand the critical stages of this process* have not yet made fullest use of the way recognition of the polarities of artistic production, of the formative oscillation between inward-looking fantasy and outward-looking rationality, can assist possible interpretations of documents in the formation of image. *Between imagination's act of grasping and the conceptual act of observing, there is tactile encounter with the object* [...], which we term the artistic act. [...] On the basis of its images it [*the Mnemosyne*] is intended to be the first of all

In the *Mnemosyne* Introduction, Warburg summarizes his ideas for a theory of social memory that takes shape through his pictorial experiences in which he intended to trace the migration of classical symbols across time and space, charting the changes in function and meaning they underwent in the process, that is, to make the semantic variability of the image visible and readable. Although *Mnemosyne* did not, in a straightforward manner, document the history of Renaissance art, it constitutes the imaginative experience that intends to make the process of historical change comprehensible by attempting to understand the tradition of images. As Agamben ([1983] 1999) notes, Warburg uses the image and iconography from the perspective of the “diagnosis of Western man through which he aims to configure a problem that is both historical and ethical”⁹. In this context, Warburg’s work must be understood in light of two main concepts, namely the concept of *Pathosformel* [pathos formula] – which designates an indissoluble intertwining of an emotional charge and an iconographic formula in which it is impossible to distinguish between form and content – and particularly the concept of *Nachleben* [the posthumous life] – which is the transmission, reception and survival of things, ideas, style and formulas as memory potentialities. *Mnemosyne* is then the body emerging from the joint articulation of these concepts as a working tool, which allows the observation at the core of gestures, of symptoms and of images (cf. Agamben 1983 [1999] and Didi-Huberman [2011] 2013). Just as the *good God*, in Warburg’s famous phrase, *hides in the details*, so the Atlas emerges as an *interrogation* device that, by arranging things from a set of made possible relations, intends to *recognize the world by making it problematic*. Consequently, Warburg saw the stylistic and formal solutions adopted over time “as ethical decisions of individuals and epochs regarding the inheritance of the past” (Agamben

inventory of pre-coined classical forms that impacted upon the stylistic development of the representation of life in motion in the age of Renaissance.” (WARBURG [c. 1926- 9] 1999: 276-278; emphasis added).

⁹ “In Warburg’s hands, iconography is never an end in itself (one can also say of him what Karl Kraus said of the artist, namely, that he was able to transform a solution into an enigma). Warburg’s use of iconography always transcends the mere identification of a subject and its sources; from the perspective of what he once defined as ‘a diagnosis of Western man’, he aims to configure a problem that is both historical and ethical [...]. The transfiguration of iconographic method in Warburg’s hands thus closely recalls Leo Spitzer’s transformation of lexicography method into ‘historical semantics’, in which the history of a word becomes both the history of a culture and the configuration of its specific vital problem.” (AGAMBEN [1983] 1999: 92).

[1983] 1999: 93)¹⁰. Such a perspective points towards a conception of the Atlas as a “body of confrontation” – *a very sensitive seismograph responding to distant earthquakes*. Warburg had already understood that the image is the crossing of numerous migrations, which he displayed at the same time and in the same surface, or plate, by *piecing together* the order of *things* and *places* simultaneously with the order of *time*. Through the work of montage, or the process of combined action between knowledge and images, Warburg aimed, indeed, to formulate the inherent *tensions* stored in the images as the invisible traces of their encounter with a particular epoch and its needs, by constantly *reacting* to the experience of its *transfiguration* (Ibid.: 94)¹¹. Ultimately, *Mnemosyne* is the body of experience that lies at the field of tension between imagination and the work of reason. This tension is, in the end, the “now” of the image. Therefore, in the montage of images, it is time that becomes visible.

Nowhere as elsewhere, *Mnemosyne* is the *zero point* of the world where paths and spaces come to meet, and from which, as in Foucault’s “Utopian Body”, *we dream and speak as we proceed and imagine, we perceive things in their place, and we negate them* (Foucault [1966] 2006: 233). And by making such a visibility into a power to see the times, *we imagine*.

¹⁰ “The theme of the ‘posthumous life’ of pagan culture that defines a main line of Warburg’s thought makes sense only within this broader horizon, in which the stylistic and formal solutions at times adopted by artists appear as ethical decisions of individuals and epochs regarding the inheritance of the past. Only from this perspective does the interpretation of a historical problem also show itself as a ‘diagnosis of Western man’ in his battle to overcome his own contradictions and to find his vital dwelling place between the old and the new. [...] From this perspective, from which culture is always seen as process of *Nachleben*, that is, transmission, reception, and polarization, it also becomes comprehensible why Warburg ultimately concentrated all his attention on the problem of symbols and their life in social memory.” (AGAMBEN [1983] 1999: 93).

