

The sourcebook for Garden Archaeology addresses the increasing need among archaeologists, who discover a garden during their own excavation project, for advice and update on current issues in garden archaeology. It also aims at stimulating broader interest in garden archaeology. Archaeologists with no specific training in garden archaeology will read about specific problems of soil archaeology with a handful of well-developed techniques, critical discussions and a number of extremely different uses. Methods are described in sufficient detail for any archaeologist to engage into field work, adapt them to their own context and develop their own methodology. While the Sourcebook aims at bringing together different disciplines related to garden archaeology and providing an overview of present knowledge, it also hopes to encourage development of new directions for the future.

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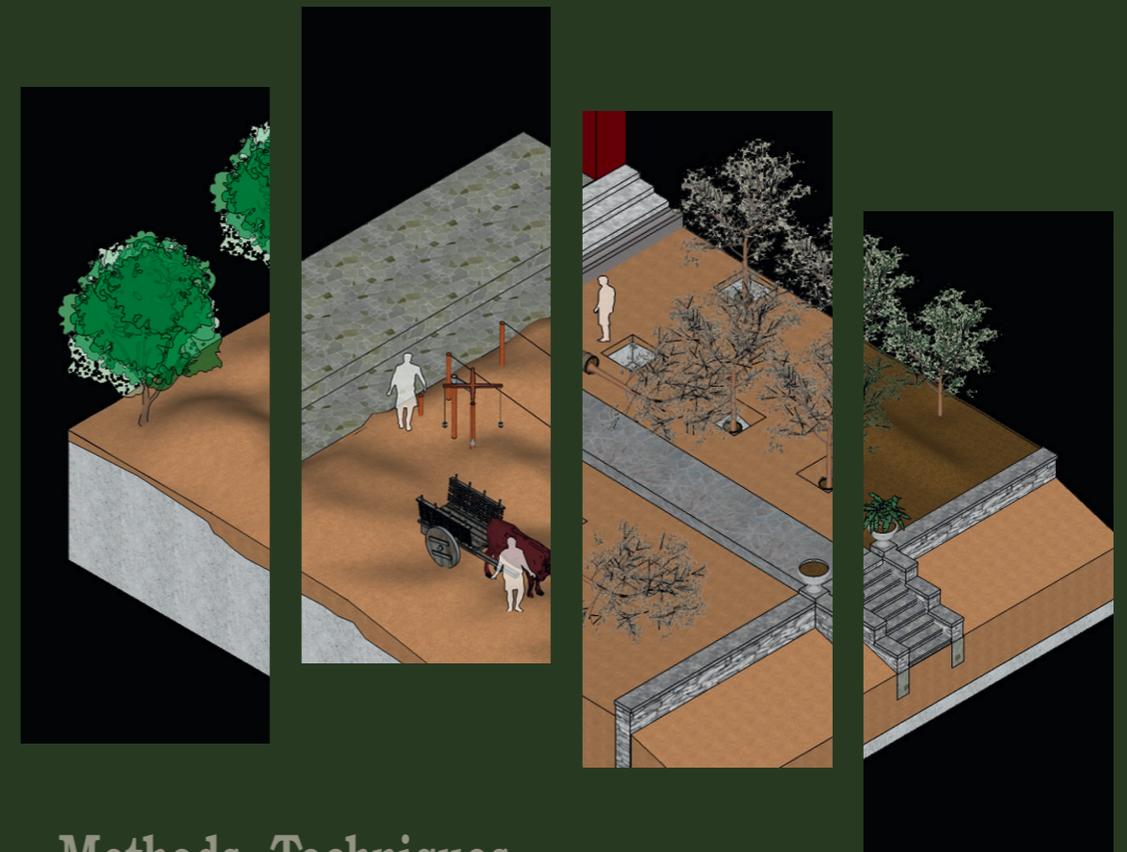
SOURCEBOOK FOR GARDEN ARCHAEOLOGY

1 Parcs et Jardins

SOURCEBOOK

FOR GARDEN ARCHAEOLOGY

Edited by Amina-Aïcha Malek



Methods, Techniques,
Interpretations and Field Examples

Peter Lang

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Gardens for Archaeologists

Amina-Aïcha MALEK

THE MAKING OF THE BOOK

The Sourcebook for Garden Archaeology is part of the intellectual heritage of Wilhelmina Jashemski and of a project initiated by Edward Keenan, Director of Dumbarton Oaks, to establish a “clearing house” for Garden archaeology as a major resource for all garden archaeologists. Since the seventies and for twenty years, Dumbarton Oaks has been involved in garden archaeology, organizing symposia, offering in-house fellowships for garden archaeology and support for outside projects. In 1991, Dumbarton Oaks decided to launch an inter-departmental project shared by the three programs of studies, the Byzantine, the Pre-Columbian and the Garden and Landscape, under the direction of Jashemski to promote garden archaeology with three main goals: the publication of a sourcebook on garden archaeology, the establishment of a network of garden archaeologists and the updating of the Dumbarton Oaks research collection library in garden archaeology. Only the first of these three goals has been systematically pursued so far. It is a great pleasure to thank the Centre national de la recherche scientifique (CNRS) and the Fondation des Parcs et Jardins de France.

I would like to present my deepest gratitude to the authors for their long-lasting support to this project over the years. It is the outcome of a very long process that has come to fruition thanks to the support of the Laboratoire “Archéologies d’Orient et d’Occident et des textes anciens” UMR 8546 CNRS-ENS. I would like to express my sincere appreciation to several colleagues whose encouragements were decisive in my perseverant efforts to publish the book, Dominique Briquel, the head of my research department UMR 8546 CNRS-ENS, Michel Fuchs of the University of Lausanne, Vincent Jolivet, researcher in my department, Catherine de Leusse, Agnès Rouveret of the University of Nanterre, Jean-Pierre Sodini, Member of the Institut de France and more particularly Michel Conan who for many years never gave up on this project and Didier Wirth, President of the Fondation des Parcs et Jardins de France who brought it to a happy conclusion. Lastly I would like to thank Sheila Gagen, the English copy editor, who cheerfully agreed to take in charge this heavy task, and very warmly also thank Cécile Thiébault who graciously dedicated her weekends and her evenings to copy editing and formatting the book.

The Sourcebook for Garden Archaeology prepared as a joint project of the three scholarly programs at Dumbarton Oaks, the first venture of its kind, was the brainchild of Michel Conan, Director of Garden and

Landscape studies and Wilhelmina Jashemski, who recognized the need for a basic manual for archaeologists. One of the challenges of preparing the book was to present information in such a way that it will be useful to archaeologists in widely differing cultures and eras. To help attain this goal, a committee of reviewers of scholars who are familiar with garden archaeology in Muslim Spain and India, in Japan, in the ancient Near East and Mediterranean, and in the Renaissance and Baroque period, have been constituted. Their comments have greatly helped make the Sourcebook more widely relevant and applicable. Kenkichi Ono an invited reviewer came from the Asuka Fujiwara Palace Site in Nara, Japan to attend, in February 2001, the meeting and a week's workshop prepared by the editor Amina-Aïcha Malek at which the contributors presented and discussed their chapters. The discovery of Garden Archaeology in Japan was a unforeseen breakthrough as it opened largely the book toward Asia with a contribution from China.

It was a great privilege to be appointed by Dumbarton Oaks as a Special Garden Archaeology Fellow to conceive and prepare the book under the supervision of Wilhelmina Jashemski and the three Directors of Studies, Michel Conan, Jeffery Quilter and Alice-Mary Talbot.

The book has evolved since but its core reflects the interdisciplinary commitment to this project at Dumbarton Oaks where the book was conceptualized.

The contributors and myself are confident that this book will help support the steady growth of garden archaeology, which has a worldwide application. My deepest thoughts, as the book is going to press, go to the few among the contributors who have already passed away: Wilhelmina Jashemski, Senior adviser to the project, and Christopher Currie.

A TENTATIVE DEFINITION

Garden archaeology is soil archaeology but all soil archaeology is not garden archaeology. Can we provide a definition of gardens that would be useful for garden archaeology? Creations of universal definition can lead to idle debates, and they are often disregarded for that reason. However it may be difficult to compare findings about a subject across different cultures unless one has a sense that there is a common subject under consideration. André Georges Haudricourt, a French social anthropologist, proposed a simple definition separating garden cultures and agricultural cultures according to interactions between humans and nature.¹

¹ Haudricourt & Hédin 1987 [1943], Haudricourt & Brunhes-Delamarre 1986: he sees horticulture as an activity that is indirect (cuttings are handled with precaution and a minimum of physical contact), negative (plants are helped in their growth rather than coerced), and dependent on the ability to collect many

Social anthropologists at present would object to Haudricourt's definition because the cluster of properties he uses to define the ideal type for horticulture or agriculture does not necessarily apply as a whole to all horticultural and agricultural practices in a particular society. Yet such an effort at definition calls attention to the interactions between humans and nature that are implied by the very idea of gardening. So we may still acknowledge that gardens constitute a specific kind of ecological system that demands constant human monitoring. This means that any garden archaeology project searches for soil that contains traces of an ecological environment resulting from specific interaction between humans and nature. However, we have not yet reached a working definition of gardens, since fields, meadows, even forests may also depend upon constant human action. We should specify the goals of such actions. Here we shall move away from Haudricourt's attempt to produce a universal definition for gardens applying across all possible cultural worlds.

Instead we propose to see gardens as places that are carefully set apart from their surrounding environment and where a highly specialized ecology is maintained through constant human monitoring established to strive for a perfected nature according to a specific cultural view. So any culture may define its views of an enhanced nature that sets gardens apart from other cultivated or managed lands. The definition is universal but gardens are historically and culturally specific.

This definition calls attention to the biological or ecological dimensions of the garden. Gardens are places of interaction with nature and they offer fields of study for an understanding of anthropogenic transformation of nature, of living species, adaptations to new forms of human culture.

Garden archaeology sheds light on the diffusion of plants, insects and other animals prompted by humans interested in exotica and the development of new varieties of wild plants; or the development of horticulture and hydraulic techniques as well as the micro-control of climate. The archaeological study of gardens can be quite rewarding in understanding all sorts of human settlements, in which humans have dedicated an area to maintenance of a perfected nature. This applies to gardens from a more recent as well as a distant past. Relatively recent gardens designed for wealthy patrons in Europe or in Asia and America have been conceived, used and studied as works of art.

Garden conservation enjoys a rapid development at present: since many historical gardens are in a very poor state of repair, archaeologists have been asked to help recover a good understanding of their forms,

different clones; agriculture, on the other hand, requires a direct, active and selective action: seeds are violently broadcast, put into the earth and threshed by the trampling of animals or by heavy machinery; draught animals must be trained and guided; seed plants must be protected from undue hybridization, etc.

plantings, and conditions of existence. Therefore, the sourcebook will serve those interested in studying gardens as works of art and those who wish to conserve them. But it also will help extend garden archaeology studies into many other directions.

The sourcebook seeks to respond to the increasing need among archaeologists for advice on how to excavate gardens, and aims to stimulate a more general interest in garden archaeology. Its main purpose is to function as a manual for archaeologists who encounter the remains of a garden (or suspect the presence of such) in the course of an excavation. It is particularly designed for archaeologists with no training in the excavation of gardens who unexpectedly discover remains of a garden, or believe they know the location of an ancient garden. It aims to provide information on initial survey techniques, methods of analyzing and identifying the soil layers, and interpretation of organic materials and artifacts found in the course of excavation.

The project hopes to bring together different disciplines relating to garden archaeology and wants to provide an overview of our knowledge at present and at the same time it hopes to develop new directions for the future. Readers who would like garden archaeology to be summarized by a set of guidelines will be disappointed. Of course every archaeologist is interested in developing methods, in establishing clearly defined criteria that will enable convincing interpretation and presentation of results, the sourcebook is devoted to the presentation of such efforts. Yet many methods and any definition can be source of contest, and clarification of scientific issues as well as development of methods grows out of these contests.

While the sourcebook has a direct, practical objective, its publication also will help to contribute to a better understanding of the meaning of gardens as sites to be studied in their own right. It will contribute to our understanding of the garden as a vital part of human culture in general, by leading us into aspects of history of technology, the history of botany and horticulture, and the history of human activities and human settlements. Thus garden archaeology opens a door to a new perspective that go beyond the garden itself. This, is why we want to bring together a variety of disciplines, only in that way will garden archaeology have a meaning for archaeology beyond gardens themselves.

The book is divided into seven parts: The first, "A Short History of Garden Archaeology" traces back the pioneer key stages of garden archaeology.

The second part written by archaeologists and geophysicists, "Preliminary Questions and Investigations" documents the strategic phase when archaeologists plan an excavation. Chapter 1 presents a general methodology for excavating gardens, setting the stage for the pragmatic aspect of the approach developed in Part III. Analytical fieldwork is not only guided by a framework established according to

the historical and cultural context of the site but is also prescribed by the results of the study of the site using non invasive techniques. Chapter 2 discusses the different non-destructive techniques and chapter 3 introduces the latest development of GPR applied to garden archaeology.

Part III, “Excavating the Garden: Bringing the Garden to Light”, provides a step by step description of a garden excavation, introducing as many techniques as possible, in order to serve as a contextual introduction to the fourth part devoted to an array of specific methodological subjects. The use of terms from contemporary landscape architectural practice illuminates the processes involved in planning and constructing a landscape space.

Hence, Part IV, “Biological Investigation: The Archaeology of Living Matter”, presents the different scientific disciplines called upon during the excavation. Three specialists, a pedologist, a palynologist, a botanist and an entomologist, who collaborated with different archaeologists, discuss in their chapters the conditions of implementation of their respective technique in garden archaeology, its results and limitations according to different archaeological contexts.

The fifth part, “The Enhanced Nature: Analyzing Elements of the Garden”, is divided into three chapters. In the first, a landscape geographer explores and discusses the archaeology of garden waterworks – physical, biological, and cultural. The second chapter, by two archaeologists working in different periods is devoted to the study of the various features that can be found in gardens ranging from “hardscape” (built elements) to “softscape” (soil features). This is followed by a discussion of the contribution of the various elements found in the garden to a spatial reconstruction, and to a study of the ways of using and experiencing a garden.

The sixth part, “Historic Gardens and Garden Archaeology”, by a landscape architect who specializes in the reconstruction of former gardens, discusses the role of garden archaeology in the study of historic gardens and their restitution and conservation.

The last part of the sourcebook, “A Garden of Practical Examples”, offers short presentations of a wide variety of gardens excavated in different geographical areas and periods. These examples give a sense of the variety of practices, circumstances and goals that have led to excavating gardens. This section is followed by some practical information on the authors who participated in this project.

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Preamble

What do archaeologists
look for when looking for gardens?

Amina-Aïcha MALEK

Garden archaeology is not a distinct discipline, but rather a sub-discipline only now emerging among the numerous institutions and organizations that support the excavation and study of historic and prehistoric sites and artifacts. Instead, individual archaeologists at various times and places have stumbled upon or, sometimes, deliberately excavated gardens in their own research directed at various questions about the past. Those who have excavated gardens have encountered similar issues and have studily gathered since the late 20th century to compare issues and methodologies of garden archaeology regionally and now internationally. The following introductory chapter reviews some of the first archaeological projects deliberately engaged with garden archeology. These studies form the foundations upon which current and future work and, potentially, future organizations for garden archaeology may be developed.

Scholars have approached the study of gardens from the perspective of “verbal and visual analysis” in order to understand their meaning and their development. But archaeological evidence also has proven to be an important source of information. Depending on the context (period, state of conservation of the site, development of techniques) archaeology enriches understandings of gardens based on texts and also contributes to the disclosure of new information that would not have been known solely by dependence on texts. The most spectacular example of the contribution of garden archaeology is the systematic archaeological exploration of the Roman gardens in the Vesuvian area, undertaken by Wilhelmina F. Jashemski. The knowledge of Roman gardens, formerly exclusively based on literary evidence, reached a turning point when Jashemski combined her expertise in ancient literature and history with a careful examination of the garden surfaces supported by an interdisciplinary scientific team. She revealed how gardens were intimately related to every aspect of Roman society. For example, she discovered that the poor who could not afford a garden were allowed to cut a window to enjoy the view of the neighbor’s garden, information not mentioned in texts. Also, Jashemski’s excavations disclosed for the first time aspects of cultivation techniques corroborated in agricultural manuals of the Roman period. In England, Christopher Taylor surprised garden historians when he published a large body of information on

post-medieval gardens. He presented a great variety and a degree of intricacy of design that historical documents had failed to reveal. The amount of information gathered by garden field archaeologists not only demonstrated that “former gardens” can survive but, more important, that they have the potential to revise the chronology of stylistic change given by traditional historiography. Garden historians in Japan argue that archaeological evidence of the past 40 years has allowed them to correctly interpret written documents, among them the classical horticultural treatises – *Sakuteiki* – and visualize components of gardens known only through literary sources. To cite an example, a garden stream at *Motsu-Ji* has allowed scholars to envision for the first time the setting where *gokusui* banquets took place. In the United States, William Kelso uncovered at Bacon’s Castle (Virginia) the earliest extant garden in America and discovered aspects of Monticello’s garden that were otherwise unknown. As he states:

The ten-year archaeological and historical study of landscape design of Thomas Jefferson’s Monticello has proved that that which is written down is really only part of the story, even if the recorder is as compulsive a chronicler as Thomas Jefferson.

Garden archaeology is still a recent area of archaeological expertise with strong regional methodologies developed in different ways and with different perspectives in several countries. Thus, a rapid summary of its development in Japan, in the lands that once comprised the Ancient Roman Empire, in England, and in the United States (even though incomplete since much could be said about Ancient Egypt, Afghanistan, Iran, Korea, Netherlands, Ouzbekistan, Russia, and Sri Lanka as well) may encourage the pursuit of new strategies in many countries and propel this domain of archaeology into a buoyant field of innovation and debate.

This introductory essay discusses some of the ideas and questions that have been raised by scholars for whom the archaeological recoverability of buried gardens has been possible and further, attempts to establish methods that enabled them to examine, interpret, and recover gardens hidden to the eye or, in some cases, absent from historical records. The development of the field is still in progress and methodologies and goals differ according to archaeologists’ objectives, the way they perceive and define their objects of research, and according to their backgrounds, ranging from classical archaeologists to field archaeologists to historical archaeologists. Garden archaeology still needs to be encouraged and more clearly define itself and its methods and objectives.

What do archaeologists look for when looking for gardens? The literature on garden archaeology displays a rich variety of purposes and respective methods. Jashemski, a classical archaeologist who systematically explored the gardens in Pompeii and Herculaneum, looked mainly for the various experiences and practices that took place

in gardens, by establishing a method according to the particular context of the sites buried under meters of *lapilli*;¹ Taylor, a field archaeologist, looked for “underlying structures” of “abandoned gardens” visible from the air, implementing the nondestructive techniques that are used in field archaeology;² Kelso, a “historical archaeologist” in North America, looked for symbolic messages of past American colonial societies encoded in the dirt by employing the best strategies of excavation, where science and theory are methodically combined.³ In order to explore further such differences we shall follow the development of garden archaeology as written by archaeologists themselves. In the past three decades, a wealth of publications by scholars has enriched this area of expertise. The following discussion draws on these studies published mainly in edited volumes and journals.

