TITLE

The Foundations of Maya Ceramics Classification:
History, method and theory of the Type-Variety:Mode System

AUTHOR

Christian Thomas Egerer

Dissertation submitted in partial fulfilment of
the requirements for the degree of MA in Archaeology
of University College London in 2012

UCL INSTITUTE OF ARCHAEOLOGY

UCL INSTITUTE OF ARCHAEOLOGY

MA/MSc DISSERTATION SUBMISSION FORM

THIS FORM MUST BE SUBMITTED WITH YOUR DISSERTATION

STUDENT'S NAME Christian Thomas Egerer

EXACT TITLE OF DISSERTATION (in full)

The Foundations of Maya Ceramics Classification: History, method and theory of the Type-Variety:Mode System

NAME OF SUPERVISOR Prof. Elizabeth Graham

DEGREE TITLE Master

WORD-COUNT 15733

I certify that the work submitted for the above Dissertation is my own and that any quotation from the published or unpublished work of other persons has been duly acknowledged.

I consent to my dissertation being made available for consultation by future Master's students. (Please delete if you do not consent.)

SIGNATURE ______________________

DATE 17.09.2012

ABSTRACT

Classifications are a vital part of ceramic studies and those in turn are an important part of the discipline of archaeology. The dominant classification for Maya ceramic studies is the Type-Variety:Mode system. The roots of this system and other modern classifications and typologies reach far back into the 16th century to the dawn of modern science. Long before the inception of archaeology as a discipline, different events, such as development of essential concepts, have shaped the nature and character of modern classifications. Therefore the history of ideas behind modern classifications needs to be investigated and understood for better clarity of the utility of the system(s) in use. This methodological investigation into the roots and foundations of the Type-Variety:Mode system will enable ceramicists to better understand how classifications in general and Type-Variety:Mode specifically have developed, how they function and what they were created for. As the result a ceramicist will know his or her most vital tool better, thus empowering him or her to make better use of it in the future.

TABLE OF CONTENT

LIST OF ILLUSTRATIONS

PREFACE

Immersing oneself into the matter of methodology of ceramic classifications is an extensive and long journey. My own journey started almost a decade ago when I took my first 'live' Maya pottery sherd into my hand back in 2003. At that point I was working in the El Pilar Project of Dr. Anabel Ford from the MesoAmerican Research Center at University of California, Santa Barbara from whom I got my first exposure to classifications, typologies and methodology.

In 2008 I had completed my Magister thesis about a comparison between the Type-Variety:Mode system and the method used at El Pilar. A research project in Peru based on the ideas elaborated in that paper followed in 2009.

Fast forward three years, I found myself at the UCL Institute of Archaeology in the MA programme, still working on the same matter. The theory, pottery and Maya courses, including the essays written in them, proved to be invaluable inspiration and preparation for this Master's dissertation.

While this dissertation is so far the latest step in a long line of work, it will be for all intents and purposes not be the final one, with this dissertation being itself in turn the stepping stone for a future Ph.D. dissertation.

As such this text is part of a larger line of research and needs to be seen – as so many other matters in archaeology – in context. Yet, I tried to make this present piece as independent a works as possible.

AKNOWLEDGEMENTS

First and foremost, I want to thank Prof. Elizabeth Graham for her integral role as supervisor for this dissertation and for having supported me to get accepted into the MA program in the first place.

Second, I want to thank Dr. Bill Sillar for his important role as second supervisor for this dissertation and for having supported me as well to get accepted into the MA program in the first place.

I thank them both for their aid in the past months and for their faith in me and my scientific abilities.

Furthermore I want to thank my course lecturers Todd Whitelaw, Karen Wright and Elizabeth Baquedano for their inspiration and insights along the way.

I also want to thank Anabel Ford to have set me on the road of ceramics in the first place.

Last, but definitely not least, I want to thank my partner, Claudia M. Hechtenberg, who stayed back in Germany and nevertheless stayed with me during this intense last year. I would not know what to do with out her.

The Foundations of Maya Ceramics Classification: History, method and theory of the Type-Variety:Mode System

'Archaeology is the search for fact... not truth. If it's truth you're interested in, Dr. Tyree's philosophy class is right down the hall.'

Dr. Henry Jones Jr. (Indiana Jones and the Last Crusade 1989)

Introduction

Ceramic studies make up an integral part of current archaeological research. Classification and typologies are a vital segment of such ceramic studies. The creation and development of classification systems often propel research further and influenced its direction immensely. One example of such an influential ceramic classification is the Type-Variety:Mode system used in the Central Maya Lowlands in Central America. It is the last version of a long line of type-based system.

Wishing to expand on earlier work of my own, in which I compare Type-Variety: Mode in relation to other classifications (Egerer 2008), I concentrate in the following on the inception and development of one of the core principles of archaeology: classification, with emphasis on the type-based system.

The first aim, therefore, is the presentation of an overview of ideas and concepts from the past four centuries of scientific history that laid the ground of modern classifications. The second aim is to trace the different development stages of the type-based methods used in American ceramic studies. The third aim is to analyse the nature and strengths and weaknesses of each development stage, in order to discern specific purposes and uses of each stage.

Chapter 1: The history of archaeological ceramic studies

Today, one of the disciplines most associated with the past is archaeology, which dedicates itself to the study of material remains from the past (Silberman 1995). Archaeology, however, despite its focus on the ancient or deep past, is a young discipline, existing in its modern form only for about one and a half centuries in Europe, and for about a hundred years in the Americas, whereas subjects, such as architecture or mathematics, were already pursued by ancient civilizations, such as those in Rome, Greece, Egypt, Babylon or the Ancient Maya (Aveni 2001).

Despite the fact that archaeology is such a young discipline, many of its fundamental concepts, including the ones classification and typology are based on, have deep roots. Some of these concepts hark back to the 17th century, to the birth of the concepts that are today known as 'modern science'.

The concept of science

Collingwood states that Galileo Galilei (1564 – 1642) 'is the true father of modern science' (1945,94). For Galilei 'nothing [was] scientifically knowable which cannot be measured', according to Collingwood (1960, 103). This view, that only what can be measured can be accepted, is called empiricism.

Empiricism states that generally 'all knowledge of real existence must be justified by experience, that is, is empirical' (Meyers 2006, 3). All other knowledge from any other source can therefore not be accepted. As such, empiricism is an epistemological concept and epistemology, being about the sources of knowledge, is in turn an extension of logic (Meyers 2006, 4). With its views about the fundamental principles of the world, empiricism is opposed to the ideas of the Aristotelian-medieval theory, that pervaded scholastics for centuries, which stated that all characteristics of matter stem from different qualities and essences inside it (Meyers 2006, 10, 12, 13). Empiricism, on the other hand, followed an approach called atomism which postulated that all matter is made up of infinitesimal particles in motion (Meyers 2006, 11). This being the case, empiricism got picked up by the 'new science' emerging in the 17th century which also subscribed to the concept of atomism and was made one of its new core tenants (Meyers 2006, 11). Later, empiricism was the basis for the doctrines of scepticism ('nothing is known to be true') and fallibilism ('nothing is absolutely certain')(Meyers 2006, 117), which became the epitome concepts of a scrutinizing, rigorous science.[1] The Scottish thinker, John Locke (1632 - 1704), who worked also on economic and social theories,was the first and best known champion of empiricism and its tenets (Locke 1690; Meyers 2006, 9; cf. Trigger 1989, 56). Ceramicists in the 20th century also claimed to base their research and their classifications on these foundations (Colton 1953, 7).

Another important concept in the spirit of empiricism, but postulated several decades earlier than Locke's ideas, was the inductive method formulated by the Briton Sir Francis Bacon, Viscount St. Albans (1561 – 1626) which heralded a new age of research (Bacon 1605). Opposed to general consensus at that time, for Bacon the human ignorance concerning the mechanics of nature and the power of nature over human affairs were not inevitable conditions; humankind just used the wrong method (Broad 1951, 48). Before Bacon's approach, methods of investigation had been divided into theory, observation and experiment, and practical application; each of these aspects was treated and practised independently (Broad 1951, 49). According to Broad, most scholars had until then, only short-sighted, immediate results with direct benefits in mind, not long-term goals, such as discovering the fundamental principles of nature, as Bacon did (1951, 49). Additionally, researchers at that time had too much faith on old ideas and teachings and adhered to them almost slavishly (Broad 1951, 50). This adherence, according to Bacon, impeded new and original research. For the Viscount, 'what was wanted, was a method by which we could slowly and cautiously rise from facts to wider generalisations (...)' (Broad 1951, 51). It was already known in Bacon's time, that humans applied this method in a general subconscious way in their day-to-day lives. Bacon, however, was the first one to abstract this concept and turned it into general principles for widespread, intentional and rational application (Broad 1951, 51). The inductive method would be vital in the

1 Still today in popular conception, the term empirical equals scientific

development of modern science and become the new scientific standard for centuries to come which would also eventually influence how classifications were later developed.

Due to this achievement, although Collingwood claims that Galilei was the first scientist (1960, 94), this honour could also be granted to Bacon. Descartes could also be added to this circle for his scientific achievements and being roughly contemporary with the other two as well as their biographical data shows. René Descartes (Lat. Cartesius) (1596 - 1650), who coined the famous sentence 'Cogito, ergo sum', 'I think, therefore I am', introduced the concept of universal and eternal laws of nature (Trigger 1989, 61)[2]. This concept enabled antiquarians, the predecessors of archaeologists, to compare different cultures methodically because they could assume that certain mechanics work the same way in all cultures, like the birth, life and death cycle. This also can be applied to ceramic studies where certain general, fundamental aspects in human biology and physiology influence the overall design of pottery (Rice 1987, 226).

Science and philosophy

During the 17th century, antiquarianism, which also could be called proto-archaeology, not only became enriched by new and better methods, but also attained philosophical underpinnings, which were provided by the Enlightenment movement attributed to French philosophers, such as Montesquieu or Voltaire. The Enlightenment championed the concepts of progress and logic. Its core tenets were:

First, *psychic unity* stipulated that all members of humankind were made out of the same material and everyone had a priori the same physical and mental capabilities as everyone else.

Second, *cultural progress* meant that a society was not a static entity from now to eternity, but changed and improved over time. This concept could be seen as one of two intellectual roots of later evolutionary archaeology (Trigger 2006, 166, 212, 215) and definitely is the core concept that underlies all classifications incorporating chronology in

2 The 1st edition of *A History of Archaeological Thought* is intentionally used since the sections vital to this paper are more extensive in this edition than the latest 3rd one.

archaeology centuries later.

Third, the concept of *universal progress* stipulated that all of nature, not only societies is progressing. This concept is at the heart of any chronological classification as well, stating that change is ordered and can be understood, without which any chronological classification would be moot and impossible.

Fourth, progress is seen as a process to perfection. In medieval times, the believe was that humankind went from better to worse ever since the expulsion from Eden and at the low point the end of the world and Judgement Day would come (Trigger 1989, 34). Now the Enlightenment movement stated that change was not a decline but progress from bad to better (Trigger 1989, 58). This concept of progress would later in the 19th century become vital as basis for the archaeological concept of seriation, which in turn was the predecessor for typologies and classifications.

The fifth and final tenet states that progress is based on rationality, logic and understanding. These principles are nothing less than what is considered to be the core tenets of science still found applicable today (Meltzer 1979).

These five core concepts had deep impact on the proto-archaeology existing at that time. The concept of progress, a positive change towards the better, or from simple to complex, was especially deeply influential on antiquarians, the proto-archaeologists, long before Darwin (Trigger 1989, 59).[3]

The investigators of antiquity now had an explanation for change in societies. In the understanding of antiquarians at that time, societies went through a process of development. Where a given society was along in the process defined its stage and characteristics. This concept enabled antiquarians for the first time to connect similar looking finds from different times with each other, something that would itself become one of archaeology's most central concepts eventually in due course. Differences in material items, due to other reasons, like aesthetics in different societies, could at that point not yet be factored in, since the concept of psychic unity stipulated that all human

3 Trigger explicitly states that 'a cultural-evolutionary perspective was widely accepted for explaining human history long before the publication of Darwin's *On the Origin of species.'* (1989, 59).

beings were the same at their core (Trigger 1989, 57).

Enlightenment helped to draw the human focus from the transcendent, religious to the physical, rational world (cf. Trigger 1989, 56). The change of focus did proto-archaeology a favour, since its ancient ruins and items belonged definitely to the physical world. The rise of natural science along with this change of focus helped proto-archaeology as well.

The Linnaean Taxonomy

Scientists from the natural sciences would have a major impact on the discipline that would become archaeology. One of these scientists was Carl Linnaeus (later known as Carl von Linné) (1707 – 1778) from Sweden. Linnaeus was a naturalist working in zoology and botany. He embarked on the task to develop a system that would order and sort all the plants and animals living on earth. Linnaeus eventually succeeded, creating the Linnaean Taxonomy of Life, which bears his name (Humphries & Huxley 2007, 135; Linné 2003). This system was one of the first large classification systems in western history and is still in use today.

The Linnaean taxonomy and any taxonomy in general, features several levels. In case of the Linnaean taxonomy the amount of levels is eight, but can vary for any given taxonomy with the necessary minimum amount being two. Higher levels subsume the lower levels while lower levels get integrated into higher levels of the hierarchy. Each unit, called a taxon (pl. taxa), in a level is mutually exclusive, meaning an object can only be in one taxon at any given time. For example, if one takes the taxa of herbivore mammals, carnivore mammals and omnivore mammals, any mammal can only be part of one of the three at any given time (Dunnell 1971, 77). Furthermore, the taxa are fixed in place and cannot be moved around without greatly changing the meaning and characteristics of the content (Dunnell 1971, 80; Egerer 2008, 22/3). Two general set-ups of a taxonomy can be seen in Figures 1a & b.

When creating his biological taxonomy Linnaeus was influenced by his belief in essentialism which he shared with other naturalists such as Plato and Aristotle and the empiricist John Locke (Ereshefsky 2001, 16). Essentialism postulated that 'each entity has an essential feature that makes it the type of entity that it is' (Ereshefsky 2001, 17). Furthermore, Ereshefsky states that this feature is an entity's real essence and this real essence occurs in all and only the entities of that type (2001,17). For Linnaeus nature was ordered by divine will and intervention (Ereshefsky 2001, 3). He, therefore, had to assume that every single species on earth had its special reason to be there and was thus unique. As a result he tried to turn each singular species into a taxon for his taxonomy and put them into relation to each other through integration into higher levels until he had, for example, subsumed all animals into an animal kingdom.

The universal binomial Latin nomenclature for each taxon, such as *Homo sapiens* for the human species, was championed and made popular by Linnaeus in his works, but actually goes back to a Swiss botanist in the 17th century and was not by Linnaeus (Humphries & Huxley 2006, 135). The first part of the name denotes always the genus and the second part always the species itself of a described species. As such the Linnaean name fuses always two levels of the Linnaean taxonomy into the species description. The Linnaean taxonomy and its naming conventions would eventually stand model for the some of the most important ceramic classifications in archaeology in Central America in the 20th century.

Additional tools

Taxonomy was, however, not the only important addition to the ever developing tool set of the vocation of antiquarianism that would become archaeology. The German Johann Joachim Winckelmann (1717 – 1768) published his *Geschichte und Kunst des Altertums* in 1764 (Winckelmann 2006), which was very well received in antiquarian circles and became widely circulated (Potts 2006, 28). The novelty of this publication was that it offered a synthesis of almost all extant knowledge of ancient Greek sculpture, within a historical framework (Potts 2006, 3). Winckelmann had studied how the style of sculptures changed over time and was thus able to build a broad picture of the evolution of ancient art (Potts 2006, 3). Now, art was suddenly not a 'fixed, universal and timeless ideal' any more, but a historical phenomenon (Potts 2006, 3/4). In a further step, Winckelmann based change in Greek art on a synthesis of physical, environmental, cultural and political factors, which at that time was, according to Potts, nothing less than revolutionary and started a new paradigm as to how ancient art was treated (2006, 4, 29). Additionally, Winckelmann first highlighted the important issues of aesthetic, ideological and cultural significance of art (Potts 2006, 6, 17) which is still today an important field of research in both art history and archaeology.

Despite what he achieved in the book, there were flaws as well. For one thing, art for Winckelmann is sculpture, thus other forms are excluded (2006, 111, 299). In addition, he never provides an actual definition of art. Nevertheless Winckelmann was able to show that changes and evolution in classic art styles were traceable and comprehensible and that art could be ordered and sorted. Winckelmann's work thus revolutionized and gave new impetus to archaeological studies (Potts 2006, 1). It also had long term effects on pottery classification, which, for example, in the Maya area, incorporated art, as in vessel decoration, into their systematics in the 20th century.

Not preoccupied with art but with the science of digging, Sir Richard Colt Hoare (1758 – 1838) published in 1812 together with William Cunnington[4] (1754 – 1810) the book *Ancient Wiltshire.* Headed with the statement 'We speak from facts, not theory' (Cunningwood 1957, 1) the publication introduced a whole new standard of practice and mindset on how to carry out archaeological excavations. These standards lay the foundation for many techniques and approaches applied today. Examples of techniques include, but are not limited to digging complete sections cut to bedrock (Cunningwood 1975, 13), recognizing the necessity of full and immediate labelling of finds (Cunningwood 1975, 21), submitting finds to experts for identification and establishing this as practice (Cunningwood 1975, 18) and applying probing to determine where to dig (Cunningwood 1975, 62). The seeds for new mindsets included that 'archaeological finds are important not in themselves,but as evidence' of human presence and activities in the past

4 In Cunnigton's case publication was posthumously.

(Cunningwood 1975, 13, 21).

Another ground-breaking approach was that excavation should not be done to simply recover objects, but in order to answer a specific question (Cunningwood 1975, 137). This idea was so completely new and ahead of its time in 1812 that it took allegedly a re-statement of R. G. Collingwood in 1938 to be picked up again by archaeologists in the 20th century, after not being heeded by archaeologists in over a century in between (1975, xvi). While it is true that the concept that an archaeological excavation should be done with a certain aim in mind would only completely take hold in the 20th century, the implication that archaeologists did so only after 1938 is exaggerated. This does many excellent excavations done in the first three decades of the 20th century injustice.

