PREFACE

“O, Lord, remember Your servants and the mosaicists whose name you know.”

The Church of St Stephen, Umm Al-Rasas, Jordan

Only the names of those who signed their artworks came down to us. They were not necessarily better, more talented, more creative or more inventive than the anonymous artists that left the inscription above. But their names are the ones that personalize the monumental mosaics that were made by them with many hours of labour.

The Early Byzantine period was one of the most fruitful and creative eras in the region of Palestine and Transjordan, and mosaics is one of the most significant corpus of artistic find in the region. In this period, mosaics have become an indispensable commodity in any building project, public or private. They cover a large artistic repertory, from figurative genre scenes, religious symbols, to floral and complex geometric designs and are a vivid testimony of the artistic wealth of Late Antiquity.

I studied within a milieu that attached the utmost importance to iconography and symbolism and which gave the interpretation of religious significance preference over the study of material and technique. During the writing of my MA thesis, which was dedicated to themes and iconography of synagogues mosaics, the differences in repetitive patterns of tesserae inlay struck to me. This technical aspect of production would probably not have become the main vehicle of the present study, had it not occurred to me again through the magnificently illustrated book Mosaics of Jordan by Michelle Piccirillo. I grew interested in the relation between the iconographical choices and the technique of execution and wondered whether the choice of a certain subject-matter was guided not only by the demands of the commissioner, but also by the specialization, preferences and the artistic ability of the individual craftsmen.

While searching for studies that explore technique, with the purpose to understand the production process of mosaics, the division of tasks within the workshop and the work construction of the producing team, I realized that modern study has not yet fully explored this field and, moreover, has not yet fully developed methods that enable such investigation. My first challenge was to sort the current investigation methods, summarize their
achievements and limitations, and form a systematic method for approaching the study of production procedures through the inlay-patterns of mosaic tesserae.

As any art-historical study, the study of mosaics demands detailed viewing, preferably of the original material, and long hours of observation, analysis and comparison. The study included travelling both to Israel and Jordan, with the aim to see and document the pavements involved in the study, consulting experts in the field of excavation, restoration and conservation of ancient mosaics as well as production of modern mosaics.

I would first of all like to thank my father for planting the love for history and art in me, as well as for helping my current research by accompanying me to various sites, in Israel, Jordan and the Palestinian Authority, despite the constant political tension in the region. My mother, who was always a source of love, optimism, creativity and strength, visited numerous archaeological sites with me while fighting the illness of cancer, which eventually overwhelmed her.

In the course of this investigation I have benefited from numerous scholars who commented, criticized, shared their insights, knowledge, experience, and provided photographs and articles, or simply encouraged and supported me in times when I thought that this dissertation would never come to an end. The late Michelle Piccirillo, who passed away during the completion of this study, is a great loss for any who is involved in the study of mosaics. He was always encouraging, willing to provide advice from his rich experience and share his expertise and insights. He also allowed me to scan and use any photographic material from his wonderfully illustrated books. I am much indebted to my teacher and mentor Dr Bouke van der Meer, who encouraged me since my arrival at the University of Leiden throughout the course of my studies and read the manuscript with much precision. Associate Prof. Birte Paulsen from Arhus University who made important contributions while preparing parts of it for publication at the JRA and many colleagues from the University of Leiden: Prof. Aart Mekking who supervised the research in its early stage, Dr Miguel John Versluys, Dr Rolf Tybout who advised me about the Greek inscriptions, Dr Bas Lafleur who read and made many useful comments on earlier versions of the text, and Dr Jan van Ginkel who always kept an eye open for internet and publication news. Prof. Asher Ovadiah from Tel Aviv University, Prof. Rina Talgam, Dr Roni Amir from the Hebrew University, Prof. Roger Ling from the University of Manchester and William Wooton from King’s College, who advised me in the very initial stage of the study, Dr David Mevorach and Dr Silvia Rozenberg
curators at the Israel Museum, Mr. Jacques Neguer, head conservation department at the Israeli Antiquities Authority, teachers from the mosaic school in Madaba and Luciana Notturni from the mosaic school at Ravenna. Mr. Ghaleb Abu-Diab from the restoration department at the Rockefeller Museum in Jerusalem, who gave me access to their archive and provided me with useful information about the process of conserving ancient mosaics, and Abdesamee’ Abu Dayyeh from the Jordanian Antiquities Authority who assisted during my study visit to Jordan. Yael Barshak of the archives of the Israeli Antiquities Authority and Dr Barbara A. Porter, director of ACOR for providing me with much of the photo material and the permission to use it. Anneke de Laaf corrected my English and made useful remarks to make this study fluent. Many others deserve thanks: the School for Area Studies (formerly CNWS) in Leiden for providing me with the financial means for this research, the Paul van Moorsel Centre for Art and Culture in the Middle East that supported my study, also financially, and facilitated the publication and presentation of my observations in various (international) congresses and colloquia. Last but not least, I would like to thank my husband Johan Boef and my three sons, Raphael, Uriah and Micha for providing me abundant daily portions of love, life and inspiration.

I dedicate this study to the unknown mosaicists whose work we admire today, and especially the nameless mosaicists of the Church of the Holy Martyrs Lot and Procopius. They would have probably never imagined that their work, many centuries later, would still inspire so many visitors, pilgrims, artists and scholars who admire the beauty of their work, study their artistic depictions and still try to reveal their secrets.
CHAPTER 1
A NEW APPROACH TOWARDS MOSAIC PRODUCTION

1.1 INTRODUCTION: MOSAIC ART IN THE NEAR EAST AND ITS STUDY

Mosaic pavements are the most prominent media of architectural decoration that survived in Palestine and Transjordan from Late Antiquity. The region yielded hundreds of mosaics, in various contexts, sizes, artistic quality and states of preservation (Fig. 1). The Early Byzantine era and especially the sixth century, was a period of growing building and renovation activity: churches, synagogues, villas, shops and tombs were erected and their commissioners possessed the means to decorate, adorn and furnish them with a wide selection of artistic media: from stone and marble dressing to wood carving, textile, metal and glass. Most of these works of art survived as fragments, whereas mosaics, due to their durability and firm position on the floors of the building, serve as a splendid testimony to the revival of the arts during the sixth century. This flourishing is expressed both by their vast quantity and their high artistic quality.

Past studies of mosaic art in the Near East show various approaches. These range from purely documentary and descriptive approaches, through the exploration of the source of the stylistic and compositional characteristics of the floors, to categorisation of groups according to technical aspects, the study of the range and source of themes, geometric repertoire and iconography, up to their function as cultural indicators, their place in ritual and religious context, and their role as expression of local religious and communal identity. Recent studies show growing interest in the organization of production, signatures and the

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1 For a historical overview of the study of mosaics and the developments in approaches through the decades, see: Britt 2003, 5-60; Merrony 2013, 21-30.
2 Avi-Yonah1933; idem 1934; idem 1935; Ovadiah/Ovadiah 1987; Piccirillo 1997.
4 Dauphin 1976a.
6 Weiss/Talgam 2002; Bowersock 2006.
7 Donceel-Voûte 1988; Clark 2007.
8 Fine 2005; Talgam 2014.
identification of workshops. This last aspect is also the focus of the present study, which seeks to develop criteria for the identification of production teams through their application techniques. It hereby introduces the notion of work procedures as a fundamental aspect of manual production of mosaics.

1.2 GEOGRAPHY AND DISTRIBUTION

In the sixth century the province of Palestine was divided into three regions: Palestina Prima with Caesarea as its historical political capital and Jerusalem as the most prominent religious centre; Palestina Secunda with Scythopolis (Beth Shean) as its prominent urban centre; and Palestina Tertia that stretched southwards and included the Sinai peninsula and Petra. The province Arabia, with Bostra as its capital, stretched from east of the Jordan river fading into an uncertain region of influence, dominated to the east by local tribes that retained a measure of loyalty to the Byzantine reign, until Muslim influence became the prominent factor in the area.