The first articles on the subject were published by Jashemski beginning in 1967-1968 in American archaeological journals (*Archaeology*, *Classical Journal*, *American Journal of Archaeology*) on the gardens of Pompeii, in 1976 in Japan as a special issue – *Excavations of Ancient Gardens* – of the journal *Buddhist Art* n°109, followed in 1979 by Jashemski’s first volume of *The Gardens of Pompeii, Herculaneum and the Villas destroyed by Vesuvius* published in New York, then by *The Archaeology of Gardens*, a pamphlet written by Taylor and published in Aylesbury, England, in 1984, and lastly the volume *Earth Patterns*, edited by William Kelso and Rachel Most and published in 1990 in Virginia. These publications gather the results of years of work and therefore are regarded collectively as a major stage of maturity in the development of garden archaeology, in terms of the methodology and the results that are discussed. They show, interestingly, that the techniques of garden archaeology began to emerge at various places in the 1960s with Barry Cunliffe’s excavation of a Roman villa at Fishbourne, Sussex in 1961-1969;⁴ Ivor N. Hume’s excavation of John Custis’ garden at Williamsburg, Virginia, in 1964;⁵ Jashemski’s excavation of the so called “Foro Boario” at Pompeii in 1966-1970;⁶ and the excavation of the Nara Palace garden in Japan in 1967-1968.⁷ Each of these archaeological campaigns was carried out independently and each marked the beginning of long autonomous processes during which archaeologists, through their specific vision of their subject of research, developed their own strategies and techniques of excavation.

¹ Jashemski 1979 and 1993.

² Taylor 1983.

³ Kelso & Most 1990; Yamin & Metheny 1996.

⁴ Cunliffe 1971.

⁵ Hume 1974.

⁶ Jashemski 1979: 201-218; 1993, App. 1, no. 146: 89-90.

⁷ Takase *et al.* 1998.

The organization of this essay follows the chronology of the earliest published important studies on garden archaeology. The first chapter will discuss “Garden Archaeology in Japan”, the second chapter “Wilhelmina F. Jashemski and the Gardens of the Roman Empire”, the third chapter “Christopher Taylor and British Garden Archaeology”, and the last chapter, “American Garden Archaeology and the Chesapeake Bay”. Each section will present, through selected examples, a chronological overview and, in order to address the various perspectives through which garden archaeology evolved, will examine the methods and the techniques employed, the vocabulary and definitions used, and finally will introduce the main issues discussed by scholars involved in this area of expertise. The conclusion will examine the objectives of the handbook and its content.

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Part I

A Short History of Garden Archaeology

Chapter 1

Garden Archaeology in Japan¹

Kenkichi ONO & Amina-Aïcha MALEK

Japanese garden archaeology is not widely known outside Japan although it started early in the 20th century just after World War I. It expanded in 1967 with the excavation of the Eastern Palace Garden of the 8th century Nara Palace by the Nara National Cultural Properties Research Institute, which accommodates the Centre for Archaeological Operations. This center trains local archaeologists and provides advice to local authorities throughout Japan. The Nara National Cultural Properties Research Institute is the only national organization in Japan for research in immovable cultural properties, which means cultural monuments that are “attached to the ground such as archaeological sites, architectural structures and gardens.” The institute belongs to the Agency for Cultural Affairs under the Ministry of Education. It comprises the Division of the Nara Palace Site Investigations, the Centre for Archaeological Operations (CAO), and the Departments of History, of Architectural History and General Affairs, which are located in Nara city; the Division of the Asuka and Fujiwara Palace Site Investigations is located in Kashihara city. Both divisions of The Nara Palace Site Investigations and The Asuka and Fujiwara Palace Site Investigations are engaged in research and archaeological investigation. The CAO, established in 1974, consists of six research sections, among them, the survey section and the excavation technique section. The archaeology of gardens is managed and conducted through the different departments and sections of this institution.

This chapter will present a succinct chronological overview of garden excavations in Japan. The most recent pamphlet published by the Nara Institute indicates that 280 gardens were excavated between 1930 and 2000 throughout Japan. The inventory specifies the site, the date of the excavation, the period of the garden, its style, and the artifacts found. This survey is most valuable to the study of gardens in Japan as it provides not only a precise overview of the progression in style and design from the 4th century CE to the 20th century, but also helps scholars

¹ The following presentation of garden archaeology in Japan is based on the edited volume by Takase Yoichi, Ono Kenkichi, Uchida Kazunabu and Hirasawa Tsuyoshi, *Archaeologically Investigated Japanese Gardens*, published in 1998 by the Nara National Cultural Properties Research Institute, and on the paper given by Dr. Ono Kenkichi at Dumbarton Oaks in February 2001.

to picture certain aspects of their features that were difficult to visualize. Unfortunately, the techniques and the methods used are not described, but are simply the results of the dig in a list of excavated features. Thus, the question of whether Japanese archaeologists have developed specific techniques and methods to excavate other types of remains still needs to be answered, as well as how these techniques compare with, or might inform, garden excavations outside of Japan.

Japanese garden archaeology can already boast a long history and fieldwork has led to major revisions of Japanese garden history. The expansion of this field cannot be divorced from the earlier development of garden history.

Ozawa Keijiro and Yokoi Tokifuyu were pioneers in the development of Japanese garden history as an independent academic discipline. Toyama Eisaku enriched these first studies with work based on archival documentation. Then, Hara Hiroshi and Yoshinaga Yoshinobu introduced between the 1920s and the 1950s more extensive field methods such as topographic survey techniques. They were the first to systematically measure existing gardens. This led in turn to the survey of abandoned gardens by Mori Osamu. During the same period, Shigemori Mirei made significant contributions to garden archaeology by comparing written documents and measurements of ancient gardens throughout Japan.

One of the first gardens discovered by archaeologists was excavated in the Hiraizumi Iwate Prefecture in the 1930s. Yet, the significance of the garden they uncovered was not understood until the 1960s, when the Eastern Palace Garden in the Nara Imperial Palace was excavated. Thus, the excavations of the Eastern Palace Garden in 1967 and 1968 constitute a turning point of garden archaeology in Japan. They provide a wonderful instance of serendipity. Since the Nara Palace was a wooden structure that had totally vanished, archaeological research consisted of studying traces and imprints of its structure left in the soil. So, while looking for traces of post-holes in the soil, the archaeologists stumbled upon a garden.

Their results confirmed the typical garden layout of the Nara period, which was known only by written documents. This discovery led to many similar sites in the country.

Information on these excavated gardens is found mostly in archaeological reports devoted to a particular site that provide only cursory descriptions of the garden. When interest in garden archaeology developed and its contribution to garden history was recognized, archaeologists gathered the scattered information of the archaeological reports to publish a comprehensive history of Japanese gardens. The first publication appeared in 1976 as a special issue – *Excavations of Ancient Gardens* – of the *Bukkyo Geijutu (Buddhist Art n°109)*. It included a series of gardens belonging to successive epochs from the Asuka to the Heian periods (593-1192). In 1990, the same periodical presented another review of excavated gardens that complemented the previous

one, extending the study from the Heian era to the Edo period (1192-1897). Two other important publications on the subject were published in 1990. The first, *Excavated Ancient Gardens and Ponds*, was edited by the Kashiwara Archeological Research Institute. The book covers excavated gardens and ponds in China, Korea, and Japan. The second publication, *Gardens of Kyoto*, focuses on gardens in Kyoto City during the Heian period (794-1192). A comprehensive survey has been recently compiled. *Archaeologically Investigated Japanese Gardens*, published in 1998 by the Nara National Cultural Properties Research Institute, is a comprehensive collection of excavated gardens throughout Japan. The main task of the book was to provide, in one source, descriptions of all major excavated gardens from the ancient mound burial period (3rd-6th century) to the Edo period (17th-19th century). Part 1 summarizes 39 major excavated gardens that have been well preserved and are considered important in the history of Japanese gardens. Part 2 presents a list of excavated gardens based on information collected by the Nara National Cultural Treasures Research Institute and updated in 1996 using inquiries sent to the Board of Education in each prefecture. An updated version was published in 2002, and a “Archaeologically investigated Japanese Garden Database” can be consulted at <http://mokuren.nabunken.go.jp/scripts/strieveW.exe?USER=NCPGE&PW=NCPGE>.

THE HISTORY OF JAPANESE GARDENS AS SEEN THROUGH
ARCHAEOLOGICAL INVESTIGATION (Kenkichi ONO)*

The beginnings of Japanese gardens

The Jonokoshi site (Ueno City, Mie Prefecture), dating from the Kofun period (late third through sixth centuries CE), is located in a small basin surrounded by hills. The remains of a watercourse from the latter half of the fourth century were unearthed there. The watercourse was meandering, with an embankment covered with pebbles. Stones were arranged at a juncture in the watercourse, and some stones were artificially placed vertically (fig. 1). This site is considered to be a ceremonial site, judging from the excavated artifacts. The design elements, however, have characteristics which reflect later Japanese garden features such as *yarimizu* streams, pebble beaches and upright stones. These findings suggest that gardens were originally constructed primarily as places for ceremonies.

* This is the manuscript of a lecture given at Dumbarton Oaks, Washington DC on March 1, 2001.



1. Meandering watercourses and arranged stones at their juncture, Jonokoshi site, Ueno City, Mie Prefecture (K. Ono).

Asuka period (593-710)

There are various ancient documentary materials concerning gardens in the Asuka period. There are some articles on gardens in the chronicle *Nihon shoki*, compiled in the eighth century. The earliest article which is considered to represent historical fact is the one stating that Michiko no Takumi, an immigrant from Paekche (on the Korean peninsula), built a representation of Mt. Sumeru and a Chinese Wu-style bridge at the palace of Empress Suiko in 612 CE. There is also an article noting that there was a garden pond with an island in the residence of Soga no Umako, a powerful aristocrat of the early seventh century. Articles mentioning a stone figure of Mt. Sumeru are found three times during the reign of Empress Saimei, in the mid seventh century. The name of Siranishiki no misono, the palace garden of Emperor Tenmu of the late seventh century, is also recorded. In addition, according to poems included in the ancient anthology *Man'yōshū*, there was a garden pond with a seascape motif at Shimanomiya, the palace of Prince Kusakabe.

The information from old documents just mentioned is fragmentary, however. Accordingly, findings from excavated gardens play an important role in the study of Japanese garden history for the Asuka period. All known garden remains from that time except those at the Kōriyama site (in northeast Honshū) are found in and around the Asuka region of the Nara prefecture.

Garden remains were uncovered at the Furumiya site (Kashihara City and Asuka Village, Nara Prefecture), possibly an aristocrat's mansion built in the first part of the seventh century. A stone pavement was constructed to the south of the main building, alongside a meandering watercourse flowing from a small round pond, both also made of stones. (fig. 2) The configuration of the pond and the watercourse is similar to one painted in the murals of the Kizil Thousand Buddha Grottoes in the Xinjiang Uygur Autonomous Region of China. Accordingly, the design may have originated from a Buddhist motif.



2. Round pond and a meandering water-course, Furumiya site, Kashihara City and Asuka Village, Nara Prefecture (Nara National Research Institute for Cultural Properties).

A square pond excavated at the Shimanoshō site (Asuka Village, Nara Prefecture) was built in the first part of the seventh century, and was possibly the garden pond of Soga no Umako described in the *Nihon shoki* article just mentioned. It measures 42 meters on a side, and is 2 meters deep with stone-piled edging and a stone-paved bottom.

The Ishigami site, Asuka Village, Nara Prefecture, garden remains were the garden of an imperial palace of Empress Saimei in the mid seventh century. There was a square pond 6 meters on a side and 80 centimeters deep, and located in an area of stone pavement surrounded by some buildings. (fig. 3) There were no facilities for water supply or drainage, and it is supposed that the water was supplied from containers.



3. Stone-edged square pond, Ishigami site, Asuka Village, Nara Prefecture (Nara National Research Institute for Cultural Properties).

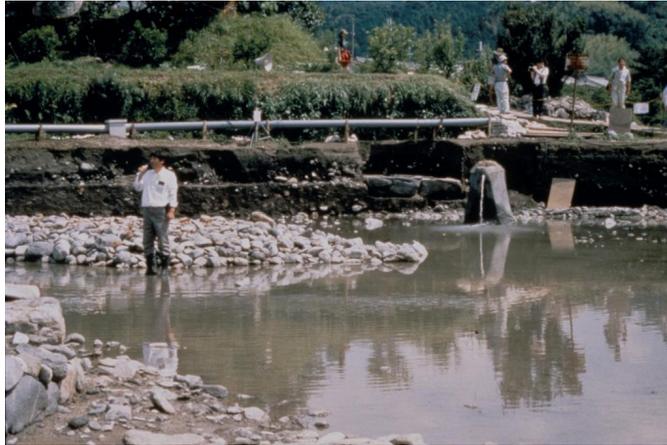
The Mt. Sumeru stone, excavated at this site about 100 years ago, has proved to have been an elaborately-worked stone fountain. Checking the *Nihon shoki* articles, it is noted that the banquets of Empress Saimei were held at a stone-paved area, setting up the Mt.Sumeru stone figure at a pond.

According to one article, the banquets were ceremonies to ensure the obedience of the people of the Tōhoku region, who were called Emishi and Mishihase at that time.

Garden remains were unearthed at the Kōriyama site (Sendai, Miyagi prefecture), the site of the government outpost in the northeastern Tōhoku region in the seventh century. A square garden pond, measuring 3.7 meters east-west, 3.4 meters north-south, and 80 centimeters in depth, was within a stone-paved area. The similarity to the Ishigami site, which has been pointed out not only in shape but in function, results from government officials being sent from Asuka, the capital of Japan at that time, to the government outpost in the Tōhoku region.

The excavated garden ponds mentioned above are all square except the one at the Furumiya site. Straight stone-piled banks were also unearthed in the Hirata Kitagawa site, Asuka Village, Nara Prefecture, and the site of the Sakatadera temple, Asuka Village, Nara Prefecture, in the Asuka region, and they are also thought to have been part of square ponds. Square ponds were characteristic of the garden design of this age.

The garden remains of the recently excavated Demizu site, Asuka Village, Nara Prefecture, are centered on a large pond whose outline shows a combination of straight and curved lines. (fig. 4)



4. Curved pond and a stone-made fountain, Demizu site, Asuka Village, Nara Prefecture (Nara National Research Institute for Cultural Properties).

The pond had stone shore edging and a stone-paved bottom. There was a fixture made of stone for drawing water into the pond at its south end, and a stone fountain in the southern part of the pond. Though the excavation is still under way, the area of the pond is estimated to have been 60 meters east-west, and over 200 meters north-south. The garden is thought to have been built first as the palace garden of Empress Saimei, and later named Shiranishiki no misono, mentioned in the *Nihon shoki* account of the reign of Emperor Tenmu. The findings from the excavation of the pond show that the outline of garden ponds in the Asuka period was not always square.

A square pond was unearthed at the palace site of Paekche in Puyo, South Korea, and large-scale curved ponds of Silla such as Anapuchi and Yongandon have been excavated in Kyongju, also in South Korea. A curved pond of the Shangyang gong palace of Tang was excavated in Luoyang, China. Further consideration of the relationship among the excavated garden ponds of Japan, Korea and China is anticipated in the future.

Nara Period (710-794)

There are a number of accounts about gardens in the Nara period in documents such as the chronicle *Shoku Nihongi*, and the poetry anthologies *Man'yōshū* and *Kaifūsō*. There are some handicraft items related to garden design as well. We have been able to obtain from these materials an image of garden design of the period to some extent. In addition, garden remains have been unearthed in good condition at the

Nara palace site and within the capital site of Nara, revealing the details of garden design of this age.

The Eastern Palace garden of the Nara palace (in the modern city of Nara) was built at the southeast corner of the palace precinct in the first part of the eighth century, and renovated at mid century. The garden grounds were 100 meters north-south and 70 meters east-west, and its pond measured 60 meters north-south by 50-60 meters east-west, and 30 centimeters in depth. After renovation, the pond was curved with a series of peninsulas and inlets, with an island in the southern part. The shore as well as the bottom of the pond was paved with pebbles. Stones were arranged at key points, and there was a conspicuous stone arrangement of over 20 stones on the north shore of the pond. (fig. 5) The analysis of plant remains in the accumulated mud at the bottom of the pond was conducted in the course of the investigation. According to the results, pine trees, cypress trees, plum trees, peach trees, willows, camellias and azaleas are thought to have been planted. Some elaborate buildings are presumed to have been built around the pond, and the complex of the garden and buildings was surely used for imperial banquets. It is possible that the stone-paved meandering stream was used for *kyokusui* banquets, at which guests sit at points on the stream and try to compose poems before cups of rice wine floating from upstream reach them, which they drink. As this description just given indicates, the Eastern Palace garden of the late eighth century has a layout and design which relate to those of Japanese gardens of later periods, and is thus regarded as an epoch-making development in Japanese garden history. This garden and its buildings have been faithfully restored according to the results of the excavation, and are open to the public.



5. Arranged stones by a pond, Eastern palace garden of Nara palace site (Nara National Research Institute for Cultural Properties).

The garden at Block 6, East Second Ward on Third Street of the Nara capital site was thought to have been an official facility for banquets, even though it was located just outside the palace precinct. A stone-paved meandering stream, varying between 2 and 7 meters in width and 55 meters long, was the garden's centrepiece (fig. 6). The bottom of the stream was paved with stones and the shore arranged with upright boulders. Upright stones and a rock island were placed at key points and wooden pots for water plants were set at the bottom. A building stood to the west of the stream. The garden and building have also been restored after excavation, and are open to the public.



6. Stone-paved meandering stream, garden at Block 6, East Second Ward on Third Street of the Nara capital site (Nara National Research Institute for Cultural Properties).

Garden remains were unearthed at the site of Amida Jōdoin of Hokkeji temple (Nara City, Nara Prefecture) established in 761. Although the excavation was partial and did not reveal the entire shape of the garden, a curved pond with stone pavement at the bottom was found, along with standing stones on the shore. The design of a building which stood within the pond is taken to be a three-dimensional expression of a *Jōdo hensōzu* (Pure Land mandala). The garden remains show the possibility that the origin of pure land gardens, long thought to belong in the tenth or eleventh century, dates back to the eighth century, though the cult of Amida in Japan of the eighth century is thought to have been different from that of the tenth century on.

Based upon the findings from excavated gardens, the Nara period can thus be evaluated as the age when traditional Japanese garden design was established.

Heian period (794-1192)

In the Heian period, the four centuries following the capital's move from Nara to Heian, or modern Kyoto, many grand gardens were built in palaces, detached palaces, aristocratic mansions, and large temples. Information on the process of construction and on the use of such gardens can be obtained from aristocrats' diaries, historical accounts, and many Japanese poems. Knowledge of the concrete layouts of gardens can be found in picture scrolls, though many of them were produced in the ensuing Kamakura period. (fig. 7)



7. Kaya no in mansion depicted in the picture scroll *Komakurabe gyoko emaki* (Kuboso memorial museum).

An architectural style which developed from the tenth century and focused on the main residential building, or *shinden*, of an aristocratic mansion is called the *shinden* style, and a garden accompanying a mansion of this style is a *shinden* style garden. The garden style of Buddhist temples which integrated an Amida hall and a pond, in an attempt to reproduce the Pure Land on this earth after the tenth or eleventh centuries is called the Pure Land style. Few *shinden* and Pure Land style gardens have survived in good condition. The garden features excavated at garden sites of this age, however, reveal in detail the designs of the *shinden* style garden, and of the Pure Land garden.

Kaya no (Kyoto City, Kyoto Prefecture) was a large-scale *shinden* style mansion built in the first part of the eleventh century on a lot within the Heian capital approximately 250 meters square. Excavations have uncovered ornamental stones and pebble beaches of the pond, and other features. It is noteworthy of note that the pebble beaches are covered with white sand.

A waterfall, ornamental stones, and pebble beaches of a pond were uncovered at the Horikawain site (Kyoto City, Kyoto Prefecture), a twelfth-century aristocratic mansion in the Heian capital. A stone-paved stream and a central island decorated with a placement of stones were

excavated at the site of Block 9 (Kyoto City, Kyoto Prefecture), East Third Ward on Fourth Street of the Heian capital as well.