These approaches changed why excavations were carried out. Not the recovery of artefacts, but the information learned from them is the most important; and excavations should proceed according to clear aims. Especially having a clear aim already reflects very well the scientific rigour many creators and users of later classifications and typologies saw themselves bound to.

Both works, *Geschichte und Kunst des Altertums* as well as *Ancient Wiltshire,* improved the tools proto-archaeology had at its disposal to develop chronologies, which would eventually in the 20th century become the main impetus for many classifications and typologies.

From antiquarianism to archaeology

The 19th century saw archaeology finally come into its own. In France and Britain the influence of approaches from geology, through Charles Lyell (1797 – 1875)(1853), as well as botany and zoology, through Charles Darwin (1809 – 1882) (Francis 2006), on archaeological concepts and methods was increasing (Trigger 1989, 84, 87).

Especially Darwin's concepts of biological evolution prompted a boost of archaeological research into cultural evolution, where human culture was perceived to develop from simple to complex, just as in the case of organisms (Trigger 1989, 100). Darwin's concepts also could be considered a second source, apart from the general enlightenment tenets cited earlier, of the theory of evolutionary archaeology, which started to dominate archaeology from the 1840s onwards. According to Willey and Sabloff, this point in time heralded in the arrival of true, modern archaeology (1974, 35). Dunnell, however, puts the arrival of modern archaeology almost 100 years later, claiming the birth of archaeology as science did not happened earlier than 1935 with the arrival of the first official archaeological paradigm(1986, 29).

Uncontested, however, is that contrary to the course of Central European countries, archaeology in Northern European countries steered a different path in their influences on archaeology. According to Trigger, the people pursuing archaeology in Northern Europe came from a background dominated by socio-evolutionary ideas and the occupation with numismatics rather than from a background in the natural sciences (Trigger 1989, 84). Yet from Northern Europe came some of the most fundamental methodological contributions to classification and typology in archaeology.

The first of the Scandinavians who propelled archaeological methods forward in the 19th century was the Dane Christian Jürgensen Thomsen (1788 - 1865). Working with the extensive collections of the Danish national museum, where he worked, he tried to come up with a method to sort and display the archaeological finds. After extensive cross-referencing and comparison work, he did the first archaeological seriation, establishing the three-age system with stone, bronze and iron age (Trigger 1989, 76).

One of Thomson's contemporaries and even a compatriot, who helped to establish the early methods of archaeology, was the Dane Jens Jacob Asmussen Worsaae (1821 - 1885), who introduced the very important concept of the 'closed find', such as graves and hoards which are undisturbed by outside influence, into archaeology and was the first person to prove by stratigraphy the correctness of Thomsen's three-age system (Trigger 1989, 81). The three-age system is still accepted and used today and has, since its inception, been continuously modified over the centuries, but never overturned (Gräslund 1987, 18). One of the persons improving on the three-age system was the Swedish archaeologist Oscar Montelius (1843 – 1921) who used typologies and cross-dating methods to turn the relative dating of the three-age system into an absolute chronology (1986).

When the Scot Daniel Wilson (1816 -1892) introduced and coined the term 'prehistory' (Trigger 1989, 59), archaeology finally had an official name for its field of research. At that point archaeology had reached its place in the pantheon of sciences in Europe.

European ceramic classifications

Following the tradition of Scandinavian archaeology in developing classifications and typologies, German archaeologists at the end of the 19th century started to create some important and influential classifications themselves. In 1895, Hermann Dragendorff, an archaeologist from Bonn, started to classify the Roman *terra sigillata* or 'Samian ware' – a term Dragendorff considered wrong and advocated for to cease it (1895,19) – that was ubiquitous in the German Rhineland, a former border province of the Roman empire.

Dragendorff clearly saw the immense benefits a classification of this widespread ware would have for chronology (1895, 18). In his publication he laid first down the essential characteristics of the ware, such as the unique red colour, the ornamentation, the workshop stamps; he then points out its high level of standardization in production (Dragendorff 1895, 19). The classification itself is mostly based on the places the 'Vasen' – 'vases' – , as Dragendorff conventionally calls all vessels, were found (1895, 31, 39). Occasionally, however, he also uses temporal and manufacturing characteristic to sort his material (Dragendorff 1895, 55, 84).

Indeed, Dragendorff succeeds in is aim to date, at least some of the conspicuous pottery, by using form and stylistic characteristics to compare them with grave inventories that had been dated already through coins with the help of numismatics in other parts of the Roman empire (1895, 34). Once a piece of pottery in a grave inventory could be dated, the whole inventory could be tentatively set in a chronology, assuming the grave was an undisturbed 'closed find'. Through that approach Dragendorff was able to date other pieces of *terra sigillata* in the same graves which previously had no time period attributed to them. Those in turn could be compared with similar material in other graves (Dragendorff 1895).

How precise and correct his chronology was and how much of it is still considered valid by archaeologists today could not be established, but his drawings of the vessels set a new standard. In them he shows vessels from the side with one half of the drawing showing the outside of the vessel and the other side showing a virtual cut through the vessel, giving an impression of the wall thickness throughout the vessel (Fig. 2). This style of drawing emphasises the form of a vessel and it is used ad taught in German archaeology up to this day.

In 1899 another German archaeologist – Heinrich Dressel – published his work on Roman household pottery (1899). Dressel uses a different system to sort his material, starting out with vessel forms, such as amphora or *terra sigillata* (1899, 491, 731). Dressel further divides his vessels into different groups of stamps used on the pottery (1899). This is different to Dragendorff who, of course, noted the stamps as important factor of recognition for this kind of pottery, but never used them for sorting purposes. The stamps were sigils of workshops that 'signed' their products with them. This practice helped archaeologists greatly to trace trade patterns throughout the Roman empire and eventually also to establish a very fine grained chronology for the Roman empire. As such the division into stamps by Dressel was both a geographical as well as temporal sorting of the material. Dressel also created during his research a list with 42 different amphora shapes, incorporating different forms of lips, handles, bodies and feet (Fig. 3). In German classical archaeology this system is still in use.

Both classifications, Dragendorff's as well as Dressel's, show a focus and emphasis on vessel form. One could even claim that large parts of European archaeology, at least at that time, were focusing on form, if one also adds in Montelius' work to that group (1986).

Unlike archaeology in Europe, however, in the Americas, both, the path to the creation of archaeology as a discipline, as well as the path to classifications followed a different route.

The American path to archaeology

During the time archaeology in Europe came of age, the same discipline took a somewhat different path in the Americas. Archaeological research was relegated to a fringe existence for a significantly longer time in the Americas (Willey & Sabloff 1974, 27). Although during the Spanish conquest of the Americas and shortly afterwards, the chroniclers Bernadino de Sahagún (1499 – 1590) for the Aztecs (Sahagún 1950), Felipe Guamán Poma de Ayala (ca. 1535 – 1616) for the Incas (Guamán Poma de Ayala 1956) and Diego de Landa (1524 – 1579) for the Maya (Landa 1966) stirred interest in the pasts of these indigenous cultures, it took centuries for this interest to be transformed into American archaeology as a science (Willey & Sabloff 1974, 18).

The arrival of American archaeology

The interest in the past in the Americas had for centuries the same characteristics as proto-archaeology had in Europe. A change to the character of American proto-archaeology came by the Irishman Edward King, Viscount Kingsborough, who published the nine Volumes of *Antiquities of Mexico* in the 1830s and 1840s. These books detailed ruins and ancient objects of indigenous peoples in Central America. While the descriptions still enjoyed somewhat artistic freedom, the pictures nevertheless at least tried to be as close to reality as possible (Willey & Sabloff 1974, 27).

The Kingsborough publications appeared during the time when John Lloyd Stephens (1805 – 1852) and his friend and travel companion Frederick Catherwood (1799 – 1854) journeyed through Central America, bringing back a large amount of archaeological data about the ancient Maya. Stephens put his descriptions of the Maya ruins he visited into writing (Stephens 1969) and Catherwood published his extremely detailed drawings

(Bourbon 2000). Both Stephens and Catherwood can be considered to have rediscovered the civilization of the Ancient Maya for the modern world.

While still lacking a certain scientific rigour, these events at least brought American archaeology into the descriptive period, which started from 1840 onward according to Willey and Sabloff (1974, 59). Everything that could be found, be they North American arrow points or Maya stonework, was recorded and described. Nonetheless, archaeology was still not a science, as Willey and Sabloff claim (1974, 34).

In this descriptive period, however, some developments started which would influence the character of archaeology in the Americas ever since. The two disciplines of archaeology and anthropology started to form their strong bond which exists until today (Willey & Sabloff 1974, 34). This is not true in Europe, where those two disciplines were always kept apart. The reason given for the close contact between the two disciplines in the U.S. was the perceived necessity to tackle the ongoing Mound Builder debate[5] with a combined archaeological-ethnological approach (Willey & Sabloff 1974, 79/80). Why on the other hand archaeology and anthropology kept their distance in Europe remains unanswered in available sources.

Great expeditions took place throughout the U.S. during the descriptive period, in order to record as many archaeological finds as possible. While compiling the records, cultural variety was found to exist, its extent grasped and its characteristics understood, but chronology was still weak and underdeveloped in the U.S. (Willey & Sabloff 1974, 53). The concept of cultural variety was still an important discovery in and by itself and would be the first axis of an archaeological matrix, which contained the core tenets American archaeology would be working under later on.

Adding the second axis, time depth, to cultural variety, or in other words chronology, turned out to be a more difficult enterprise, just as it had been in Europe. Indeed a

5 The Mound Builder debate centered around the question who built the large earth tumuli found in the U.S. from the Great Lakes to the Mississippi River valley.

European was a forerunner in the achievement of eventually adding chronology: The famous German archaeologist Max Uhle (1856 – 1944) (Willey & Sabloff 1974, 57). Uhle's archaeological work in Peru and Bolivia was unprecedented and unmatched for his time and it is still held in high esteem by American archaeologists in general and Andean researchers in particular. His work in Tiwanaku and other sites enabled him to create the first chronology of a region in the Americas. His findings and results have been corroborated repeatedly ever since. (Kaulicke 1998).

Uhle's important achievement was applied to other regions in the Americas. For the American Southwest and Mesoamerica important figures in this endeavour were Alfred Maudslay (1850 – 1931) and Alfred V. Kidder (1885 - 1963), as well as Spinden, Maler and Holmes, who dedicated themselves to the task to give these regions a chronology.

An additional impetus for finding a chronology for the Americas was the rise of the evolutionary theory of Darwinism which came over from Europe, where Darwinism already had triggered the theory of evolutionary archaeology. Darwinism introduced to U.S. academia the concept of change not only to biological organisms, but also to cultures, similarly to Europe earlier. This finally gave rise to archaeology in the U.S. helping it to prominence, finally removing archaeology from its fringe existence it so far had languished in (Willey & Sabloff 1974, 76).

The era of American ceramic classifications

Shortly after the turn of the century, Holmes developed the first typology and classification of Eastern U.S. pottery in 1903 (Willey & Sabloff 1974, 77). Holmes' achievement was a milestone, since pottery would soon afterwards become the main chronological tool in American and Mesoamerican archaeology for the decades to come.

It was pottery that was the means of achieving time depth for the Maya area by the archaeologists Sylvanus Morley (1883 – 1948), Alfred Tozzer (1877 – 1954) and Raymond E. Merwin (1881 – 1928) (Willey & Sabloff 1974, 63) in 1909, after Merwin had been the first archaeologist to do a stratigraphic excavation at a Maya site in Holmul (Merwin & Vaillant 1932).

A few years later after Merwin carried out his seminal excavation at Holmul, stratigraphy was introduced to American archaeology in 1914, according to Willey and Sabloff (1974, 83). This claim can be questioned since Merwin's work already could be considered to an extent stratigraphical. Maybe Willey referred to the U.S. itself rather than the Americas in general. Reasons given by Willey and Sabloff for the relatively late introduction of stratigraphy to American archaeology, half a century after its introduction in Europe, are attributed to theories dominating at the time (1974, 84). American Archaeology, after initially following evolutionism, later on focused on the concept of anti-evolutionism championed by the German-American anthropologist Franz Boas (1848 - 1952) which resulted in American archaeology not investigating cultural change but mainly the status quo of cultures (Willey & Sabloff 1974, 81).

Generally, the concept of stratigraphy comes from geology (Willey & Sabloff 1974, 93). Stratigraphy takes the fundamental premise of geology that rock layers located further down in a profile of the earth's crust are older and layers that are higher up are younger and applies that premise to the deposits of human settlement activity. There are essentially two basic systems: metric stratigraphy, where sections are divided artificially into equal pieces, which is favoured in the Americas (Willey & Sabloff 1974, 93) as opposed to natural stratigraphy, which follows the natural layers of deposits, which is predominately used in Europe where it was championed by Sir Robert Eric Mortimer Wheeler (1890 – 1976) (1954). The reason for this difference is explained by Willey and Sabloff through the difference in characteristics of European and American deposits, the latter being shallower and less conspicuous (1974, 93).

Stratigraphy had a huge impact on how typology was conceived and applied. Before stratigraphy typology was only used as a descriptive method, afterwards it was used as chronological tool. The first stratigraphic excavation in the Americas happened in Mexico and the Aztec ceramics were analysed by Manuel Gamio (Willey & Sabloff 1974, 85).

Subsequent seeding places for this method were Mesoamerica and the American South West were both Nelson and Tozzer worked (Willey & Sabloff 1974, 84). Nelson used stratigraphy himself a bit later in the American South West and also developed stratigraphy further (Nelson 1916). Still later was the usage of stratigraphy by Kidder at the site of Pecos (Kidder 1962; Willey & Sabloff 1974, 89).

Just as in Europe the concept of stratigraphy was followed by the concept of seriation. As in Europe, seriation is influenced by Darwinism and was based on the notion that everything evolves from simple to complex (Willey & Sabloff 1974, 94). The exact mode of arrival of the concept of seriation in the Americas seems to be unclear, because no available source brought forward any explanation. One possible way of transmission could have been through the European scholars, such as Max Uhle, who surely were familiar with the works of Montelius back then.

In case of American archaeology seriation is being applied already within the paradigm of culture history, the first great archaeological paradigm in American archaeology (Willey & Sabloff 1974, 94). With the arrival of culture history in world archaeology, according to Dunnell, someone could now postulate theories in archaeology and could be wrong, whereas before culture history this was not the case (1986, 29).

Culture history was focused on three core questions: 'What? – Where? – When?' (Dunnell 1986, 30; O'Brien *et al.* 2005, 9). With the first two questions already covered in the previous centuries by the archaeological expeditions and descriptive volumes on artefacts, the question that still needed the most attention was the chronological one. Therefore culture history initiated the age of chronology. For the Americas the most useful objects for chronology had turned out to be pottery, which prompted archaeologists to focus on pottery typologies and classifications in order to answer chronological questions. The type-based methods in the American Southwest and subsequently in Mesoamerica would become important pottery classifications over the following decades, starting at the end of the 1920s.

Chapter 2: The inner workings of the type-based methods

The development of the type-based methods occurred in four stages, each resting on and including the previous level.

The type system by W. and H.S. Gladwin

The first stage was the Gladwins' type method, which was written in a simple, three-page pamphlet in 1928. Despite its brevity and simplicity it contained essential concepts, which would become the core of the method. These concepts were presented in six statements, which at that point were published with almost no further commentary by the authors (Gladwin W & H.S. Gladwin 1930a (not paginated)).

The most important topic that was treated was the nomenclature of types. In their first two statements the Gladwins laid down that a bipartite name should be used, based on the Linnaean Taxonomy of Life (Gladwin W & H.S. Gladwin 1930a; cf. Colton 1953,52). In case of pottery types, the 'genus' should be named after colour combination or surface treatment of a given piece, whereas the 'species' of pottery should be named after a locality in the area (Gladwin W & H.S. Gladwin 1930a). The Gladwins emphasize, however, that a type does not need and even should not to be named neither after the place where it was found first nor where it is found most (1930a). The Gladwins stated that they 'decided to omit, as far as possible, designations which introduce factors of time or comparison, since their use injects elements which later might require correction' (Gladwin 1930a; cf. Willey & Sabloff 1974, 102). This essentially meant that pottery was given intentionally names unrelated to its geographic origin and temporal period in order to present pottery without its history of context so the pottery vessels could be looked at in an unbiased way. This is a known approach in American archaeology and could, for example, also be witnessed in the naming conventions of the stratigraphy of the Central Acropolis in the Tikal Project (Coe 1982, 46; 1990, 3).

The rules also stated that the 'species' name should always be mentioned first and the 'genus' always second. Examples for the 'species' names are Black Mesa, Jeddito or Mogollon, whereas examples for the 'genus' name are Black-on-grey, Polychrome or Plain. Following these naming rules, a correctly named type would be expressed as Hohokam Black-on-Red, with Hohokam being the species and Black-on-Red the genus. This essentially reverses the order of the orginial Linnaean nomenclature in which genus always is mentioned first and species always second (Humphries & Huxley 2006, 135). To give an example the Linnaean name of *Homo sapiens* would be turned into *Sapiens homo* when expressed by the Galdwins' nomenclature. If this was intention or an error on part of the Gladwins' could not be established with available sources.

Initially set out by H.S. and W. Gladwin, working in Gila Pueblo in 1928, this naming style has been used ever since in all type-based methods. Soon after the publication of this type system, archaeologists started to produce an ever-increasing amount of types. This creation process, while an important first step, served at first no purpose other than to group alike pottery and give the group a name, since the Gladwins had not introduced means to put those types into meaningful context. Types were created and existed solely for their own sake. This situation changed in 1937.

The ware-type system by L.L. Hargrave and H.S. Colton

Two archaeologists who adopted the proposal of the Gladwins and developed it further were L.L. Hargrave and H.S. Colton who worked in Northern Arizona. After publishing together several articles (Hargrave & Colton 1935; Colton & Hargrave 1935), their jointly written book, in which they introduced new levels to the Gladwins' type method, came out in 1937 (Hargrave & Colton 1979).