Politically, the sixth century is associated with the reign of Emperor Justinian (AD 527-565), due to his long term in office as well as to the political, economic, religious and cultural impact that his reign had upon Byzantine history. Archaeological finds indicate flourishing communities that possessed the financial means to invest in local churches and synagogues, and a high social involvement on the part of the local inhabitants, who donated generously for artistic commissions. Religious sites, monasticism and pilgrimage became important factors. The number of public buildings, most prominently churches, that were erected, renovated and decorated throughout the region in this period is overwhelming and, at times, enjoyed direct imperial patronage. The works of art that survived from this period are an indication of the broader revival of crafts in general, and of mosaics in particular.

10 The literature about the period of Justinian is vast. For recent publications on the topic, see: Maas 2005; Gregory 2005; Cameron 2006.
11 A vivid indication for such patronage is the monumental inscription at the vaulted substructure of the Nea Church in Jerusalem: “And this is the work which our most pious Emperor Flavius Justinianus carried out with munificence, under the care and devotion of the most holy Constantius, Priest and Hegumen, in the thirteenth indiction.” (Avigad 1993, 133-135). Other examples are the church built by Empress Eudoxia in Gaza (Ovadiah/Mucsnik 2009, 221-222), and the Monastery of St Catherine in the Sinai peninsula by Justinian (Tsafrir 1993, 327). Churches initiated by Emperor Zeno are, for
The region is characterized by a wide distribution of pavements, also in relatively remote areas or in small villages. Some villages yielded a single mosaic, suggesting that only the main public building of the community – usually the church or, in case of a Jewish village, the synagogue – received the investment of a monumental decoration. Larger settlements and cities enjoyed intensive building activity and yielded at times an overwhelming number of mosaics. Madaba, Gaza and Tsippori (Sepphoris) are even seen as centres of arts and crafts, where local mosaic workshops are assumed to have had a permanent seat and continuous production. That the demand for luxurious commodities in the cities made it attractive for artisans and workshops to settle there is highly probable. In turn, the existence of urban workshops is likely to have stimulated the local commissioners, resulting in an increase of production. As plausible as it sounds, the suggestion that a high concentration of mosaics in a certain region or an urban centre points to an activity area of a permanent workshop which dominated the production in that area, remains a hypothesis that modern research has not yet fully tested. The study of workshops and the questions evolving from the attempts to identify workshops became an issue in recent mosaic study and a growing number of scholars have become aware of the limits of the current investigation methods.


1.3 The aim of the study

The aim of the research is to explore the potential of the study of production procedures for understanding regional trends, identification of the production team and the division of work within a certain mosaic. For this purpose, the present study formulates a set of criteria, functioning as an empiric observation method, with which the production procedures of figurative mosaics can be explored and an inlay tradition can be identified. This set will be applied to a few case studies with the purpose of answering the question of how mosaics, and especially mosaics with figurative images, were produced and constructed in terms of the order of production and inlay of the tesserae. The study will aim to identify the repetitive patterns in the application of tesserae (referred to throughout the present study with the term ‘production procedures’) within a specific mosaic. The Mount Nebo area forms the first case study. Especially the mosaic of the Church of the Holy Martyrs Lot and Procopius shows a distinct case of repetitive patterns and a coherent set of application methods guided by a procedure. It is for this reason that the study of the Mount Nebo region takes this mosaic as a starting-point of the investigation. The second case study reconsiders the Gaza area and the ‘Gaza workshop’ theory that has already been advanced in the 1960’s.

1.4 Definitions

The introduction of a new approach towards mosaics and their production process demands clarification of a few of the terms used, as well as of the assumptions that form the basis for the present study.

1.4.1 The permanent mosaic workshop as a preconception

The difficulties involved in the investigation of production are the lack of a clear definition of the term ‘workshop’ or ‘school’ and the controversies involved in the attribution of a group of mosaics to a specific team. In the case of mosaic art, where production often took place on location, the term workshop does not refer to the ‘studio’, or ‘atelier’, the physical place where work was produced, but rather to the team of producers and its organization. Little is known about the inner structure of workshops in Antiquity, their hierarchy, the relation between the members of the production team and the division of tasks among them. A few
models have been suggested in the past, with the reservation that each workshop may have differed from the other in its formation process and its inner structure:

They [mosaics] belong in a category of work which was typically exercised in antiquity in workshops which might be as small as a single master-craftsman with his son or apprentice, and a slave or assistant for the less skilled work; larger establishments might be operated by a contractor with a number of subordinates... ¹⁴

It is exactly this diversity that made modern scholars comply with the neutral term ‘workshop’ as a cover term for a wide range of organization possibilities. As a result, very little has been done to explore the mechanism of production and the formation of the producing team in specific cases. The traditional preconception of ‘the workshop’ as a permanent team that stayed active for a few generations and dominated the production of a certain region should therefore be investigated.

1.4.2 The problem of terminology

The vast interest that emerged in recent years in the practical and technical aspects of mosaics and the skills of those who produced them, proves that the current terminology no longer suffices for the needs of future study. For beyond the need to offer a model for understanding the functioning of the production unit, the study wishes to explore the art-historical challenge, embodied in the question whether artisans and workshops in Antiquity can be artistically identified at all. Most questions regarding this issue are left unanswered: Has any local production team developed a genuine artistic identity that can be identified as such? Would it be possible to identify the oeuvre of a certain team and distinguish various teams from one another, and on what ground? And which method of investigation can best be applied in order to shed light on these issues? This last question is the main concern of the present study. In her recent study, Rachel Hachlili states:

Artists, workshops and schools of mosaic pavements, meaning a group or a team of artists and workshops, can be identified by the following means: inscriptions mentioning artists or builders who signed their work; analysis of stylistic and

¹⁴ Dunbabin 1999, 269.
As will be shown later, the criteria that many studies apply for the identification of workshops are mostly focused on the repertoire of designs and subject matter, lay out and iconography. Hachlili’s term ‘technical idiosyncrasy’ is an attempt to give a name to a technical aspect that has not yet been properly explored and defined. A characteristic different from ‘style’, but still very much related to it. The present study puts this elusive characteristic, that has already been noticed by Rachel Hachlili, Michelle Piccirillo, Nira Stone and John Clarke, at the centre of the investigation. By giving it a definition and a defined set of criteria, it adds a new aspect to the investigation of mosaics and their production teams. It sets the focus on the working hand, on the craftsman and his work, with attention to the micro level of the manual production, the order of production, patterns of inlay and repetitive characteristics of application as possible indicators for mosaic producers or, at least, as defining characteristics of training traditions.

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15 Hachlili 2009, 243. The largest part of Hachlili’s meticulous study is dedicated to the iconography of mosaic pavements in Israel and Transjordan. Chapter 12 is concerned with ‘Mosaicists, Workshops, and the repertory’, which includes an overview of inscriptions, discussion of a few mosaics and their possible makers, as well as suggestions for grouping a possible oeuvre of a few workshops or artists, including some sharp new observations. However, the term ‘technical idiosyncrasy’ lacks a clear definition, with the consequence that the method remains somewhat vague. It is exactly this vague usage of terminology that the present study wishes to clarify. A further discussion will be dedicated to Hachlili’s observations in the next chapters.

16 Hachlili 2009, 243-280.

17 In his book The Mosaics of Jordan Piccirillo suggests a few workshop identifications on stylistic grounds. For example, concerning the so-called ‘Panel of Heracles’, the ‘Mosaic of Achilles’ and the ‘Bacchic Procession’ he notes: “Solely on Stylistic criteria the three mosaics…can certainly belong to the same workshop…” (Ppiccirillo 1997, 80). This observation is completely unfounded, and shows the need for a clear definition of the identification criteria.


1.4.3 Application techniques and production procedures

The present study introduces two new terms. The term ‘application technique’ indicates a repetitive method involved in the production of a certain element in the mosaic, such as the order of setting the tesserae, the inner division of a figure or the direction of inlay of the tesserae. The term ‘production procedure’ refers to the approach and the planning of the production steps taken by the producer. It includes the set of application techniques and the systematisation of the inlay into a repetitive whole. The production procedure refers to the manner in which a mosaicist organises the production and lays his complete set of application techniques, in terms of the size of the sections, order of production and inlay methods.