The Toba imperial villa (Kyoto City, Kyoto Prefecture) was maintained for 200 years from the end of eleventh century. There are many documents describing its gardens and the activities that took place there. Also, some garden landscapes were drawn in picture scrolls. Although the excavations were partial, several garden ponds with pebble beaches (fig. 8), rockwork embankments, and ornamental stones have been excavated at the site. The analysis of plant remains in the accumulated mud at the bottom of the ponds showed that pine trees, plum trees, cherry trees and chinaberry trees were probably planted.



8. Pebble beach and ornamental stones of a pond, site of Toba, Kyoto City, Kyoto Prefecture, detached palace (Kyoto City Archaeological Research Institute).

Byōdōin (Uji City, Kyoto Prefecture) is a temple converted by the aristocrat Fujiwara no Yorimichi from the villa inherited from his father Michinaga, with its inauguration ceremony held in 1053. It is a classic Pure Land garden with the Amida hall on the central island facing east, a composition in which it is worshipped from the east shore of the pond as a symbol of the western Pure Land of the Amida Buddha. In recent years excavations have revealed that the original pond had a pebble beach shore and a smaller central island than at present, and that the Amida hall would thus have looked as if it had risen up from the water. (fig. 9) The renovation of the pond is now under way strictly based on the results of excavation.



9. Pebble beach in front of Amida hall, Byodoin temple, Uji City, Kyoto Prefecture (K. Ono).

Mōtsūji temple in Hiraizumi (Iwate Prefecture) was first established by Fujiwara no Kiyohira in 1126, and later reconstructed by his son Motohira after it burned down. Ōizumiga'ike pond, located to the south of the main hall and with a central island, retains the design of the Heian period in such elements as an upright stone in the pond and the wave-beaten rough seashore. Recent excavations have revealed that all the shore of the pond was covered with pebble beaches, and that the *yarimizu* stream, paved with pebbles and having a 5.5% incline on the average, flowed in from the north-eastern part of the pond. (fig. 10) The renovation of the garden has been conducted based on the results of excavation.



10. Stone-paved *yarimizu* stream, Mōtsūji temple, Hiraizumi (Iwate Prefecture) (K. Ono).

Kamakura period (1192-1333)

According to documentary sources, a good number of gardens of the Pure Land style were built in the Kantō region during the Kamakura period. The findings from excavations have revealed the designs of these gardens in detail.

Yōfukuji temple (Kamakura City, Kanagawa Prefecture) was established at the end of the twelfth century by Minamoto no Yoritomo, founder of the Kamakura shogunate. According to one document, the layout and design of this temple was influenced by those of temples in Hiraizumi, which Yoritomo had conquered. Excavations have uncovered the remains of three Buddhist halls and corridors, and the remains of a pond to the east of the buildings. The pond measures 200 meters north-south and from 40 to 70 meters east-west, with pebble beaches used along the shoreline. A bridge spanned from east to west at the center of the pond and a rocky island was placed in the pond's southern part, while a *yarimizu* stream flowed into the pond at its northern part.

A Pure Land garden of Shōmyōji temple survives in Yokohama (Kanagawa Prefecture). The garden was built under the supervision of gardener priest Shōitsu by order of Kanazawa Sadaaki from 1319 to 1320. The landscape of the temple at this time of establishment is depicted in the painting *Shōmyōji ezu narabini kakkai*. As depicted in that work, a central island was placed in the pond, with an arched bridge extending to the pond's southern shore (fig. 11), and a flat bridge to its northern shore. Excavations of recent years have uncovered pebble beaches of the shore of the pond and on the island, as well as the pillars of the bridges.



11. Restored pond and bridges, Shomyoji temple, Yokohama City, Kanagawa Prefecture (K. Ono)

Muromachi period (1333-1573)

The Muromachi period is very important in Japanese garden history, because the style of *karesansui* or dry landscape garden was established. It is unique to Japan, making symbolic representations of natural landscapes without using water. This period is also important from the viewpoint that many feudal warlords around the country built gardens attached to their mansions. Excavations in various regions of the country have revealed the layout and design of such gardens.

The garden remains excavated at the Ema mansion site (Kamioka Town, Gifu Prefecture) belong to the end of 15th century or the first part of the 16th. The lot of the mansion was 97 meters north-south and 114 meters east-west, and the garden was located in its southwestern part. The pond, 30 meters east-west by 19 meters north-south, was equipped with rockwork banks, a central island, a waterfall, and ornamental stones. (fig. 12) This garden is an early example of feudal warlords' garden and is thought to have been modeled after those of the mansions of shoguns or of powerful warlords in Kyoto.



12. Stone-edged pond with an island, Ema mansion site, Kamioka Town, Gifu Prefecture (Hida City Board of Education).

Garden remains have been excavated at the southern corner of the mansion site of Asakura Yoshikage (Fukui City, Fukui Prefecture), a powerful feudal warlord of the late 16th century. Water was drawn from the adjacent hill through a stone-made ditch and poured over a waterfall into the pond. (fig. 13) The pond, attached to the guestroom and built alongside the foot of a hill, was 18 meters long and 1.5 to 3 meters wide. It has a sophisticated design with rockwork banks, a stone paved bottom and a 1.3 meter-high waterfall.



13. Restored pond garden with waterfall, mansion site of Asakura Yoshikage, Fukui City, Fukui Prefecture (K. Ono).

A rectangular flowerbed was uncovered in another sector of the manor. The garden remains mentioned above have been restored and are open to the public. At the Ichijōdani Asakurashi site (Fukui City, Fukui Prefecture), the castle town of the Asakura family, nine garden remains have been excavated in addition to the Asakura Yoshikage mansion. Some of them have been restored or renovated, and opened to the public.

Garden remains have also been excavated at the Ōuchi mansion site (Yamaguchi City, Yamaguchi Prefecture), the Ōtomo mansion site (Ōita City, Ōita Prefecture), the Takanashi mansion site (Nakano City, Nagano prefecture), and the Kikkawa mansion site (Toyohira Town, Hiroshima Prefecture). The findings from excavations such as these have also advanced the study of garden history of the 15th and 16th centuries.

Momoyama period (1573-1603), Edo period (1603-1867)

The tea garden style was established in the Momoyama period. A typical tea garden found in archeological investigations is that of the Shōkadō site (Yawata City, Kyoto Prefecture), though it was built in the early Edo period. Stepping stones, a *nobedan* pavement, and an ornamental privy have been unearthed in good condition. (fig. 14) The privy has a colorful design using red and green stones in particular, and a part of the garden has been opened to the public in its excavated condition.

Many gardens of various styles were built all over the country during the Edo period, and a number of them have survived to the present day. Many documents and pictures concerning gardens have survived as well. The stroll garden style is typical for the Edo period, integrating the various styles of pond garden, dry landscape garden, and tea garden, and many of the daimyo gardens are of this style. Kōrakuen garden

(Okayama City, Okayama Prefecture), Kenrokuen garden (Kanazawa City, Ishikawa Prefecture) and Ritsurin'en garden (Takamatsu City, Kagawa Prefecture) are typical daimyo gardens that have been kept in good condition. Garden remains at the main mansions in Edo of the Tatsuno and Sendai domains have given us detailed information on the garden designs and techniques of daimyo gardens (fig. 15).



14. Privy and stepping stones, Shokado site, Yakawa City, Kyoto Prefecture (Nara National Research Institute for Cultural Properties).



15. Pond edged with piled round stones, site of the main mansion of the Sendai domain.

In conclusion, as seen from the examples mentioned above, the results of excavations conducted at garden sites have become an essential element in the study of Japanese garden history. Furthermore, it is of great importance that garden restorations, such as those of the Eastern Palace of the Nara palace site and of Byōdōin temple, have been strictly based on the findings of archaeological excavation.

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Chapter 2

Wilhelmina F. Jashemski and the Gardens of the Roman Empire

Amina-Aïcha MALEK

During the 1950s, when Mori Osamu was examining ancient Japanese gardens from different historical periods throughout Japan, by measuring them and comparing measured landforms with written documents, Wilhelmina Jashemski had also begun her study of Roman gardens throughout the Roman Empire, collecting information from excavation reports, archive documents, and museums, examining ancient texts and visiting the archaeological sites. Her first large excavations¹ were undertaken in Pompeii just before the garden excavation of the Nara Palace in 1967-1968, so influential in the development of garden archaeology in Japan. As we shall see, with the Pompeian campaign, Jashemski shifted from a historical standpoint to an archaeological perspective, blending dirt archaeology and science with her background as a historian.

In 1950, after Jashemski had published her first book on the proconsular and propraetorian imperium, she decided to write a book on gardens of the Roman Empire. She was encouraged to undertake this project – which seemed an oddity to many – by her University of Chicago professor Jacob Larson, a constitutional historian, who believed that gardens covered every aspect of Roman life and therefore was convinced that their study could be a breakthrough to a better comprehension of Roman society. Bradford Welles, professor of classics at Yale, was also a staunch supporter. Roman gardens had been neither considered nor even widely acknowledged as a legitimate topic for research that would illuminate not only the cultural context but also the social and economic background of Roman society. The key exception is Pierre Grimal's *Les jardins romains*, first published in 1943² and twice reissued without significant revision. His study – mainly devoted to the gardens and public parks of Rome – examined the literary evidence to discuss the profound sense of nature in the Roman soul. In 1984, however, in the preface to the third edition of his book,³ Grimal reflected upon Jashemski's contributions of the past 30 years to the subject. He stressed the significance of her work in terms of information she could retrieve from her careful examination of

¹ Excavation of Via Nola vineyard in 1961, Euxinus vineyard in 1964, Foro Boario in 1966.

² Grimal 1984.

³ Grimal 1984: I-II.

the soil that confirmed what we could learn from ancient texts. He noted that this was a completely different approach than his own, and one that has since been followed by archaeologists.⁴

Pompeii was first examined archaeologically in the 18th century as scientific techniques of excavation and reporting began. However, when Jashemski started to work in Pompeii in the mid 1950s, excavation reports were still scarce,⁵ and precious evidence from soil contours, tree-root cavities, or plant remains that might have been recovered at the time of the excavation had been lost forever. Soil contours had been rarely observed by excavators and plant material was rarely salvaged. Nevertheless, the scant observations made by different archaeologists on gardens will stimulate the development of a new methodology where soil is at the same time context and artifact.

As early as 1895 excavators in the garden of the House of the Vettii at Pompeii reported that at the time of excavation planting beds were visible in the soil. Giuseppe Spano, the first archaeologist to show a great interest in Pompeian gardens in 1910, reported finding root cavities in seven gardens, but the cavities were not emptied of lapilli, measured, or casts made. Nor was there any attempt to identify the plants. A few years later Vittorio Spinazzola found cavities in the garden of the House of the Moralist, which he emptied and filled with cement, but the number and sizes of the cavities were not reported. In 1927 Amadeo Maiuri reported finding in the house of the priest Amandus a tree-root cavity of which he made a cast. In 1939 he made casts of the magnificent tree-root cavities in the palaestra and similar cavities in the park areas north and east of the palaestra, but these cavities were not measured.⁶ Maiuri identified them and similar ones that he found in the Villa of San Marco at Stabiae as those of the roots of plane trees because of the popularity of that tree in the palaestra in antiquity. He later made casts of root cavities in the garden in a humble house (I.xi.12)⁷, but these were never published. Although this interest in garden planting already manifested itself at the end of the 19th century, it was Jashemski who first applied archaeobotanical expertise to gardens. When she observed that details about ancient gardens such as planting features were exceptionally preserved, she gradually established a methodology using diverse disciplines to analyze the various plant materials that she found, ranging from tree-root cavities to carbonized remains, soil contours, and

⁴ Grimal 1984: II.

⁵ Jashemski 1993: ix. Another significant exception was the work of Dorothy Burr Thompson on the plantings around the Hephaiston and the Athenian Agora in the 1930s (Thompson 1937).

⁶ Jashemski 1993: 8. Thomas Drees Price worked on the House of Loreius Tiburtinus and published the results of the garden documentation in the *Memoirs of the American Academy in Rome* V.12 (1935).

⁷ Jashemski 1993 : House of Euximus, App. I, no. 73, I.xi.12: 52.

pollen. This innovative examination of gardens, focusing on shallow layers covered by 4 meters of lapilli, and of plant remains was accompanied by a reflection on the importance of gardens in the city.

As she considered the role of gardens in the daily life of the Pompeian citizens, Jashemski realized that she had first to determine the location of the garden and identify its use in relation to the property to which it was attached.⁸ She explains that in the specific context of Pompeii, which was approximately three-quarters excavated, it was possible “to get the feel of the entire city, to study its plan and land use, the distribution and character not only of its public buildings, but also of its places of business and homes, and to experience the prominent role of the garden in the life of the people.”⁹ This specific approach allowed her to “get under the skin of the ancient city, bringing it alive”¹⁰ in a way that had never been done before. The gardens destroyed by Vesuvius were the last to be studied, as Jashemski mistakenly thought that these sites had already been published and would therefore constitute a small part of her book. Twenty-five years and many seasons of work later, she concluded her major study of Pompeii and the other Vesuvian sites and published in two volumes *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius* in 1979 and 1993.

This chapter will try to retrace the development of Jashemski’s scientific methodology, which has encouraged western archaeologists from different backgrounds to realize that it was possible to recover a garden by carefully examining the soil and applying scientific techniques to the study of plant and animal remains, and artifacts of garden life. Also notable is Jashemski’s use of ethnographic parallels, using modern practices to inform her understanding of cultivation methods, expanding interpretation of the evidence.

BRIEF HISTORY

Jashemski embarked on her study of the gardens of Pompeii thinking that she would concentrate on gardens within the private sphere, particularly on large peristyle gardens already known for their refined paintings, fountains, and sculpture. However, after carefully studying the city, she noticed a number of open areas considered by scholars to have been used for commercial and industrial purposes. Although these designations seemed reasonable, Jashemski suspected that these lands could also have been planted. The discovery in 1966 of a large vineyard within the city walls corroborated her first intuition and encouraged her to examine more carefully the subsoil of other open areas within the city. The following

⁸ Jashemski 1993: 1.

⁹ *Ibid.*

¹⁰ Hadrill 1994: 9.

chronological overview will concentrate on three of these gardens, and the development of Jashemski's methods as excavations progressed. The examination of these gardens can be considered as the turning point in handling and understanding soil features. Therefore a detailed account of her findings and her conclusions will be thoroughly discussed to point out the contribution of garden archaeology to a better comprehension of aspects of human endeavors that go beyond the garden realm.

The *insula* known as the "cattle market" had already been excavated at three different periods in modern times.¹¹ Limited excavations in 1775 concluded that it was a cattle market, so it was called the "Foro Boario." Then in 1885 further excavations unearthed a *triclinium* near the entrance across from the amphitheater. This led scholars to debate whether this was the burial place of gladiators killed in action, or the place where gladiators enjoyed a banquet before their deadly performance. Finally, in the 1950s most of the *insula* was uncovered, and an ancient structure with two rooms equipped for making wine was discovered, suggesting that the *insula* might have been planted with grapevines. However the 1775 interpretation still prevailed and the site remained known as the Foro Boario. Jashemski argued that only subsoil excavation could tell whether this *insula* had been planted as she suspected. In 1966 the preliminary subsoil excavation corroborated her hypothesis. The excavation was pursued in 1968 and in 1970 an additional area still covered with the original lapilli was excavated. At the end of the 1970 season, Jashemski had found 2,014 vine root and stake cavities. She reports that the vines were almost exactly 4 Roman feet apart and that they had been trained on a trellis with a rectangular frame (*vitis compluviata*).

The layout of the vineyard was examined. Two intersecting paths divided the vineyard into four sections. Jashemski suggested that the posts along the paths supported an arbored passageway similar to those used today in the Pompeii area. She argued that the cut posts and the stakes were probably made of chestnut because of its durability in accordance with Pliny's recommendations. Along the paths and the edges of the vineyard, and at intervals throughout the interior of the vineyard, she found a total of 58 tree-root cavities. Carbonized olives found near a tree-root cavity identified it as the hole for an olive tree. The carbonized bean that was found may indicate that beans grew under the vines. Fifty animal bones and two teeth were found near the place where the two masonry *triclinia* had been unearthed in 1887. They were analyzed and identified by Henry Setzer. He discovered that eleven of the bones had cleaver marks suggesting that they had been split to reach the marrow, which the Romans considered a delicacy. The discovery of the

¹¹ Jashemski 1979: 201-218; 1993, Large vine yard, App. I, no. 146, II.v (formerly II.viii): 89-90.

bones near the triclinia explained why in 1775 the excavators had labeled the insula “Foro Boario.”

This excavation, which led to the discovery of the first vineyard of the Roman period ever found, provided significant information on Roman viticulture and, even more meaningful, it confirmed practices recommended in Roman agriculture manuals. Not only had literary evidence been corroborated for the first time, but details of daily life activities in a vineyard, which are not mentioned in agricultural manuals, were also recovered. Furthermore, this excavation yielded important insights on land use in a Roman city, since scholars had never considered garden cultivation within cities. It introduced a new approach by using scientific methods and interdisciplinary collaboration with scientists. The next example, a site excavated just after the vineyard, shows how other techniques have been gradually developed.

The discovery of the vineyard encouraged Jashemski to make a systematic survey of all the open areas uncovered during the last period of excavation between 1951 and 1961 in Pompeii by the Superintendency where it might still be possible to make subsoil excavations. Insula xv of Region I that Jashemski examined had only two houses, which appeared to be a single property since they shared a common open area at the rear.¹² The house in the northwest corner of the insula was called the House of the Ship of *Europa*, because a large graffito of a ship labeled *Europa* was found on the north wall of the peristyle. For archaeologists the graffito reflected the commercial activity of the owner of the house. Therefore, the rear area was thought to have served as a warehouse. However, Jashemski's excavation showed that because of the natural slope of the land, there was a large garden divided at different ground levels. In the lower garden, soil contours and 415 root cavities revealed vines, with trees around the edge and two small vegetable gardens with beds separated by irrigation channels. Furthermore, Jashemski recovered in detail the way water was collected, stored, and channeled, in order to irrigate the different areas of this large garden, located in the southeastern part of Pompeii, which the aqueduct had not reached. The reconstructed layout of the garden shows clearly a path she discovered that gave the gardener access to the different parts of the garden. The identification of the carbonized plant remains by Frederick Meyer revealed the different plants grown in the garden. The large number of broad beans suggested that beans had been grown under the vines and trees, a practice still common in the area today.

According to Jashemski it is unusual to find carbonized fruits, nuts, and vegetables preserved in a garden at Pompeii. Furthermore, entomologists at the Smithsonian Institution extracted from one of the beans a bruchid, or the strawberry weevil, which gave an insight into the

¹² Jashemski 1979: 233-242; 1993, App. I, no. 107, I.xv.1-3: 61-63.

kind of insects that were living in this garden (Part IV, chapter 5). Moreover, for the first time, a large number of terracotta pots with four holes – “breathing holes for the roots” as described by Pliny – were found in this garden. Since then, archaeologists have commonly acknowledged the discovery of similar pots in the ground as a signature for Roman gardens. Jashemski, in a long discussion based on literary evidence, other archaeological findings in Pompeii and elsewhere in the empire, and contemporary local practices, suggested that the trees planted in pots along the wall were probably lemons or perhaps citrons, exotic plants at this time in Italy.

The excavation of the House of the Ship of *Europa* disclosed aspects of cultivation techniques used in the Roman period that had never been described before. Thus, the excavation of the large vineyard recovered aspects of Roman life at different scales: at the city scale it called attention to new forms of land use. At the garden scale it revealed garden layout; plants, animals, and even insects that grew and lived in the garden; the process of cultivation; and other activities that also took place in gardens.