With the addition of levels above the type level, Hargrave and Colton turned the system devised roughly a decade earlier by the Gladwins into a true taxonomic system. Although the Gladwins adopted a taxonomical naming process, which is suited for multilevel classifications, their system possessed only one level.

Although many New World ceramicists today refer to Colton's method as the original 'type-variety' method, Hargrave and Colton (1937) and later Colton (1953) alone, always refer to their classification as one which employs types and wares; they did not call it a type-variety classification. Colton mentions the term 'variety' a single time in his book and only once in a cursory manner (1953, 55). Since Colton seems to have never officially christened his method with any name (1953), I will henceforth refer to it as the ware-type method.

Concerning terminology, Hargrave and Colton went even further than the Gladwins with the biological analogy when talking about 'genetic relationships' and 'inherited features' (1979, xi)[6], which are terms from biology referring to the passing on of genes from one generation to the next in living organisms.

Both Hargrave and Colton made vital contributions to the type-based method. Their biggest contribution was a definition of 'type', a concept which was introduced by the Gladwins but never defined: 'A pottery type is a group of pottery vessels which are alike in every important characteristic except (possibly) form' (Hargrave & Colton 1979, 2). Hargrave and Colton, expanding on what they consider important, state that characteristics of the type unit should include surface colour, method of handling the clay (their term for forming techniques), texture of the core (their term for the degree and type of tempering), chemical composition of the temper (but only if it clearly shows human interference), chemical composition of the paint and styles and design in decorated pottery (1979, 2).

Hargrave and Colton also give a definition of the level they introduce above the type, which they call 'ware'. According to Hargrave and Colton, 'ware' is a group of pottery which shares the majority of the characteristics of the type unit, but not all (1979, 2).[7] This

6 I am predominately going to quote Hargrove & Colton 'Handbook of Northern Arizona Pottery' since this is the older publication and Colton's 'Potsherds' from 1953 is just a larger elaboration on the basic concepts, sometimes even reprinted verbatim.

7 The verbatim original definition is: 'A Ware is a group of pottery types which has a majority of (the above) characteristics in common but that differ in others'

definition is problematic since Hargrave and Colton never elaborate what exactly the characteristics are that are not shared by the types that make up a given ware unit. Nevertheless, they consider ‘ware’ the most important group.

Hargrave and Colton develop another level – called ‘series’ – which they describe as being equal to a sub-ware (1979, 3). Thus the units of a 'series' are located between the type and the ware level; they define the concept of 'series' as an unbroken line of pottery types, each type of which represents different stages of a development chain. It seems, following their logic, that several types can form a series and that several series can form a ware (Hargrave & Colton 1979, 3).

By proposing their ware-type system, Hargrave and Colton tried to bring order to the chaos that ensued after the Gladwins published their type system. They point out the fact that in many cases ceramicists in the Southwest working in different areas gave different names to the same types of pottery (1979, 1). Hargrave and Colton called that situation a 'muddle' (1979, 19) and the Gladwins' system just a naming system, not a classification (1979,29). With this assessment Hargrave and Colton do the Gladwins' injustice insofar that their system was already a classification system, just not a taxonomic one. Maybe Hargrave and Colton only considered taxonomy worthy of the term classification and not applicable to a system that had a simpler structure than taxonomy.

Colton and Hargrave wanted to introduce a taxonomic system into which newly created pottery types could be put into relation and context. Now, an archaeologist could establish that type A and B had a high similarity and therefore most likely were part of ware 1, but that Type C did not fit and possibly belonged with other types into ware 2, or Type C might be an intrusion and did not fit in any established ware unit. From these basic groupings the first rough outlines of relationships and geographical distributions of Southwestern pottery could be gleaned.

These first insights were a seminal moment in ceramic studies in the American Southwest and for years archaeologists were content with the system. Expectations of ceramicists, however, became higher over the years and therefore the system had to be developed further. This necessary next leap occurred at the end of the 1950s.

The Type-Variety system by J.B. Wheat, J.C. Gifford, W.W. Wasley, G.R. Willey and R.E. Smith

The development from the ware-type system to the Type-variety system included two steps. Step one involved the ceramicists Wheat, Gifford and Wasley in 1958; step two, in 1960, included Smith, Willey and Gifford.

Initially, in step one, Wheat, Gifford and Wasley pointed out that even more types had been created since Hargrave and Colton stated the same fact and that there was starting to be an 'alarming proliferation' of types (1958, 34). Wheat and colleagues argued that the difference in types was becoming very minute, for example, regarding style of decoration (1958, 35). As a result they considered the traditional type unit to have become too broadly inclusive for the fine-tuned differences that characterized the newer types that were being created. Wheat and colleagues also claimed that the system, as it stood, did not allow expression of the degree of similarity or disparity between types, which they considered a flaw (1958, 35).

To remedy the situation they introduced a new level 'below' the type – the variety. The term 'below' refers to the visualization of a taxonomy as a multi-tiered construct or hierarchy featuring several levels. The higher, the more inclusive a level becomes; the lower, the more exclusive a level becomes. Higher levels subsume lower levels, whereas lower levels make up higher levels. In the case of type-variety, the variety rests one level below the type. Although the term ‘type-variety’ is mentioned for the first time, the system to which it referred was not yet officially named after this term (Wheat *et al.* 1958, 41). Wheat and colleagues state several prerequisites a ceramic unit needs to fulfil to be considered a variety of a type. A variety must share the temporal and spatial attributes of the type and it must be similar in design, surface finish, character of paint and paste (1958, 35). As a result varieties are defined by three aspects – technological, spatial and temporal. If a variety for example differs in time it is a temporal variety of an established type.

Wheat, Gifford and Wasley not only proposed the new variety unit but included several more classification units, making the system even more complex. One addition was the unit of 'type cluster' (Wheat *et al.* 1958, 39). Type clusters are essentially augmented type units. Whereas the type unit comprises just types, type clusters are the types plus all actual and possible existing varieties of a given type. For example, the Kiet Siel Polychrome type unit just contained the Kiet Siel polychrome type, whereas the Kiet Siel Polychrome Cluster contained, apart from the Kiet Siel polychrome type, also the Kiet Siel Polychrome: Awatovi variety (Fig. 4). Wheat and colleagues considered the upgraded type cluster unit still the basic building block of their system, just as the normal type unit was before.

With a type cluster being an augmentation of the original type unit, it encompassed both the type and the variety units, framing them, thus essentially nesting two levels. This new unit keeps its place below the ware level, meaning it is subsumed by the ware unit, as can be seen in Figure 5, where representative type clusters form ware units.

Another unit introduced by the authors is 'ceramic system' (Fig. 5). According to Wheat, Gifford and Wasley the unit of ceramic system is on the same level of integration as the ware units and 'cross-cuts' them (1958, 41). A ceramic system is thus made up of several wares, without subsuming them completely. It seems Wheat and colleagues imagined the type clusters to be a three dimensional cube and wares are aligned one way throughout the block whereas ceramic systems are aligned perpendicular to the ware alignment. Thus a ceramic system always touches on some of the ware units, but not all of them at the same time.

A 'ceramic complex' is a new unit introduced by Wheat and colleagues, which is equated with a certain time period in the American Southwest. In the chosen figure, the complexes 'Basketmaker III' and 'Pueblo III' can be seen, which are time periods equalling cultural development stages, which were first agreed upon during the first Pecos conference in 1927 (Kidder 1927). According to Wheat, Gifford and Wasley, every Basketmaker III vessel has certain characteristics that are always present, such as black-on-gray paint, making these characteristics culturally significant (1958, 41). These black-on-gray vessels are subsumed under the name Lino Black-on-Gray, following the standard nomenclature of the type-based methods. In their paper Wheat and colleagues call this collection of vessels Lino Black-on-Gray ceramic system. In a subsequent step, Wheat, Gifford and Wasley equalled the Lino Black-on-Gray ceramic system to the Basketmaker III time period. The result was, according to Wheat and colleagues, that henceforth, whenever an archaeologist picks up a back and grey sherd and he or she can successfully link it to the Lino Black-on-Gray ceramic system, that person instantly can identify said sherd as Basketmaker III and attribute it to the associated culture (Wheat *et al.* 1958, 41).

Since the unit 'ceramic system' contains a set of pottery vessels from a certain period of time, it is usually preceded and followed by other ceramic systems, which contain pottery earlier and later in time, each of which is made up of different wares, which in turn are created by sub-wares or series, and sub-wares or series are created by type-clusters that contain a type and its varieties (Wheat *et al.* 1958, 42).

Wheat, Gifford and Wasley supply a diagram that displays this intricate web of units (Fig. 6). This diagram also shows that Wheat and colleagues not only introduced new units, but also redefined others. They renamed Hargrave and Colton's 'series' into 'sequence' and gave 'series' a new meaning (Wheat *et al.* 1958, 35). According to Wheat, Gifford and Wasley, a series was now a group of contemporaneous pottery that exhibits a similar kind of technology applied to it in a specific geographical area. Originally, 'series' signified an unbroken line of development stages of a pottery type cross-cutting several time periods (Hargrave & Colton 1979, 3). Therefore Wheat and colleagues completely altered the meaning of the term 'series' by removing the focus on temporal development and putting the emphasis on geography and technology.

More changes were brought to the approach two years later by Smith, Willey and Gifford, who published an updated version. Now being named for the first time officially Type-Variety, this update was created, according to Smith, Willey and Gifford, with one reason in mind: the transfer of its area of application from the American Southwest to the Maya Lowlands of Guatemala and Belize in Central America (1960, 330). Smith, Willey and Gifford were reacting to new problems arising in ceramic studies and implemented further changes to the type-variety system. One flaw which Smith and his colleagues pointed out is that ware and type have a great many definitions and applications (1960, 330). This was an issue that arose already between Hargrave and Colton on one side and Wheat, Gifford and Wasley on the other, which can clearly be seen when comparing their respective ware definitions (Hargrave & Colton 1979, 2; Wheat *et al.* 1958,34/5). In Smith, Willey and Gifford's own words: 'No two people followed the same concept of ware and type' (1960, 331). In order to be able to revise proposed types in this situation, Smith and colleagues reiterate the statement of the Gladwins that neutral type and variety names should be used for easy movement of units, if necessary (Fig. 7). Smith, Willey and Gifford also criticized that that paste and temper have been largely neglected in analyses (Smith *et al.* 1960, 331) As a result Smith, Willey and Gifford proposed a new unit to be added to the existing system: the 'mode' (1960, 331), which they defined as an 'attribute or a cluster of attributes in their own right'. This idea of the mode unit, which referred to conspicuous parts of a vessel such as a rim, handle, feet or flange, is, however, not new to ceramic studies. Phillips (1958) already mentioned the mode concept when he tested the possibility of applying the type-variety method from the Southwest to ceramics from the Southeast (1958). He pointed out, however, that the concept of the mode is older still and had been first brought up by Rouse (1939). Phillips relegated the mode unit to a location below the variety, which made it the lowest unit in the system, being subsumed by the variety unit (1958, 117). Smith, Willey and Gifford, on the other hand, attributed more importance to the mode unit, but at that point did not yet formulate what to do with it (1960, 331).

Smith, Willey and Gifford admitted that Phillips' article influenced them by moving the focus from the type as the basic unit to the varieties as the new basic unit of the system, a view which they adopted (Smith *et al.* 1960, 333). This shift in focus attributed to Phillips by Smith, Willey and Gifford, however, is not articulated by Phillips himself (Phillips 1958). Nevertheless, based on the claims of Smith, Willey and Gifford, one could say that the original proposal of Wheat, Gifford and Wasley (1958) together with the alterations proposed by Phillips in his article (1958) effectively created the third incarnation of the type-based method, called Type-Variety.

With the changes introduced by Smith, Willey and Gifford, the Type-Variety reached its final configuration and also arrived in the Maya area. For James C. Gifford, the unresolved matter where exactly to put the mode and how to integrate it into the Type-Variety seemed to have represented the opportunity and possibly the duty to do more follow up research. His attempt to resolve the unfinished business with the mode unit resulted in the fourth and - so far - last stage of the type based method.

The Type-Variety:Mode system by James C. Gifford

While continuing his research under Gordon R. Willey at the site of Barton Ramie in Belize, James C. Gifford encountered Maya pottery, which had not yet been touched by a taxonomic system. Other systems, however, had been employed in the Maya area up to that time with great success, such as the seminal work of Robert E. Smith with the Uaxactun ceramics (1955), aided by Anna O. Shepard, who championed alternative ceramic classification methods during all of her academic life (Morris 1973; Shepard 1948).

Gifford seemed to have had the intention, apart from adding the mode unit, to make Type-Variety even more useful in its application by adding other levels and units. When elaborating on his newly named Type-Variety:Mode[8] classification method, Gifford renamed and combined several classification units that had been in constant use for almost half a century (Figs. 8 & 9).

8 Gifford always refers to his system in writing as Type:Variety-Mode. For the purpose of consistency the term should be Type-Variety:Mode, which I will be using in this paper.

One of the units that Gifford introduced is the 'mode' which has been discussed above. While Phillips (1958) relegated the mode to a place below the level of variety, and Smith never finalized the place of the mode in the taxonomy of Type-Variety, Gifford set it on the same level as the type and the variety units, effectively making these three units equal (Figs. 8 & 9). Modes were for Gifford, as they were for Phillips, certain vessel parts, such as bases, flanges or rims, that can show certain distinct characteristics and thus can have an influence on the overall membership of a piece in a variety (Gifford 1976, 8, 11). Possibly influenced by R.E. Smith's work in Uaxactun, who used to an extent a form of modal analysis (1955) and with whom Gifford had collaborated before, modes seemed for Gifford to be so important that he included them in the name of his new method and furthermore stated that mode analysis should become a separate, parallel process independent from the type-variety analysis. Thus he built a second column of analysis for ceramics, integrating the modal approach deeper and to a larger extent into his method than anyone else before. Pottery would be subjected to both analyses and the two separate findings would be joined together for a final result (Gifford 1976, 11).

While the role of modes was newly designed by Gifford, the traditional types and the varieties were left by him as they had been introduced in the original Type-Variety system, with the notable exception that he never mentioned the type clusters, introduced partly by him in the Type-Variety method years earlier. For reasons unknown he seemed to have discontinued the usage of this unit.

The more challenging part with Gifford's new system starts in the higher levels of integration, where one encounters familiar unit names from earlier development stages of the type-based system, but with more changes to rank and meaning than expected from a method being a direct descendant of Type-Variety.

The ware unit (Fig. 8) 'consists of types that are demonstrably similar on technological grounds (with particular reference to paste and surface finish) and in method of manufacture' (Gifford 1976, 14). Gifford's ware unit is therefore essentially congruent with the ware concept Hargrave and Colton already put forward (1979, 2/3), except for

Gifford’s use of more refined wording with a distinct emphasis on technology. The wording in Gifford 1976 is also different from the version given by him and others in the original article about Type-Variety in 1958 (Wheat *et al.* 1958, 34/5).

The ‘ceramic sequence’ '. . . is composed of pottery types similar to one another in decorative style or manner of surface treatment (…) which can be shown to have developed one to another from early to late times' (Gifford 1976, 12). The ceramic sequence is a concept not new to the type-based method, having been put forward already under the name of ‘series’ by Hargrave and Colton (1979, 3), later changed by Wheat, Gifford and Wasley into ‘ceramic sequence’ and simply reiterated by Gifford (Wheat *et al.* 1958, 35).

Contrary to ‘ware’ and ‘ceramic sequence’, the unit of 'ceramic system' (Gifford 1976, 12) had its meaning changed. Whereas it was in the original Type-Variety a term for all the ceramics in a certain culture period (Wheat *et al.* 1958, 41), it was turned by Gifford into a term for a specific style of vessels that is 'characteristically brief in duration but its elements have spread beyond its source over a wide geographical range' (Gifford 1976, 14).

What is striking is the fact that ceramic system had been established and defined with the help of Gifford in the first Type-Variety article (Wheat *et al.* 1958, 35) and now, despite having had a hand in its creation, Gifford changes the definition. The reasons are unfortunately not given, but the implication is that the original application was not workable.

There are three more units that need addressing on the mode side (Fig. 8). The unit ‘horizon style’ is to the mode analysis essentially what ceramic system in Gifford's sense was to vessels on the type and variety side (Gifford 1976, 14).

Staying with modal units, as Gifford states, the unit 'pottery tradition' is the existence of one special peculiar mode throughout time, i.e. the flange and ridge tradition or the monochrome-red tradition (1976,14). As such 'pottery tradition' is for modes what the unit 'ceramic sequence' is to complete vessels on the type-variety side of the Type-Variety:Mode system.

At the same time, ‘pottery tradition’ is essentially the juxtaposition of the just mentioned modal unit 'horizon style' (cf. Willey & Philips 1958, 31 and 34). Whereas horizon style refers to ceramics that have a very large distribution area and a relatively limited time-depth, pottery tradition is the exact opposite in having extensive time-depth, but usually a rather small regional distribution area, according to Willey and Phillips (1958, 35), from whom Gifford borrowed these two units. Exceptions to both units are known and they can even 'morph' into each other under special circumstances, with 'pottery tradition' becoming a 'horizon style' and vice versa (Willey & Phillips 1958, 35). An exact correlation between pottery tradition and horizon style, as Willey and Phillips saw it, can be seen in Figure 10. It is noteworthy that both concepts stem from the Andean area and it might be worthwhile research to establish, if the geographical and societal background of Mesoamerica lends itself to the transfer of these concepts from one area to the other.

In contrast to the last two units, which were new, 'design style' is a unit that had been used already in previous decades. According to Gifford, design style 'is the highly specialized study of irreducible motifs (...), combinations of motifs (…) and whole design patterns (...)' (1976, 14). Design style is identical to what Hargrave and Colton called Style of Design (1979, 15; cf. Colton 1953, 46pp). The significant difference between the two usages, however, is that, Hargrave and Colton (contrary to Gifford), never made design style an official part of the type based method, keeping it–independent. Since design motifs are distinctive parts of a vessel, it makes sense that Gifford included them in the mode section.