The procedure of production explores an aspect that has hitherto been largely neglected in the study of mosaics. The study of application techniques introduces a set of observation criteria that offers an alternative for approaching the figurative depiction in stylistic terms. Whereas style focuses on the visual characteristics of the forms, for instance the relation of the figure to other elements in the same space, the illusionistic quality of this space and the illusions of naturalism and three dimensionality of the figure itself, the study of production procedures analyses the actual techniques with which those impressions and illusions are achieved. Technique and style are closely related, since the application of a certain technique inevitably results in certain stylistic characteristics. It would thus be negligent to eliminate stylistic descriptions altogether, but the discussion is aimed at the technique behind the stylistic result. For example, the three-dimensionality of the body of a sheep can be achieved in various ways (the example of Shellal in Chapter 5 is illuminating). Each craftsman may apply a different production procedure in order to achieve the illusion of three-dimensionality. Stylistic analysis seldom refers to the application techniques with which the stylistic result was achieved. The present study refers to the application techniques as the main expertise of the craftsman, while style is treated as the result of application techniques and production procedures. The criteria with which application techniques can be defined will be presented below in Section 1.5.
1.4.4 The organization of the production team

One aim of the analysis of production procedures and application techniques that the present study seeks to explore is a better understanding of the organization of work and division of work among the members of a production team. Exploring the division of work within the team infers the possibility to distinguish between different craftsmen and their artistic ‘signature’. Though the question of individual identification has been raised in the past, scholars continue to avoid the issue of the identification of the individual craftsman in Antiquity.

The controversy surrounding the identification of individual craftsmen has been settled as far as works of art from the Renaissance and later periods are concerned, but the art of Antiquity presents more complicated challenges. Lucille Roussin expressed it with the following words: “Because the making of a mosaic pavement involved various artists some of the problems which concern art historians in other media, such as the assignment of work to individual artists with individual style, are meaningless when discussing floor mosaics. Not only are groups of artists involved, but also the translation of the picture into stone carries with it certain limitations which make stylistic distinctions even more difficult.”

“Unfortunately”, she remarks: “There are no extent ancient texts that describe the making of a mosaic”.

Indeed, we lack external evidence about the actual organization of production work, its process and the composition of the production team. Also the process of commissioning and the training of craftsmen and even the social and economic reality during Antiquity (especially in the provinces), is often obscure. Despite these difficulties, the production process is a challenging field and any future discussion of mosaic art in Antiquity may benefit from its exploration.

The present study shares the insight of those scholars who conceive art objects, mosaics among them, as products that cannot be understood without the context of their production.

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20 The study of production techniques of painters such as Rembrandt and Vincent van Gogh proved how effective the study of individual stylistic traits and techniques can be. The ‘Rembrandt Research Project’, that culminated in the 5-volume Corpus of Rembrandt Paintings, began in 1968 and aimed at identifying Rembrandt’s own paintings from a vast number of paintings made by his apprentices and followers. Researchers can distinguish between the hand of the master and an apprentice within one and the same painting. For the Rembrandt Research Project, see: www.rembrandtresearchproject.org/
21 Roussin 1985, 7.
22 Roussin 1985, 36.
conditions, where the production process is conceived as a key for understanding the work organization and the process of artistic continuity. This approach has been applied more commonly to the study of sculpture and relief art, as will be shown later on, is exemplary in the study of ancient sarcophagi.

Identification of individual craftsmen by characterization of the artistic output has been attempted in various media of art, most prominent among them is the attribution of Greek vases and, to lesser degree, Pompeian wall paintings, ivory carving and metalwork. The present study seeks to explore the possibilities and limits of the criteria for identification of mosaic producers.

Works of art in Antiquity rarely carry a signature of the individual maker, and even when they do its intention and motivation is often obscure. The lack of information results in a controversy concerning the very possibility to distinguish between individual producers, let alone the methods applied for their identification. Despite the lacunae in our evidence, the methodology that conceives the individual craftsman as the main carrier of visual traditions and their transmission, is a legitimate starting point that is worth exploring. The few literary indications that we have, exceptional as they are, illustrate that also during Classical Antiquity, an era in which the visual arts were considered technical, physical work, inferior to literary arts that were considered to involve intellect and inspiration, artistic mastery in the visual arts was appreciated and had a long lasting impact. Even the anthropological

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24 Immerzeel 2003.
26 Fröhlich 1991; Tybout 1996.
28 One of the difficulties has to do with the broad implication of the verb ‘to make’ in Greek. In the case of the glass maker Enion, the verb clearly refers to the producer, who advertised his name by signing his superior products (Dayagi-Mendels/Rozenberg 2011, 305). In mosaic, the reference is often to the donor who paid for the work and not to those who actually produced the mosaic (Assimakopoulou-Atzaka, 1986, Donderer 1989). But even when the verb is more specific, it is not clear what was the range of tasks fulfilled by the persons mentioned and how many were involved in the work but not mentioned in the inscription.
29 The visual arts are referred to in Greek with the term τέχνη, denoting an occupation that can be learned.
30 Only a few names of visual artists have been preserved by ancient writers. Sculptors such as Phidias, Polyclitus and Praxiteles and painters, such as Polygnotos and Zeuxis (OCD 1999, 178). Although these artists gained fame in their own time, the original works of art did not survive and their quality is appreciated solely by a comparative study of their later copies.
approach towards traditional art as an expression of a generic tradition, does not ignore the influence of the individual creator. Furthermore, in traditional society individual artists were appreciated by their contemporaries because they were considered able, more so than other individuals, to visualise the aesthetic ideal of their time and grasp in their art a particular aspect which that society considered as artistic excellence.\(^{31}\)

The following assumptions form the starting point of the present study for investigating the possibility to identify an individual mosaicist:

A) The art of mosaic making is approached as a craft, practiced by artisans who followed a long and laborious training from young age until becoming professional mosaicists. During their training, craftsmen not only became familiar with a broad range of thematic cycles, artistic subjects, iconography, sets of lay-out and geometric designs, but learned first of all a set of inlay methods and techniques of production. It is therefore assumed that during their training period, young mosaicists practised, systematised and familiarized themselves with a set of production procedures or at least some application techniques that became part of their professional expertise.

B) The production of a pavement surface could have been divided among several craftsmen. A group of craftsmen could have cooperated in the contemporaneous production of various parts of the same floor. But also consecutive work on each part of the floor could be executed by more than one producer. Theoretically, the production of each figure, if not completed within one session of work, could be divided among more than one mosaicist, each continuing the work of his colleague. For this reason, each section and each image should be analysed separately to identify its characteristic application techniques.

C) A high degree of repetitiveness in all criteria of the application techniques indicates a highly professionalized procedure and a more convincing attribution of two or more floor-parts (or images) to one individual producer.

D) Only if a craftsman retained consistency in a set of application methods throughout his career, can the investigation identify his artistic signature and attribute to him a certain oeuvre.

E) The criteria for analysing application techniques will first be applied within one and the same floor, and will only then be extended to a group of mosaics.

\(^{31}\) Gell 1998, 155-159.
The present study suggests that identification of the individual producers can shed a new light on the division of tasks within the production team, while a further exploration of the division of tasks may offer a better understanding of the workshop construction.

1.4.5 The mechanism of transmission

The tracing of application techniques may also be applied in order to understand the mechanism of transmission of procedures from one generation of producers to the next and for mapping the spread of application techniques within a certain region and beyond.

Artistic transmission is often treated in general terms as an influence that spreads mainly on the basis of geographical proximity, though according to uncertain dynamics. Suggestions of direct mechanisms of influence, such as pattern books\textsuperscript{32} or migration of artists\textsuperscript{33} fail to illustrate a clear pattern in which stylistic traits spread, let alone the spread of technical applications. The approach of James Ackerman regarding the development of style in Western art stresses the importance of the interaction taking place among artists of a certain period or region. His method stresses the artistic choices (and rejections) of the individual producer as decisive for the process of transmission.\textsuperscript{34}

Ackerman’s approach suggests that any work of art mainly reflects the artistic process that the individual artist went through, in terms of the relation between his art and the art of the past and the art of his immediate predecessors. Although the terminology of the present study will be shifted from the field of style to the field of application techniques, the theoretical

\textsuperscript{32} The theory of pattern books had already been advanced by scholars of the nineteenth century (Tikkonen 1889; Buchtal 1979, 13). Although more pronounced in relation to medieval art and especially manuscript illumination (Weitzmann 1947; Scheller 1963; \textit{idem} 1995; Kitzinger 1975), the theory had been argued for mosaic art in Antiquity and has become widely accepted ever since (Levi 1947, 9; Dauphin 1978; Dunbabin 1978, 9; Roussin 1985, 45). Hugo Buchtal (1979, 66) sees the pattern book as an iconographical guide for narrative cycles rather than motif book, while Dauphin (1978, 408) advances the idea of a pattern book as a collection of motifs, which are independent from a specific iconographical context. Since no such books have survived, the discussion of the model or pattern books will probably continue to occupy modern scholars. Though the current study is not aimed at discussing pattern books, the study of application techniques may certainly be applied to the future study of that phenomenon.