Another important excavation for the development of methodology was of an “unusual garden,” the garden of Hercules,¹³ an open area attached to a “humble house.” When in 1971 Jashemski began to examine this garden, she could not at first enter the house since it was completely invaded by dense vegetation that grew up after the 1953-1954 excavation. A close examination of the garden, however, showed that, fortunately, in certain areas evidence for ancient roots had survived. A trial trench revealed three cavities that invited further examination of the garden.

The following year the excavation progressed slowly, since the soil was badly damaged from earlier excavation that had uncovered most of the built features of the garden: a masonry *triclinium*, an *aedicula lararium*, a marble statue of Hercules, a human skeleton, two votive offerings, a dog house, and various objects like rings, coins, and medical instruments, all of which proved to be important in understanding life in the garden.

Here Jashemski found pollen for the first time, ten samples of which were taken from protected areas. Professor Geoffrey Dimbleby identified at least 21 different pollens and three different fern spores. The samples taken from the planting beds showed a strong dominance of olive pollen; the one taken near the wall had a significant amount of olive pollen as well as *polypodium* spores that were also represented in the sample taken near the southwest corner of the shrine. These results suggested to Jashemski different ideas regarding the plants that were cultivated in the garden. For instance, it was reasonable that polypodium spores would be found near the walls since ferns grow on walls, and the large amount of

¹³ Jashemski 1979: 279-288; 1993, App. I, no. 153, II.viii.6: 94-96. See Part VII, chapter 7.

olive pollen could mean that olives were planted in this garden since this kind of tree is insect-pollinated. The low incidence of pine, walnut, and hazel pollens was not surprising since they are wind-pollinated, suggesting that they were probably not cultivated in this garden. Furthermore, for Jashemski it was significant that there were also low values for weed and grass pollens in the sample taken from the planting beds, since it suggested either that they were shaded enough to exclude light-demanding weeds or that the garden beds were well tended. The high concentration of insect-pollinated olive pollen, found near a huge tree-root cavity that had the appearance of an olive, indicated that olives were raised in this garden.

Other findings allowed Jashemski to reconstitute aspects of the husbandry practices that took place in this garden, for example, the discovery of a large root growing out of a small pot near another small one suggested that the young tree that had been started in the first pot did not survive so another was planted in a pot next to it. For Jashemski the unusual feature of this garden was the complicated soil contours, which divided the garden into many planting beds, each of them carefully watered. In a well-preserved bed, Jashemski discovered round formations in the center of which a small plant had grown. The plant was too small for lapilli to have preserved its root cavity, suggesting that flowers or vegetables were planted in this garden. Pollen analysis shed little light on what was cultivated in these beds. The discovery of fragments of perfume bottles and terracotta unguent containers, the evidence for olive planting, the striking resemblance of the planting beds to those used by contemporary cultivators to grow flowers in Pompeii all suggested to Jashemski that this garden might have been a commercial flower garden, at least for part of the year. As the ancient agricultural writers advised: flowers can be a very profitable crop. She also suggests that at the impressive *lararium* and altar of Hercules, a deity venerated by merchants and traders, was worshipped and visited by members of a common trade that would meet during festive days and share a meal on the large *triclinium* of the garden.

This example emphasizes again how Jashemski's scientific methodology, combined with her precise knowledge of ancient literature and history, brings to light aspects of the garden that had never been previously foreseen: the Roman garden as a commercial enterprise, as a place of gathering and worshipping, as a place of pleasure, in short the garden as an indispensable part of the daily life of an early imperial Roman city.

These three examples show how a thorough examination and analysis of the soil features, supported by scientific techniques, sharpened interpretations. Around the same time that she was excavating the flower market garden, Jashemski was invited in 1973 to excavate the peristyle garden of a noble Samnite house on Via Dell'Abbondanza, the House of

Polybius that the Superintendency had started excavating.¹⁴ It was the first time that a peristyle garden was excavated according to a methodological approach that included investigations by scientists, such as palynologists, botanists, pedologists, mammalogists, entomologists, geochemists, and microbiologists. Three porticoes enclosed the garden. The cistern under the east portico supplied the entire house and its garden with water until the eruption in the year 79. Jashemski reported that she was surprised to find root cavities of five large trees as well as those of smaller ones and shrubs in a rather small garden. When the casts of the roots were identified, two of them appeared to be fig tree roots, 30-35 years old. Two others were also fruit trees – cherry or pear – and the fifth seemed to be the root of a young olive tree. Along the west wall, fragments of four planting pots were found in the root cavities of smaller trees. The traces of a number of nail holes on the wall above the roots suggested to Jashemski that the trees were first planted in the pots and then espaliered on the wall. The marks left by a narrow wooden ladder 8 meters long, similar to those used today to pick cherries and pears from trees, constituted another interesting find in this garden. The dense planting found in this small garden suggests that the soil was exceptionally fertile, and subsequent soil studies showed this to be true.

In 1974 and 1975 Jashemski examined seven other peristyle gardens that had been previously excavated, where it was still possible to find garden evidence. In six of them, she found informal plantings, as she had in the garden of Polybius. The garden in a small house located in region (I.xii.11)¹⁵ had been planted with small shrubs laid out in a very formal design. These results demonstrated that peristyle gardens could also be informal. During the Augustan period, the introduction of the aqueduct made water easily available, and low, formal, ornamental plantings that required more water were possible; statuary and pool fountains became common. But many owners were understandably reluctant to cut down long-established trees that furnished shade and food.

In 1983 the first formal garden in a luxurious house was examined using scientific techniques. Jashemski described as follows the small garden that she excavated at the rear of the House of the Bracelet:

the garden was laid out formally with passageways on three sides, leaving a rectangular area with slightly raised borders. Within the rectangle, soil contours outlined an oval bed with mounded borders, which left trapezoidal beds at each corner of the garden. The size and the location of the root cavities suggest a formal hedge, perhaps box.¹⁶

¹⁴ Jashemski 1979: 25-30; 1993, App. I, no. 517, IX.xiii.1-3: 249-251.

¹⁵ Jashemski 1993, App. I, no. 87, I.xii.11: 55.

¹⁶ Jashemski & Meyer 2002.

The excavation of this small garden confirms the Roman taste for evergreen plants that was known primarily from authors like Pliny. These writers give detailed information on the way flowers are used to make garlands but seldom mention flowers in the garden.

In total Jashemski excavated 50 gardens, vineyards and vegetable gardens in the Vesuvian area, including the *villa rustica* at Boscoreale and twelve gardens in the luxurious villa of Poppaea at Oplontis (modern Torre Annunziata).

The results of her methodology encouraged her to examine other sites outside the unique region preserved by the eruption of Vesuvius. Between 1987 and 1988 Jashemski and Salza Prina Ricotti excavated the *Canopus* area of Hadrian's Villa at Tivoli.¹⁷ Their work revealed terraced gardens along the shore of the long basin called the *Canopus*. Shrubs and trees were planted in discarded amphoras cut in two, with both the upper and lower parts serving as planting pots. The peristyle garden of the Piazza d'Oro was also examined. It was discovered that the garden was built on a sloping tufa base with insufficient soil covering for the plants, necessitating the construction of a series of large pits in which shrubs or trees were planted along the *euripus*, reminding the excavators of those found in the forum at Cosa and also in the nearby temple at Gabii.

In 1988 and 1990 Jashemski went to Tunisia to study the ancient gardens of the African provinces.¹⁸ Despite the commonly held belief among scholars that most peristyles in Roman Africa were paved and gardens were not introduced into the house complex, Jashemski examined the major Roman sites, making an effort to locate all possible gardens in the city. She found that the peristyle courts in some houses were indeed paved with mosaics or marble, but that the great majority had soil. Some of them had been replanted for embellishment reasons by modern curators, unfortunately destroying evidence for ancient plantings.

The gardens in Roman Africa were not as perfectly preserved as those in the Vesuvian sites, at an exact moment in history. Hence, Jashemski was aware that trees and shrubs would have continued to grow for some time after the site was abandoned and thus, what would be uncovered was not the garden at its prime. Nevertheless, she suspected that if modern roots had not disturbed the soil and if other conditions, such as the character of the soil and drainage, were favorable, it might be possible to find evidence of ancient roots. She therefore excavated the courtyard garden of the House of Bacchus and Ariadne at Thuburbo Maius (Part VII, chapter 6), with the assistance of the pedologist John Foss, with whom she had worked in Pompeii. He determined by soil auger tests that 25-30 centimeters of soil had accumulated through the centuries, blown in

¹⁷ Jashemski & Prina Ricotti 1992.

¹⁸ Alexander & Ben Abed Ben Khader 1994: II.4, p. 39-66; Jashemski 1995: 559-576; Lantier 1943-1945: 280-282.

by the wind after the site was abandoned. When this was carefully removed, evidence of the plantings at the last occupation level was perfectly preserved. Jashemski observed that the soil formed by decaying roots was of an entirely different texture and color from that of the surrounding soil, making the shape of the ancient roots at ground level as distinct as those of lapilli-filled cavities in the Vesuvian area. Three large tree-root cavities, the largest dimension at ground level (40-50 cm in diameter), three smaller tree-root cavities (20-30 cm in diameter), and many smaller cavities (most 5-10 centimeters in diameter) were uncovered.

Furthermore, three large rectangular areas of approximately the same size (36 x 72 cm, 40 x 60 cm and 46 x 63 cm) and only a few centimeters deep, represented decayed wood, that Jashemski interpreted as the wooden bases of garden benches or tables. In addition, numerous olive pits and bones that showed evidence of burning were found in an area near the rear of the garden, on the surface and shallowly buried. Nearby, in a place where there had been frequent fires, were more shallowly buried bones. When many bones accumulated, they were raked into the fire, and those not burned were shallowly buried, a common Roman practice. Of the 34 bones found, 15 were identified.¹⁹ The apricot pit found near the large tree-root cavity in the south corner of the garden probably identifies a tree. These findings suggested the location of the cooking area behind the bench or table, as houses at Thuburbo had no kitchens. Servants would have cooked the food at the rear of the garden, using the table or bench screened by plantings, for both provisions and cooked food, to serve guests in the formal colonnaded dining room, the *oecus*. Jashemski believes that at other times during the hot summer, the family and perhaps a few special guests would have enjoyed meals in the garden.

Using the evidence of the size of the tree-root cavities and the species depicted on mosaics, Jashemski suggested that olive, fig, apricot, and other fruit or nut trees grew in this garden and probably a few grapes were raised for table use. Fruit trees would have been attractive in flower or fruit but they are deciduous; thus, only the evergreen olive tree would have been verdant throughout the year. These smaller roots suggest plantings of bushes and shrubs to provide year-round beauty for the garden that was viewed from the large formal dining room. The plant material found in Roman Africa was limited for the most part to laurel, myrtle, rosemary, laurustinus, oleander, acanthus, and ivy; according to Jashemski there does not seem to be a place in this garden for ivy, but any of the other plants could have been used. Finally she suggested that oleanders (*Nerium oleander* L.), so prominent in modern North African

¹⁹ Fifteen were of pig, eight were of sheep or domestic goat, one was from a rabbit, one from a carnivore (probably a pet cat); other bones were too badly broken to be identifiable.

gardens, as well as in the wild, may have added color to this garden. It is widespread in all North Africa and tolerant of variable growing conditions. Limited excavations in the peristyle garden of this house also revealed root cavities. She also found evidence of root cavities in a temple garden in the East Temple at Thuburbo Maius.

Since this unique experience, the results of which greatly exceeded common expectation, no additional subsoil excavations have been carried out in any of the African provinces. Nevertheless it contributed to a better understanding of the role of gardens in the African *domus*, and encouraged scholars to integrate into their research the garden and the various mosaic floors that decorated the different rooms of the house²⁰.

In her paper "The contribution of archaeology to the Study of Ancient Roman Gardens," read at the 1989 symposium on landscape architecture held at Dumbarton Oaks,²¹ Jashemski discussed 18 provincial sites, noting the rare gardens in which subsoil excavations had taken place as well as others known from their architectural context. Her forthcoming edited book *Gardens of the Roman Empire* will show how interest in gardens has gradually grown among scholars since she began excavating.²²

A NEW GENERATION OF GARDEN ARCHAEOLOGISTS

As a result of Jashemski's work and the symposia she organized with Elizabeth MacDougall at Dumbarton Oaks, the study of gardens has become a recognized field in Roman studies and the subject of excavation by a new generation of archaeologists. Hence, during the past three decades many Roman gardens have been excavated,²³ under the sponsorship of institutions and universities whose traditional projects had concerned mainly architectural remains.²⁴

²⁰ Malek, forthcoming.

²¹ Jashemski 1992: 5-30.

²² *Gardens of the Roman Empire* edited by W. Jashemski *et al.* (forthcoming).

²³ *Ibid.*

²⁴ The École Française at Rome in collaboration with the Académie de France in Rome excavated the gardens of Lucullus on the Pincio (1981-2002). The École Française at Rome in collaboration with the Soprintendenza Archeologica di Roma undertook the excavation of the gardens of the Palatine (1985-1999); the results were exhibited in 2002 at the Museo Nazionale Romano. The Swedish Institute at Rome in collaboration with the Soprintendenza Archeologica di Roma launched an archaeological project at the Villa of Livia, to establish the design of the alleged *magnus hortus* located on the large terrace east of the living quarters of the villa. Leigh-Ann Bedal directed the preliminary excavations of the Petra garden with the sponsorship of Dumbarton Oaks (2000-2001). The Danish Institute at Rome with the Soprintendenza Archeologica di Roma undertook the excavation of two peristyle gardens of the Villa Santa Maria and the garden of the Temple of Diana Nemorensis (2001-2002). Two major excavations in

Kathryn Gleason of Cornell University has dedicated her archaeological research mostly to gardens. She is a scholar who has undertaken a systematic exploration of gardens. Trained as a landscape architect, Gleason started in the early 1980s to look for gardens at Jericho and Herodium, then in the 1990s at Masada, Caesarea, and Licenza, and more recently at Lago di Nemi, Stabiae and Petra, where she has been invited as a specialist on garden excavations. She has worked primarily in regions where very few gardens had been explored or even recognized by archaeologists. In England, however, she had the opportunity to study with Barry Cunliffe whose excavations at Fishbourne uncovered remains of a garden villa. His approach as a prehistorian drew from environmental archaeology, whose methods, combining both archaeological techniques and those of soil and biological sciences, provided classical archaeologists with new ways to explore gardens outside the Vesuvian context. Dimpleby's *Plants and Archaeology*; *The Making of English Landscape* by the landscape historian W.G. Hoskin; O. Rackham's *The Illustrated History of the Countryside*; Taylor's *The Archaeology of Gardens*; and Jashemski's publications have greatly influenced Gleason's work. During her 20 years of experience in excavating gardens, she has developed a methodology where "soil is not simply the context of artifacts but is itself the feature for study." Therefore soil stratigraphy ("the most important and most complex evidence available for analyzing the structure of ancient gardens and fields; and in many places (...) the only evidence"), soil chemistry, artifacts, and environmental inclusions play an important part as they "provide critical evidence that can strengthen and augment interpretations based on surface survey and aerial photography."²⁵ One should note that stratigraphy, crucial for the location of garden layers, was never employed by Jashemski in the Vesuvian area, because of its specific context. It was necessary, however, in her excavations at Hadrian's Villa and in Tunisia.

Gleason's expertise in garden archaeology started with Herod the Great's palatial complexes. At Jericho²⁶ (1985-1987), Gleason used stratigraphy and flotation, and found planting pits and ceramic planting pots from which she made root casts. At Herodium (1985), the water features and the rich mottled brown soil with chalk inclusions and pot shards beneath the plaster surface attested to the presence of a garden;

Switzerland and France were undertaken: the excavation of the villa of Dietikon, Zürich (Ebnöther 1991 and 1995) and of the gardens of Richebourg, Yvelines (Barat 1999, 2000 and 2001). The Institut national du Patrimoine in collaboration with Collège de France et École française at Rome, excavated a peristyle garden at Jebel Oust in Tunisia (Durost, Scheid & Ben Abed 2010).

²⁵ Gleason 1994a: 14 and Miller & Gleason 1994: 25.

²⁶ Gleason 1987-1988.

however, plant features were not found. At Masada²⁷ (1990-1996), pools, channels, and cisterns were uncovered, and soil discoloration was observed, but the results remained inconclusive; at Caesarea²⁸ (1990-1996), she employed environmental retrieval (flotation, sieving) and located the garden with its rich red sand under the paving of the courtyard.

At Horace's Villa at Licenza (Italy) (1997-2001) (Part VII, chapter 8), Gleason collaborated with two scientists, a geophysist and a pedologist, John Foss, to survey the garden and determine the soil origins of the area: carbonized plants, animal bones, mollusks, and egg shells were recovered using flotation and wet sieving; different artifacts – statues, a sundial and a flower pot – were also found. At Lago di Nemi²⁹ (2001-2002), three gardens were examined: two garden peristyles in the Villa Santa Maria and cuttings for trees in the bedrock around the temple dedicated to Diana Nemorensis. Contrary to expectations, the very fertility of the volcanic soil proved to be problematic for excavators. With little need for fertilizer, soil discoloration or soil inclusions that would distinguish between modern or ancient cultivated surfaces and indicate planting features were not observed. The excavation of the villa gardens uncovered ornamental water features and garden architecture; however, it did not reveal details of planting, and neither pits nor pots have survived. In the sacred grove of Diana, Gleason excavated one planting pit in the portico; stratigraphy and artifacts recovered confirmed the use of the pits for plantings along the colonnade and the presence of a sacred grove around the temple.

For Kathryn Gleason and Leigh-Ann Bedal, the director and coordinator of the Petra garden feasibility study, the preliminary excavation of the Nabataean garden has been a breakthrough in coordination of methodology.³⁰ The goal was to cross-reference the results of the ground penetrating radar (GPR) and soil coring with the stratigraphy in order to locate the garden soils, understand the site layout, and recover artifacts and environmental remains, with a limited budget.

As a dirt archaeologist but also landscape architect, Gleason stresses in her publications that questions of design – the challenges posed by the site, the brief given to the designer expressed in the resultant form, the manner in which the visitors experienced the garden – must be addressed by excavation to provide the spatial skeleton on which to hang the rich imagery and descriptive accounts from art and literature and texts.³¹ (Part III)

²⁷ Netzer 1991.

²⁸ Gleason 1996.

²⁹ Rasmus Brandt, Leander Touati & Zahle 2000.

³⁰ See Gleason, Parts II-III, in this volume and Bedal, Part VII, chapter 10.

³¹ Gleason 1994b: 4-13; 1994c: 13-27.

METHODS

Jashemski's methodology and innovation rests on careful examination of soils either from direct observation, or from laboratory analysis of sample finds. Interpretive methods that are, of course, culture specific, turned out to be as important as excavation or observation techniques. She has shown that soil contours, planting patterns, the size and shape of root cavities, and the distance between roots all provide significant evidence. Aerial photographs were used to identify damaged soil contours, which could not be seen from the ground. Soil from Pompeian gardens was sent to Dimbleby at the Institute of Archaeology at the University of London, and from Hadrian's villa to the British School at Rome for analysis by flotation, but the results proved disappointing. Important information about the plantings in Pompeian gardens was derived from the pollen analysis of soil samples by Dimbleby, and after his retirement by Eberhardt Gröger³² at the University of Göttingen in Germany.