It is noteworthy that with 'style of design', Gifford breaks the symmetry of his model. So far all units had a mode version and a type-variety version. Ware, however, focuses on technology of complete vessels, whereas design style focuses on the decoration of vessels which is only one aspect or mode of a vessel, not the complete one. If that disparity is intentional or could not be helped, can not be determined. Therefore the question remains whether or not a unit dealing with the technology of only parts, or modes of vessels, or a unit dealing with overall designs of complete vessels exist and were neglected by Gifford or simply do not exist *a priori* at all.

Finally, the seventh and last unit on Gifford's integration level is ‘ceramic complex’. The ceramic complex includes 'all pottery utilized by a culture in a certain area and certain time' (Gifford 1976, 11). With this definition, ‘ceramic complex’ is now to Gifford's Type-Variety:Mode what ‘ceramic system’ was before in the Type-Variety system (Wheat *et al.* 1958, 41).

At the same time, ceramic complex is more extensively defined by Gifford as 'the sum of total modes and varieties (within types) that comprises the full ceramic content of an archaeological phase.' As such it has a hybrid function spanning both approaches, the traditional Type-Variety one and the new Mode one. This is clearly depicted in both diagrams (Fig. 8 & 9), where it is located in the centre, reaching into both ‘pillars’ of the Type-Variety:Mode method.

The way how Gifford handled several of these unit descriptions and their integration can be criticised. Indeed, type-based methods in general had to endure diverse critique in their times. The nature and the basis of these critiques will be central to the next chapter.

Chapter 3: Type-based classifications – a discussion

There are several aspects that open Type-Variety:Mode up to criticisms. Not only the Type-Variety:Mode, however, can be criticized, also the works of other authors at other stages of development and their interaction with each other concerning the type-based methods and Type-Variety in general can be examined.

The type system – the brief start of the type-based methods

Although laying the foundation for the entire line of type-based methods was a great achievement, the work of the Gladwins was, of course, not exhaustive, otherwise decades of alterations and improvement would not have followed. H.S. and W. Gladwin's original three page pamphlet (1930a) is too short to be really judged in any way and that is essentially already its main flaw. It only states the type system and leaves it at that, without putting it in context or elaborating on it.

The Gladwins afterwards put out two further publications in which they applied their system to ceramics: *Some Southwestern Pottery Types Series I and II* (1930b, c). Regarding these publications, their style is generally descriptive, which especially applies to 'Series I' (1930b). This first part contains neither an introduction nor a conclusion, only the type descriptions follow unrelated one after another. This is especially noticeable in case of the first type presented in Series I (Gila Polychrome) which is considered by the Gladwins an evolution of an earlier type (Little Colorado)(1930a, 5), which was first published no earlier than in 'Series II'. Usually, one would assume, if types are linked chronologically, they would also be published that way.

'Series II' improves on some of the shortcomings of 'Series I' by including some historical background about the scientific work done on the pottery treated in the publication. Generally, however, it is still the same list of pottery types as 'Series I' was.

Notably the Gladwins already use the words 'variety' and 'ware' (1930b, 3, 5), but do not provide any definitions to go along with them. Therefore, it can most likely be assumed that they did not connect any specific meaning with them and did not use them as terms in the way they were regarded in later versions of the type-based methods.

One positive aspect of the Gladwins' publication is the wide range of aspects covered in their type descriptions. The authors cover synonyms (alternate names the type is known as), colour, vessel shapes, treatment, design, type site (original find spot) and range (geographic distribution) (1930b, c). All these aspects, but especially the synonyms and the range are helpful to get a solid first impression of the nature of Southwestern pottery.

Another positive aspect is the pictures used in both series. While in 'Series I' both black and white as well as colour images of single pieces dominate (Fig. 11), in 'Series II' plates of grouped vessels are mainly present (Fig. 12).

At the time, when only the first rudimentary pieces of knowledge concerning Southwestern pottery were being collected and aspects about this kind of pottery remained vague, the extensive descriptions as well as the informative pictures made both series volumes into helpful pieces of orientation for the research area. In case the given type names are still valid, these publications make good primers for any researchers intending to familiarized themselves with the material. Despite these merits Hargrave and Colton wanted to achieve more consistency in the system with their additions (1979, 19).

The ware-type system – roads never travelled

The first notable difference to the Gladwins' publications, when going through Hargrave and Colton's book (1979) is the significantly lower amount of depictions. While the authors provide references to pictures of their discussed types (cf. 1979, 46), not having pictures is a disadvantage and makes their discussion harder to follow. The only depictions occasionally occurring are photographs of grouped potsherds (Fig. 13) and some drawings of painted vessel interiors (Fig. 14).

The detailed descriptions already present in the Gladwins' publications were continued and further expanded by new aspects, especially by chronological information, such as 'Stage' and 'Time' of each type (e.g. 1979, 47). This was made most likely possible through the advances in the understanding of Southwestern chronology, especially achieved by A.V. Kidder (1927) in the years between. Whereas the Gladwins, one could say necessarily, focused on the geographical distributions of pottery, Hargrave and Colton now emphasise temporal distribution, adding another dimension to the pottery matrix of the American Southwest. Another significant addition is the sorting of types into ware and series headings (e.g. 1979, 146pp), putting types into better context to each other than the Gladwins were able to do years earlier. These two additions, the extra chronological information, as well as the arrangement of the pottery types into the ware – series – type structure gave the type descriptions significantly more depth of archaeological meaning.

The ware-type system would have added even more archaeological meaning to Southwestern pottery in the long run, if some other new ideas and approaches would have been taken over by later incarnations of the type-based method.

First, one new idea was the proposal by Hargrave of a system based on paste, temper surface treatment (Hargrave & Colton 1979, 1) for creating and identifying pottery types. This system would have had quite likely a similar nature as the approach proposed and followed by Anna O. Shepard in her work on Maya ceramics (1947). Later versions of the type-based methods, such as Type-Variety and Type-Variety:Mode did not follow this approach, but rather opted for a focus on decoration, as will be discussed below.

Second, another new approach was a system of classification for rim types (Hargrave & Colton 1979, 9). This system used three different kinds of characteristics in rim types to classify them. First stage was the shape of the cross-section of the wall formed by the rim, given a Roman numeral. Second stage was the lip direction, which was given an alphabetic letter. Third stage was the rim form, which was given an Arabic number. Expressed in an example, a rim with a straight side wall, a crescent-shaped lip direction and a flat rim form would have been given the code IF4 (Fig. 15). This system described a rim efficiently and in detail, which was advantageous, since the rim is considered by many ceramicists to be the part of a vessel that has the highest sensibility to chronological changes (Fossey *et al.* 1982). Hargrave and Colton expressively recommend the use of a descriptive table for rims (1979, 11). It is interesting that such a simple, yet effective system has never been taken over by later versions of the type-based systems. Throughout the years and up to today approaches to record and describe rims in such a manner, only seem exist outside the type-based system. On example of the use of an extensive rim shape catalogue, similar to the table recommended by Hargrave and Colton, is the ceramic classification system used in the El Pilar project (Egerer 2008, 49).

The exact reasons why later versions of the type-based system never adopted either idea, the temper / paste analysis as well as the rim shape classification, could not be established with the available literature. Finding out might be worthwhile further research, in order to shed more light on the exact creation processes of the different versions of the type-based system, such as the steps from the ware type system to the Type-Variety system.

The Type-Variety system – high aspirations

With the Type-Variety system all involved authors wanted to move the type-based method to the next level. Despite their attempts, several aims were not reached and problems were introduced that would hamper the system in the following years.

An example for both a failed aim and a problem created is the introduction of the variety concept, which was intended to make the ware type system more sensitive to subtle differences between types and give ceramicists a means to express relationships of different pottery types in a more gradual scale, rather than the simple yes / no alternative the ware-type system provided.

Despite the attempt of Wheat and colleagues to provide a thorough definition of their new 'variety' unit and succeeding for the most part, they omit one very important aspect, which would become crucial in the decades to come. Wheat, Gifford and Wasley never define any kind of threshold representing the moment when a variety can still be considered a variety and when it already might constitute a new type. Wheat and colleagues established that in their view there can be temporal or spatial varieties of a type (1958, 35). But how should ceramics be treated that differ in temporal *and* spatial characteristics? Can those still be considered varieties? To go a step further, what should be done with pottery that differs in all three aspects a variety can have? Could and should that kind of pottery already be considered a different type rather than still a variety? Unfortunately Wheat, Gifford and Wasely remain mute about these vital questions.

Another shortcoming in the variety concept is pointed out by Willey and colleagues, stating that the choice for ceramicists between descriptive and arbitrary variety names were considered to be up to the individual researcher (Willey *et al.* 1967, 304). With this kind of flexibility Wheat and colleagues undermined their attempt to make the application of the type-based method consistent.

Furthermore, Wheat and colleagues sought to achieve a higher level of integration with their system by adding new units and honing the criteria of others. Their changes, however, were so fundamental that the authors occasionally altered the content and meaning of an established term, such as 'series', so completely that only the name remained the same between the old and the new version. Such a radical change must have caused troubles within the archaeological community with some continuing to use the old version of the term and some starting to use the new one. This situation probably necessitated an elaboration every time by a ceramicist when talking about 'series' which stated which version of the term 'series' he or she was about to use.

Adding new units to the ware-type system to enable the type-based method to include even more subtle differences in ceramics was a necessary step required at the time to allow further progress in the field. Changing established terms in such a fundamental way, however, clearly went counter to Wheat, Gifford and Wasley's original intention to create less confusion in ceramic studies (1958, 34).

Even more confusion was created by the overly complex and abstract images provided in the articles in which Type-Variety was elaborated on (Smith *et al.* 1960; Wheat *et al.* 1958). Usually, diagrams are expected to elucidate points made in the text, or help to decipher the points made in the text. In the case of Type-Variety, however, repeatedly a very intense study of the texts is required to decipher the meaning and content of the diagrams provided (Figs. 4, 5 & 6). This situation results in the ironic effect that instead of making the elaborations on Type-Variety more approachable, the abstractness of the provided figures make the articles less accessible.

The overall result is, despite two attempts of creating a clear and concise new type-based method, that the Type-Variety method made things more complex, intricate and sophisticated, but lost clarity and accessibility on the way. This statement of course touches on the debate about how simple or complex science, including ceramic studies, should be, but that is a different research topic.

James C. Gifford seemed to have opted for the complex way in ceramic studies when embarking on creating the Type-Variety:Mode system, after finishing with the Type-Variety system.

The Type-Varíety:Mode system – The Unfinished

The Type-Variety:Mode system is the version of the type-based methods that is most difficult to assess. The simple reason is that its creator James C. Gifford suffered an untimely, sudden death before he could complete his work on the system. The fact that this system has ever seen the light of publication is owed to Gifford's wife Carol Gifford, Robert J. Sharer and other collaborators who finished the book in a team effort. Such an endeavour is highly commendable, but it makes any evaluation of Gifford's original work almost impossible. The authors who finished the book had certainly to complete half finished manuscripts or fill in gaps between manuscript pieces in order to complete the text. In hindsight, such a completion poses the problem that no one can say any more where exactly Gifford ended every time and the other authors started.

Despite the best efforts of all people involved, the cracks and fissures that cross-cut the Type-Variety:Mode volume are definitely noticeable upon closer inspection and immersion into the text. Attempting a thorough stylistic analysis to shed light on the underlying construction of the text seems to be worthwhile research, but will have to be done at a different time.

Minding these circumstances, any criticism levelled against the Type-Variety:Mode system is not aimed at Gifford or any of the other authors, since authorship can not be securely placed. Any assessment is rather the attempt of objectively pointing out shortcomings in the system itself.

Comparing Gifford's book of Type-Variety:Mode (1976) with Hargrave and Colton's book of the ware-mode system[9] (1979) one will note the similar layout with a large theoretical introduction section and the type descriptions in the latter part of the volume. As it can be expected with a more recent version of the type-based method, Gifford's elaborations are more complex and extensive than Hargrave & Colton's.

The type descriptions are ordered chronologically and sorted into the framework of Gifford's integrations. This kind of display is very helpful when looking for types from a chronological standpoint and if looking for similar types within Gifford's ceramic complexes.

Concerning the aspects described in each type, the range is equal compared to Hargrave and Colton's publication. Just as Hargrave and Colton, Gifford gives an array of description, spanning paste and temper, form, external finishing and decorations (e.g. 1976, 112). Apart from that his emphasis clearly lies on chronological information as can be seen in the sometimes extensive detail sections accompanying type description chapters (e.g. 1976, 69).

9 The presentations of Type-Variety:Mode and Type-Variety will not be compared since the presentation of the latter only seems to exist in papers and not in a book as the others do.

The depictions of the types described are located throughout the book and alternate between drawings and photographs (Fig.16). Drawings clearly dominate. The drawings show the exterior views of the vessels and also cuts through vessel walls in the side way view that Dragendorff already used (cf. Fig. 2). This style of depiction is new to the type-based methods, having not been used in prior versions such as the ones from Colton and Hargrave's (1979) or the Gladwins (1930a). Notable though is the vast amount of depictions of vessel cuts incorporated in the volume which outweighs all other kinds of depictions or photographs. Whereas vessel cuts are the best way to display the material for a method that is based on form, vessel cuts are a problematic way of depiction of vessels for a method relying heavily on finish and decoration such as the Type-Variety:Mode method. For such a method vessel cuts lack usefulness since they do not show any exterior or interior views of a vessel on which types and varieties are mainly based. An explanation,why vessel cuts where selected throughout the volume in such an extensive fashion, could not be found.

In regards to keeping the descriptions and depictions of the types and the varieties together, the attempt to do so was clearly made. Due to the placement of the depictions throughout the text flow, however, the space for those depiction was clearly restricted. For some types and varieties only a single sherd is depicted (Gifford 1976, 173). Sometime it is even solely vessel cuts without any exterior or interior views (Gifford 1976, 163).

This mode of depiction reduces the overall understanding of a type or variety and gives descriptions an aura of abstractness they were probably never intended to have. Following this example ceramicists started in later years to use and apply type descriptions in a purely abstract fashion completely dislodged from type depictions, which lead to a multitude of issues (pers comm. B. Sillar August 2012). Willey and Sabloff insist as well that the 'limitations of the procedure and the model were (...) in the abstraction from context and overall barreness' (1974, 102/3).

Moving on from the types to the higher integration that had been developed by Gifford one will start to see the cracks and breaks that are in the presentation. When presenting his system, Gifford added intricate diagrams (Figs.8 & 9), as he did already during the presentation of Type-Variety as well (Wheat *et al.* 1958).

Both diagrams allegedly show the same system, but Figure 8 looks markedly different from Figure 9. One will note differences in the integration level. These differences are explained by Gifford through the claim that Figure 9 is the practical version used at Barton Ramie, whereas the first diagram (Fig. 8) is the theoretical concept behind the Type-Variety:Mode system in general. Some units from Figure 8 can be recognized in Figure 9, such as ceramic system and ceramic complex.

Another - ceramic horizon - can be connected due to similarity of terms to the horizon style unit. Although this connection can be made by some effort on part of the reader, changes in terms, how ever minimal, should be always communicated by the author.

There are two units that exist in only one of the diagrams (Fig. 9) the meaning of which cannot be explained by the reader on his or her own: ceramic sphere and ceramic group. In the first case, ceramic sphere, there is no reference, description or explanation of it in the text at all; there is only a single reference to an older article by Smith and Gifford about ceramic spheres in the caption of the diagram (Gifford 1976, 19). One has to consult altogether two older articles, in order to get a first-hand definition of the concept of ceramic sphere (Smith & Gifford 1970; Willey *et al.* 1967, 306). According to Willey and colleagues, 'a ceramic sphere exists when two or more [ceramic] complexes share a majority of their most common types' (1967, 306). This definition puts ceramic sphere one level higher than ceramic complex and subsequently over all other integration units so far, as it is already depicted in the diagram. Without this definition, however, the reader does not know why and that makes all the difference.

In the second case, ceramic group, the situation of description is different, but not necessarily better. Gifford fully recognizes that the unit ceramic group present in Figure 9 is not present in Figure 8, while nevertheless claiming that it still has a fixed position in his Type-Variety:Mode system (Gifford 1976, 17). Unlike the other occasions, Gifford provides in the case of ceramic groups several definitions, his own and those from other ceramicists (Gifford 1976, 17). Reading through all of these definitions which are all similar to each other, but not exactly the same, makes the character of the term ceramic group blurry. As a result, it could be connected to ware as well as series and seems to cross-cut both to an extent. In any case, it seems the ceramic group unit can not be assigned a viable location in the theoretical diagram in Figure 8, unless one would try to add a third dimension to it.

Additional to the problems mentioned above, it is noteworthy that in the description of the various units used in the Type-Variety:Mode, Gifford addresses at length a unit – ceramic school – which appears in neither of the two diagrams (Gifford 1976, 15).

Finally, the main distinction between the Type-Variety:Mode and the older Type-Variety, the mode aspect, about which Gifford extensively wrote on the outset of the volume, barely ever features in the description part. Therefore, Type-Variety:Mode essentially got dubbed down to the simpler Type-Variety version of the type-based methods. Explanations for this omission of mode do not seem to be present in the book. This absence of modal analysis in the type and variety descriptions, however, could be one explanation why, when Type-Variety:Mode was adapted by other ceramicists later on, the Mode aspect was essentially always omitted.

Inconsistencies such as these make Type-Variety:Mode in parts hard to grasp and heighten the chance of mistakes and misinterpretation when being used by other ceramicists. This situation might be the reason why Type-Variety:Mode has been adopted in many different fashions, but never exactly.

The type-based classifications – overall aspects

To conclude this chapter, there are some aspects which span the different stages of development of the type-based method and are not confined to one system alone.

First, there is the term ware, which is probably one of the most variable term in the history of the type-based classifications. It seems that from early on almost every ceramicist had his or her own personal definition of ware. Already Colton pointed out that there is misuse of the term ware by archaeologists (1953, 51) and stated that Guthe defines ware as 'ceramic group in which all the attributes of paste and surface finish are constant' (1953, 51). This definition differs markedly from Hargrave and Colton's own ware definition (1979, 2), as well as the one Gifford gives (1976, 14).