\textsuperscript{33} Catherine Balmelle and Jean-Pierre Darmon (1986, 241-243) conceive mosaic producers as travelling craftsmen who carry only their tools with them from place to place. Dunbabin (1978, 21) identified an itinerary workshop that worked next to local workshops in African centres, while Lavin (1963) argues for migration of artists as a mechanism for stylistic developments of Antioch mosaics.

\textsuperscript{34} Ackerman 1963, 170-173.
framework that has been suggested by Ackerman influenced the present study immensely in its approach towards the mechanism of transmission.

As a working hypothesis, the current study adopts the master/apprentice model as the basic training method of craftsmen in Antiquity. The interaction between trainer and trainee is conceived as the basic vehicle that enabled transmission of application techniques from one generation to the next and for the forming of the expertise of a young mosaicist. In addition to active training there may also have been passive mechanisms of influence in the form of inspecting works of art that were visible at that time. Naturally, the range of artistic material that was available to the contemporary artist was far more complete than that which have survived to this day. It would therefore be difficult to trace all direct sources that influenced the production of a certain mosaic or a certain producer. Furthermore, influence may have been sometimes indirect, as suggested by the pattern-book theory. Notwithstanding the impact of these additional factors, the current study conceives the training process as the basic vehicle for transmission of production methods from one generation to the next and crucial in the mechanism of artistic continuity.

The investigation of continuity, however, involves the need for additional data concerning the mosaics, namely: their date of completion or at least the relative chronology between them. A comparative study of the procedures that appear in various mosaics, taking into account their regional distribution and their chronological order, may reveal the pattern of spread of application techniques. Such an investigation depends on the availability of sources that can be dated, hence the importance of mosaics that carry inscriptions. Tracing identical patterns of inlay along a substantial period may indicate a transmission of tradition from one generation of craftsmen to the next. The tracing of identical patterns in contemporary mosaics within a certain geographical limit indicates a shared tradition by contemporary producers, and perhaps the pattern of mutual influence that contemporary craftsmen exercised on each other.

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35 Poulsen 2012, 131-132.
1.5 FORMULATING A PROCEDURE

Seven criteria will be applied in order to describe a production procedure, illustrating various aspects of application techniques: 1) illusionistic overlapping; 2) internal division of the figure; 3) repetitive forms of gestures; 4) recurring features; 5) size and shape of the tesserae; 6) colour and the sorting level of the tesserae; 7) inlay patterns and the various techniques that determine the effects created by the filling in of surfaces.

The study focuses primarily upon figurative depictions, assuming that these depictions demand more than just a mechanical inlay, and therefore reflect more explicitly the artistic background of the producer and his technical skills. Other elements, however, such as floral elements will be shown to offer a rich variety of inlay patterns in their own right.

A few basic technical aspects of production may be portrayed from the outset: guide-lines in the form of preliminary drawings or incisions marked the position of panels and frames that surround the figural imagery. The inlay work of the mosaic progressed in sections. This was dictated by the fact that in the climate conditions of the Near East, the mortar in which the tesserae were inserted would dry quite quickly. These sections were units that allowed easy access to any of their parts and were presumably easy for a mosaicist to complete within one day of work or within a few hours. Dauphin has already noted, that in scroll-pavements, for example the Al-Hammam pavement from Beth Shean, the lay-out divided the surface to a grid of about 55x55 cm, reducing the sections into relatively small squares.36 The largest scrolls on mosaic pavements appear not to exceed 80 cm in diameter, and the majority of scrolls vary between 60-70 cm. This means that a craftsman sitting in front of the image could reach with his arm any part of the scroll, and move systematically from one section to another. This procedure probably became a standard for the production of scroll mosaics and other ‘carpet-type’ pavements.

It may also be assumed that, whenever possible, the producer of a figurative depiction would always prefer to sit in front of the depicted figure and produce it in a face-to-face position. Out of technical considerations, the producer would probably avoid sitting or stepping on a freshly-made mosaic and would prefer to let the bedding harden somewhat.37

36 Dauphin 1976b, 155.
37 Wootton 2012, 162. In his study of the mosaic at Badmiton Park, Wootton observes that the production began at the centre moving outwards, probably, among other reasons, to avoid movement upon still damp areas.
This would influence the general direction in which work proceeded and would be taken into consideration in the planning-phase of the work.

Any inlaid line of tesserae would influence the setting of the tesserae next to it. Where tesserae were already set, no other tesserae could be laid (unless the previously-laid tesserae were pulled out and replaced).

We may now turn to the description of each of the seven criteria and its place in the definition of a production procedure. The seven suggested criteria will be applied later on as a method, that should offer a set of tools with which the scholar can gain new insights into the procedures that were applied by mosaicists. A mosaic that shows a high degree of consistency and repetitive application of all seven criteria in more than one figure, is indicated as possessing a high artistic integrity, or, in Clarke’s terms, the figures that show high consistency can be considered as a ‘perfect match’.\textsuperscript{38}

1.5.1 Illusionistic overlapping

Important guiding principles in the reconstruction of the order of inlay are that each available space on the mosaic surface can only be laid once and an existing line of tesserae influences the setting of the tesserae in its vicinity. It is therefore possible to trace the order in which tesserae were laid and reconstruct which element was produced before another. Illusionistic overlapping of elements within a design often indicates the order in which these elements were produced: elements that are produced in an early phase of the work (‘foreground elements’) dictate the position of the later produced elements (‘background elements’).

A good example are figures that partly overlap the scroll that surrounds them and thus make it possible to reconstruct the order in which different elements in the design were laid. In the figure of the old man carrying a basket of grapes on his back from the Church of the Holy Martyrs Lot and Procopius (Fig. 22), it is possible to observe how various sections of the image overlap. For example, the figure’s right foot overlaps the scroll. The scroll itself is composed of two elements: what may be described as the ‘primary’ scroll is continuous and formed by two parallel rows of tesserae, so that it looks thicker than the ‘secondary’ scroll, which is made up of just a single row and appears in sections as if partially ‘hidden’ by the primary scroll. Since both scrolls are made in the same reddish coloured tesserae, a distant

\textsuperscript{38} The term ‘perfect match’ is applied by Clarke for the identification of the same hand in different floors (Clarke 1994, 89-102). Chapter 3 will go more in detail into the methods of identifications that have been hitherto employed in the study of mosaics.
glimpse creates the illusion that the secondary scroll is wrapped around the primary scroll, while in fact the secondary scroll is ‘hidden’ by the primary scroll. This is consistent throughout the mosaic. The secondary scroll carries most of the leaves, bunches and tendrils. The tesserae of the white background clearly follow the outlines of the figure, the leaves, the bunches and the tendrils. According to the criterion of illusionistic overlapping, the order of production can thus be summarized as follows (Fig. 23): The first section to be laid was the central figure. The second was the primary scroll, followed by the secondary scroll that carries bunches of grapes, leaves and tendrils filling up the spaces between the figure and the scroll. The last stage included the filling of the background with white tesserae.

1.5.2 Internal division

Images, especially complex human figures, were often divided into several sections and produced in stages. These stages can often be recognized by division lines that are sometimes clearly indicated by a darker colour. However, even when these lines are concealed, a careful inspection can reveal them.

A good example of the approach towards the internal division of an image is the zodiac sign of Aquarius from the synagogue of Beth Alpha (Fig. 3) Aquarius is represented by the figure of a man drawing a bucket of water out of a well. The procedure was based on indicating each section by a dark outline (Fig. 4). The face was the first element that was produced, by laying a line of tesserae in an egg-shape. Since the hair curls rest directly on the upper outline of the forehead, it seems that the hair was produced after the head. The following section was that of the neck, which was made as a square, with the upper line formed by the already existing line of the chin.