Root casts of the trees and bushes located and helped identify the plants that grew in the garden. Experts in various scientific disciplines were invited to share their knowledge. Hence, Jashemski's methodology rests upon inter-disciplinary cooperation with a network of scientists that she systematically consulted to build up her awareness of methods of observation. Botanists identified the carbonized fruits, vegetables, and seeds that were found in the excavations, as well as the plant material in the wall paintings, and compared them with specimens growing in the area today. They also identified and photographed fragments of carbonized plants. The paleobotanist identified carbonized roots and stems. The agronomist shared his knowledge of the culture of fruits; the palynologist undertook pollen analysis; the plant pathologist advised on interpretations of questions pertaining to viticulture. The pedologist made soil analysis in the ancient gardens and compared them to modern soils. The ornithologist identified birds pictured in garden paintings; the ichthyologist identified the sea animals in the garden paintings and advised on technical matters relating to fish and fish pools. The mammalogist analyzed the bones found in the gardens. The nature of carbonization of plant specimens was discussed by the geochemist. The entomologist identified carbonized insects and insects pictured in the wall paintings. This does not mean that Jashemski always worked with a large team. To the contrary, individual scientists were called upon according to the context and the specific findings of each garden.

The tragic way in which the gardens of the Vesuvian area were buried has preserved a wealth of archaeological evidence that cannot be compared to any other sites. This specific context has allowed Jashemski to be the first to see the excavation program as a complete team effort

³² For the limitations of pollen analysis see Chapter 3 of Part IV in this volume by Eberhardt Gröger.

rather one in which an archaeologist excavates and then sends soil samples to a laboratory or invites experts to the site after the work has been done. Therefore, one should emphasize that Jashemski's pioneering methodology resides in the degree to which she uses an interdisciplinary team that tries to maximize as much information from the excavation as possible. More than 30 years later the recent preliminary excavation of the Nabataean garden at Petra, which benefited from the development of new techniques like soil stratigraphy, soil chemistry, and GPR, is an example of such coordination among different disciplines during the process of the dig (Part VII, Chapter 10).

DEFINITION

Jashemski does not provide a specific definition of a garden in her publications. First, she discusses gardens in terms of open areas that were probably planted and then she explains how her findings revealed the everyday experience of gardens in Pompeii. She has found that the garden was intimately related to many aspects of people's lives; to both public and domestic architecture; to painting, sculpture, horticulture, religion, work, and recreation.³³ Thus, she compared her archaeological findings with literary evidence from ancient authors in order to reconstruct the various garden experiences on both an urban scale and a domestic scale. Hence, for Jashemski the garden is a place of constant cultivation that invites different life experiences shared by any number of social groups, such as the citizen members of a specific trade or members of a household. Therefore she uses the word "garden" to designate a cultivated place within a house, cultivated nature in institutional spaces, or large cultivated open areas within the city. This terminology follows the practice of the ancient Romans who applied the Latin word for garden, *hortus*, to any enclosure for plants, whether an ornamental garden, pleasure garden, fruit garden, vegetable garden, or vineyard. Pliny the Elder tells us that in the Twelve Tables the word *hortus* denoted the *heredium*, the family estate or farm, and that, in his day, it was even used for farms and luxurious villas within the city of Rome.³⁴

FROM GARDENS TO NATURAL HISTORY

Jashemski pursues garden archaeology to gain knowledge about the Roman world rather than for its own sake. Her interest in forms and artifacts is instrumental. She has aimed throughout her life at understanding whether gardens provided evidence of a uniform Roman culture throughout the

³³ Jashemski 1979: 1.

³⁴ Pliny the Elder, *Natural History*, XIX.19.4, translated by Harris Rackham, Loeb, 1950.

empire, or showed vernacular differences. She has also expressed concerns about the situation of garden archeology, and suggested guidelines for the future to avoid losing precious material: publication of gardens as soon as they have been excavated, giving a high priority to subsoil excavation of previously excavated gardens when it is still possible, stressing multidisciplinary research. She emphasizes that “garden archaeology at its best is an international venture.”³⁵ She also discusses how garden archaeology has raised important issues that go beyond the experience of life itself in gardens. For instance, her work raised a question about carbonization in Pompeii – why were carbonized or partially carbonized plant materials found in certain gardens or parts of gardens and not throughout the excavations? – that was answered by the cooperation of scientists – vulcanologists, botanists, paleobotanists, geochemists, archaeologists, and paleontologists – all working together.

Since pollen evidence was disappointingly scant in Pompeii, scientists felt the need to pursue pollen analysis in the neighboring Lake Averno, in order to improve their understanding of the natural history of the region. When the findings of the various scientists were assembled it became obvious that they provided the material for a natural history of the Vesuvian area. Thus, the study of the gardens of Pompeii led to a natural history of the area such as can be written for no other Roman site. This data has been gathered in *The Natural History of Pompeii and the Other Vesuvian sites*.³⁶

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³⁵ Jashemski 1992: 29.

³⁶ Jashemski & Meyer 2002.

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Chapter 3

Christopher Taylor and British Garden Archaeology

Amina-Aïcha MALEK

In memory of Christopher Currie

While Jashemski was in Pompeii gathering information on the Vesuvian sites and excavating her first garden in 1961 on the Via Nola,¹ Barry Cunliffe was examining a Roman villa at Fishbourne, in Sussex, between 1961 and 1969. He uncovered an arrangement of narrow trenches, which he interpreted as beds for box hedges.² This excavation was discussed later at a Dumbarton Oaks symposium on Roman gardens organized by Jashemski. The results of the Fishbourne experience proved that gardens could be archaeologically examined even outside the Vesuvian context and gave information on gardens of the Roman provinces.³ Its interdisciplinary methods and fine field techniques remain a model for Roman garden archaeology but had little immediate impact on the expansion of garden archaeology in Britain. Hence, this important excavation might have been considered as the beginning of the development of garden archaeology in England, but it turned out to be a “spectacular exception” rather than a starting point, as this experience was “followed by somewhat disappointing garden excavations till the mid 1980s.”⁴ However, the development of garden archaeology in England took an unexpected path when, in the early 1960s, Christopher Taylor, a field archaeologist, first realized that some of the earthworks classified as “moats” were in fact the remains of Tudor or Stuart gardens.⁵ Since then, field archaeologists have developed a method of identifying and interpreting the surface forms of gardens by using a non-intrusive approach. In contrast to Japanese archaeologists and classical archaeologists like Jashemski or Cunliffe, field archaeologists focus exclusively on surface features (earthworks) surviving on the ground or visible as soilmarks or cropmarks on aerial photographs.

¹ Jashemski 1979: 226.

² Cunliffe 1981: 95-108.

³ Zeepvat 1991.

⁴ Jacques 1991: 17.

⁵ Royal Commission on Historical Monuments of England (RCHME), *West Cambs*, 1968, lxii-lxiii. See fn. 50 for full citation.

Christopher Taylor, an archaeologist who specializes in field archaeology, is considered in England as the “most constant and authoritative figure that has set the subject firmly on the academic and conservation agenda.”⁶ He is a pioneer in the recognition and the study of early gardens from field evidence that led to the acceptance of “formal garden remains” or the equivalent as a monument type in the National Monument Record and as an indexing term in the Cambridge University Collection for Air Photographs. His work coincided with the creation of a Register of Parks and Gardens of special historic interest in England as a conservation mechanism, which now includes some early gardens surviving as earthworks. It also led to the commissioning in 1992 of a monument class description for gardens. This institutional process that promoted the recognition of “garden remains” as a national monument type, as well as the course of its development as a branch of archaeology, is unique in Europe. Therefore an awareness of how garden remains were discovered – methods and techniques – and interpreted by British scholars is the key to understanding the stages of this unique development of garden archaeology that has been widely presented in a series of conferences and their published proceedings by Taylor and his followers.

BRIEF HISTORY

According to Taylor, Amelia Amherst was the first garden historian who recognized in 1895 that there was an “archaeological side to garden history,” when she observed earthworks within both *existing* and *abandoned* gardens. Thirteen years later another scholar, A.H. Allcroft, an archaeologist, acknowledged that “garden-like features existed as earthworks.”⁷

In the 1920s the Royal Commissions in Scotland and England first recorded the remains of former gardens in their publications, and in 1926 the English Royal Commission published the earliest plan of a former garden at Leighton Bromswold. During the following 30 years, “abandoned gardens” were recorded unsystematically by the Royal Commissions, notably by the Scottish Royal Commission, which published the plan of the hanging gardens at Whytebank Tower⁸ and, among others, the remains of the garden of Stirling Castle.⁹ More important, in 1968, the English Commission in West Cambridgeshire listed and surveyed systematically all the “abandoned gardens” of the

⁶ Everson & Williamson 1998: 140-141.

⁷ Taylor 1991: 1; Allcroft 1908; Amherst 1895.

⁸ Royal Commission of the Ancient and Historical Monuments of Scotland (RCAHMS) 1957 (16), quoted *in* Taylor 1991: 1.

⁹ RCAHMS 1963 (192), quoted *in* Taylor 1991: 1.

area,¹⁰ and between 1972 and 1975 extended the record to the other parts of Cambridgeshire and to Dorset. Taylor reports that in 1972 the earthworks of an “abandoned park” designed by Charles Bridgeman were recorded for the first time. He also comments that during the same period (1960s-1970s) garden remains were unfortunately often misinterpreted, and therefore many sites were destroyed. As he explains in his book *The Archaeology of Gardens*, published in 1983,

none of these gardens was recognized until recently because, as is so often the case, archaeologists only see what they want to see. If they have been told that a site is a deserted village then the visible remains are interpreted as part of one.¹¹

When it became accepted in the 1970s that remnants of ancient gardens did in fact survive, fieldwork on gardens and park remains went on the rise. We mostly find what we are looking for. It is telling, for example, that 40 sites in Northamptonshire¹² (including the remains of emparking¹³ earthworks) were discovered and surveyed after the English Royal Commission engaged expressly in a search for gardens. And Taylor has stressed how much the publication of gardens and related material in the “Northamptonshire Inventories”¹⁴ encouraged a growing interest in the “field archaeology of gardens.”¹⁵ In April 1988 at the Conference of Knuston Hall, he listed at least 17 sites with garden remains recently recorded by several scholars and the English Royal Commission,¹⁶ and commented: “it is now clear that the remains of former gardens must be amongst the commonest type of archaeological sites at least in England.”¹⁷ Since the 1970s, field archaeologists have surveyed, recorded, and discussed the results of their search for garden remains.

Many of the gardens discovered by these archaeologists date from the 16th and early 18th centuries. They present formalized designs composed of ponds, canals, mounts, etc., the size and elaborate shapes of which are fairly easily identifiable, such as the *ziggurat*-type terraces at Holdenby

¹⁰ RCHME 1968, *An inventory of the Historical Monuments in the county of Cambridgeshire*, 1, *West Cambridgeshire*, London, HMSO; quoted in Taylor 1991: 1.

¹¹ Taylor 1983: 8.

¹² RCHME 1975, *An inventory of the Historical Monuments in Northamptonshire*, 1, *Archaeological sites in north-east Northamptonshire*, London, HMSO; RCHME 1982, 4, *Archaeological sites in south-west Northamptonshire*; quoted in Taylor 1991: 2.

¹³ Empark is the usual spelling used by British archaeologists. The OED 3rd ed. gives Impark: (1) to enclose beasts of chase in a park; (2) to enclose land for a park, to fence in, ... hence Imparking's enclosure of a land for a park.

¹⁴ RCHME 1979, *An inventory of the Historical Monuments in Northamptonshire*, 2, *Archaeological sites in central Northamptonshire*, London, HMSO; Binney 1979: 2342-2345; quoted in Taylor 1991: 2.

¹⁵ Taylor 1991: 2.

¹⁶ Taylor 1991: 2. The English Royal Commission Berkshire, Cheshire, Essex, Gloucestershire, Lincolnshire, Staffordshire, Shropshire, Wiltshire and Yorkshire.

¹⁷ Taylor 1991: 2.

and the double-truncated pyramidal mounts at Lyveden, both in Northamptonshire, as well as the cascade at Croxby, Lincolnshire.¹⁸ Furthermore, archaeologists have also found formal and informal emparking dated from the early 18th century and 19th century that provide less clear features, although some exceptions have shown that many aspects of the various changes they underwent can be traced.¹⁹ When the characteristic features of specific period gardens are known, it is easier to identify new ones on other sites, even when they were constructed on a flat topography. Furthermore, A.E. Brown and Taylor were able to recognize earthworks at Hamerton, Cambridgeshire, and Boughton, Northamptonshire, as former flowerbeds and paths,²⁰ proving that once garden remains are located and identified, it becomes possible to identify even minor surviving features.

A further step was taken when fieldworkers learned how to detect former gardens in places where they actually “overlie earlier, better documented and more obvious archaeological sites” like deserted medieval villages, monastic sites, and even sites of the 19th century. These examples echo Amherst’s theory that many existing gardens contained within their layouts the remains of earlier phases of formal arrangements.²¹ But more notably, in the case especially of monastic garden sites, they also re-used earlier features in a selective and purposeful way.

A stream of publications on the subject has greatly contributed to the development of the awareness and the conceptual frame of garden archaeology. The most important²² are Taylor’s publication of the late Elizabethan garden earthworks at Leyveden in 1973;²³ the RCHME comprehensive inventory of the late 17th century gardens and landscape at Boughton together with at least 12 other sites;²⁴ the publication in 1983 of Taylor’s book *The Archaeology of Gardens*;²⁵ the proceedings of the conference on “Garden archaeology” held at Knuston Hall in the spring 1988, organized by the Council for British Archaeology and published in 1991;²⁶ the conference held at Strawberry Hill, London, in June 1995 and published in 1997;²⁷ and the conference organized by the Royal Commission on the Historical Monuments of England and the Garden History Society in London in the fall of 1996, published in

¹⁸ RCHME 1981, 3, *Archaeological sites in north-west Northamptonshire* quoted in Taylor 1991: 2; Everson, Taylor & Dunn 1991.

¹⁹ Taylor 1991: 2.

²⁰ Brown & Taylor 1978: 64-67; RCHME 1979, quoted in Taylor 1991: 2.

²¹ Taylor 1991: 2.

²² According to Everson & Williamson 1998: 139.

²³ Taylor 1973: 145-160; RCHME 1975.

²⁴ RCHME 1979, 2, *Archaeological sites in central Northamptonshire*, London.

²⁵ Taylor 1983.

²⁶ Brown 1991.

²⁷ Jacques 1997.

1998.²⁸ These publications have further encouraged major excavation projects that “aimed at elucidating the layout and the development of gardens for their own sake.” In the mid- and late 1980s,²⁹ several gardens were excavated, among them, Neil Hynd and Gordon Ewart’s excavations of the gardens of Aberdour Castle, Fife in Scotland³⁰, Paul Drury and Carol Cunningham’s excavation of a parterre of the early 1830s at Audley End, Essex; the excavation of a Georgian town garden in Bath, The Circus, City of Bath, Somerset;³¹ and excavations at Painshill Park, Surrey. Later, excavations at Castle Bromwich Hall, West Midlands, at Kirby Hall, Northamptonshire (Part VII, chapters 1 & 2),³² and of the Privy Garden at Hampton Court, Greater London,³³ have marked further stages in the involvement of archaeology in the recognition and study of early gardens based on field evidence, typically including excavation and restoration.

METHODS

Gardens in England were mainly recognized and identified by field archaeologists. Analytical field archaeology aims at discovering, recording, and analyzing archaeological sites – by visual examination alone – without excavating. It is one of the oldest forms of archaeological study, with a history that stretches back to the 16th century in Britain.³⁴ Field archaeology is a specialized discipline that involves mainly the observation of earthworks and the interpretation of their period of construction, function, and relationships.³⁵ Taylor clearly states,

though many people equate archaeology with excavation, the understanding of the past by archaeology involves much more than merely digging. When an archaeological site exists as an upstanding series of mounds, banks or ditches, these features can be interpreted by analytical fieldwork. Where sites have been obliterated by later activities they can be discovered and interpreted by using air photographs, by geophysical methods using sophisticated sensing devices and by minute examination of the ground for traces of objects which have been exposed by modern disturbance. The

²⁸ Pattison 1998.

²⁹ According to David Jacques, “The picture in Britain began to change once more with the advent of a golden age garden restoration from the early 1980s (...) The more crucial though, was 1985, when two garden excavations, both purely of garden soil layers, started. They initiated a run of successful excavations that raised the profile and expectations of garden archaeology considerably,” *in* Jacques 1997: 4.

³⁰ Hynd & Ewart 1983.

³¹ Bell 1990: 1-21.

³² Currie & Locock 1991: 77-99.

³³ Dix & Parry 1995: 79-118.

³⁴ Taylor 1997: 18.

³⁵ *Ibid.*

archaeology of gardens is thus the examination of the sites of abandoned gardens by all the methods outlined above.³⁶

During the 20th century the discipline greatly benefited from the emergence of aerial photography and geophysical investigations. In 1988, air photographers recorded gardens, and it was discovered that previously gardens had often been mistakenly identified and registered, leading custodians of collections of aerial photographs to review their holdings. Taylor mentions as the most notable success in the identification of garden remains in aerial photographs “the recognition of the Pre-Brown canal below the lake at Blenheim, Oxfordshire, on a standard vertical air photograph taken for planning purposes.”³⁷ D.R. Wilson, from the Committee of Aerial Photography at the University of Cambridge, discusses the use of aerial photography for the study of archaeological garden remains in his article “Old gardens from the Air”³⁸ published in the proceedings of the Knuston Hall conference. He explains, by using specific examples, the limitation and possibilities of the technique. For example, if a garden runs wild and especially if trees and shrubs are already present as part of its design, earthworks may disappear entirely from the aerial view. On the other hand, air photographs have also been extremely useful in recovering the design of parterres that were no longer visible. For example, “in time of drought overlying turf may parch above the hard-core foundations of former paths to reveal their patterns,” or when the parterres are covered with a light snow their patterns can be appreciated and recorded.³⁹ Furthermore, once awareness of the existence of gardens developed, old aerial photographs were regarded as the means to discover gardens that had been overlooked. Wilson explains that the recognition of the existence of “garden remains” attributable to post-medieval times has led archaeologists to “regard all monastic sites as potentially holding the remains of a later house and garden,”⁴⁰ and encourages them to revisit their collections of aerial photographs in order to detect examples of gardens that were overlooked when the photography was first interpreted. Since this examination of photographs was not correlated to ground survey or documentary explorations, Wilson sees these results however as preliminary and provisional.

Geophysical prospecting – resistivity and magnetic surveys – is a recent development for garden archaeology, even in England. According to a 1999 article, which offers a comprehensive survey on geophysical investigation in England,⁴¹ geophysical techniques have not been systematically applied to gardens, when compared to other traditional non-

³⁶ Taylor 1983: 5.

³⁷ Taylor 1997: 2.

³⁸ Wilson 1991: 20-35.

³⁹ *Ibid.*: 33.

⁴⁰ *Ibid.*: 27.

⁴¹ Cole *et al.* 1997: 26-27.

invasive techniques. The reason lies in their limitations for surveying gardens. Geophysical techniques are sometimes unable to overcome such obstacles as the interferences of an urban setting, surface obstructions and dense vegetation, and also the superposition of different archaeological layers. However, a careful choice of geophysical techniques that matches the characteristics of the garden and an adjustment of the settings permits identification of the individual features of the garden.