This is yet another case in point that the type based method was repeatedly plagued by fuzzy and changing definitions of terms, in this case ware, from which stemmed regularly recurring issues throughout the years. To put matters into perspective though, especially the ware term seems to be something ceramicists in general, not only in the type-based classifications alone, use in a rather loose fashion. A recent visit to the ceramic collections of the Victoria & Albert museum showed that wares are named and based on many different aspects of ceramics. There is, for example, salt-glazed ware, which denotes a special ingredient, Dresden ware, which denotes a specific place of manufacture or pearl ware, which denotes a specific appearance and look. Depending on what the ceramicist who named the ware found to be the most important aspect, wares got over time and in different places of the world differing names, with different definitions of wares underlying the naming process.

Second, staying with terminology, other terms used by the type-based method were criticised as well. Especially the terms regarding the relationships between types, which were borrowed from biology in reference to the Linnaean taxonomy by which the type-based methods is inspired. These terms include 'genetic relationships' and 'inherited features' between specific types. The usage of terms like these probably was the reason that drew criticism. An anthropologist is quoted with saying 'potsherds don't breed' (Willey & Sabloff 1974, 102), because by using such terms, archaeologists implied links inanimate objects could not by all means possess. While a taxonomic system is undoubtedly about relationships, archaeologists tend to turn pottery into living, acting beings with this kind of writing, which clearly can create misconceptions of actual mechanisms.

Third, concerning types in general there is a problem that troubled the whole line of the type-based method and essentially all etic classifications for decades: types were always and still are commonly agreed upon units. They exist by convention not due to natural reasons and the creation conventions never where really centrally governed (Willey *et al.* 1967, 304), which is the root for a plethora of problems, such as same types getting named differently in different places (cf. Hargrave & Colton 1979, 1). Another reason why types get named differently without the help of a central rule set is individual perception. In a perfect world the types would be ideal and exactly the same, but archaeological material is always somewhat 'fuzzy' and decisions need to be made if it is still the same type or a new one (Gorodzov 1933, 100). Since individual perception of the surrounding world, including pottery, differs, so does descriptions and later sorting and grouping based on those descriptions. Therefore pottery that might have been assigned to one type by one researcher, possibly is assigned to a new or different type by another. A third reason is that researchers forgot about the scientific concept of fallibilism and started to consider the descriptions and depictions of the type-based method as infallible, due to them being scientific, which is not without irony. As a result ceramicists started increasingly to work solely on published material instead of the real pottery collections.

Someone for whom the type-based definitions were generally too lax and who tried to remedy that situation early on was James A. Ford (1911 – 1968). Ford picked up on the Type-Variety style method and tried to make the type definitions more rigorous. But he failed to do so, partly because of the realities in the field and partly due to resistance from other archaeologists. The argument between Ford and Spaulding are the pinnacle of these debates (Ford 1972; cf. Spaulding 1953; cf. Willey 1974, 103, 143). As a result, types rules seem to have been kept most of the time on the relaxed side, for example in Mesoamerica.

Fourth and final, an issue that taxonomic systems, such as Type-Variety:Mode, also face is that the basis of them, the Linnean system, is meanwhile considered outdated by biologists. There are several reasons for that. One is that essentialism which guided the creation of the taxa is overcome in the opinion of evolutionary biologists (Ereshefsky 2001, 3). Another is that allegedly some of the higher integration levels have no ontological meaning (Ereshefsky 2001, 4). Furthermore, another criticism is that the Linnaean nomenclature is perceived to be cumbersome and unwieldy (Ereshefsky 2001, 5). Meanwhile there are several alternatives to the traditional Linnaean taxonomy present in biology: evolutionary taxonomy, pheneticism and cladism, to name some (Ereshefsky 2001, 7).

Therefore the question can be asked, whether or not Linnaean taxonomy is still an adequate model for classifications in archaeology. There are many occasions in the history of archaeology where archaeologists have borrowed concepts and methods from other sciences. Sometimes this loaning went so far that Dunnell felt compelled to write that archaeologists seem only to be able to borrow from other sciences and even be bad at it (1982, 3). The switch of the order of the genus and species names by the Gladwins' could be used as a case in point, assuming this mix up was an error and not intention. In any case, this point and others, such as the non essentialist approach of the type-based system, which bases its types and varieties not on one unique characteristic but on a cluster of attributes (Hargrave & Colton 1979), shows that the resemblance between the type-based methods and the Linnaean taxonomy is not as strong is it seems on the first glance. Therefore a departure from the traditional taxonomical system can be argued and archaeologists could and possibly should start to search for a new classification system the could borrow. This scenario, however, has to be the matter of a future paper.

Conclusion

The roots of archaeological classifications and typologies are long and intricate. Some concepts hark back to the 16th century while others are recent additions. All additions and changes were done to improve classifications or keep them up to date with the questions posed to them.

This can be seen very well in the case of the type-based methods. When the ware-type and Type-Variety systems were created, the paradigm of culture-history was generally followed. Culture-history was focused on the questions 'what – where – when' (Wheat *et al.* 1958, 42). This reflected on the type system, which tried to answer the first question, and the ware-type system and the Type-Variety system which focused on the latter two questions, especially the last one. In a sense the type system through to the Type-Variety system are ever more complex and sophisticated iterations of an continuous attempt to improve the answers for the same questions.

This outset changed only with the Type-Variety:Mode system. The reason for this change is rooted in an alteration in the predominant theory followed in archaeology at the time. The new movement of processualism campaigned for by Lewis Binford (1962) tried to change the focus of archaeologists away from the traditional questions of culture history towards new ones not yet explored, striving for less description and more integration.

Such a new alignment in goals also effected the way classifications and typologies were set up, their overall kind and for what aims they were used for (Rice 1987, 285). In an attempt to keep up with these new flows in theory, Gifford added the mode unit and mode analysis pillar as a new main factor apart from the type-variety pillar to his system.

The 'horizom style' unit was also new and an interesting addition to the type-based system. Gifford picked the name and concept up from Willey and Phillips, who championed it in their book *Method and Theory in American Archaeology* published in 1958, and used it for his new modal approach (Willey & Phillips 1958). This concept is interesting, because Willey and Phillips can be considered part of a proto-processual movement, that preceded and paved the way for Binford's processualism in 1962 (Binford 1962; O'Brien *et al*. 2005, 27). As such these authors can be considered part of the new path of thought that tried to upset and replace culture-history. Same applies to the unit of 'pottery tradition' which stems from the same publication of Willey and Phillips (cf. Willey & Philips 1958,31 & 34). These new units and the mode approach itself essentially turns Type-Variety:Mode into a hybrid method out of culture-history and processualism, a view that is shared by O'Brien and colleagues (2005).

With each new theory movement possibly a new layer of expectations and requirements is added to classifications and typologies. The Type-Variety:Mode system was often subject to this procedure, with archaeologists trying to apply it to ever new areas of research. The system seemed to have been considered by ceramicists for the past forty years an universal tool that can be applied to wide variety of topics and augmented as best as they could (e.g. LeCount 1996).

The type-based methods were in concordance with the culture-history paradigm created to deal with chronology. As it was shown with the rise of complexity between ware-type, Type-Variety and Type-Variety:Mode systems, augmenting classifications even in their intended field, can make them overly complicated. Augmentation of a classification for a purpose outside its original one is even harder and more extensive, as own research has shown.

Classifications and typologies have been fitted to new theories, such as the Type-Variety:Mode the culture-historical core of which was augmented with processual additions. Processualism was meanwhile followed by post-processualism (Hodder 1982) and post-processualism will probably one day followed by yet another theory. Although the champions of a new theory usually intend that their new approach completely replaces the old ways, this actually never happened so far. Culture history is still practised and followed as Trigger shows in his extensive chapter on the current worldwide use of culture-historical approaches (2006). Same applies to processualism that tried to replace cultural-history and to post-processualism that tried to make processualism obsolete.

At this point, ceramicists have the choice to enlarge one and the same classifications over and over again in an attempt to create the ultimate one- fits-all classification or they can try to develop and use several different classifications with specialized abilities for specific aims and questions. Renowned ceramicists, such as T. Patrick Culbert, have argued already in the past for the latter approach (Culbert & Rands 2007).

This will be an important crossroads for ceramic studies in archaeology in the future and one in which the type-based methods will play an important factor either way. Extensive future research is required on this topic to enable ceramicists to make an informed decision best for their field when the time comes.

ILLUSTRATIONS

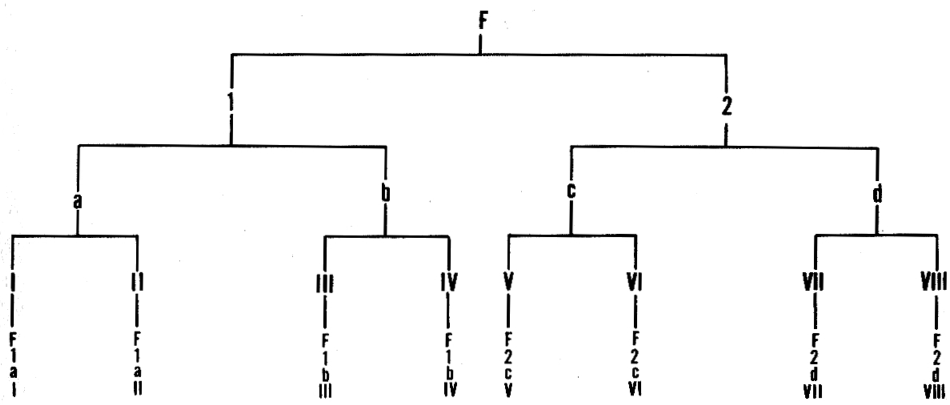


Figure 5. A taxonomy composed of binary oppositions. Only the definitions of the lowest level classes are written out.

Figure 1a: a symmetrical taxonomy

Reproduced from Dunnell 1971, 77

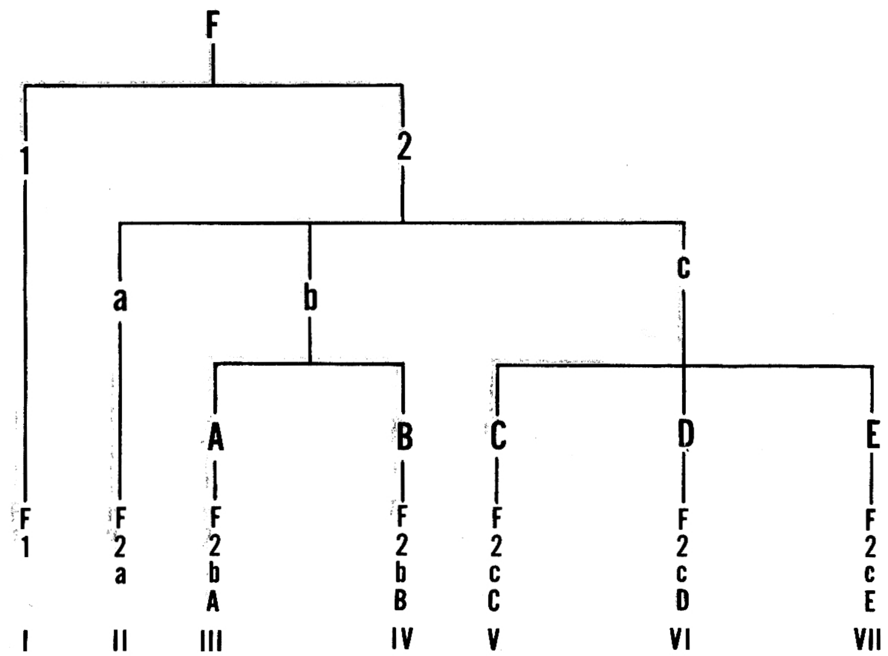
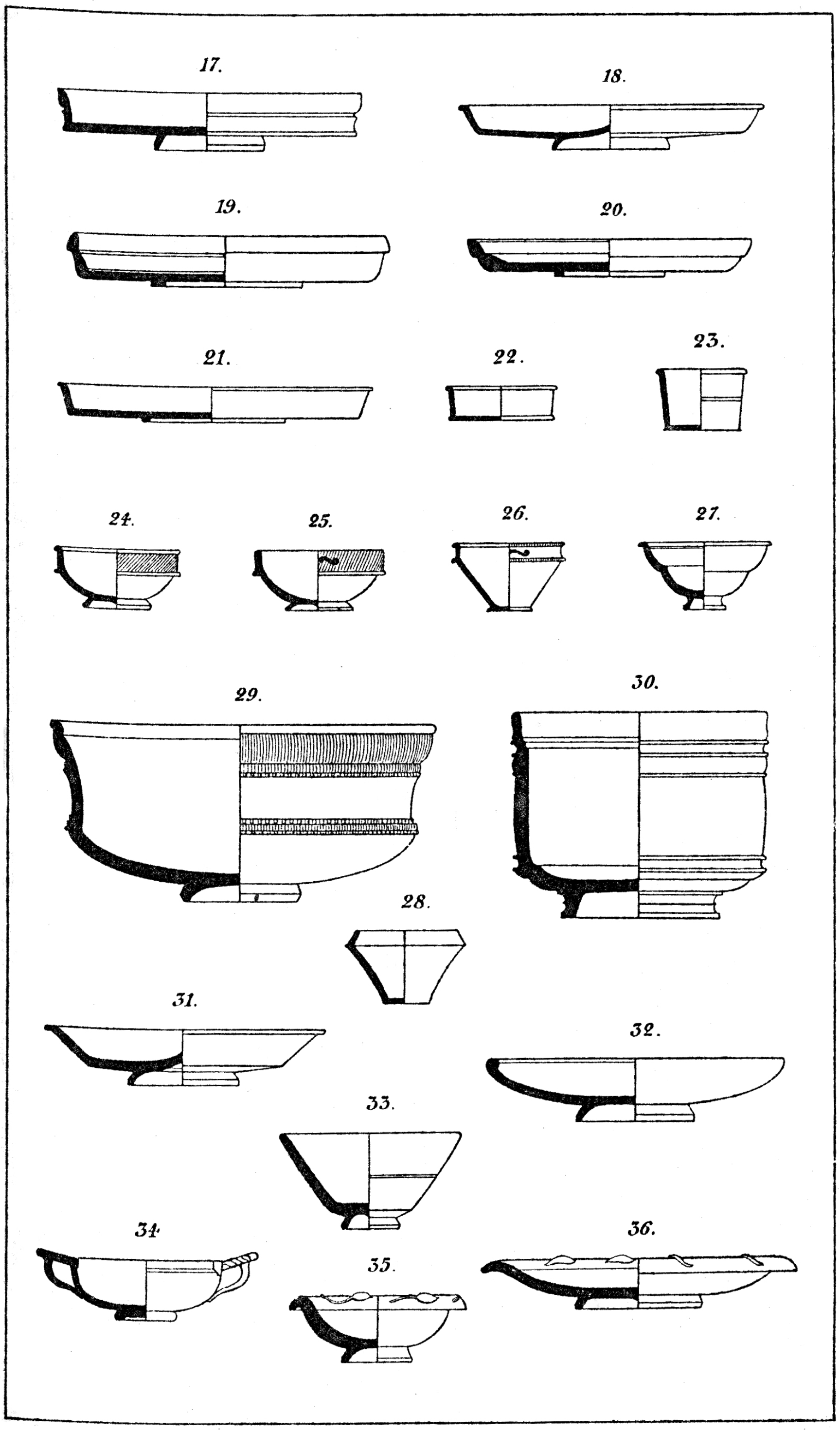


Figure 6. A typical taxonomy composed of various oppositions at different levels. Only the definitions of the lowest level classes are written out.

Figure 1b: an asymmetrical taxonomy

Reproduced from Dunnell 1971, 78



Formen römischer Terra-sigillata-Gefässe.