¹¹ “Warburg often speaks of symbols as ‘dynamograms’ that are transmitted to artists in a state of great tension, but that are not polarized in their active or passive, positive or negative energetic charge; their polarization, which occurs through an encounter with a new epoch and its vital needs, can then bring about a complete transformation of meaning. [...] *For Warburg, the attitude of artists toward images inherited from tradition was therefore conceivable in terms neither of aesthetic choice nor of neutral reception; rather, for him it is a matter of a confrontation* [...]” (Ibid.: 94; emphasis added)

“The first stage in this undertaking will be to carry over the *principle of montage* into history. That is, to assemble large – scale constructions out of the smallest and most precisely cut components [...]. *To grasp the construction of history* as such. *In the structure of commentary*. Refuse of History.” [N2, 6]

Walter Benjamin ([1982] 1999: 461 (emphasis added).

To define Walter Benjamin’s unfinished and massive project known as the *Passagen-Werk*¹², we searched for an image that somehow could illuminate it. Immediately what came to mind was the *folded fan*, which Benjamin himself had imagined: its “extensiveness to contain its new and compressed fullness” and which, as depicted by Benjamin, “only in spreading draws breath and flourishes the beloved features within it” (Benjamin 1979: 15). This fragmented discourse covered nineteenth century industrial culture as it emerged in Paris, and more specifically the Paris Passages as the origin of modern commercial arcade¹³, which he linked with a number of phenomena characteristic of that century’s concerns. Undertaken over thirteen years (1927-1940), it unfolds a massive collection of research and conceptual notes, citations from a vast array of historical sources accompanied by Benjamin’s commentary, as well as two exposés (of 1935 and 1939) of the *Passagen* project (cf. Buck-Morss 1989: 8- 43).

To approach Benjamin’s *Passagen-Werk* resembles muddling through an often-labyrinthine cartography. Perhaps this is due to the fact that, in itself, the *Passagen-Werk* entitles a phenomenon embodied in an abundance of traces of a work in process. The collected vestiges, images, liaisons, curiosities and phantasmagorias thus constitute its documents, which in itself, however, do not comprise a totality (Ibid.: 48-52). Thereby, their coherence is intrinsically related to the rest of Benjamin’s work as well as to his own historical experiences. In this sense, considering Buck-Morss’s idea that “the whole elaborate structure of the *Passagen-Werk*

¹² First published in 1982 in Volume 5 of Walter Benjamin’s *Gesammelte Schriften* (Frankfurt / M., Suhrkamp Verlag).

¹³ As Susan Buck-Morss (1989: 39) mentions “the covered shopping arcades of the nineteenth century were Benjamin’s central image because they were the precise material replica of the internal consciousness, or rather, the unconscious of the dreaming collective. All of the errors of bourgeois consciousness could be found there (commodity fetishism, reification, the world as ‘inwardness’), as well as (in fashion, prostitution, gambling) all of its utopian dreams. Moreover, the arcades were the first international style of modern architecture, hence part of the lived experience of a worldwide, metropolitan generation.”

must be seen within the temporal axis that connects the nineteenth-century to Benjamin's present" (Ibid.: 215), and faced with Benjamin's accumulation, his discontinuous historical images in their multiple configurations as well as his fragmentary pieces of data superimposition, we should not intend to search for any chronological sequence but rather, from within Benjamin's overlay and the overlapping of material concerns over time, to perform a whole archaeological exercise in order to understand Benjamin's philosophical and historical design as an entirely new experience of writing, intrinsically and implicitly forged by an *erratic experience of exile* (cf. Didi-Huberman 2009)¹⁴. Somehow, the *Passagen-Werk* is a "double body": it is the graphic space of the nineteenth-century history, its world of industrial objects and modern commodities and allegories, and additionally exposes Benjamin's own body as the tenacious *collector* (Benjamin [1982] 1999)¹⁵.

It was during the 1930's that Benjamin initiated a fundamental change to the project, which, as he wrote, '*was now less a galvanization of the past than anticipatory of a more human future*'¹⁶. This change had involved a fundamental reorganization of Benjamin's research notes, culminating in the elaboration of a filing system wherein the early motifs became key-words under which all historical documentation would then be assembled. Each of these files – known as *Konvoluts*¹⁷ – set out the

¹⁴ "Ce mouvement est *approche* autant qu'*écart*: approche avec réserve, écart avec désir. Il suppose un contact, mais il le suppose interrompu, si ce n'est brisé, perdu, impossible jusqu'au bout." (DIDI-HUBERMAN 2009: 12)

¹⁵ "Perhaps the most deeply hidden motive of the person who collects can be described this way: he takes up the struggle against dispersion. Right from the start, the great collector is struck by the confusion, by the scatter, in which the things of the world are found. [...] The collector brings together what belongs together; by keeping in mind their *affinities* and their succession in time, he can eventually furnish information about his objects. *Nevertheless, in every collector hides an allegorist, and in every allegorist a collector.* As far as the collector is concerned, his collection is never complete; for let him discover just a single piece missing, and everything he's collected remains a *patchwork*, which is what things are for *allegory* from the beginning. On the other hand, the allegorist [...] *precisely the allegorist can never have enough of things* [H4a, 1]." (BENJAMIN ([1982] 1999: 211; emphasis added)

¹⁶ This statement can be found in a letter to Adorno of 18 March 1934 (quoted in BUCK-MORSS 1989: 49).