The arms are each made as a closed section, and the hands lean against the lower line of each wrist. The torso was then formed by a single vertical line, defining the square between the previously-produced lower line of the neck and inner lines of the arms. The mosaicist then produced the round edge of the well, added the bucket and filled-in the background tesserae in the well and around the figure, including the inscription that identifies the zodiac sign. This procedure was applied repetitively for the production of all human figures in the mosaic of Beth Alpha. The craftsmen who produced this floor reduced the human body to a few sets of lines, turning the production into a simple procedure that could be repeated in variations again and again.
Linearity is a basic characteristic of Byzantine art in general, and of mosaic art of the Byzantine period in particular. The example of Beth Alpha shows the practical function that the line fulfils in the production process. The treatment of the line that marks the silhouette or contour of a figure is fundamental for the visual perception of the image. But rarely do outlines mark only the silhouette of a figure. More often an outline becomes an inline that marks anatomical details, often marking also the sections of a figure. Whether these lines are a remnant of a preparatory drawing or a reflection of a pattern, the treatment of linearity is part of the set of application techniques. The exploration of repetitions in their application is therefore an important aspect of the investigation. Line is an important part of the imagery design and is often used in a repetitive manner in order to mark the figures, their anatomy and other details.

But linearity does not dominate all representations. Another example of a carefully planned process can be illustrated by the phases of production of the fruit tree from the Church of the Prophet Elias in Madaba (Fig. 4) A careful analysis may suggest the internal division that dictated the order of production of the various elements that form the foliage (Fig. 5). It seems plausible that the first elements to have been produced are the fruits that form the foreground objects. These were placed in a central position, guided by a simple symmetry: two fruits mark the vertical axis, with four fruits on each side. The production of the fruit was followed by the light branches and trefoil leaves, which tesserae were set in the spaces between the fruit and directly around them. The background of dark foliage was added after the two former elements were in position, adding an element of fullness and depth due to the contrast of the dark green and the lighter tints of the former element. The mosaicist could then proceed to the lower side of the medallion to make the trunk of the tree and complete the medallion by setting the background tesserae.

The background tesserae seem to have been placed last, in concentric circles, beginning with the inner limits of the outer circle, moving gradually in and filling-in the whole medallion. This simple reconstruction reveals that, what at first glance seems to be a tree with randomly distributed fruits growing between its leaves, appears to be an almost geometrically planned design, which production process was guided by an ordered procedure, that included several stages. What seemed to be a complex design appears to be a result of a simple procedure of inlay of a repetitive pattern. The simplicity behind complex designs illustrates the sophistication that craftsmen managed to achieve by following a repetitive procedure.
1.5.3 Repetitive characteristics of design: Poses and gestures

Notwithstanding the question of usage of patterns or models by the ancient mosaicist, a certain repetitiveness in gestures and poses can regularly be recognized.

The example from the Nile celebration mosaic in Tsippori/Sepphoris (Fig. 6) illustrates how one basic body-gesture has been applied to more than one of the nude figures. One of them marks the height of the water on the Nilometer, the other carries lilies and a staff, the third is carrying a duck and the fourth is at the feet of the large personification of the Nile. They are all depicted with legs bent at the knees, the torso firmly positioned and slightly bent forward while the position of the arms is shared by several of the figures, although they hold different objects in their hands.

1.5.4 Recurring features

This criterion is based on the assumption that craftsmen had a personal preference for a design of certain formalistic details such as eyes, cloth folds, hair, hands, etc. In the past, such details were suggested to have been a subconscious preference that betrayed the hand of an individual producer.\(^39\) Whether subconscious or conscious, repetitive formalistic principles, when they occur, deserve the attention of the scholar as they may represent a tradition that was inherited within a certain artistic milieu.

An example for this criterion is the shape of eyes in the animals of Maon-Nirim (Figs 88-92). The eye is shaped as a single dark dot surrounded by a white circle and a black circle. Based on this feature, Hachlili suggested that all figures were made by one craftsman.\(^40\) A single feature is probably not sufficient to draw a certain conclusion, but it illustrates the decisive weight given to such features by modern scholars.

1.5.5 Size and shape of the tesserae

In many cases, tesserae size varies within one and the same floor. For example, faces are more detailed than background and thus demanded the application of smaller tesserae. Faces are often the element on which the spectator focuses, and it is thus not surprising that craftsmen chose to pay special attention to the facial features. However, the degree of application of differently sized tesserae varies. In the former example from Beth Alpha such variation does

\(^39\) Clarke 1994, 90.

\(^40\) Hachlili 2009, 266.
not exist, while in the example from Sepphoris much detail is given to the faces, thanks to the reduced size of the tesserae. Also the shape of tesserae varies considerably. Some producers applied regular square tesserae, while others applied various trapezoid and triangular tesserae. At times, irregular shapes were chosen deliberately for certain locations for the creation of certain effects. An exceptional form is, for example, the round tesserae, which was not used by all producers (see the discussion of the gazelle in Chapter 4). It was reserved especially for the pupil of the eye or for depiction of jewels. Such tesserae were made especially for that purpose and were not set elsewhere in the same mosaic.

As will be shown in Chapter 2, it was probably possible in the early Byzantine period to buy ready-made tesserae. However, at least some craftsmen apparently chose not to do so, probably because cutting the tesserae on site made it possible to shape the tesserae according to their specific demands. This strengthens the relevancy of this (and the next) criterion, as this clearly indicates the practice of a certain team or a certain producer. However, we should always bear in mind that in some cases ready-made tesserae may have been applied.

1.5.6 Colour and the sorting level of the tesserae

This criterion refers to the preference for a certain palette of colours and the level of sorting the palette to achieve a certain amount of shades of each colour. It would generally be correct to state that the refinement of shades stands in relation to the complexity of the design. Geometric mosaic floors rarely include more than six colours, while figurative mosaics can include as many as 25 different shades. However, obtaining shades is not necessarily a matter of searching for additional kinds of stones, but often a matter of straining, sorting, selecting, and reaching a more refined scale of the different shades that can be provided by the same block of stone, enabling the creation of a smoother range of tonality within the same colour. Observation of geometric mosaics shows that colours are rarely pure. Mosaicists used a mixture of shades, which the eye ‘mixes’ and perceives as one. A good example can be seen in a detail from the scroll of the Church of the Apostles in Madaba (Fig. 7). The ochre colour is a mixture of two tints that are applied as one colour, indicating that the producer did not bother to separate the two during the process of cutting.

Mosaicists producing figurative designs would usually refine the grouping of shades in order to create a smoother transit from shade to highlight. Achieving this is part of the
preparatory work involved in the process of cutting the tesserae and grouping them according to shades. This criterion illustrates the relation between the preparatory phase and the necessary steps that were involved in matching the material and the design that was commissioned for a certain location.

1.5.7 Inlay patterns – A few examples

The term inlay patterns refers to the manner in which the application of mosaic-tesserae, in the form of points, lines and fields of colour, create in the eye of the beholder the illusion of the figurative image, including the various effects of three dimensionality and volume. The line-work of inlay patterns determines the fundamental characteristic of the figurative motif, its style and form. In the following examples, different inlay patterns of Early Byzantine mosaics will be presented, with the purpose to illustrate how an analysis of these aspects of production can be used as a tool for the classification of application techniques.

As will be shown, some patterns provide a more naturalistic result than others. Indeed, inlay patterns can also be studied as an inseparable aspect of style. As has already been stressed, it is not the stylistic result that the current study wishes to focus on, but rather the technique with which a certain stylistic result was achieved. The following application patterns illustrate the range of inlay methods that were at the mosaicists’ disposal for the sake of laying, filling and defining images. Clearly, some of these methods were more popular and applied more often than others.

A) Interlocking inlay

The interlocking inlay is applied in order to create a smooth transition between two fields of different colours, which serves the illusion of three-dimensionality. Each colour creates a field, from which a series of single-tesserae-lines are protruding. The lines of each colour fill the intervals created by the other colour, resulting in an effect that resembles the teeth of a closed zipper. When the two colours are tints of the same group, the result is a gradual transition of colour, and it becomes an effective technique for achieving an illusion of volume. The more sections are applied, the more gradual is the colour change and the better is the illusion of three-dimensionality.