Figure 2: vessel form chart after Dragendorff

Reproduced from Dragendorff 1895, Taf. II

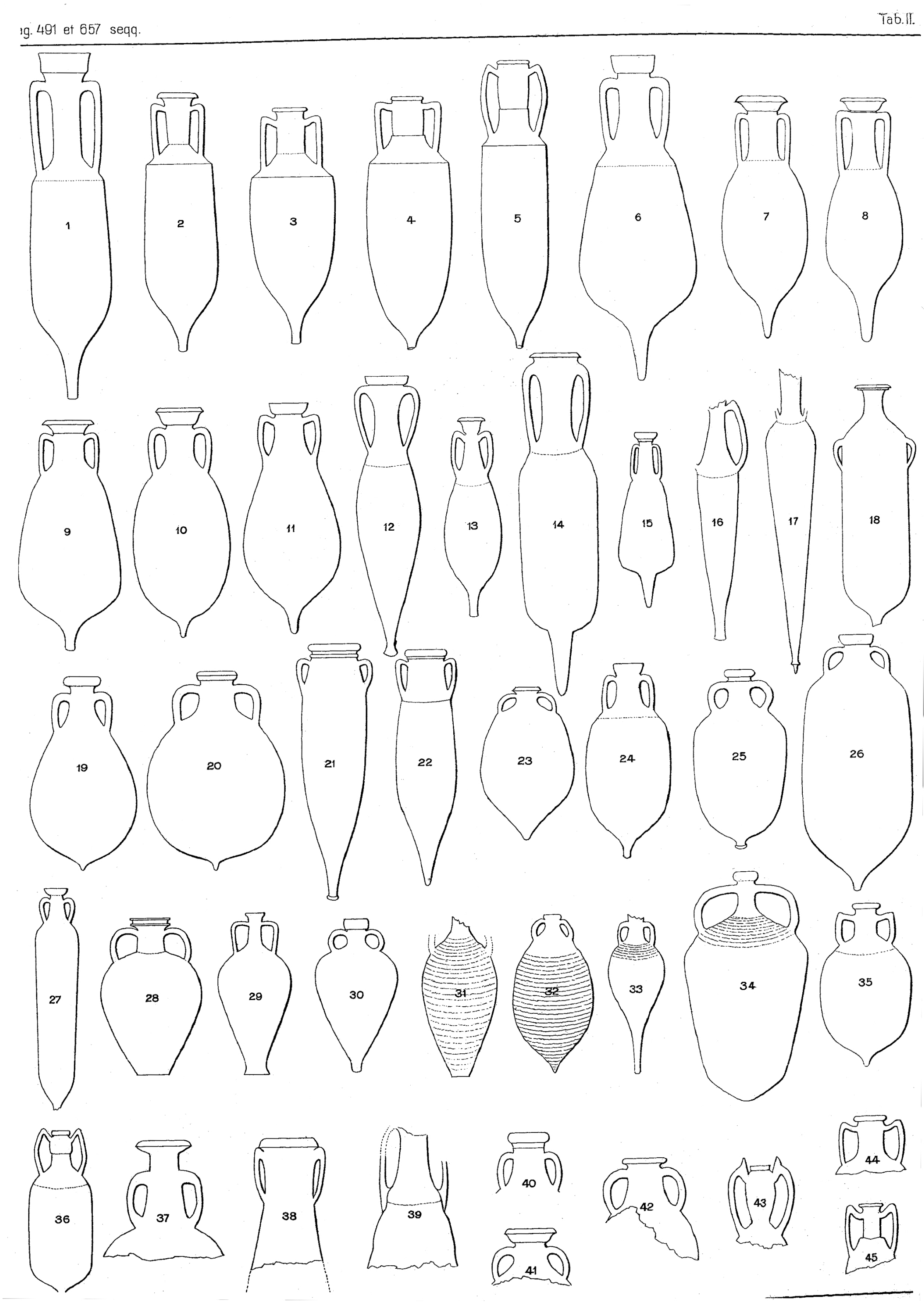


Figure 3: amphora shape chart after Dressel

Reproduced from Dressel 1899, Tab. II

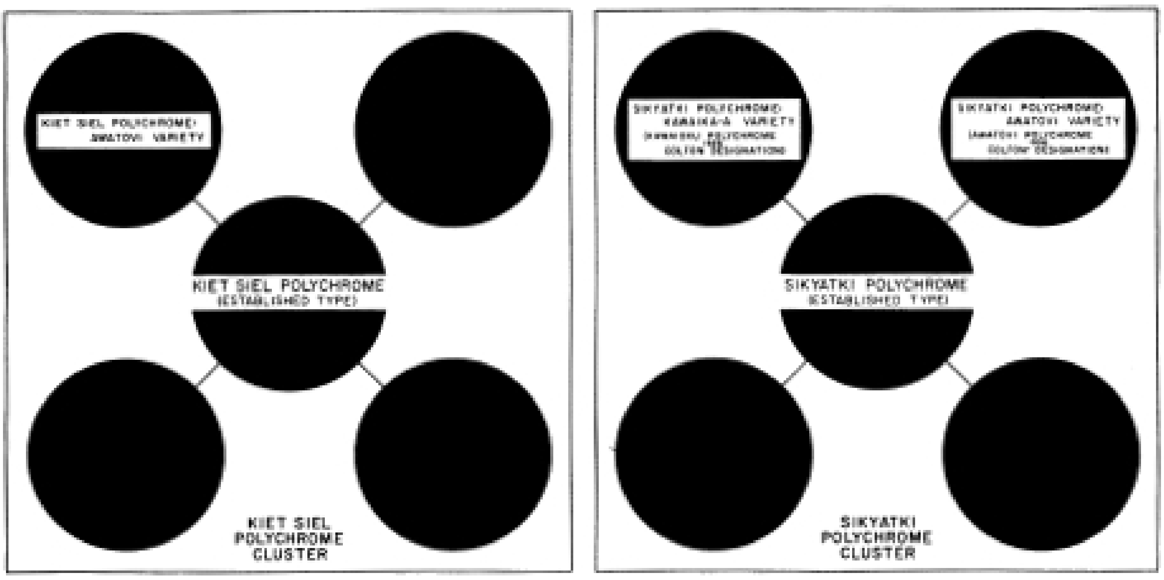


FIG. 1. The Kiet Siel Polychrome Cluster and the Sikyatki Polychrome Cluster. Solid black circles represent potential varieties of an established type, of which there may be any number.

Figure 4: graphical representations of type clusters

Reproduced from Wheat *et al.* 1958, 39

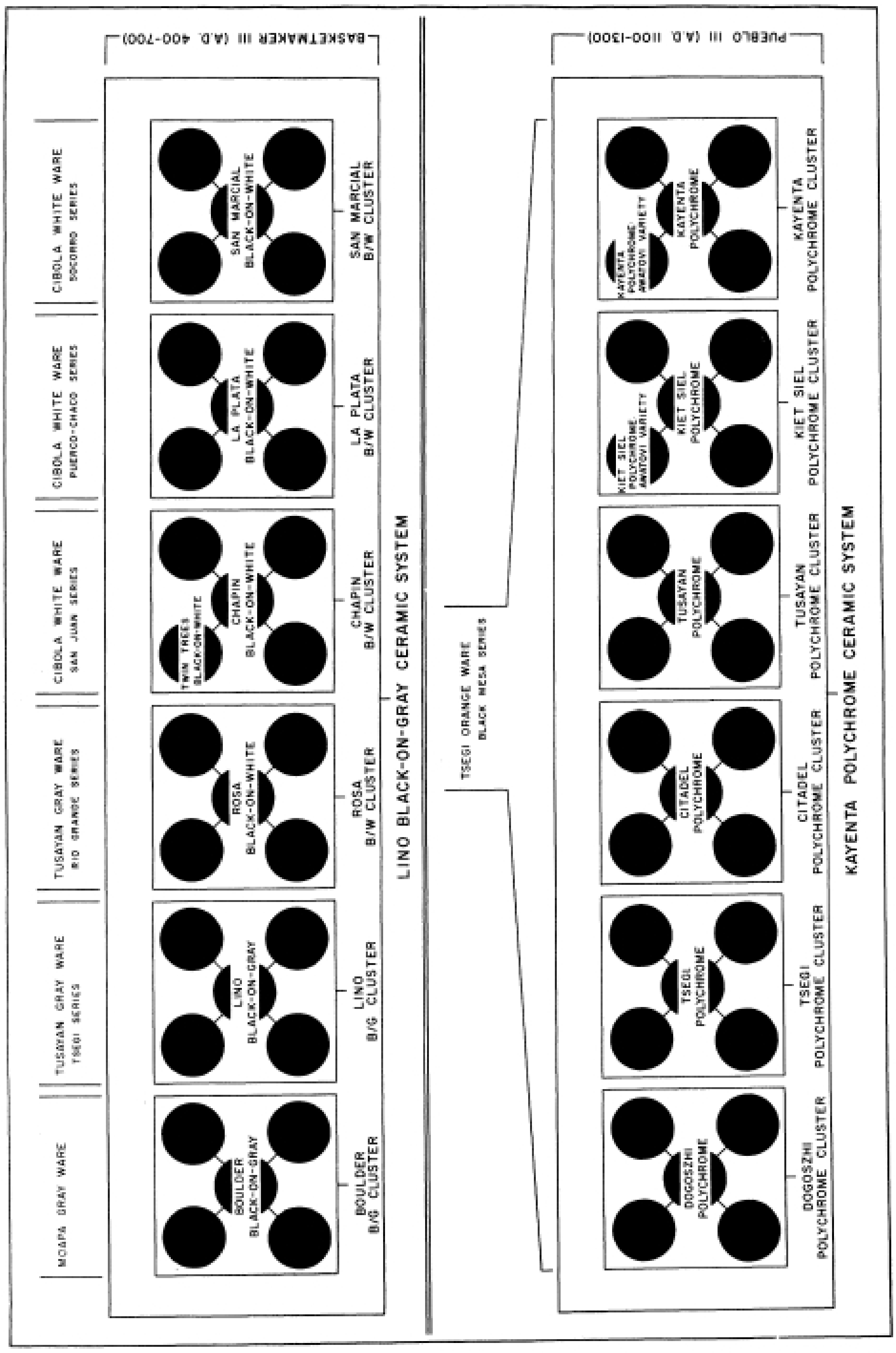


FIG. 2. The Lino Black-on-gray Ceramic System and the Kayenta Polychrome Ceramic System. Solid black circles represent potential varieties of an established type, of which there may be any number.

Figure 5: graphical representation of ceramic systems

Reproduced from Wheat *et al.* 1958, 40

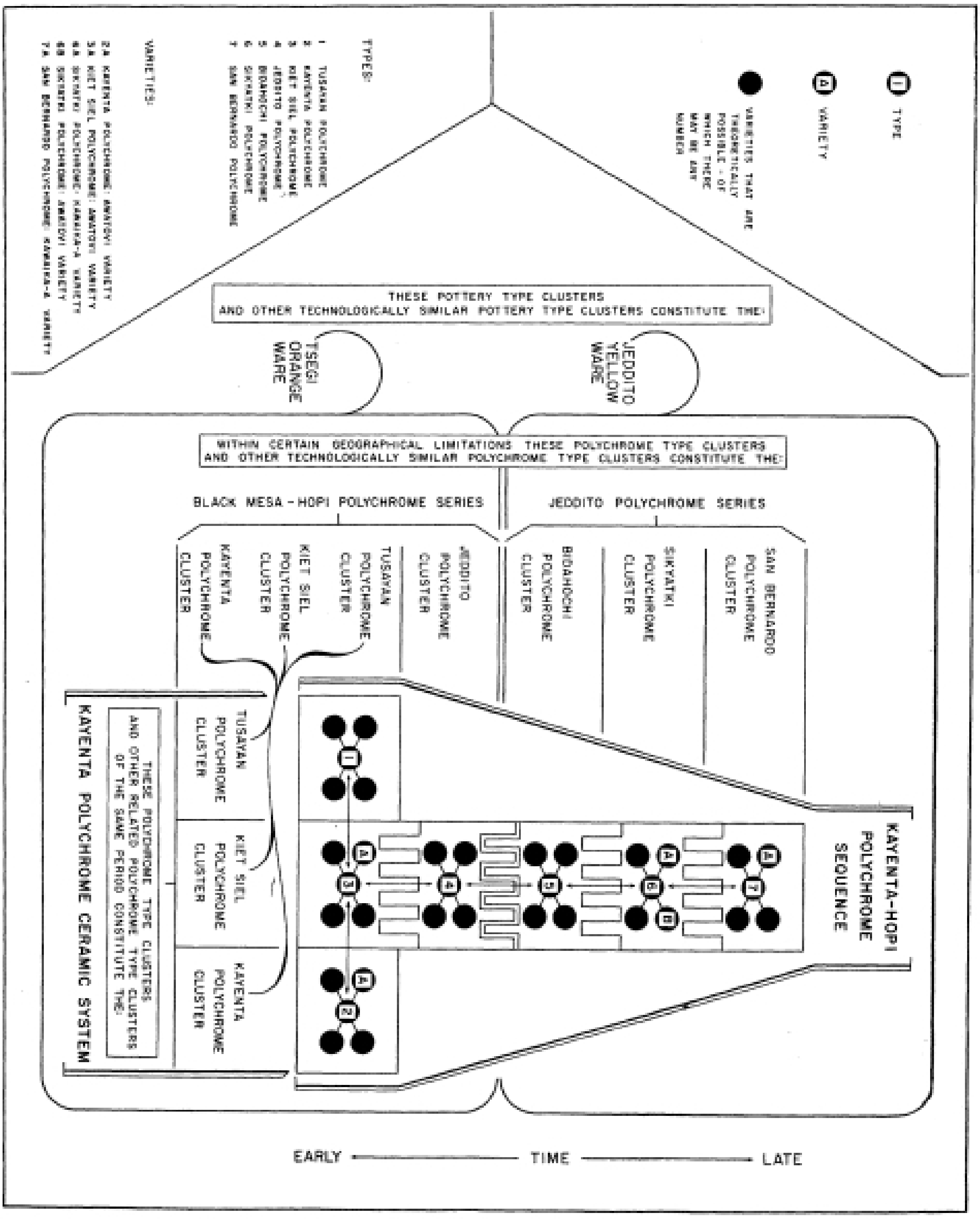


FIG. 3. A graphic summary presentation of variety, type, type cluster, series, ceramic system, ceramic sequence, and ware, used as taxonomic devices to show technological, temporal, cultural, and areal interrelationships and similarities among certain ceramic manifestations.

Figure 6: diagram of unit relationships in Type-Variety

Reproduced from Wheat *et al.* 1958, 43

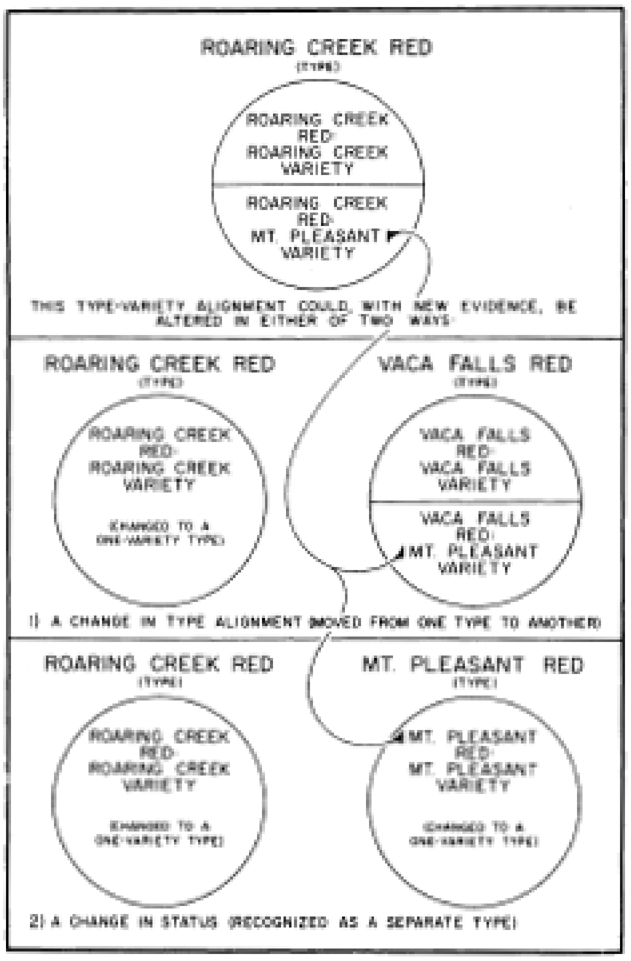


Fig. 1. Diagram illustrating the methodological advantage in assigning a separate place or geographical name to each variety unit. If a descriptive name had been used to designate the Mt. Pleasant Variety in the initial instance, such a name might have had to be supplanted in change 1 and certainly would have been replaced in change 2.