In the article just mentioned, a table listing the “Geophysical surveys containing significant anomalies related to historic gardens” inventories 33 historic gardens that have been surveyed using these technique, and presented successful results. Resistivity and magnetic surveys are the most frequently used techniques. Earth resistance surveying was successful at a number of gardens. It is efficient at detecting masonry structures (walls, basins, and fountains), paths, water features, and subtle traces of flowerbeds and tree pits under specific conditions. The main use of magnetometry in garden archaeology is in the “discrimination of anomalies already detected by resistivity. For example, the magnetometer can help distinguish modern ferrous pipes from trenches dug for clay or stone drains and culverts.”⁴² Although it has proven to be of a more limited application than resistivity, it is nevertheless a “useful and rapid method to detect metal pipes and voids in a magnetically enhanced soil.”⁴³ According to English geophysicists, other techniques such as ground penetrating radar, electromagnetic surveying, and resistivity profiling, would probably be more appropriate, in the future, for locating garden features, although they have not yet been commonly applied in Britain.

The archaeological fieldwork undertaken in 1996 on a late-17th century garden at Hamstead Marshall, near Newbury, Berkshire,⁴⁴ may signal a new step in the development of British garden archaeology. The published report discusses the potential and the complementary uses of three quite distinct archaeological survey methods: topographical, aerial, and geophysical surveys. The presentation summarizes the process of archaeological fieldwork undertaken on a garden, remains of which have presumably survived. A thorough investigation of the historical background of the site was undertaken first, using historical studies, records, and depictions of the site. The opportunity afforded by a panoramic view of the site, commissioned around 1700 from Johannes Kip, was the starting point for the study of this garden. First, a comparative discussion of the different documents at hand, the archaeological survey carried out by the RCHME, and the aerial photographs taken several decades ago for non-archaeological purposes, demonstrated the complexity of the remains and the survival of the garden

⁴² Cole *et al.* 1997: 35.

⁴³ *Ibid.*: 38.

⁴⁴ Keevill & Linford 1998: 13-22.

depicted by Kip in a detailed layout. Second, the Ancient Monuments Laboratory undertook geophysical surveys. After a trial magnetometer survey on the platform of the bailey proved unsuccessful,⁴⁵ an earth resistance survey was then substituted to explore the bailey platform, the medieval settlement of the North Lodge, and the formal garden. The resistivity survey, which covered 3 hectares of the formal garden including the house site, revealed among other features (pipes, walls) the pathways and two of the parterres. However, the identification of the planting beds, which were expected to produce low-resistance anomalies, on account of the organic matter added to the soil as manure, was blurred by the ploughing of gravel into the topsoil and also by the underlying geology of the site. Since the magnetic response of a brick structure presents rather distinctive cues,⁴⁶ a survey using this technique was used to detect brick features. In addition to the garden wall, the magnetic response suggested a surviving brick cutwork that separated the original gravel path from the adjoining planting bed. In conclusion, the authors emphasize that the archaeological survey has confirmed the accuracy of the garden layout depicted in the painting and they also stress that the archaeological data was fully interpretable. Not only features like garden walls and parterres were found, but the archaeological surveys have also provided additional information regarding water management that could not be retrieved from the painting, and allowed one to discern the transformation of the site over time. In a closing remark, Keevill and Linford observe that geophysical surveys may help them to see beneath the soil, but will not help them to “lift it.” Therefore, they would like in the future to undertake excavations, which will “offer the best way of establishing the condition of the archaeology within and under the plough horizon.”⁴⁷

The insistence on nondestructive techniques in general does not exclude excavations; in Britain however, these are mostly limited to the reconstruction of historic gardens. For example, Christopher K. Currie and M. Locock published an evaluation of the archaeological techniques used at the Castle Bromwich Hall site. They proposed a critical examination of the different techniques that can be applied to excavate a garden. The excavation, which lasted three years (1989-1992), was undertaken in order “to examine the applicability of archaeological techniques to the restoration of historic gardens.”⁴⁸ The paper lists the “theoretical techniques” used, discusses their results, and even makes recommendations and presents the cost of such archaeological research. The techniques presented are excavation, building survey, field survey, geophysical survey (resistivity and magnetometry), soil analysis (phosphate

⁴⁵ The limits and moderate success of this technique is discussed in Cole *et al.* 1997: 26-39.

⁴⁶ Keevill & Linford 1998: 21.

⁴⁷ *Ibid.*: 22

⁴⁸ Currie & Locock 1991: 77.

percolation, pH testing, particle size analysis, soil chemical analysis), environmental sampling, pollen sampling, dating techniques (optical luminescence), and artifact studies.

This example shows that, despite a tendency in England to favor surveying over excavation, a wide range of soil analysis and other specific techniques that are part of the digging process are applied when gardens of historical value are reconstructed. It demonstrates that since the mid-1980s, strategies for garden excavation were known and discussed in Britain. According to Brian Dix who excavated the Privy Garden at Hampton Court, the scope of a garden excavation “can range from the comprehensive to the selective, targeting particular aspects for either research or veracity of reconstruction. Thus, it may be used to evaluate the extent and condition of surviving remains, so providing information upon the constraints of a site, or be undertaken as an essential stage of restoration.”⁴⁹ In his handbook on garden archaeology, Christopher Currie presents and discusses the different techniques that have been used in the UK, from non-intrusive methods (documentary research, aerial photography, survey methods) to excavation techniques and environmental sampling. Using his expertise as an experienced field practitioner, he provides methodological considerations for carrying out a dig. He also discusses important issues, such as the recoverability of “sealed layers” of “multi phased gardens” or how “linear trenching provides the best initial results of gardens”.⁵⁰ The case studies concluding the book reflect key stages in garden archaeology development until recent years in the UK. This handbook gives an insight into the history of garden archaeology and current approaches in the UK⁵¹.

DEFINITION

Taylor defines a garden as follows:

In essence there are two types, although there is not always a clear division between them in practice... A pleasure garden may be defined as a relatively small area of land arranged and managed to create contrived patterns of shape and color (...) The vegetable garden is often an equally small piece of land on which different varieties of plants and trees are grown in order to produce food by intensive agricultural methods, usually for the owner’s own consumption.”⁵²

Apart from this definition of a “garden” given by Taylor in his pamphlet “The Archaeology of Gardens,” the various published proceedings that discuss the development of garden archaeology in Britain do not define the

⁴⁹ Brian Dix, “‘Of cabbages – and kings’: garden archaeology in action,” unpublished.

⁵⁰ Currie 2005.

⁵¹ Currie 2005: 72.

⁵² Taylor 1983: 5.

term. A common understanding seems to prevail and there is no obvious need for conceptual clarification. As Taylor's definition indicates, archaeologists consider gardens in terms of their "underlying structures" that may comprise "soft detail" such as flowerbeds or "hard details" such as paths and wall terraces. Furthermore, Taylor argues, "what distinguishes a seventeenth century garden from a 19th century one is not merely different plants but importantly, entirely different underlying structures and settings. And these settings are the result of differences in philosophy, politics, fashion, social attitudes, aesthetic appreciation and technology as well as plant collection and breeding."⁵³ Most of the gardens that are discussed are "pleasure gardens." They are designated in terms of earthworks and therefore in terms of topographical remains on the ground. The terminology used by archaeologists includes "abandoned gardens," "former gardens," and "garden remains." When Taylor presents the development of garden archaeology in Britain, he mentions that it was initially focused on the "physical remains of former gardens" and on the use of archaeological techniques to elucidate their "arrangement" and "development." He then explains that both "abandoned gardens and the redundant early phases of existing gardens could leave behind earthworks of much the same form as burial, mounds, field systems or deserted settlements." Gardens are thus characterized by their light traces imposed on the earth surface rather than their ecology or by the kind of experience of nature they afforded to their users.

Most old gardens were discovered by field archaeologists trained to analyze large surfaces, in order "to discover, record and understand the relict features relating to those parks and gardens."⁵⁴ Gardens are seen from the specific point of view of aerial photography, which seems to prevail when garden features are analyzed. The illustrations of proceedings and publications on garden archaeology present survey plans, aerial photographs, and details of the design of a parterre, making gardens appear as horizontal spaces, even though archaeologists argue that "field archaeology can provide three-dimensional information about a garden, rarely achievable from one-dimensional plans or even from drawings or paintings."⁵⁵ Thus, the three-dimensional aspect, which is claimed here, concerns the topographical information that the survey plans and the aerial photographs provide. For example they show that the ground is sloped, that the walks are terraced, or that the ponds are set in a steep-sided curving narrow valley. The depth and the relief of the garden that are introduced by these pictorial means are significant, but they do not reconstitute the daily experience of the garden. Rather, they allow archaeologists to examine the dimensions and the limits of the garden,

⁵³ Taylor 1998a: 1.

⁵⁴ Taylor 1998b: 1-6.

⁵⁵ Taylor 1997: 21.

consider the design of the earlier layout on which the garden under discussion was constructed, identify the elements that were adapted from the earlier phase before the garden was created, and understand the rationale behind it.

Starting with the evidence of thin earthworks imposed on the earth, field archaeologists were able to bring to light aspects of the development of English gardens that were not previously recognized. Uncovering garden remains from the Roman period to the 19th century and beyond,⁵⁶ they introduced into their pragmatic and systematic approach of locating and recording earthworks a more theoretical one, searching for “symbolism and emblematic manipulation in the design of early gardens and landscape.”⁵⁷ The identification of medieval gardens – typically forms of enclosed gardens – as field remains and more importantly of medieval designed landscapes is considered as a conceptual jump. The discovery of designed landscape changed the way gardens were known by specialists and also how they were perceived by their designers.⁵⁸

Thus, with the development of techniques and increasing amount of data gathered, field archaeologists are progressively reshaping their image of the garden by exploring the economical and cultural functions that lie behind the “underlying structures of abandoned gardens.”

British garden archaeologists have shown the relevance of two different but not exclusive methods for studying gardens, field archaeology, and excavation. These two complementary approaches are contributing to the understanding of the development of the “designed landscape” in England.

FROM GARDEN FIELD ARCHAEOLOGY TO GARDEN HISTORY

The issues that are discussed by British field archaeologists pertain mainly to regional surveys, overviews of gardens of a particular period, or of specific survey techniques. Artifacts and features found in gardens in the form of earthworks and buildings, and sometimes in terms of environmental remains,⁵⁹ are thoroughly presented.

Field archaeologists have attempted to go beyond the enumeration of techniques to ponder the value of the rapidly increasing body of survey information they have accumulated. For Everson and Williamson “the available body of material still lacks a structure of secure dating and a coherent stylistic framework.” Therefore, a “substantial synthetic study may well be required,

⁵⁶ Taylor 1983; Everson & Williamson 1998: 142-162.

⁵⁷ Everson & Williamson 1998: 141.

⁵⁸ For examples of identification of medieval enclosed gardens as field remains, see Everson, Taylor & Dunn 1991: 129-131; Brown & Taylor 1978: 59-75; Rees 1996: 11-13. For examples of identification of medieval designed landscapes, see Everson 1998: 32-38; Taylor 2000: 71-117.

⁵⁹ Phibbs 1991: 118-122; Murphy & Scaife 1991: 83-99.

which could act as the next stepping stone in the subject's development."⁶⁰ Furthermore, field archaeologists are increasingly seeking venues to communicate new information to other interested parties. For Taylor, "what is required is not just interpretation and analysis but an overall assessment with the placing of sites in their relative regional, national and historical contexts, in a widely disseminated and clearly understandable form."⁶¹

Williamson argues that the conventional historiography of English gardens, focused "on the work of particularly gifted individuals,"⁶² can be broadened by a systematic survey of sites in a restricted area using an array of sources, ranging from archaeological evidence and plant surveys to archival information. According to him, this approach allows a better comprehension of "general patterns of social, economic and landscape change,"⁶³ which is critical for understanding the development of gardens through time. Williamson insists that scholars "need to look at the organization of landownership, and the economic fortunes of different social groups. The history of designed landscapes, in other words, cannot be divorced from the wide history of society."⁶⁴

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⁶⁰ Everson & Williamson 1998: 146.

⁶¹ Taylor 1998a: 1.

⁶² Williamson 1992: 59.

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Chapter 4

American Garden Archaeology and the Chesapeake Bay

Amina-Aïcha MALEK

The British experience in garden archaeology can be summarized as follows: archaeologists explored successively the deep layers without any results, then rose to the ground surface and finally moved down to the shallow layers, in both cases with success. Such a specific trajectory was experienced neither by Japanese archaeologists nor American archaeologists working on American colonial gardens, as some of them wandered between two layers, the deep and the shallow. In each case, when a layer had lain undisturbed for several centuries, it was possible for archaeologists to uncover a garden invisible at the surface, just a few centimeters below. This situation has proved to archaeologists that remnants of old gardens could survive, countering the common belief of their lack of durability, and has given impetus to the development of garden archaeology. For instance, in Britain, Capability Brown and his followers transformed many formal gardens into lawns, through which earlier geometrical features were detected by field archaeologists using aerial photography; in Italy, four meters of protective lapilli had sealed the gardens of the Vesuvian sites that Jashemski carefully uncovered; in the United States, the gardens of the Chesapeake Bay would be uncovered by William Kelso, by stripping the plough zone that covered them for centuries. This specific condition allowed Kelso to develop his excavation strategies, which in turn have served archaeologists who worked in more complex archaeological contexts in the United States.

In the concluding remarks of her article “Why gardens?” Mary Beaudry synthesizes the perspective from which garden excavations in North America have been viewed by historical archaeologists, when she states that “Landscape archaeology, blending science and humanism, contributes to ourself-image as a nation carved from the wilderness while constructing for us a past ideally suited for the late twentieth century.”¹ According to Beaudry,² garden archaeology started when preservationists realized that saving historical houses and their furnishings was not sufficient if one wished to “recapture and recreate

¹ Beaudry 1996: 5.

² *Ibid.*: 3-4.

the past settings in their entirety.”³ She implied that the “ordered landscape of yard and garden, field and forest”⁴ in which these houses are inserted should also be studied. In the 1960s, at the “dawn of modern garden archaeology,” archaeologists started to focus on gardens of prominent historical personages, whose mansions had to be preserved. In the 1980s, as excavation strategies evolved and the object of research – the “cultural landscape” – was discussed and defined more precisely, the single view of the past was broadened by a new generation of archaeologists, for whom the “interesting questions have to do with meaning.”⁵ In order to decode the “cultural landscapes” that people at different social levels created and the meanings embedded in them, a new manner of reasoning emerged. It consists of reading the past by questioning it with contemporary perspectives, for example: examining economic, class, and gender relations that are signified within the landscape.⁶ The methodology moves back and forth between present and past and cross-examines different categories of data – archaeological evidence, oral history, written sources, ethnographic data, anthropological theory, human experience.⁷

This section will focus primarily on more technical aspects of garden archaeology that developed mainly on the East Coast of the United States, then will attempt to present the gradual progress, since the early 1960s, of garden archaeology – “landscape archaeology” for the American historical archaeologists – through selected examples. It shall examine how “historical archaeologists” have used specific techniques and established various methods to recover yards, kitchen gardens, groves, and pleasure gardens.

BRIEF HISTORY

In the United States, garden excavation can be traced back to 1930-1931 when Arthur A. Shurcliff investigated the garden of the Governor’s Palace in Williamsburg, Virginia, but modern garden archaeology, however, really had its debut in the United States during the 1960s with the partial excavation of John Custis’ garden in Williamsburg by Ivor Noël Hume in 1964. As garden archaeology was thought to be essential for the restoration of historical sites, garden excavations were carried out at William Paca’s garden in Annapolis, Maryland, in 1966 by Bruce Powell (Part VII, chapter 20); at Carter’s Grove, Virginia, in 1968 by Hume; at Kingsmill Plantation, Virginia, in 1975; and at Monticello in

³ Beaudry 1996: 5.

⁴ *Ibid.*: 5.

⁵ Yamin & Metheny 1996: xiv.

⁶ *Ibid.*: xvii.

⁷ *Ibid.*: xvii.

1979, by William Kelso. These experiences can be considered as pioneering in the development of modern garden archaeology in North America.

Compared to the number of architecturally oriented excavations that are undertaken on this continent, garden archaeology lags behind. Two reasons can explain this situation. The first relates to the complexity of garden archaeology. As Audrey Noël Hume states in the introductory paragraph of her *Archaeology and the Colonial Gardener*,

The archaeological excavation of a garden calls for a degree of skill and perception far exceeding that required of an archaeologist uncovering the foundations of a building. The area to be explored will almost certainly be larger, at the same time the number of datable artifacts recovered from the relevant features will be woefully small, and inclement weather will, in spite of the most careful precautions, do infinitely more damage to the transitory remains of a garden than those of a house.⁸

But archaeologists think that in addition to the technical complexity there is another reason. Most garden excavations have been part of the domain of historic preservation and therefore depend on the “low level of federal research funding available to historical archaeologists (...) No garden has been studied as a pure research endeavor.”⁹ Nevertheless, North American garden archaeology has experienced a rapid development that can be characterized by the constant search for methods and techniques that would respond to the needs of garden archaeologists.

To appreciate the intellectual context of garden archaeology in America one should be aware of a distinction that is made between two groups of scholars in archaeology, “the fact seekers who hone their craft to obtain new facts and the macrotheorists who hone more abstract models.”¹⁰ Lawrence Stone, a historian, described these two categories of archaeologists as the “truffle hunters” and the “parachutists”:

The first group grub about with their noses in the dirt, searching for some minute and precious facts (...) The second float down from the clouds, surveying the whole panorama of the countryside, but from too great a height to see anything in detail very clearly.¹¹

In a 1995 article Conrad McCall Goodwin, Karen Bescherer Metheny, Judson M. Kratzer, and Anne Yentsch, co-authors of “Recovering the Lost Landscapes of Stockton Gardens at Morven, Princeton, New Jersey,” present their methods and their strategies and sum up the history of the methods used in “landscape archaeology.” They point out that Ivor Noël Hume first

⁸ Hume 1974.

⁹ Yentsch *et al.* 1987: 3.

¹⁰ Goodwin *et al.* 1995: 37.

¹¹ *Ibid.*; Stone 1981.

realized that archaeology is tied to craft (...) He searched for garden facts in Williamsburg with a field crew who might be said to have apprenticed with him; he taught them the truffle-hunt. These archaeologists then went out and searched for 17th century houses and 18th century gardens in the Chesapeake (...) In retrospect, Noël Hume nudged Chesapeake archaeologists to consider the myriad minute details that combine to form the social landscape.¹²

The different experiences of excavations that follow will show how “landscape archaeologists” are truffle hunters because it is the method that enables them to record every trace they come across in the soil to recover buried gardens, fields, and yards.

In her 1947 booklet *Archaeology and the Colonial Gardener*¹³ for both gardeners and archaeologists, Audrey Hume explains how modern techniques of archaeology have succeeded in revealing aspects of colonial gardens with their fences, paths, gates, various tools used for gardening, pots and bell glasses, and even traces in the ground of the trees and shrubs that were planted in the gardens of Williamsburg. Kelso, considered as one of the pioneers of garden archaeology working along the eastern seaboard of the United States, has written on the methods and the strategies he employed during his excavations whereby he was able to reveal the limits of the garden with its protective fences and the paths, terraces, and stairs that structured it. James Deetz, in his preface to Kelso’s book *Archaeology at Monticello*, writes,

It can be fairly said that Monticello saw the birth of landscape archaeology as we know it today. The first full book on the subject, ‘Earth Patterns,’ published in 1990 and edited by Kelso and Rachel Most, grew out of Monticello Landscape research.¹⁴

Before starting to work at Monticello in 1979, Kelso had already undertaken two important excavations, at Carter’s Grove between 1970 and 1971 and Kingsmill plantation between 1972 and 1975. At the Dumbarton Oaks symposium in 1989,¹⁵ Kelso explained how “by chance and by design” he gradually became a “landscape archaeologist specializing in uncovering the outlines of old buried gardens in Virginia.” His excavations of the most prominent Virginia plantation estates were part of larger projects of preservation of American historical mansions. These experiences made him gradually realize that archaeology can bring to light gardens absent from historical records and invisible to the eye; as Deetz explains when describing his own work at Plymouth, all traces of human activities that “fall below the normal threshold of archaeological visibility”¹⁶ could be recovered and studied.