In the ram of the Chapel of the Priest John in Jordan (Fig. 43) the interlocking method is applied in the main section of the body. The lines of inlay do not follow the spine-line, but are
perpendicular to it. The line-work is a good example of interlocking lines between two fields of colour, creating a smooth transition from the dark back to the light belly. The mosaicist created a set of lines in a darker colour at a width of a single tessera, laid from the spine-line down. The same is done with light-coloured tesserae from the belly up. At the meeting-zone of the two sections, the lines merge and create an interlocking effect. The tints are close enough to create an impression of volume.

B) Interchanging inlay

The inlay method of interchanging lines may be seen as a variation on the interlocked method, but here, the lines do not protrude from the field. The interchanging lines are usually of two different colours, but the lines are equal in length and are thus not necessarily applied for the sake of the transition of colour (as in the case of the interlocking lines) and can be used for other purposes than the creation of the illusion of volume. An excellent example of the interchanging lines inlay method is the depiction of the bear in the mosaic of Kissufim (Fig. 8). The mosaicist applied two interchanging colours of tesserae lines in four bands along the body of the animal, in gradual tonality. The rightmost band, along the back and hind leg is made with black and brown. For the following band, the lighter colour of the first pair of colours was coupled with dark ochre.

These interchanging lines follow the inner body and split between the hind and forelegs. The following band is again combining the ochre colour of the previous band with light ochre to create the third band, which indicates the outer belly, the fore leg and the innermost side of the hind leg. The light ochre is finally paired with beige to create the last vertical band of the belly and fore leg. This technique is different from the interlocking method, where the lines create a transition-zone. Here, each band is made up of two colours of intersecting lines and despite the vertical division of the bands, the horizontal lines are continuous and each darker tint of the two colours that create each band continues the dark tint of the previous band. The same technique is used in the arm of the beast. This technique is very effective for both the creation of the three-dimensionality of the body as well as the illusion of texture of the bear’s fur.

C) Parallel inlay

This is the most popular inlay method. It features parallel lines that are applied along outlines in order to fill-in various surfaces, body parts and limbs. Application of a single colour creates
a rather flat impression. The more gradual the colours and tints parallel to one another, the more voluminous effect can be created.

The parallel inlay is used intensively in human figures and is an easy method for the creation of a highlight, by lying lines of darker and lighter hues next to one another. The parallel method is applied in the upper body of Achilles playing the harp in a mosaic from Madaba (Fig. 9). The arms are laid with parallel lines from dark pink on the outside to white in the centre, creating the illusion of three-dimensionality. The belly is formed in circular parallel lines in pink, white and ochre and though the inlay is spiral in shape, creating concentric line-work, the relation between the different lines is that of a parallel inlay.

D) Diagonal inlay
Diagonal inlay means that the tesserae are applied to create a surface which lines are diagonal in relation to the outline at that specific area. Diagonal inlay is often utilized to permit a gradual change in the colour of tesserae and is often applied in order to create an illusion of volume in geometric motifs, such as inside the bands of the geometric frame at the Crypt of St Elianus in Madaba (Fig. 10).

1.6 Choice of the material

The seven criteria will be applied as a tool for defining application techniques and production procedures in ancient mosaics. In the first instance, the case studies that will be presented refer to mosaics from a single site. An important aspect for the success of the investigation is the condition of the mosaics. Not only should they have escaped the natural wear and tear, but also damage caused by human activity. Regrettably, it is especially figurative representations that suffered from iconoclastic activity in later periods. This destruction excludes many mosaic floors that may have formed interesting case studies. Modern building activity is another factor in the destruction of ancient mosaics, while theft displaces objects from their context. Another aspect that needs to be taken into account are modern restoration works that, at times, may have involved the filling in of missing parts of the mosaic. Such fillings are not part of the original work and should therefore be left out of the investigation.

Prerequisites for the success of the present investigation is the existence of a regional group of mosaics, related geographically and chronologically. The possibility to establish a
chronological sequence among these floors becomes essential when one focuses on the question of transmission. Only on rare occasions is it possible to attribute an absolute date to an ancient work of art. In cases where such a date is provided, these art works become a chronological marker, which serves as a touchstone for dating related works of art. Mosaics that carry inscriptions are therefore most valuable for the current investigation. Inscriptions often include valuable information such as the year of completion (and sometimes the month), or the bishop in whose time the work was either commissioned or completed. These facts help to place at least some of the mosaics in chronological order of their production.

Comparison between mosaics within their chronological context enables the study of influences between them and the investigation of the spreading of traditions, processes that otherwise remain obscure. Though the availability of chronological data has already been noted in previous studies, placing the mosaics within a chronological order with the purpose of finding artistic relations between them, received too little attention.\footnote{Studies that are documentary in their nature, such as the publications of Avi-Yonah and Ovadiah often do not attempt a chronological synthesis (Avi-Yonah 1933 \textit{idem} 1934a; \textit{idem} 1935; Ovadiah/Ovadiah 1987). Piccirillo (1995a, 86) applied chronological data provided by mosaics in order to reconstruct historically related questions such as the terms of office and order of Bishops in a certain region and the borders of these regions. Hachlili’s monumental recent volume offers an excellent documentation of iconographic parallels in mosaics of the region of Palestine and Transjordan. Subject-matter is the main criterion of discussion, with relative chronological order as a secondary aspect for the sake of presentation (Hachlili 2009). Occupied with questions of developments in style, Talgam (1998, 80) is one of the few that systematically applied the chronological data provided by mosaics. She argues, for example, for a linear development in the design of vine scrolls from flat and strict in earlier floors to lively and naturalistic in later mosaics. Anchoring her observations in chronologically dated examples makes them highly convincing. This approach gives the provided chronological data an important place in the discussion of artistic phenomena such as change in taste and fashion.}

The combination of a good state of preservation, the existence of relative chronology and the search for high artistic quality of the figurative depictions led to the choice of the mosaics that form the main case-study of the current investigation. Both in the Mount Nebo region in Jordan and the Gaza region in the Negev, there is a relatively large number of mosaics that have been preserved in a relatively small area. The possibility to date many of these pavements allows placing most of the mosaics in a chronological order, offering a new artistic context of continuity. Furthermore, many of these mosaics offer optimal conditions, due to their excellent preservation and the richness of their figurative depictions. The long controversy regarding the ‘Gaza workshop’, which will be discussed in length at a later stage,
makes the Gaza area mosaics especially attractive for the present investigation, as it reconsiders the identification of the workshop from a different point of view and with new criteria.

Despite some border tension, both regions could be visited and many of the mosaics that are discussed in this study were studied, measured and photographed either in situ or in museum collections where they are stored. Some mosaics were better accessible than others, but most mosaics in both case studies were either visible or documented to a degree that made the art-historical investigation possible.

1.7 OUTLINE OF THE STUDY

The main concern of the present study is to test the seven criteria that were suggested above to promote understanding the production process and shed more light on the organization of production.

Chapter 2 will discuss some of the issues concerning the basic techniques involved in the preparatory phase of mosaics production, and will especially discuss the question in what way material analysis can contribute to the study of division of labour and workshop organization.

Chapter 3 will discuss the question of workshop organization in Antiquity in general, including the available historical documentation as well as sources that appear in the mosaics themselves, such as inscriptions. Secondly, it will present the approaches of the modern art-historical study concerning the organization of workshops and identification of individual mosaicists in Antiquity.

Chapter 4 will present the first case study: the Church of the Holy Martyrs Lot and Procopius and the region of Mount Nebo in Jordan. Especially the production of the figurative representations will be discussed, with the intention to illustrate how production order and recurring inlay-patterns can be traced. Production phases and procedures of work will be compared to other mosaics from the region. Though not presented in their chronological order, the chronology will be taken into account at the synthesis stage. The reason for this choice is, that the images at the Church of Lot and Procopius serve as an excellent departure point due to the high consistency of the production procedure applied by its production team. The mosaics at the Church of the Holy Martyrs Lot and Procopius illustrate very clearly the
method of the present study and its aims, clarify the terminology, and illustrate more clearly the application of the seven criteria.