Figure 7: diagram showing possible type and variety unit movement

Reproduced from Smith *et al.* 1960, 335

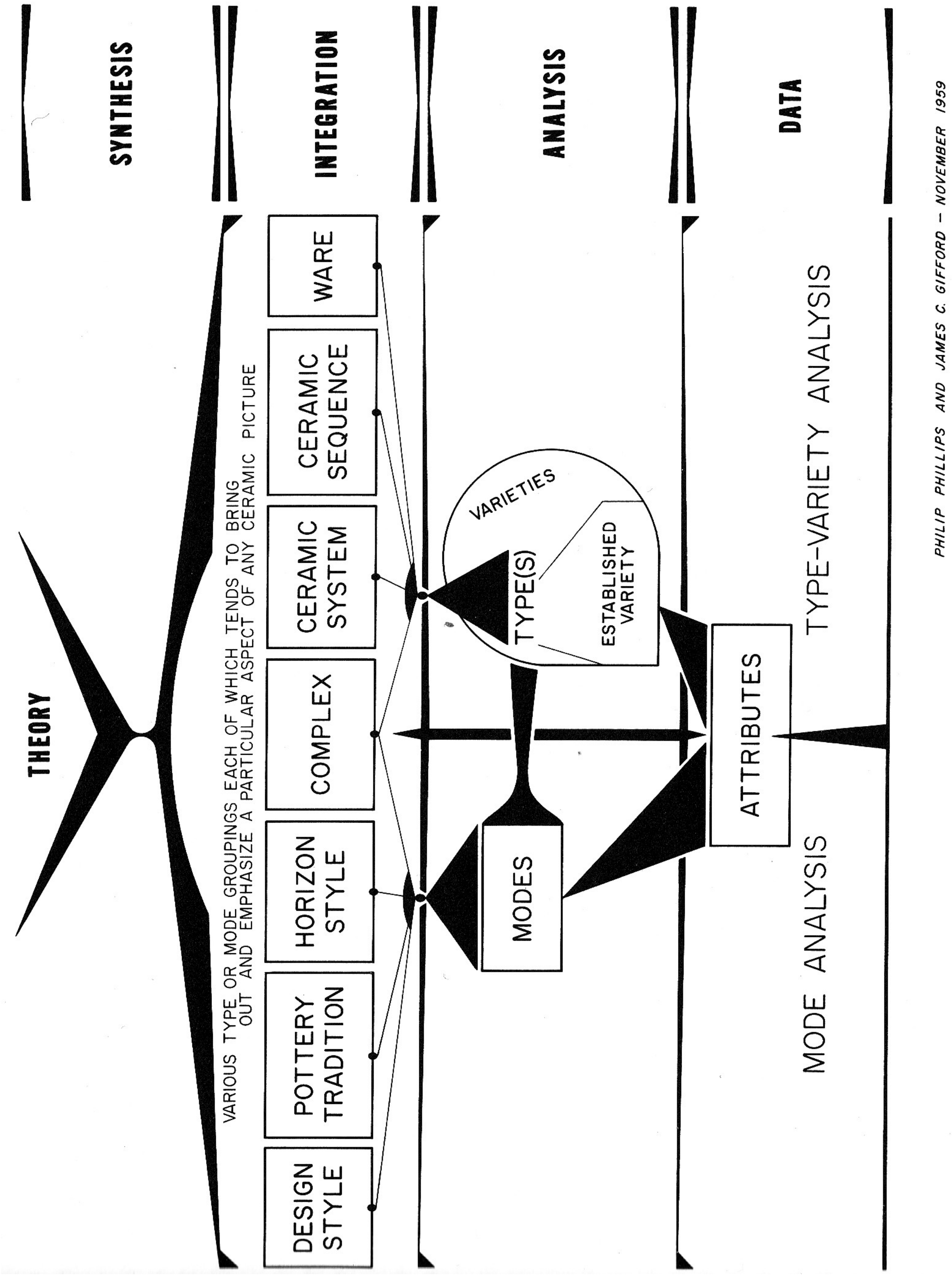


Figure 8: diagram of the theoretical mechanics of the Type-Variety-Mode system

Reproduced from Gifford 1976, 7

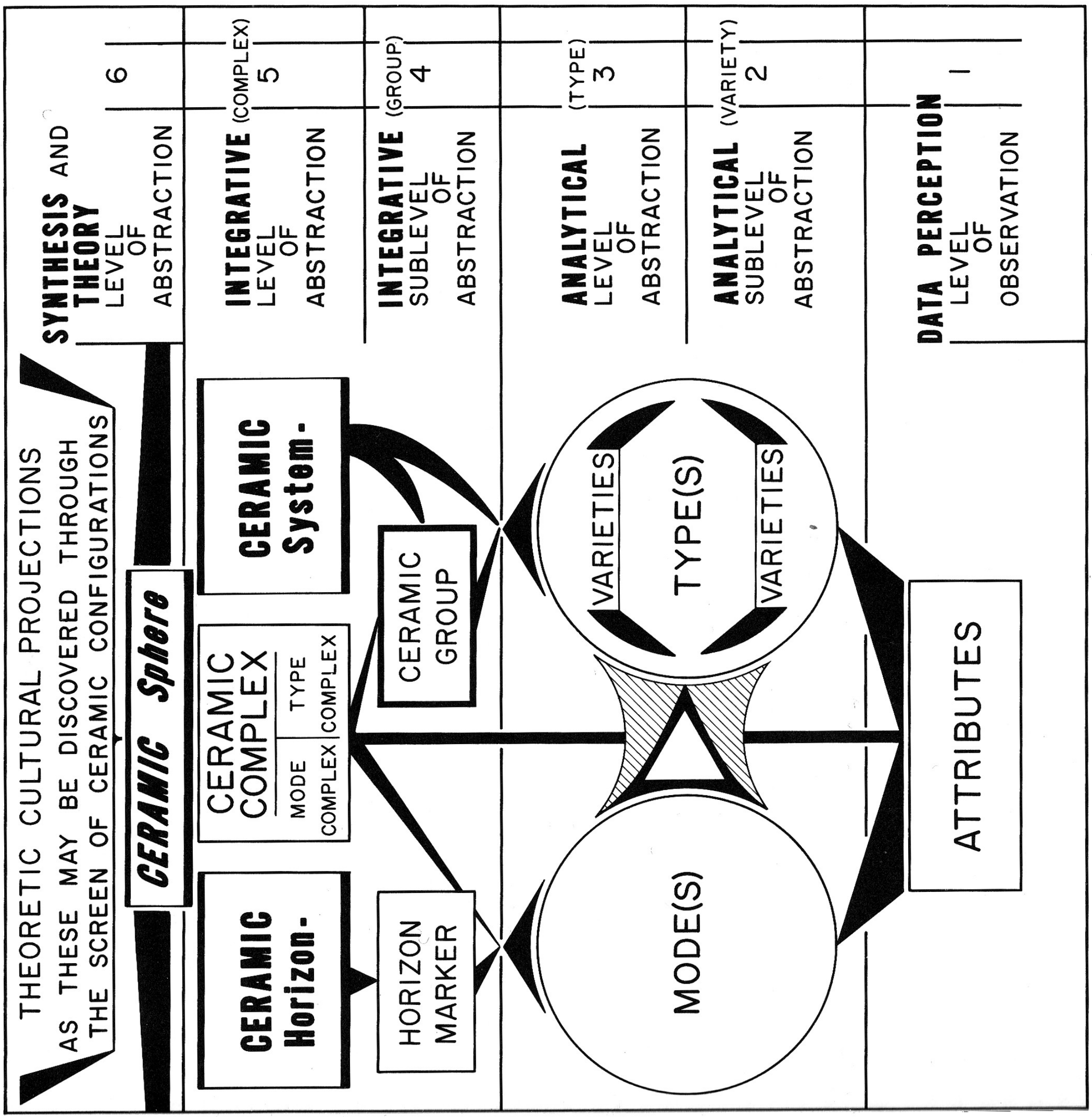


Figure 9: diagram of the actual mechanics of the Type-Variety:Mode system applied at Barton Ramie, Belize, Central America

Reproduced from Gifford 1976, 19

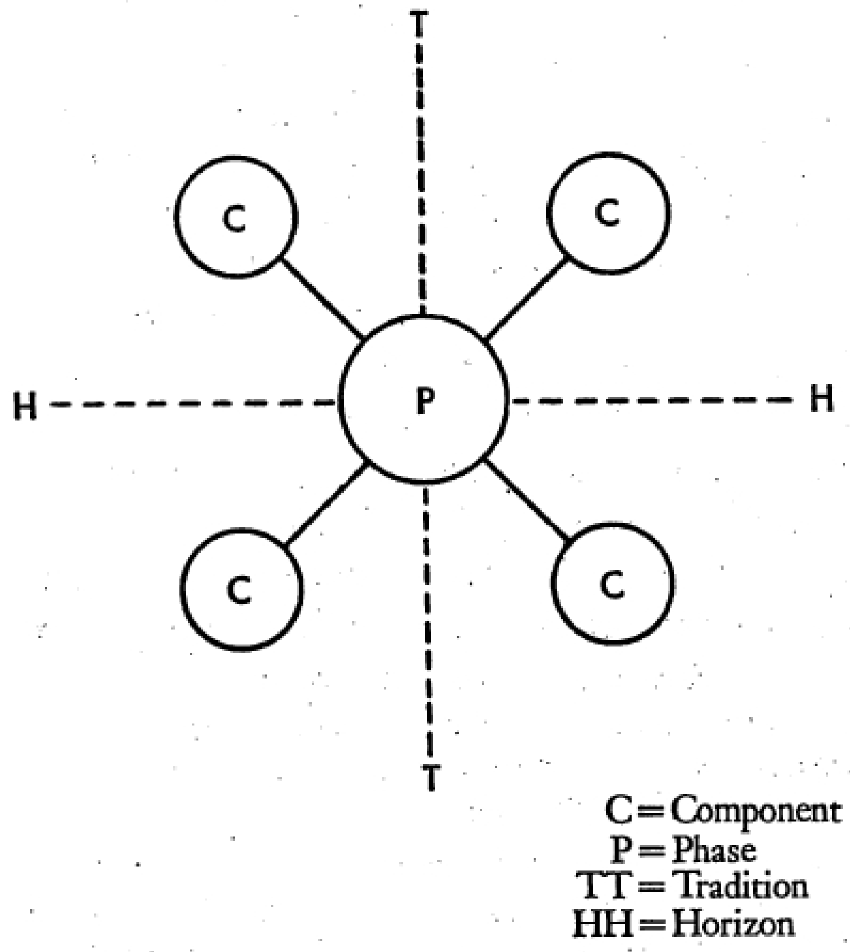


FIG. 1.—Diagrammatic integration of components, phase, horizon, and tradition.

Figure 10: graphical representation of the relationship between pottery tradition and horizon

Reproduced from Willey & Phillips 1958, 41

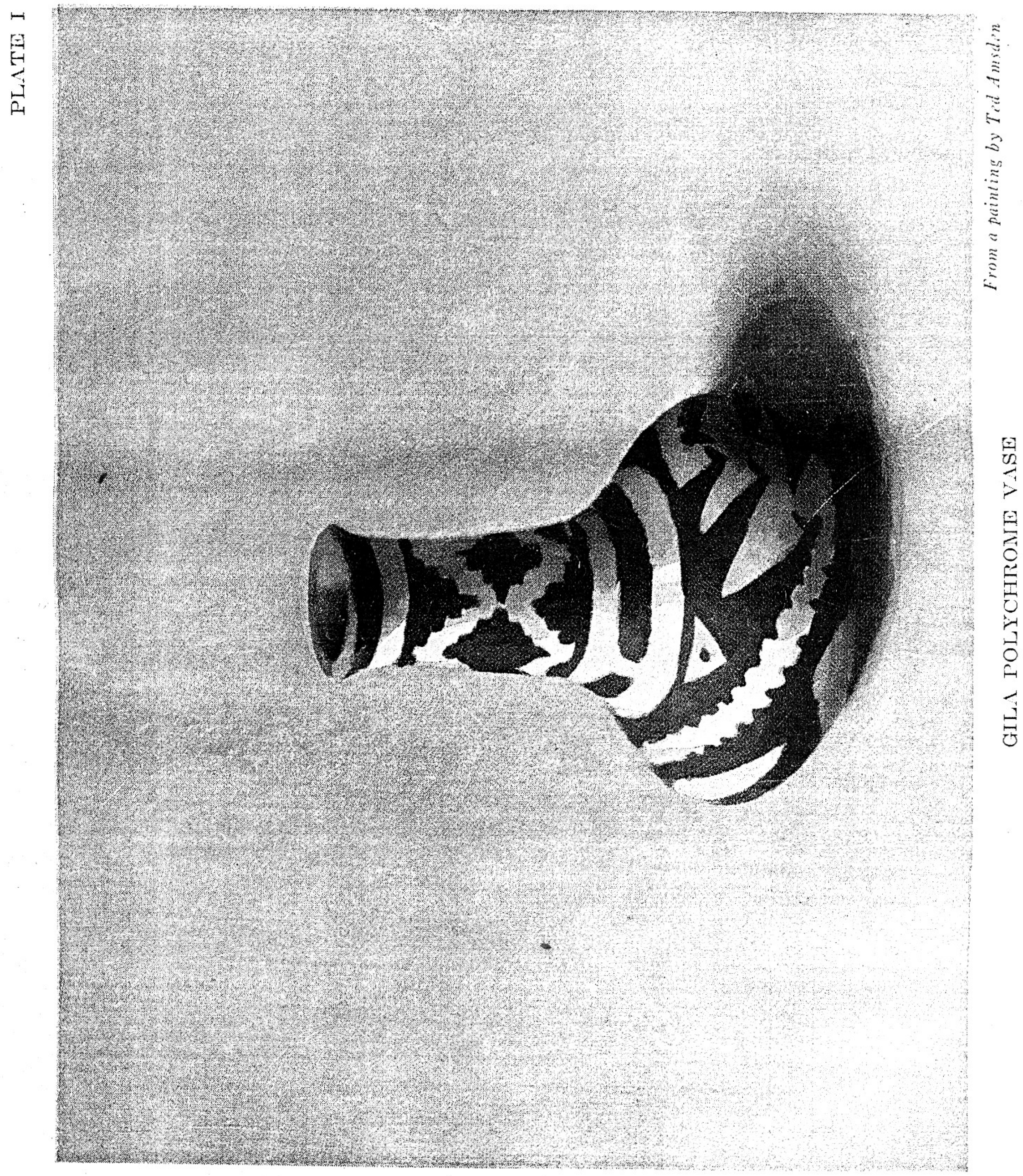


Figure 11: black-and-white reproduction of a pottery vase colour photograph

Adapted from Gladwin & Gladwin 1930b, Plate I

PLATE XXXIV

A

B

TULAROSA BLACK-ON-WHITE WARE

Figure 12: photographs of grouped pottery vessels

Reproduced from Gladwin & Gladwin 1930c, Plate XXXIV

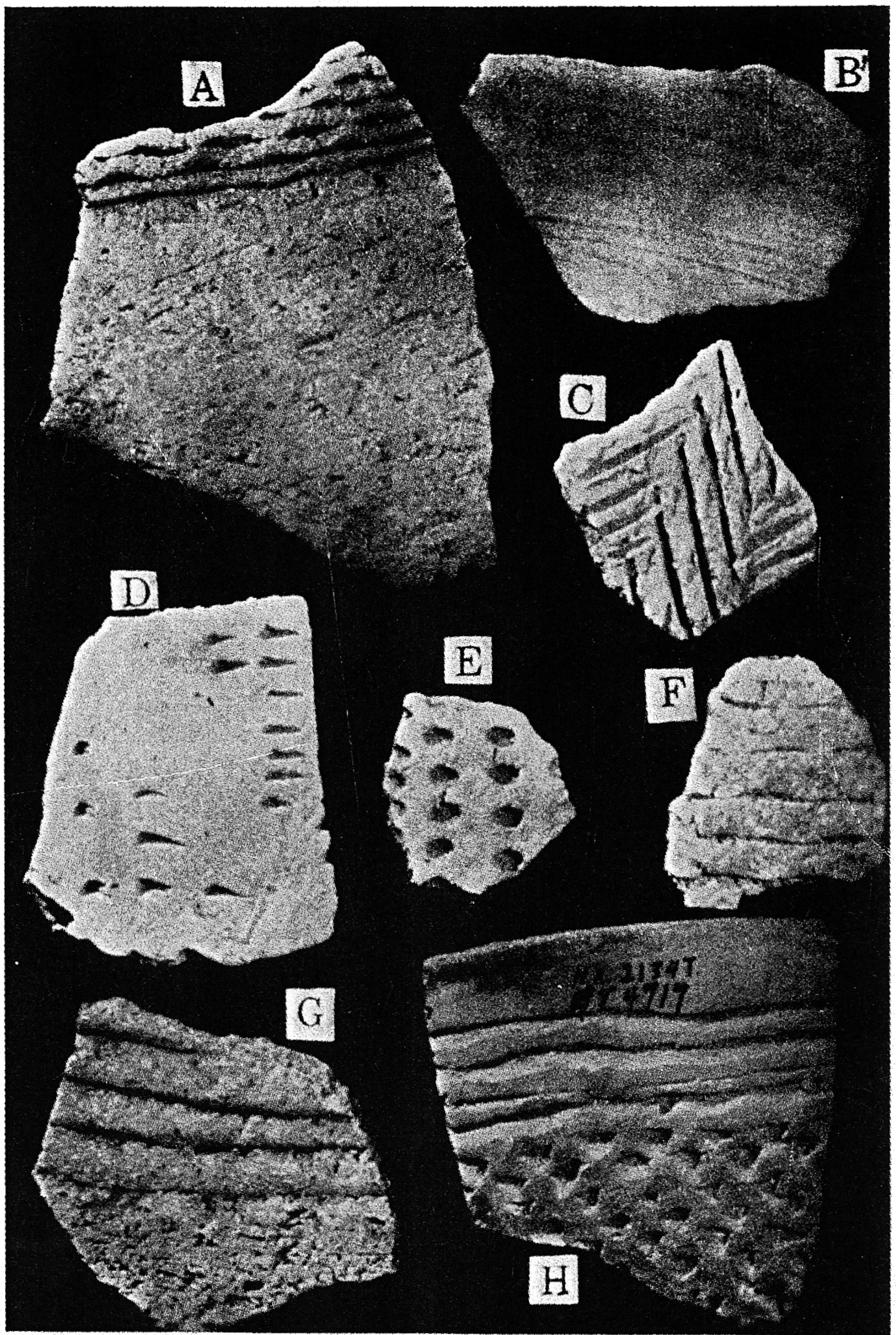


Figure 13: photograph of a group of potsherds with altered surface

Reproduced from Hargrave & Colton 1979, 38

Fig. 48. Deadmans Black-on-white ($\frac{1}{4}\times$).

Figure 14: drawings of painted vessel interiors

Reproduced from Hargrave & Colton 1979, 207

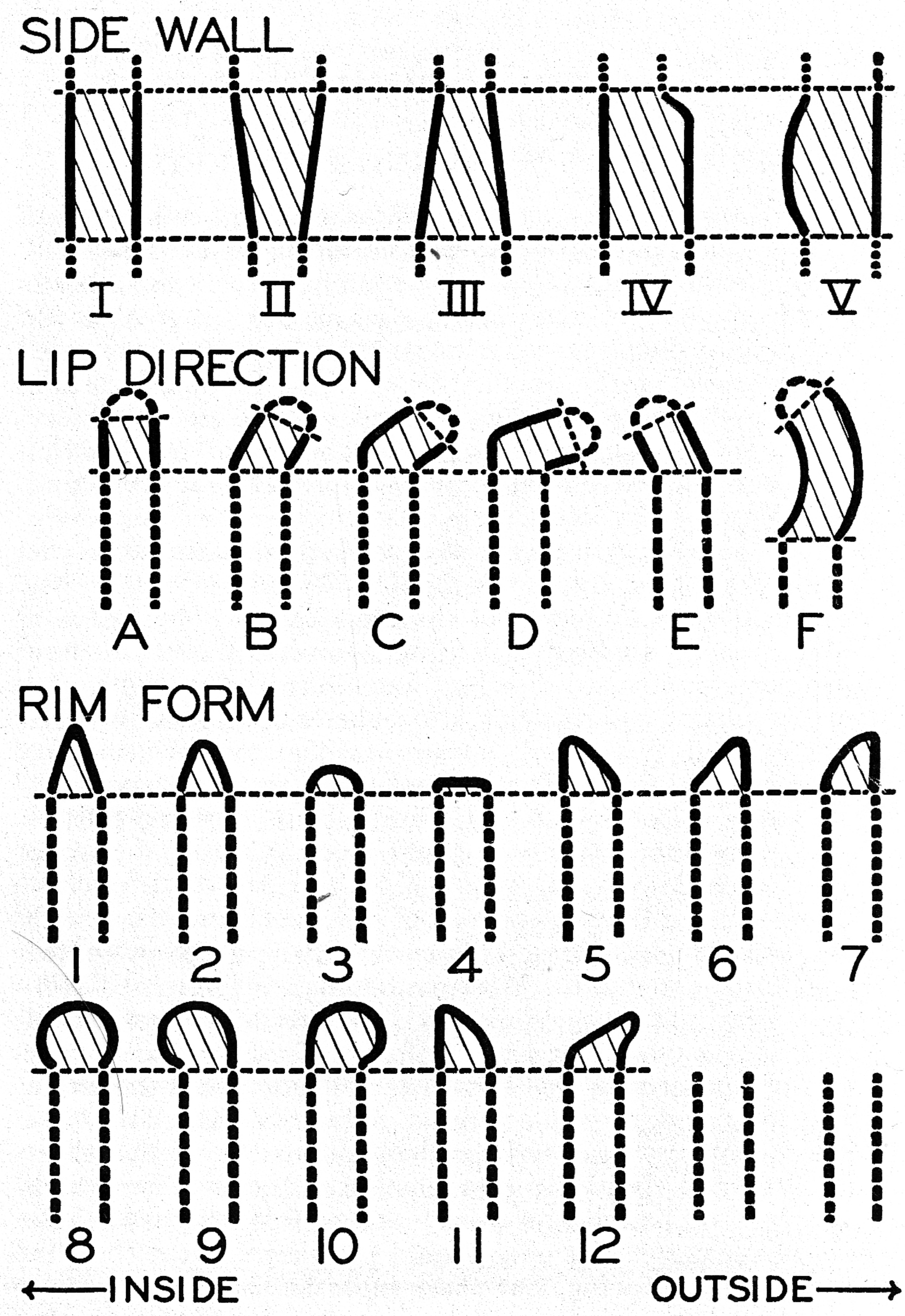


Fig. 2. Rim Types.