¹² Goodwin *et al.* 1995: 37.

¹³ Hume 1974.

¹⁴ Deetz 1997: 12.

¹⁵ Kelso 1992: 31.

¹⁶ Deetz 1990: 2.

The scale of these “landscapes” is so big that “digging the twenty or so acres considered the most significant part of the landscape that was visible from the house could not be done in one person’s life-time.”¹⁷ Aware of this major constraint, Kelso established excavation strategies that helped find the best places to make small informative test trenches that give as much data as possible (period, nature, and extent of the landscape).¹⁸ At Carter’s Grove,¹⁹ from which few historical documents survived and no maps were known, Kelso had the opportunity to use two different strategies.²⁰ First, near the house and its flanking outbuildings he hand-tested by digging 2-foot-square test holes at 10-foot intervals, recording the soil layers and defining concentration of artifacts. This method avoided the destruction of the modern landscapes as much as possible. Second, he opted for mechanical trenching in the fields that surrounded the mansion, already disturbed by plowing.

It was during the mechanical trenching that evidence of the garden appeared in a trench between the house and the river. The removal of the plow in this trench revealed a “double line of dark soil stains in the subsoil with parallel narrow dark streaks.”²¹ Kelso recognized that these were holes dug to support posts for a fence and planting ditches. Further excavations to trace the course of the fence revealed that it enclosed 3 acres, was rectangular, and centered on the mansion and its three-tier advance terraces. Examination of posts and traces of darker stains in the soils suggested that the fence was not ornamental. Traces of other smaller holes, which disturbed the earlier fill in the line of larger holes, revealed that a second fence was constructed at a later point in time. The date of the fences and their disappearance was determined by the examination of varied artifacts – pottery, wine bottle glass, tobacco pipes – found in the holes. Kelso comments that the results of this slow and expensive process of discovery are important to the garden historian “for whom chronology is vital in defining a succession of garden styles and shapes.”²² The discovery of sand or natural clay paths leading to the gate inside the fence line confirmed the location of the gates already indicated by the irregular spacing of the post-holes. The principal finding was a central “alley” and other sand walkways inside and along the fence line or across the rectangular enclosure, which divided the lower two-thirds of the garden into planting beds. The excavation of one planting bed was successful, but at the south end of the enclosure the expected results failed to materialize. This led Kelso to conclude that

¹⁷ Kelso 1990: 9.

¹⁸ *Ibid.*

¹⁹ Kelso 1984: 160

²⁰ *Ibid.*

²¹ *Ibid.*

²² *Ibid.*: 161.

despite the “incongruous visual effect”²³ the southern part of the enclosure was relegated to livestock grazing or field crop. A central ramp and a crushed oyster shell walk were excavated in the three-tiered terrace, located immediately south of the main house,– but despite searching for remaining stains, no trace of planting patterns was found. The Carter’s Grove excavation brought to light different aspects of the garden that the written records failed to reveal. Eight years after the excavation and the reconstruction of the garden, a map showing the ramp of the three-tiered terrace was found, confirming what the excavation had already unearthed. For Kelso “the discovery of the formally laid out rectangular garden with its symmetrical planting beds, walkways, gates, ramp and terraces was one of the most unexpected and pleasant surprises of the archaeological survey.”²⁴

The Carter’s Grove excavation showed how the recovery of vanished fences and their gates can lead to the discovery of the main scheme of the garden with its planting beds, walkways and terracing, “literally laying out full scale maps on the ground that have not survived in documents.”²⁵ The following year, in 1972, Kelso applied the same methodology at Kingsmill Plantation.²⁶ As at Carter’s Grove, after the fence was discovered and the gates were located, the major cross paths and the central alley were determined and in turn led to the discovery of the planting beds, terraces, and stairs. Kelso stressed how the results of the archaeological investigations permitted comprehension of the influence of the Governor’s Palace on the architecture and landscaping design of Kingsmill Plantation and how in turn it was clear that Kingsmill Plantation influenced greatly Carter’s Grove owned by the same family and constructed shortly afterward.

Four years after the excavation of Kingsmill Plantation, Kelso was invited to study Monticello. The successful results of the archaeological excavations at Carter’s Grove and Kingsmill Plantation and the “maturing of historical archaeology” had encouraged the Jefferson Foundation to initiate archaeological investigation conducted in concert with a study of Jefferson’s drawings and specifications, in order to restore the nonvisible garden features from after 1809 – the period after which the house reached its present form. Kelso started to excavate Monticello in 1979 in a completely different context, in comparison with his previous projects, in terms of the abundance of detailed historical documents written by a “compulsive chronicler” like Thomas Jefferson.

Kelso looked first for fences, planting squares, and terraces. Although the scale was very challenging, the aerial photographs and the eroded

²³ Kelso 1984: 161.

²⁴ *Ibid.*

²⁵ *Ibid.*: 160.

²⁶ *Ibid.*: 162-163.

but obviously “man-shaped topography” facilitated the choice of test sites. The excavation, guided by various documents, insurance maps, notes and plans of the property, and planting maps of different periods (1796, 1806-1811), rapidly revealed that the major features of the garden had survived.²⁷ During his excavation Kelso had to face problems that he had not encountered in his previous excavations. For example, the specific color of the soil, made of a natural red clay quite different from the dark and light sandy loam of the Carter’s Grove and Kingsmill area, blurred the visibility of the post-holes along the garden fence line. Fortunately the remains of the locust wood posts or the stones used to wedge the posts in the holes showed where the posts were placed. Furthermore, the fence line excavations along the major approach road from the south known as “Mulberry Row” revealed four periods of fence lines with their “complex stratigraphy and artifacts associated with an adjacent series of Jefferson-period craft shops, servant’s quarters, and utilitarian outbuilding sites.” Kelso comments how the archaeological study of Monticello confirmed two aspects of Jefferson’s personality. In contrast to the taste for geometry and symmetry that appears in the careful layout of his estate,

Jefferson was also typical of his time in that as much as he was concerned with the picturesque and the aesthetic, he still had to tolerate the spartan Mulberry Row cabins and put up with trash-littered side yards all in full view from the house. (...) In fact recognizing such land use patterns as this is perhaps the most significant contribution to landscape archaeology.²⁸

In the early 1980s, while excavations were undertaken on gardens of the elite large estates, an interest grew among archaeologists to understand and identify the “practice of gardening undertaken by most people during the colonial period,”²⁹ a type of information that escaped documentation in conventional historical sources. For Marley R. Brown and Patricia M. Samford,

the archaeology’s real values rests with the opportunity it affords to explore the vernacular landscape, to identify an important dimension of the folk tradition that informed the practice of gardening undertaken by most people during the colonial period.³⁰

The restored gardens of Williamsburg, a site that has had a long history of archaeological investigations and reconstruction, since the 1920s, have rarely been accurate revivals of the 18th and 19th century gardens. According to Charles Hosmer,

²⁷ Kelso 1984: 164.

²⁸ Kelso 1992: 52.

²⁹ Brown & Samford 1990: 103.

³⁰ *Ibid.*

trained in twentieth-century concepts of design, landscape architects became artists who helped to perpetuate the idea that the life of the past was blissfully harmonious. There was a conscious refusal to accept the conclusions of research reports that implied colonial gardens had been simple, functional and even somewhat bare.³¹

The lack of archaeological accuracy that prevailed in the examination of town gardens in Williamsburg has led Brown and Samford to consider the role of “properly executed archaeology” in garden research and to address the following question:

what have new techniques of excavation, focused on the problem of reconstructing the spatial organization of behavior on Williamsburg’s residential and commercial properties, revealed about the vernacular garden?³²

In the mid-1980s, excavations undertaken both in gardens that were not renowned or well documented and in gardens that belonged to well-known gardeners like John Randolph, Jr., and Judge Joseph Prentis,³³ have uncovered features that testify to the kind of gardening activities that took place during the 18th century when horticultural knowledge was mainly propagated orally and through local experimentation by gardeners trying to adapt English plants to the climate of the Tidewater. Among these gardeners were well-established gentlemen as well as artisans, tavern keepers, and ordinary citizens.

During the excavation of the Peyton Randolph backyard, which had been previously investigated, archaeologists opted for a new method that has prevailed ever since for re-excavation. It consists of renouncing

the historical archaeologist’s typical excavation grid 10-foot-square units in favor of broad expanses of block excavation, in which horizontal control was kept by piece plotting and artifacts recovery in 2.5-foot squares.³⁴

During the dig two garden beds dated to the early 18th century came to light, the first to be uncovered in Williamsburg and the earliest such feature to be found in the region. Further excavation work uncovered two other beds of larger dimensions, oriented in a different direction and dated slightly later than those first identified. Most importantly the archaeologists discovered that the lining material used was different: animal bones and wine bottle bases were used for the first discovered beds while the other beds were lined with oyster shell mixed with a small amount of animal bones. Furthermore, the garden manuals of the 18th century discuss beds raised above the ground and do not mention beds deeply rooted in the soil with such linings. A large sample of seeds was

³¹ Hosmer 1985: 53; Brown & Samford 1990: 105.

³² Brown & Samford 1990: 105.

³³ *Ibid.*; J. Randolph, Jr., is the attributed author of *A Treatise on Gardening* and Judge Joseph Prentis is the author of an unpublished garden calendar and garden book.

³⁴ Brown & Samford 1990: 108.

recovered from analysis of soil samples, among them several remains of what seems to be asparagus. These findings and results led archaeologists to conclude that these planting beds were specific in the sense that “they were trenched into the clay substratum rather than raised, and were most likely used for growing asparagus.”³⁵ What makes this discovery interesting is that the features of the planting beds found in the backyard of the Peyton Randolph house correspond to John Randolph and Judge Prentis’s description of asparagus beds, written 50 to 60 years later. The only difference from their recommendations and the ones given by English garden journals is with the type of paving made of bottles and bones rather than oyster shell. Bearing in mind this discovery, the archaeologists were concerned to determine the nature of the bed construction in order to anticipate the kind of bed that might leave an imprint in the soils. Additional beds of this kind were discovered in other gardens, attesting that these beds can survive. It seems that their traces in the soil can be more easily recovered than those of raised beds. According to Brown and Samford, raised beds have probably been destroyed since they can be easily shoveled away, leaving behind no trace in the subsoil. This might explain why, despite the repeated references to raised beds, so few of them have been identified in Williamsburg. In James Schield’s tavern, planting beds were also found in the kitchen garden, fertilized with ash from the tavern’s fireplaces. In one of the beds a rumbler bell and a bird-scaring device were found.³⁶

The authors conclude that as a result of these findings the Colonial Williamsburg Foundation would like to “portray more accurately” the vernacular gardens; hence, small gardens have already been simplified in Williamsburg. The archaeology department at Colonial Williamsburg

will continue to emphasize recovering as much information as possible about the ordinary gardens of the town and their placement in and among the outbuildings, walkways, and fences of individual lots. Evidence will be sought from both the ground and the contemporary garden diaries, journals and calendars. The study will seek to unravel the grammar of the vernacular code that guided Williamsburg’s anonymous multitude gardeners during the Colonial period, leaving the grand formal gardens of a precious few to stand as beautiful reminders of one era’s perception of the colonial past.³⁷

As a concluding remark on Williamsburg’s new garden archaeology, we would like to mention that in 1994-1995 another garden was excavated.³⁸ George Tucker’s garden was planted on three lots that he purchased in 1788. Several features of different phases were found, including the fence, a path, and an irrigation ditch, elements of the first layout, and the central

³⁵ Brown & Samford 1990: 108.

³⁶ Brown & Chappel 1997: 74.

³⁷ Brown & Samford 1990: 117-120.

³⁸ Brown & Chappel 1997: 75-76.

pathway built in a later phase. Layers sealed by the path were sampled and pollen analysis has recovered at various levels tomato pollen, possible fertilizer with Eurasian cereals and corn pollen, and an irrigation activity indicated by sedge pollen. Geophysical prospecting (ground penetrating radar, resistivity), remote sensing, and historical research revealed three rows of plantings and two beds that archaeologists related to a fruit-tree nursery that Tucker cultivated for many years.

The project on the vernacular gardens of Williamsburg demonstrates how garden archaeology permits partial recovery of daily practices, which are scarcely reported in written documents. Furthermore such projects are representative of the evolution of the perception of what is worth examining, interpreting, and recovering. As it emerged that the gardens of the elite citizens were utilitarian, studies of formal gardens, which had prevailed as “monuments to the Colonial Revival” during the long years of Williamsburg reconstruction, have given place to studies of more modest kitchen gardens, which demonstrate an important transitory period of adaptation of Anglo-American society to the new land they colonized.

The Stockton gardens at Morven, New Jersey, were the property of one of New Jersey’s most prominent families. Richard Stockton, the owner and builder of the house and a close friend of George Washington, was one of New Jersey’s signers of the Declaration of Independence. The lack of written information on the earlier form of the gardens prompted the New Jersey Museum to hire an archaeological team, whose task was to provide information on the state of conservation of the buried gardens that could warrant future restoration and to determine whether the gardens were designed for pleasure or as essentially productive units. The team included a historical archaeologist, an ethnobotanist, and a phytolitharian. As we shall see, because of the different context, approaches different from the one used by Kelso in his projects were put into practice. This illustrates the variety of field techniques that archaeologists have successfully conceived in their search for buried gardens and their understanding. The authors of the final report mention that the techniques used at Morven have already been employed and “polished” on other sites, studies of which have been published since 1984. The Morven excavation lasted from 1987 until 1990 when the New Jersey political authorities interrupted the project.

The “Stockton experience” marks a defining moment in the development of landscape archaeology in North America, when the excavation strategies of the 1970s and their results initiated an interest among a new generation of archaeologists who, in the mid-1980s, began to draw upon theoretical considerations using the perspective of

anthropological history.³⁹ With the contribution of Deetz they established a framework that would enable them to illustrate

how each subsequent generation reformed the original landscape in ways that could reveal the sequential series of the then prevalent societal attitudes towards the past, toward family and home, toward the roles – monetary and symbolic – of a family farm. Reflected in these changing attitudes are a series of culturally construed – and hence mutable – world views in which the landscape provided a material, symbolic dimension framing daily life.⁴⁰

The material consists of all the various artifacts buried in the soil, from preserved plant remains and surviving natural elements – soil, pollen and phytolith studies, dendrochronology, and an existing plant inventory established the botanical data – to all kinds of buried features. All these artifacts allowed scholars to understand the “archaeological delineation of the evolving garden form.” A strategy was established in order to decide where to dig, how deep, and what to expect by seeking the “model of 18th-century spatial logic in documents and in the ground.”⁴¹ Different field methods were used for testing and excavating, among them,

remote sensing, mechanical stripping, trenching, intermittent 5-x-5-ft. units, a sampling plan of excavation units patterned like a checkboard, various type of probes and/or windows into the soil.⁴²

These various techniques were used in order to respond to the different constraints that archaeologists had to face. For instance, they point out that the “built landscape” in an 18th century garden is not composed of rich artifacts; these can be smaller than 6 inches across for individual planting or can measure 100 feet in width or length for features like terraces or garden walks. Furthermore it would be much too expensive and too time consuming to “bring down” the whole garden to the 19th century level and then “strip down” to the 18th century.⁴³ In addition, unlike the Chesapeake gardens, (Colonial Williamsburg, Carter’s Grove, Kingsmill, Monticello, Bacons Castle⁴⁴), there is very little plough zone that could be removed by a machine without destroying the garden layer. It led archaeologists to think of a

³⁹ In their article “Recovering the lost landscapes of the Stockton Gardens at Morven, Princeton, New Jersey,” C.M. Goodwin, K.B. Metheny, J.M. Kratzer and A. Yentsch explicitly state that in their study of the Stockton gardens they “brought the perspective of anthropological history to the study”: Goodwin *et al.* 1995: 36.

⁴⁰ Goodwin *et al.* 1995: 36.

⁴¹ *Ibid.*: 38.

⁴² *Ibid.*: 38-39.

⁴³ *Ibid.*: 39.

⁴⁴ Lucchetti 1990: 23-42.

“system that allows one part of the excavation to move downward prior to the rest.”⁴⁵

Another way to discover the design of the gardens was to undertake ethnobotanical research.⁴⁶ In the 18th century trees were an essential part of the architectural setting; therefore, a plant survey has been undertaken to discover whether or not plants that are still alive at Morven were part of the 18th and 19th century gardens.⁴⁷ Aware that the age of a tree does not establish when it was planted in its present location, the team thought that the information could nevertheless be helpful.⁴⁸ The ethnobotanist Naomi Miller identified trees that might have been alive in the 19th century, and specialists were invited to core the selected trees in order to determine their age more or less precisely. The tree-ring dates are relatively accurate, and enabled archaeologists to direct their attention to particular areas of the yard that are not important in the modern landscape.⁴⁹ Miller noted that two chestnuts, originally within the property but now outside the fence yard, were aligned with the front house; she listed them with the trees to be cored. The results were unexpected, as it was determined that they were 200 years old. This led archaeologists to align an excavation unit with the trees. It revealed two important walkways of different periods, one dating to the 20th century, the other to the 19th century. They both led people toward the library entrance. Garden beds flanked the older walk. Buried under the 19th century walk was an older narrow, slightly curving walk, along which was found a planting hole. Its planting date was determined by stratigraphy and by the examination of the planting hole refuse containing shards of creamware.⁵⁰ In addition to the plant survey, phytolith analysis was used to complete the possible information that plants could provide to reconstitute the floral history of the site and to re-create the 18th and 19th century garden.⁵¹ Since phytoliths have a narrow dispersal range, their analysis helps distinguish different spatial uses. For instance, their distribution can help make a distinction between former lawns and nonlawn areas, between ornamental gardens and vegetable gardens, between orchards and vineyards.⁵² The authors mention, for example, how samples taken from the kitchen courtyard contained the fewest lawn-type grasses, indicating heavy foot traffic.⁵³ In addition the plant remains from a feature sampled in the courtyard area

⁴⁵ Goodwin *et al.* 1995: 40

⁴⁶ Yentsch *et al.* 1987: 17.

⁴⁷ *Ibid.*: 17-21.

⁴⁸ *Ibid.*: 17.

⁴⁹ *Ibid.*: 19.

⁵⁰ *Ibid.*: 21.

⁵¹ *Ibid.*

⁵² *Ibid.*: 22.

⁵³ *Ibid.*: 23.

included diatoms and sponge spicules, which indicate that the soil was well watered and poorly drained. Hence, the feature was located near a well and the icehouse.⁵⁴ Soil samples for the phytolith study were taken in and around excavated planting holes and garden beds.⁵⁵

Besides the technical aspect of the excavation, other means were used to uncover buried gardens. The Morven excavators stressed that archaeologists should know how gardens were conceived, arranged, and constructed in order to plan the excavation. Finding the limits of the garden, its entrances, and its components is necessary to understand the spatial interactions created in a garden's design. Among the important features of the garden is the set of terraces that structures it spatially and visually.⁵⁶ The authors perceive the garden as a bounded single unit arranged by a series of horizontal planes, which are linked by terrace falls, passageways, and exterior boundaries. Terraces and paths are seen as horizontal planes, while the limits of the garden made of fences and naturalistic elements provide verticality. At Morven, the different phases of the garden have added to the complexity of the excavation, further complicated by the constant mixing of soil layers, blurring the archeological visibility. In addition, since the horizontal planes are shallow, features within them are less visible. In response to these constraints, archaeologists used a recording system that translates every depth record into an above sea-level (ASL) measurement and used these measurements to establish separate depth ranges across the garden for each of its different phases.⁵⁷ This technique allowed archaeologists to know immediately and precisely if the feature or the level that they excavated corresponded to those located elsewhere. To be able to correlate different and separate elements like terraces, paths, and other features as contemporaneous was extremely enlightening as "knowledge among and between the various successive horizontal planes tells how a garden evolved over time and how its present-day contour lines developed."⁵⁸ Furthermore, the authors comment that

when features can be seen within a horizontal frame or plan view that includes the garden's boundaries, its relationships to buildings on site, and its relationship with wider environment, then and only then does the overall design at any point in time appear.⁵⁹

Another method, which "brought the greatest breakthrough"⁶⁰ in understanding the garden design, was to consider the site in terms of the

⁵⁴ Yentsch *et al.* 1987: 23.