Chapter 5 will discuss the second case study with the mosaics of the Gaza region. The ‘Gaza workshop’ has been extensively discussed, especially from the perspective of lay-out and iconography. The new approach adds a new dimension to the identification of the producers.

Chapter 6, the conclusions, will offer a synthesis of the new approach and will discuss the possibilities and limitations it provides for:

1. Understanding the process of production of ancient mosaics through the study of procedures and application methods as a prominent aspect of production.
2. Shedding light on procedures as a tool for distinguishing between different artistic approaches within one mosaic.
3. The possibility to identify individual producers.
4. Exploration of the mechanism of artistic continuity in terms of regional trends.
CHAPTER 2
MATERIAL ASPECTS OF MOSAIC PRODUCTION

2.1 MATERIAL ASPECTS AS INDICATOR OF WORK CONSTRUCTION

The main question in this chapter is whether, and in what way, material aspects can provide a clue to the division of work among the team of producers. There are four main aspects that will be considered: the under-layers of the mosaics, the material and the tesserae, the question of direct production or prefabrication and the layout as expression of the division of work among the producers.

2.2 THE UNDER-LAYERS OF THE MOSAICS

There is still too little research concerning the material aspect of the under-layers of Near Eastern mosaics. A few aspects could be relevant to the study of the production team. For example, the composition of the substructure layers could either indicate the practice of a certain team, a regional tradition, or a technical choice that had to do with the geological and material conditions in a particular location. Also, a study into the sections of inlay of a mosaic could reveal more about the production practices. There has been no attempt made to identify the daily progress of work based on the material of the setting bed (the equivalent of the giornate in fresco). The reason for this is technical: in order to inspect the setting bed it is necessary to detach the tesserae from the bedding. This is often done as part of restoration works, which also provides the opportunity to inspect and investigate the under-layers. However, lifting the mosaic causes much damage to the setting bed and the process destroys the very material evidence necessary for such a study.

Other evidence related to the under-layers are footprints and preparatory drawings. These aspects have attracted more attention in recent years. Data from old excavations is often not documented and it can only be hoped that the growing interest in the under-layer of floors in recent years will provide sufficient evidence for future examination.
2.2.1 Layers

In a newly-laid mosaic, a few preparatory layers of mortar preceded the stage of the actual inlay of the tesserae, in order to strengthen the structure and ensure its evenness. Vitruvius, in the seventh book of his *De Architectura* considers the production of the under-layers of the floor part of the architect’s responsibility, which may reflect the reality in the period of writing his book.¹ Vitruvius stresses the importance of testing the solidity and evenness of the under-structure which served as the foundation of the under-layers for the mosaic. The instructions that Vitruvius records for laying the foundations of a mosaic floor describe three layers of preparation before the decorative pavements can be laid. “[…] the under-layer [statumen] is set down of stones no smaller than can fill a hand. Once the under-layers have been installed, if the rubble for the sub pavement [Rudus] is new, then mix it three-to-one with lime; if it is reused, then the mixture should be five-to-two. […] Above this, a core of crushed terracotta should be installed [nucleus], mixed three-to-one with lime, and it should be no less than six digits thick [c. 15 cm].”² (Fig. 11).

In practice, the treatment, thickness and material composition of the preparatory layers varied at each floor and differed from one period to another. Sections from two floors from Sepphoris serve here as an example: the Nile festival building mosaic, dated by its excavators to the fifth century AD,³ and the triclinium mosaic of the third-century House of Dionysos.⁴ Both floors were constructed upon the natural underground of the limestone rock, but show quite a different treatment.

The lowest layer of the Nile mosaic (Fig. 12) contains cut stones of about 25x35 cm that were laid closely one next to the other, with soil filling the spaces between them. Above this layer, 3 cm of lime plaster was spread, above which lay ten cm of brown soil mixed with lime. On top of this a layer of 9 cm of plaster, packed earth, and rubble was placed. The layer that sealed the bedding was composed of white plaster and fist-sized stones. On this nucleus a

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¹ Vitruvius lived in the first century BC during the reign of Augustus. His ten books about architecture include very divers subjects, from building material to the different architectural styles, and even the building of machines and water installations. Most relevant for the subject of floors and mosaics is the seventh book. Vitruvius, *De Architectura*, Book 7, Chapter I, 1-4 (Morgan 1960, 202-203).
² Rowland 1999, 88.
³ It concerns the central section (A-A’) in room 4, which is a side-chamber, where the tesserae did not survive and therefore allowed the exploration of the lower layers without causing damage to an existing mosaic (Weiss/Talgam 2002, 58).
thin layer of lime plaster was spread, in which the tesserae were inserted. In the House of Dionysos, investigation of the bedding was conducted after the mosaic floor was removed for preservation and restoration.\textsuperscript{5} Fig. 13 shows that the surface of the natural bedrock was evened with large stones to fill in the large gaps, and above it the surface was levelled with a layer of brown earth containing small stones. On top of it was the floor bedding: a layer of coarse plaster mixed with ash and containing some medium-sized stones. Above this, a layer of plaster without stones was spread and upon this layer the lime was spread into which the tesserae were inserted. These examples show that in two near-by floors, albeit of different periods, the under-layers were treated quite differently and none follow the advice of Vitruvius. But also floors that are dated to the same period may show considerable differences in the composition of the under layers. It seems that the treatment of the under-layer depended on different variables and the particular conditions at each site were crucial. In mosaics that were laid above already existing floors, such as in Hammath-Tiberias\textsuperscript{6} and Beth Alpha,\textsuperscript{7} only a few centimetres of mortar were laid, with the new mosaic directly above the old one.

The aim of the bedding was to ensure the solidity and evenness of the floor and it appears that a variety of procedures were applied for this purpose, depending on the technical demands of the site and the local circumstances that the builders or craftsmen confronted. Can the under-layers then be used as an identification criterion for the producing team? This question is difficult to answer, as we do not know whether the producers of the mosaics were also involved in the production of the under-layers and if they were, to what extent. There is also no reliable attribution between floors and their makers to facilitate such research. British mosaics that were attributed to the same group of producers show quite different bedding layers.\textsuperscript{8} In large-scale projects, where more than one mosaic was laid, the bedding may even differ from one room to the other.\textsuperscript{9} It seems that an identification of a repetitive pattern in the under-layer would identify the team of builders rather than the team of mosaicists.

Despite these reservations, the treatment of the under-layers may reveal in some cases the stage in which the mosaic producers became involved in the work. In the fourth-century mosaic of the Samaritan Synagogue at Khirbet Samra, the waste of tesserae production was

\textsuperscript{5} Talgam/Weiss 2004, 28.
\textsuperscript{6} Dothan 1983, 22-24.
\textsuperscript{7} Sukenik 1932, 52; Ovadiah/Ovadiah 1987, 17.
\textsuperscript{8} Wootton 2012, 160.
\textsuperscript{9} Wootton 2012,160.
observed in the *nucleus*. This is also the case in Ma'ale Adumim and Horvat Berachot. The find of tesserae waste in the lower level of the mosaic suggests that, at least in these cases, the production of tesserae started well in advance and that the mosaicists were already involved in the production work at the stage of preparing the under-layers. In those cases, the involvement of the team of mosaicists in the preparation of the under-layers could provide a starting point for investigating the application of under-layers as additional support for the identification of a team. Such data supports the theory that tesserae were often prepared especially for a certain project. In other cases, it is possible that tesserae were taken ready-made out of stock. Some workshops may have specialized in cutting the raw material into either elongated pieces or bars that were easier to break off or even into ready-made tesserae.

At least two such workplaces seem to have existed during the Early Byzantine period in Palestine: in Masada and in Beth Shean. In either case it seems that it was not necessary to hold a separate team at the site especially for cutting the tesserae and that at least in some cases, the inlay craftsmen themselves did also the cutting work of the tesserae, in advance and on site, as indicated by the waste found in the under-layers. The preference for either preparing tesserae especially for a certain project or for purchasing ready-made material in addition to the formation of the under-layers, could provide an additional indicator for the identification of a team, if this data was available in each case. However, in the current stage of investigation there is insufficient material to allow such an investigation on a large scale.