Figure 15: chart of Hargrave and Colton's rim type classification system

Reproduced from Hargrave & Colton 1979, 10

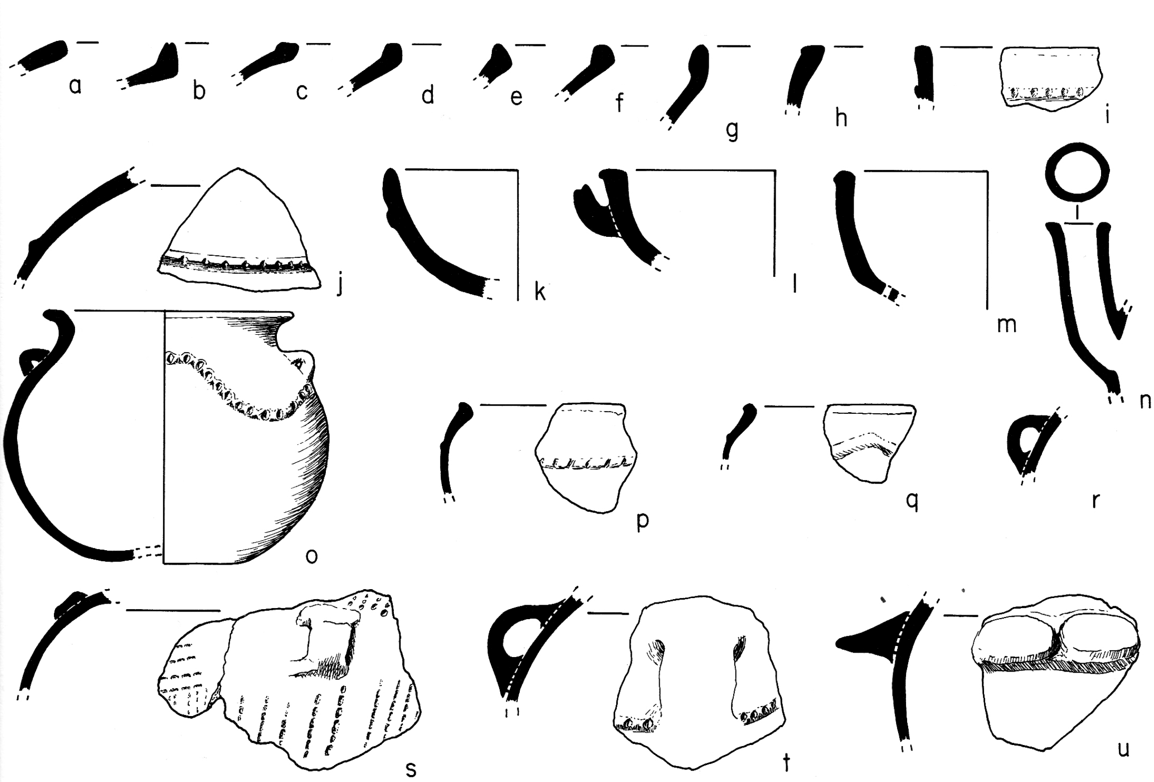


Figure 16. a–r, t, u. Jocote Orange-brown: Jocote Variety; s. Jocote Orange-brown: Variety Unspecified (Punctated); all exterior views.

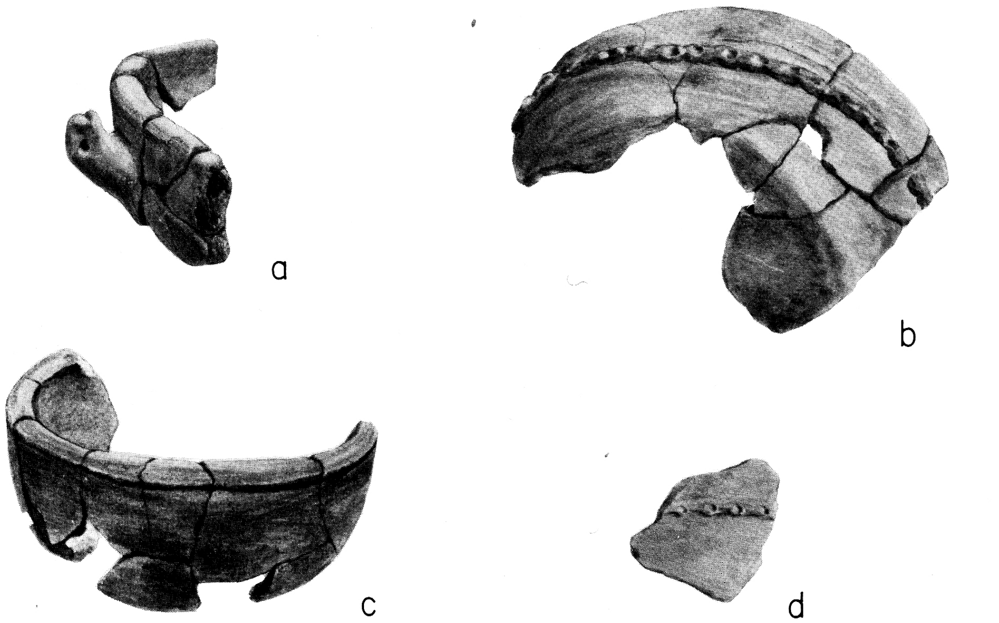


Figure 17. Jocote Orange-brown: Jocote Variety (1/2 scale).

65

Figure 16: sample page of Type-Variety:Mode depictions

Reproduced from Gifford 1976, 65

References Cited

Aveni, A. F., 2001. *Skywatchers.* (Revised Edition). Austin: University of Texas Press.

Bacon, F., 1605. *The tvvoo (sic) bookes of Francis Bacon. Of the proficience and aduancement of learning, diuine and humane. To the King.* London: printed by Thomas Purfoot and Thomas Creede for Henrie Tomes, and are to be sould at his shop at Graines Inn gate in Holborn.

Binford, L., 1962. Archaeology as anthropology. In: *American antiquity 28/2, 217 – 225.*

Bourbon, F., 2000. *The lost cities of the Maya: the life, art, and discoveries of Frederick Catherwood.* San Francisco: Abbeville Press.

Broad, C. D., 1951. Bacon and the inductive method. In: Lindsay, J.S., 1951. *The history of science: origins and results of the scientific revolution: a symposium.* London: Cohen & West.

Coe, W. R., 1982. *Introduction to the archaeology of Tikal, Guatemala.* Tikal Report No.12. University Museum monograph, 46. Philadelphia: University Museum, University of Pennsylvania.

—— , 1990. *Excavations in the Great Plaza, North Terrace and North Acropolis of Tikal.* Tikal Report No. 14, Vol. I. University Museum monograph 61. Philadelphia: University Museum, University of Pennsylvania.

Collingwood, R. G., 1960. *The idea of nature.* London: Oxford University Press.

Colton, H.S.,1953. *Potsherds: An introduction to the study of prehistoric Southwestern ceramics and their use in historic reconstruction.* Museum of Northern Arizona Bulletin 25, The Northern Arizona Society of Science and Art, Flagstaff, Arizona.

Colton H. S. & L. L. Hargrave, 1935. Naming Pottery types and Rules of Priority. In: *Science 82/2133, 462 – 463.*

Cunnington, R. H., 1975. *From antiquary to archaeologist: a biography of William Cunnington, 1754 – 1810.* Princes Risborough: Shire Publications.

Culbert, T. P. & R. L. Rands, 2007. Multiple classifications: An alternative approach to the investigation of Maya Ceramics, In: *Latin American Antiquity 18/2, 181 – 190.*

Dragendorff, H., 1895. *Terra sigillata; Verzeichnis der Stempel auf Terra sigillata-Gefässen.* Offprint from Bonner Jahrbücher, 96 and 97, 1895.

Dressel, H., 1899. *Corpus Inscriptionum latinarum: consilio et auctoritate Academiae litterarum regiae borussicae Vol. 15, Inscriptiones urbis Romae latinae: instrumentarium domesticum, Pars 2, Fasc. 1.* Berolini: G. Reimerum.

Dunnell, R. C., 1971. *Systematics in Prehistory.* New York: The Free Press.

—, 1982. Science, social science and common sense: the agonizing dilemma of modern archaeology. In: *Journal of anthropological research* 38/1, 1 – 25.

—, 1986. Five decades of American archaeology. In: *American archaeology, past and future: a celebration of the Society for American Archaeology, 1935-1985* by Meltzer, D. J, Fowler, D. D. & J. A. Sabloff, Smithsonian Institution Press, pp. 23 – 49.

Egerer, C. T., 2008. *The ancient Maya ceramics of El Pilar – characteristics and comparison.* Internet published Magister Thesis, Bonn University. [PDF] retrieved 13.09.2012 at http://wayeb.com/download/theses/egerer_2008.pdf

Ereshefsky, M., 2001. *The poverty of the Linnaean Hierarchy: A philosophical study of biological taxonomy.* Cambridge: Cambridge University Press.

Ford, J. A., 1972. *A quantitative method for deriving cultural chronology: revised version of working paper prepared for the teaching seminar in the methods of establishing chronological sequences of Pre-Columbian cultures in the Americas, Barranquilla, Columbia, June 25 – July 6, 1961.* Museum Brief #9. Columbia, Miss: Columbia Museum of Anthropology, University of Missouri.

Fossey, J.M., Sedgwick, D. & M. Attas, 1982. The Lake Vouliagméni (Pekahóra) Recording System for Pottery Revisited: an Answer to Nicholas David. In: *Journal of Field Archaeology, 9/2, 241 - 247.*

Francis, K., 2006. *Charles Darwin and The origin of species.* Westport, Conn.; London: Greenwood Press.

Gifford, J. C., 1976. *Prehistoric Pottery Analysis and the Ceramics of Barton Ramie in the Belize River Valley.* Cambridge, Mass.: Peabody Museum of Archaeology and Ethnology: Harvard University.

Gladwin W. & H.S. Gladwin, 1930a. *A method for the designation of Southwestern pottery types.* Medallion Papers Vol. 7. Globe, privately printed.

—, 1930b. *Some Southwestern pottery types – Series I.* Medallion Papers Vol. 8. Globe, privately printed.

—, 1930c. *Some Southwestern pottery types – Series II.* Medallion Papers Vol. 10. Globe, privately printed.

Gorodzov, V. A., 1933. The typological method in archaeology. In: *American Anthropologist, N.S., 35/1, 95 – 102.*

Gräslund, B., 1987. *The birth of prehistoric chronology: dating methods and dating systems in nineteenth-century Scandinavian archaeology.* Cambridge: Cambridge University Press.

Guamán Poma de Ayala, F., 1956. *La nueva crónica y buen gobierno*. Translated by Luis Bustíos Gálvez. Lima: Editorial Cultura, Dirección de Cultura, Arqueología e Historia del Ministerio de Educación Pública del Perú.

Hargrave, L. L. & H. S. Colton, 1935. What do potsherds tell us? In: *Museum Notes Vol. 7, No.12, June*, Museum of Northern Arizona.

—, 1979. *Handbook of Northern Arizona pottery wares.* Reprint of the 1937 ed. published by the Northern Arizona Society of Science and Art, Flagstaff, which was issued as Bulletin no. 11 of the Museum of Northern Arizona. New York: AMS Press.

Hodder, I., 1982. *Symbols in action: ethnoarchaeological studies of material culture.* Cambridge: Cambridge University Press.

Humphries, C. J. & R. Huxley, 2007. Carl Linnaeus – The man who brought order to nature. In: Huxley, R. (ed.), 2007. *The Great Naturalists.* London: Thames & Hudson.

Indiana Jones and the Last Crusade, 1989. [Film] Directed by Stephen Spielberg. U.K: Paramount Home Entertainment.

Kaulicke, P. (ed.), 1998. *Max Uhle y el Peru antiguo.* Lima: Editioral de la Pontifica Universidad Católica del Peru.

Kidder, A. V., 1927. Southwestern Archaeological Conference. In: *Science, N. S., 66/1716, 489 – 491.*

—, 1962. *An introduction to the study of Southwestern archaeology with a preliminary account of the excavations at Pecos.* (Revised edition). New Haven; London: Yale University Press.

Landa, D. de, 1966. *Landa's relación de las cosas de Yucatan.* Translated and edited with notes by Alfred M. Tozzer. New York: Kraus.

LeCount, L. .J., 1996. *Pottery and Power: Feating, Gifting and Displaying Wealth among the Late and Terminal Classic Lowland Maya.* Ph.D. Dissertation, University of California, Los Angeles.

Linné, C. v., 2003. *Linnaeus' Philosophia Botanica.* Translated by Stephen Freer. 1st English Edition. First published in Stockholm and Amsterdam in 1751. Oxford: Oxford University Press.

Locke, J., 1690. *An essay concerning humane understanding. In four books.* London: Printed [by Elizabeth Holt] for Tho. Bassett, and sold by Edw. Mory.

Lyell, C., Sir, 1853. *Principles of geology: The modern changes of the earth ands its inhabitants.* London: John Murray.

Meltzer, D. J., 1979. Paradigms and the nature of change in American archaeology. In: *American antiquity* 44/4, 644 – 657.

Merwin, R.E. & G.C. Vaillant, 1932. *The Ruins of Holmul, Guatemala.* Memoirs of the Peabody Museum of American Archaeology and Ethnology, Vol. III, No. 2, Harvard University, Cambridge, Massachusetts.

Meyers, R. G., 2006. *Understanding Empiricism.* Chesham; Acumen.

Montelius, O., 1986. *Dating the Bronze Age: with special reference to Scandinavia.* Translated by Helen Clarke. Stockholm. Kungl. Vitterhets Historie och Antikvitets Akademien.

Morris, E.A., 1974. Anna O. Shepard, 1903-1973. In: *American Antiquity 39/3, 448 – 451.*

Nelson, N. C., 1916. Chronology of the Tano Ruins, New Mexico*. In: American Anthropologist* 18/2, 159 – 180.

O'Brien, M. J., Lyman, R. L. & M. B. Schiffer, 2005. *Archaeology as a process: processualism and its progeny.* Salt Lake City: University of Utah Press.

Phillips, P., 1957. Application of the Wheat-Gifford-Wasely Taxonomy to Eastern Ceramics. In: *American Antiquity 24/2, 117 – 125.*

Potts, A., 2006. Introduction. In: Winckelmann, J. J., 2006. *History of the art of antiquity.* Translated by Harris Francis Mallgrave. Los Angeles: Getty Research Institute.

Rice, P. M., 1987. *Pottery Analysis: A Sourcebook.* Chicago: University of Chichago Press.

Rouse, I., 1939. *Prehistory in Haiti: a study in method.* New Haven: Yale University, Yale University Press; London: H. Millford, Oxford University Press.

Sahagun, B. de, 1970. *Florentine codex: general history of the things of New Spain.* Translated from the Aztec into English with notes and illustrations by Arthur J.O. Anderson [and] Charles E. Dibble. 2nd. ed. Salt Lake City, Utah: University of Utah.

Shepard, A.O., 1948. *Plumbate: a Mesoamerican trade ware*. Washington: Carnegie Institution of Washington,No. 573.

Silberman, N. A., 1995. The politics and poetics of archaeological narrative. In: P. Kohl & C. Fawcett (eds.), *Nationalism, politics, and the practice of archaeology.* Cambridge: Cambridge University Press, pp. 249 – 262.

Smith, R. E., 1955. *Ceramic sequence at Uaxactun, Guatemala.* Volume I. New Orleans: Middle American Research Institute, Tulane University.

Smith, R. E., G. R. Willey & J. C. Gifford, 1960. The Type-Variety Concept as a Basis for the Analysis of Maya Pottery. In: *American Antiquity 25/3, 330 – 340.*

Spaulding, A. C., 1953. Statistical techniques for the discovery of artifact types. In: *American Antiquity 18/4, 305 – 313*.

Stephens, J. L., 1969. *Incidents of travel in Central America, Chiapas and Yucatan.* Two volume set. New York: Dover Publications.

Trigger, B. G., 1989. *A history of archaeological thought.* (1st edition). Cambridge: Cambridge University Press.

—, 2006. *A history of archaeological thought.* (3rd edition). Cambridge: Cambridge University Press.

Wheat J. B., Gifford, J. C., & W. W. Wasley, 1958. Ceramic Variety, Type Cluster, and Ceramic System in Southwestern Pottery Analysis. In: *American Antiquity Vol. 24/1, 34 – 47.*

Wheeler, R.E.M., Sir, 1954. *Archaeology from the earth.* Harmondsworth: Penguin.

Winckelmann, J. J., 2006. *History of the art of antiquity.* Translated by Harris Francis Mallgrave. Los Angeles: Getty Research Institute.

Willey, G. R., Culbert, T. P. & R. E. W. Adams, 1967. Maya Lowland Ceramics: A Report from the 1965 Guatemala City Conference. In: *American Antiquity 32/3, 289 – 315.*

Willey, G. R. & P. Phillips, 1958. *Method and theory in American archaeology.* Chicago: University of Chicago Press.

Willey, G. R. & J. A. Sabloff, 1974. *A history of American Archaeology.* London: Thames and Hudson.