¹⁷ In total there are 36 *Konvoluts*, arranged through an alphabetic and numeric code (A1, 1; A1a, 1; A1, 2, etc.), each one entitled with a key word or phrase (A. *Arcades*; D. *Boredom, Eternal Recurrence*; H. *The Collector*; N. *Epistemology, Theory of Progress*; Q. *Panorama*; X. *Marx*; Z. *Doll, Automaton*). Subliminally

theatrical space for possible *worlds of secret affinities*, which, amongst themselves, make possible a play of relations at various scales¹⁸.

This philosophical play, whereby Benjamin engages with distances, transitions and intersections and through which he is constantly changing and juxtaposing the contexts, had developed under the *principle of montage*, a complex device particularly noticeable in Benjamin’s later works¹⁹, such as *One-Way Street* ([1925-1926] 2004) or *On the Concept of History* ([1940] 2006a). By putting into play the method of montage, Benjamin is, in fact, creating a whole new method of representation by imposing a critical examination of the object. This method consists in the working of quotations, commentary, reading and research notes into the framework of a *minimal micrology* that, by entailing the questioning *about that which is not in the sunlight*²⁰, causes different temporalities to reverberate which, in turn, are to be unfolded through a discontinuous presentation deliberately opposed to the traditional modes of argument. Hence, in Benjamin’s method, the principle of montage points towards a reflection on those not always visible traces of that problematic and opaque constellation which is history and its movements (cf. Benjamin

implicit in their conception are three key concepts – ‘myth’, ‘nature’ and ‘history’ – intertwined with some key words such as fossil, fetish, archaic and new, wish image or ruin. Still in this regard, we would like to highlight the *Konvolut N*, where Benjamin sets out his critique of progress by outlining a counter-discourse that exposes progress as the fetishization of modern temporality, which becomes fundamental in order to understand the substance for Benjamin’s method. Cf. BENJAMIN ([1982] 1999: 456-488 and BUCK-MORSS 1989: 58-201.

¹⁸ For further information, see BUCK-MORSS 1989: 50-57 and TIEDEMANN [1988] 1999: 930-931.

¹⁹ “Outline the story of *The Arcades Project* in terms of its development. Its properly problematic component: the refusal to renounce anything that would demonstrate the materialist presentation of history as imagistic [*bildhaft*] in a higher sense than in the traditional presentation. [*N3, 3*].” (BENJAMIN ([1982] 1999: 463). In other words, and as Susan Buck-Morss underlines, “Benjamin was at least convinced of one thing: what was needed was a visual, not linear logic: the concepts were to be imagistically constructed, according to the cognitive principles of montage. *Nineteen-century objects were to be made visible as the origin of the present, at the same time that every assumption of progress was to be scrupulously rejected.*” (BUCK-MORSS 1989: 218; emphasis added).

²⁰ “[...] e o método é o mesmo: o de uma micrologia minimalista que arranca à opacidade do in-significante os sentidos mais secretos dos grandes movimentos da História e dos abismos da linguagem.” (BARRENTO 2005: 43).

[1982] 1999)²¹. Through the experimental method of montage, Benjamin aims to unfold *a world of particular secret affinities*, a world in which things *enter into the most contradictory communication* and in which, once released from the fixations and encrustations of any classical historical narrative, could display *indeterminate affinities*²².

Thus, at the heart of the *principle of montage*, lies what Benjamin defined by *pathos of nearness* (Ibid.: 846) when he wrote that “the true method of making things present is to represent them in our space and not represent ourselves in their space”²³. By wanting to “bring things near” and to “allow them to step into our life” Benjamin was, indeed, aiming at presenting *what relates to us* and *what conditions us* – that *set of noises that invades our dream*²⁴. In this way, the past objects and events would not be fixed data unchangeably given but, rather, that which ‘*is being no more*’²⁵. As such, by bringing things near to us spatially and by making use of them, the implications of the work of montage are those of the historian’s own particular time and space, that is, ‘*what is being*’ and ‘*what is to be*’, i.e., legibility as the critical point of readability at a particular time. In Benjamin’s own terms, it is the *awakening* of history, of its empathic and continuous reconstructions, in the form of *commentary* on a reality that *is being* and which, as in the image of the field notebook, can only happen through the work of constant *actualization*²⁶.

²¹ “Good formulation by Bloch apropos of *The Arcades Project*: history displays its Scotland Yard badge. That was in the context of a conversation in which I was describing how this work – comparable to the method of atomic fission, which deliberates the enormous energies bound up within the atom – is supposed to liberate the enormous energies of history that are slumbering in the ‘once upon a time’ of classical historical narrative. The history that was bent to showing things ‘as they really and truly were’ was the strongest narcotic of the nineteenth century [*O°*, 71].” (BENJAMIN ([1982] 1999: 863).

²² Ibid.: 827 [*A°*, 4 and *A°*, 5].

²³ Ibid.: 846 [*I°*, 2].

²⁴ Ibid.: 831 [*C°*, 5].

²⁵ Ibid.: 833 [*D°*, 4].

²⁶ Ibid.: 460 [*N2*, 2]; 462-463 [*N3*, 1]; 470 [*N7*, 6 and *N7*, 7]; 475 [*N10*, 3] and 476 [*N11*, 3].