⁵⁵ *Ibid.*: 22.

⁵⁶ Goodwin *et al.* 1995: 44.

⁵⁷ Yentsch *et al.* 1987: 6.

⁵⁸ Goodwin *et al.* 1995: 47.

⁵⁹ *Ibid.*: 47.

⁶⁰ *Ibid.*: 52.

geometric principles used to design the garden. The geometric grid at Morven determined the placement of features such as the terrace fall lines and garden outbuildings – an icehouse, a garden house, a grotto, walkways, and other decorative elements.⁶¹

The Morven project illustrates the great flexibility with which archaeologists combine a variety of methods and archaeological tools with knowledge coming from a variety of different sources. As the authors themselves emphasize, the archaeological program at Morven was not particularly innovative, since it drew on other garden excavations undertaken in the 1980s and 1990s. Precisely for this reason it can be considered as representative of the level of development of garden archaeology achieved in the United States.

METHODS

Most excavations of North American gardens have been conducted at historical houses transformed into museums. Therefore archaeologists worked with curators, restoration architects, historians, and even in some cases with educators specializing in preservation and history. All of them have access to the same background information, such as written documents, historic photographs, and oral history, all of which pertain to the historical context of the site. The interaction between the different actors and the background on which they base their work establishes a first strategy where goals and archaeological testing are defined and decided.

The understanding of the “social logic for space,” meaning the ideas that presided over garden designs, is considered by archaeologists as the key to their methodology. It enables them to know where to dig, what to expect, and even how deep to go. The fieldwork is conducted according to a framework that archaeologists have learned to take into account. The garden features are perceived within a “horizontal framework” of 18th century geometric principles, which is used by archaeologists as a canvas to guide them on the field. The house built before the garden also holds a central strategic importance in terms of the significant concentration of artifact deposition found near the house (doors lead to paths and walkways, fence lines often align with the house and its dependencies), which enables archaeologists to date the different occupation layers and find the boundaries of the garden.

Field techniques that are used in the first phase of the excavation are previewing techniques. Among them are nondestructive techniques such as remote sensing, GPR (ground penetrating radar), topographic surveys using an electronic theodolite, and EDM (electronic distance measuring device). The previewing techniques also include mechanical stripping, trenching, the excavation of intermittent units along the cardinal

⁶¹ Goodwin *et al.* 1995: 52.

directions, checkerboard sampling plans, and various types of probes into the soil using different instruments according to the situation and the nature of the feature. Maps and vegetation inventories are also part of the site surveys. Different strategies of excavation are used according to the context of survival of the gardens. For instance, Kelso has developed an excavation strategy that combines large-scale open-area excavation, meticulous examination of recovered artifacts, and careful reading of historical source material. The use of heavy machinery to strip the plough layer, which uncovers the traces of post-holes, planting beds, and walks, is still applied in gardens that have been abandoned or become ploughed fields. This technique is, however, not functional in the mid-Atlantic region where the mansions have been gradually taken over by urban development. The gardens adjacent to the houses, although preserved, were continuously planted, complicating the stratigraphic sequences. In the town of Williamsburg, archaeologists replaced the mechanical excavator by hand excavation of large parcels of earth, removed stratigraphically, and recorded using single context plans. Thus the question of archaeological context arises by understanding the history of the sediment matrix, the place of the deposits and their origin and nature.

Archaeobotanical research comprising garden macro-remains, pollen, and phytolith identification, is a common practice for archeologists. Historical archeologists view the methods that they have established through the years as follows:

Palynologists and ethnobotanists identify and date historic-period plants and trees, pedologists analyze the chemical components of historic-period soils; garden historians explain parterres and changing fashions in flowers and plants. The blending of data from sciences and the humanities enriches the interpretation of past landscapes and demonstrates the power of synthesis between the positivist methods of science and the more contextual historical particularism of the post-processual approach.⁶²

This brief synthesis of their methodology characterizes the specific direction in which garden archaeology in the United States has developed, as anthropologists drew on archaeology to interpret the interactions between humans and nature.

DEFINITION

Gardens are not specifically discussed and defined by archaeologists working on North American sites since they are regarded as being part of the broader frame of the cultural landscape. Hence conversely, archaeologists and anthropologists discuss the landscape in terms of its cultural meaning and as a feature to approach archaeologically.

⁶² Yamin & Metheny 1996: XIV.

In the first edited volume to be published on archaeology of landscape, *Earth Patterns*, Deetz defined *landscape* as “a rather general, non specific term,” and he indicated that in terms of landscape archaeology,

we can take the word to mean the total terrestrial context in which archaeological study is pursued and use *cultural landscape* to denote that part of the terrain which is modified according to a set of cultural plans. These terms embrace the entire range of terrain from the house lot, the smallest and the most frequently studied, through gardens and field systems to truly large units of analysis, entire regions that bear the imprint of a shared set of values.⁶³

Furthermore he specifies that “Gardens, landfills, and fields are all landscapes created by people who desired some specific and quite explicit end result.”⁶⁴

This definition of landscape sums up the understanding of the subject by American archaeologists from which they draw together their methodologies where science and theory are blended in order to reveal the past cultural landscapes. According to M. Beaudry, “archaeology is the only means at hand for recovering precise information about the earlier configuration and content of landscapes and former gardens.”⁶⁵ But before reaching this stage of recognition of landscape as a feature that could be excavated, Deetz reminds us, archaeologists had to learn to first consider landscapes as sites. The implicit definition of a site “as a place where an archaeologist digs,” meaning digging where there is a visible trace of human activity, had to be reconsidered as the “threshold of archaeological visibility” had to be redefined.

“THEORY HOVERS CLOSE TO THE GROUND”

“Theory hovers close to the ground and is intricately related to methodology.”⁶⁶ This is the main issue discussed by American garden archaeologists. It started with Mark Leone, when he wrote his first article on colonial gardens in Annapolis, published in 1987 in an edited volume, *Method and Theory for Activity Area Research*.⁶⁷ He argues that a coherent research strategy should be established in order to examine gardens of English colonial America and the early United States.⁶⁸ Leone proposes to resolve this issue through “ethnoarchaeology, but only by a

⁶³ Deetz 1990: 2.

⁶⁴ *Ibid.*: 4.

⁶⁵ Beaudry 1996: 4.

⁶⁶ Yentsch 1996: xxv.

⁶⁷ Leone 1987: 605-633.

⁶⁸ *Ibid.*: 605.

special sight of it.”⁶⁹ He argues that instead of digging a garden to verify historical documents or just for pure discovery, one should examine “how archaeological fragments and remains of discrete activities were linked to behavior and to a larger cultural system”⁷⁰ by questioning how they were built and what they were used for. His first argument discusses how gardens should be considered by archaeologists as features planned mathematically in three dimensions, thus understood and handled by their creators as a volume. More important, for Leone, gardens “were planned as wholes with their visual impact on the mind and imagination uppermost as a consideration.”⁷¹ Hence, in his view, digging without being informed of the role of visual effects in the garden’s conception can give only a partial two-dimensional aspect of the garden, which does not convey the variety of experiences that took place in it. Knowledge of the “management of lines of sight” improves excavation strategies, as it leads to a search for certain features that were not looked for by archaeologists. They pertain to the shape of planting beds, width of terraces, lining of trees, or placement of structures at specific focal points.⁷² As he re-places the colonial American garden in the European tradition, and more specifically as he compares it with English gardens and reinstates it in the political context of the period, Leone argues that gardens were once a device for ostentation, as “ostentation was a needed adjunct to wealth in the absence of adequate power to protect newly acquired and quite sizeable resources.”⁷³ The political symbolism of colonial gardens discussed by Leone led archaeologists to ponder the type of information that should be retrieved from gardens examined archaeologically. Archaeologists argue that gardens as luxurious creation is not an issue, neither is the sensuous pleasure that gardens provide to their owners. Hence, what matters is how historical archaeologists can learn more about past colonial societies by searching for the complex multi-layered symbolic content of gardens:⁷⁴

What is critical is the extent to which gardens were convincing metaphors that effectively enhanced social solidarity among the various social sectors of the community. Did they mask reality of class relation? Or were they effective symbols of status and power precisely because people did know how much skill, effort, control, and slave labor went into their maintenance? Much rests on these questions, so critical to understanding resistance and social interaction among all members of society.⁷⁵

⁶⁹ Leone 1987: 605.

⁷⁰ *Ibid.*: 609.

⁷¹ *Ibid.*: 612.

⁷² *Ibid.*: 630.

⁷³ *Ibid.*: 631.

⁷⁴ Yentsch 1996: xxviii-xxxi.

⁷⁵ *Ibid.*: xxxi.

With their focus on meaning, the issues discussed in the edited volume of *Landscape Archaeology, Reading and Interpreting the American Historical Landscape*, stress how

Landscape studies stretch the mind and bring us closer to an integrated anthropological history than we have been before. By paying close attention to place, they also disclose aspects of social interaction as varied as the gardens people create.⁷⁶

Garden archaeology is thus discussed as an ongoing method constantly developed by archaeologists where theory is as much at stake as technique. Hence, theory helps archaeologists to perceive, question, and deepen the meaning of past gardens. Therefore, for American archaeologists theory is crucial since it channels the way through which meaning can proceed. Thus, gardens acquire a significance that goes beyond the sensuous experience that they provide.

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⁷⁶ Yentsch 1996: xxxvii.

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Conclusion

Amina-Aïcha MALEK

Garden archaeology has been understood in very different ways according to local contexts and theoretical issues used by archaeologists. It is fair to say that rather than a sub-discipline, garden archaeology is part and parcel of archaeology generally speaking, employing concepts from environmental archaeology not always practiced in the various traditions of archaeology. This handbook addresses specific problems of soil archaeology with a handful of well-developed techniques that are described in sufficient detail for archaeologists to undertake work in the field. This volume focuses on those specially devised methods and does not describe standard practices in archaeology that are well known to the readers.

The preceding survey of pioneering practices is but an introduction to the wide array of current practices and uses of garden archaeology. These are offered as examples throughout the handbook and in detail in the last part of the volume, which provides a broad selection of individual case studies and references to the work of archaeologists around the world in the hope that any reader will find a few examples relating to his or her concerns. On the whole we can see that even if garden archaeology was closely linked to antiquarianism at its early beginnings, it has become more and more concerned with a larger set of issues in contemporary historical research. It must be recognized that archaeological research is very much dependent upon local resources and economic or political priorities and that garden archaeology demands prudent judgment and a sense of diplomacy as much as technical experience. This handbook offers a set of tools to help achieve these goals and to develop new practices whenever the circumstances or historical issues call for it.

Part II

Preliminary Questions and Investigations

The second part of the volume vividly illustrates the need for any archaeologist interested in engaging in garden archaeology to a primary question: how can a nondestructive survey be carried out before planning further investigation?

Kathryn Gleason and Mark Leone are two highly experienced garden archaeologists who have conducted research in very different historical and geographical discuss in the first chapter the best strategies in using non-destructive techniques to identify and record garden features both on the surface and beneath it.

The next two chapters, one by Bruce Bevan and Rinata Dalan, the other by Larry Conyers, concern the choice of instruments for geophysical investigation of the site before choosing to engage in destructive approaches. These are not the only nondestructive approaches for garden archaeologists, as we shall highlight in the introduction to the next part, but they can be very useful for investigating a garden. There are problems, however: these are techniques that vary from very inexpensive to very expensive; moreover, they can yield very different levels of confidence, depending upon the pedological, hydrological, and vegetal conditions on site. Any specialist knows that what the differences in appreciation of ground penetrating radar between the two chapters illuminates is the fact that any specialist also depends upon his or her own field experience. Both chapters provide a wealth of information that may help make the first choices, depending on economic constraints and the pedological and hydrological context. They will also help archaeologists hoping to become proficient in the use of these techniques. (AAM)

Part III

Excavating the Garden: Bringing the Garden to Light

The third part of the volume is the core of the handbook, as it provides methodological considerations and techniques for carrying out the dig. It follows the rationale of Part II, that is, to engage excavators to adapt the information provided by the authors to their own context and invent their own methodology. Kathryn Gleason was asked to use her expertise at garden excavations in the Old World to discuss the constraints and the issues that archaeologists might face during a dig. As Gleason states, “Garden archaeology is just good dirt archaeology,” yet specific modifications need to be discussed. The author describes in four chapters the different stages of the excavation by stressing how digging exterior spaces – gardens – differs from conventional practice.

The first chapter explains the main concerns that an archaeologist should be aware of before starting a garden excavation. *Materiality* (dirt is artifact and context), *Scale* (gardens can cover very large areas), and *Levels* (gardens’ surfaces are never perfectly level) are the three main aspects that differentiate gardens from architectural remains, orient the excavation, and therefore, demand a specific strategy. The second chapter details the dig itself, following the key steps of an excavation starting from the different types of baulks and trenches, to the delicate phase of locating and identifying the garden layer and the surface features, to discussing situations where the garden surface is not preserved. It concludes with advice on the field recording system that should be used. The third chapter presents an overview of the integration of environmental archaeology in the process of work. The last chapter moves from the soil to the design of the garden – gardens being the result of a complex dialectic between soil and culture. It offers the insight of Kathryn Gleason and Michele Palmer’s background in landscape architecture to aid in the interpretation and reconstruction of garden remains. (AAM)

Part IV

Biological Investigations: The Archaeology of Living Matter

The fourth part of the volume does not pretend to cover all the disciplines and scientific methods that can be called upon during the process of a garden excavation. Rather, the main objective is to comprehend what soils are, considered to be the contexts for artifacts and artifacts themselves in garden archeology. Gardens are the results of a complex relationship between nature and culture, and soils reflect and embody this dialectic. The previous chapters have mentioned how the choice of geophysical instruments and the sampling strategies depend upon the quality of the soils, and how archaeologists should be attentive to the texture and the color of soils that are the result of both natural and human activities and therefore are considered by archaeologists as signatures of gardens.

The section is divided into four chapters written by scientists: a pedologist, two botanists, and an entomologist.

The first chapter, "Soil Investigations" by John Foss, is the key chapter to understanding the material nature of gardens. Foss defines garden soils, their characteristics, and the factors of their variety, and discusses the "optimum approach in using a soils investigation" to help evaluate former gardens during the different stages of the excavation developed in Part III by Gleason.

The next four chapters, by Mark Harrocks, Eberard Grüger, and Hiram Larew, present some of the biological residues that can be retrieved from soils that provide precious information on the past ecosystem of former gardens. Each chapter introduces the discipline and its use in garden archaeology, presents the methods used, then discusses the practical requirement for implementation and the conditions of feasibility of the techniques, and finally concludes on the contribution and the limits of the discipline in garden archaeology. Each author exploits the results of their own experiences and specific examples where the discipline has been applied, to illustrate their arguments. This should enable archaeologists to understand the basics of the disciplines and their techniques and search for further information and methods that may be helpful to them on their own archaeological sites. An annotated bibliography and a repertory of specialized laboratories will further guide archaeologists in their endeavor. The specialists play an important role in assessing the material evidence of gardens, yet it is the role of the archaeologist to select and coordinate the specialist that should be called upon, and ultimately be able to fit their findings into a coherent interpretation of the garden. (AAM)

Part V

The Enhanced Nature: Analyzing Elements of the Garden

Each artifact found in gardens, from earth patterns, biological residues, and built elements, is a fragile trace of past cultural manipulations of nature. Their study illuminates the cultural context under which the garden was designed. The following chapters explore the issues at stake when reading such a complex range of artifacts in their original settings, which have more or less survived, and discuss the results of these interpretations.

The fifth part of the volume opens with a discussion on waterworks, the most enduring components of gardens that play a key role in their being and design.

James Wescoat, a landscape geographer, discusses how the study of hydrology allows the discernment and understanding of forms of culture specific to different geographic contexts. He first suggests a conceptual framework deriving from his understanding of “water issues” to be considered in garden archaeology. Then he explains how archaeological research on garden waterworks requires the full suite of methods examined in the preceding chapters, from topographical studies of gravity flow piping systems and remote sensing of canal and drainage systems; to excavation of water sources and conveyance, display, and drainage systems; to biological inferences about the hydrometeorology, fish ponds, aquatic plantings, etc., of gardens. Finally he presents the material culture *of* waterworks (fountainheads and tools) and *in* waterworks (sediments in wells and privies) and proposes lines of inquiry to explore their cultural aspects.

Wilhelmina Jashemski, Stefano de Caro, and Elizabeth Kryder Reid, authors of the third and fourth chapters, use their expertise in Roman gardens and American Colonial gardens to present how in-depth analysis of material culture contributes to a better understanding of the garden and the society to which they belong. The authors, by using specific examples, explore all the artifacts that archaeologists discovered during the excavation, ranging from the environmental remains, earth patterns, cultivation implements, to the more visible part of the garden, the built elements. This is followed by a discussion on the way archaeologists interpret the material culture using methods that vary according to the cultural context of the garden, the condition of preservation of the artifacts, and the conceptual framework of the archaeologists. Again these examples do not pretend to be universal but rather suggest and encourage new perspectives in other contexts. (AAM)

Part VI

Historic Gardens and Garden Archaeology

The sixth part of the volume is an essay on the role of archaeology in garden conservation, management, and restoration. Several decades ago garden archaeology has proved to be an essential requirement to any intervention on historical gardens. Giorgio Galletti, a landscape designer who restored the gardens of the villa Medici in Rome and the Boboli Garden in Florence, presents the recent discussions on the relationship between garden conservation and archaeology. Through his personal experiences he presents and argues his standpoint regarding the current debates that oscillate between two opposite views: The one that sees in garden archaeology a means to restore and reconstruct gardens and the other that considers that garden archaeology should be regarded as an “independent discipline” and not be solely subjugated to the service of restoration. In addition to the issues at stake when restoring gardens, Galletti presents a wealth of valuable information for the reader to reflect on, as he clarifies the terminology used by the professionals, comments on the text of the Charter of Florence, and discusses the turning points of the history of garden conservation. (AAM)

Part VII

A Garden of Practical Examples

The past chapters of the volume proposed a strategy of excavation and a range of different methods and techniques that do not pretend to be universal. Rather they were written by professionals who discussed their experiences, with the recognition that in archaeology every site is different and thus calls for a different strategy. To help the reader with the complex task of establishing his own methodology, the following section offers a short presentation of a wide variety of gardens excavated in different geographical areas and periods. We hope that the reader will find among these examples, which give a sense of the variety of circumstances, goals, and practices, some methodological approaches applicable to the specific conditions of his site.



The gardens are presented according to a roughly geographical order of countries (or rather, their capital cities) starting from the 0° meridian going toward the East (England, France, Switzerland, Tunisia, Italy, Poland, Jordan, Syria, Pakistan, India, China, Japan, Hawaii, Mexico, El Salvador, Bolivia, Peru, United States of America, and Spain). Some of the gardens have already been discussed in earlier chapters where only a particular aspect of the excavation was presented. Each author offers a detailed synopsis of their excavation in which they examine the circumstances under which the garden was examined (location, history, and description of the site), the methods used, and the results. (AAM)