### 2.2.2 Footprints

A new direction of the investigation into the composition of the team may be footprints that were found under the layer of inlay. Though this evidence is incidental, the case of the recently restored mosaic of Lod demonstrates the potential of such remains to shed more light on the issue of production. The pavement of Lod was excavated in 1996 and lifted for

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10 Magen 1992, 77.
11 Talgam 1998, 75.
12 Ovadiah /Ovadiah 1987, 39, 110 and 149. Also in Britain various deposits of ready-made tesserae were found (Wootton 2012, 152).
13 The earlier-mentioned cases of Khirbet Samra, Ma'ale Adumim and Horvat Berachot are probably not isolated instances. Future excavations will hopefully preserve also the under-layers for analysis.
restoration in 2009. On the *rudus* mortar several footprints (and one handprint) were found. It has been suggested, that these prints belong to the craftsmen who prepared the floor for inlay. If this is correct, then the team responsible for the preparation of the under structure at Lod was composed of at least four craftsmen: three adults and one child (among the prints is one smaller footprint, supposed to be of a child, whose foot size suggests that he was about 8-12 years of age). Some of the footprints indicate shoes, but others were barefoot. However, it is not certain that these prints are of the craftsmen, as they may belong to people who just happened to walk in that area before the mortar was completely dry, similar to footprints of cats and dogs found on roof tiles.

An attempt has been made to suggest the division of work in Lod among three mature mosaicists, which is based also on stylistic arguments.

2.2.3 *Preliminary drawings and incisions*

Prior to the inlay work, the surfaces of the *rudus* and *nucleus* were made level and sometimes a general design in incision or paint was applied upon these surfaces. The lay-out must often have been decided upon already at an early stage. Even a simple geometric lay-out required some calculations in order to adjust it to the size of the room, taking into account the number of panels, borders, and dividing bands.

The method of marking straight linear patterns into the wet mortar was fairly simple. Strings were tied to nails that were placed in the nucleus after the upper layer of mortar was spread. Pulling the string down marked a perfectly straight line between the two points. The evidence for this method has been preserved in the form of nails and holes in the nucleus layer of some mosaics. Lay-out design was sometimes incised into the surface of the mortar while it was still damp. During the inlay work, however, the upper mortar layer into which the tesserae were inserted covered the nucleus and the design upon it, so the incision or drawing in that section was partly invisible at the time of work. However, work proceeded in

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14 For proper documentation of the lifting process and conservation, see: www.lodmosaic.org/conservation.
15 I thank the team of the conservation department of the Israeli Antiquities Authority for sharing these insights with me. See also: Gorzalczany 2015, 70-71 and Fig. 52.
16 See: www.lodmosaic.org/conservation. I thank Jacques Neguer for sending me a copy of the research preposition that has been presented at the University of Bologna, aiming to study this specific aspect of the Lod mosaic.
17 Dunbabin 1999, 283.
18 A combination of drawings and incisions was applied in the black-and-white mosaic in the first-century mosaic at Villa Arianna in Stabiae (Dunbabin 1999, 284-285).
sections, and the mortar covered only part of the preliminary markings. Work advanced little by little according to the general lay-out and the producer either drew anew the preliminary lines upon the upper layer of lime, or had to rely mainly on his eyes, training and experience in order to estimate the right position for the inlay of the tesserae.

There is very limited evidence for the use of lay-out incisions and drawings in the Near East. The reason may be, that much material was lost during past excavation works that did not preserve the layers underneath the mosaics. Only a few excavation-reports mention or document these layers properly, and the existence or absence of incisions or drawings is rarely mentioned. It is thus not yet clear, whether those mosaics where incisions were preserved are an exception or that they represent a common feature that was either not preserved or not well documented by the excavators. In recent years there is a growing awareness regarding the importance of such information for understanding the process of production. It seems that preliminary incisions of the layout were part of the standard procedure rather than the exception. However, actual sinopia (painting on the nucleus layer, functioning as guidelines for the inlay of figurative images) appears to be more rare.

An example of the use of incision for marking the general composition of the mosaic appears in the first century BC mosaic at the Western Palace of Herod the Great at Masada (room 456), which has a layout of concentric squares. The incised lines on the bedding-layer are very accurate. The third-century Mosaic of Dionysos in Sepphoris is said to have revealed markings upon the uppermost plaster layers. Talgam remarks: “Preserved on the surface of the uppermost plaster layers are some of the preliminary markings and coloured sketches made prior to the laying of the mosaic to guide the setters of the tesserae. The markings on the nucleus comprise incised lines demarcating the principal units of the mosaic. Both the line bounding the frame of acanthus medallions and the line marking the mosaic’s axis are clearly visible. [...] In certain parts throughout the bedding, coloured patches in shades of red, pink, ochre and black were discernible above the incised lines. [...] As far as we know, this is the first discovery of drawings of this type beneath a mosaic of the Roman period”. Elsewhere, Talgam stresses that the paint was applied on the wet layer of lime into which the tesserae were inserted. At the mosaic of the Monastery of Martirius at Ma’ale Adumim, outside Jerusalem (Khirbet el-Murassas), in the Eastern Church at the Herodian, in

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19 Netzer 1991, 250.
21 Talgam 1998, 75.
the mosaic of the study-house of Meroth and the mosaics at Beth Guvrin preparatory paintings are also said to have been observed.\textsuperscript{22}

In the Lod mosaic, incisions that functioned as guidelines for inlay of the frame were observed on the \textit{rudus} layer and traces of red paint were found within the incisions. \textit{Sinopia} has been found under the fish panel. Underneath the birds and small animals panel, however, no incision or \textit{sinopia} were found, and this part of the mosaic seems to have been executed ‘free handed’. During the removal of the mosaic of Lod, special attention was given to the lifting process in an attempt to give an indication for the daily application of mortar sections. Identification of the daily progress of work based on the material of the setting bed (equivalent to the ‘\textit{giornate}’ in fresco work) raises a practical difficulty. In order to inspect the setting bed it is necessary to detach the tesserae from the bedding and lift the mosaic. This is occasionally done as part of restoration work, which is also the opportunity to inspect and investigate the under-layers. However, in the process of lifting the mosaic the setting bed suffers much damage. The earlier-mentioned excavation of the Lod mosaic is the first attempt to preserve the inlay bed for research.\textsuperscript{23} On the basis of the inlay phases, tesserae material and inlay technique, it has been proposed to identify three mosaicists who produced the Lod mosaic.\textsuperscript{24}

Though a preliminary drawing cannot in itself indicate the division of work, it can give some clues about the planning or about the guidance that mosaicists used, especially in the case of figurative mosaics. Particularly interesting are instances in which the result shows that the artistic design was changed between the application of the drawing and the final version. Such is the case with a wall mosaic in Pompeii, where the sketch on the mortar shows a swan, but the finished version depicts a female figure and an Eros.\textsuperscript{25} Another example is the apse mosaic in the Church of Sant’Appolinare in Classe outside Ravenna (Fig. 14), where during restoration it was revealed that the original drawing was composed of antithetical peacocks standing on both sides of amphorae, while the final choice was to depict twelve sheep, six on each side under the figure of the central saint. The structure, including the original

\textsuperscript{22} Talgam 1998, 75.
\textsuperscript{23} I thank the team of the conservation department of the Israeli Antiquities Authority for sharing these insights with me.
\textsuperscript{24} The analysis of the Lod mosaic by Rina Talgam appears in: Gorzalczany 2015, 50-107. For the ongoing research, see: www.lodmosaic.org/conservation.
\textsuperscript{25} Dunbabin 1999, 284.
preliminary drawing, is now exhibited at the Archaeological Museum in Ravenna. These instances do not indicate the division of work, but they may shed light on the function of the *sinopia*. If the drawings were actual models that served as figurative guidelines for the mosaicists, one would expect that the change in iconographic choice in Sant’Appolinare in Classe was to be followed by a re-drawing of the sheep on top of the peacocks. As this is not the case, it seems that the preliminary drawings, at least in the case of Ravenna, were intended for the commissioner in order to obtain his approval of the design, rather than as actual guidelines for the mosaicists. It shows that in the case of the Ravenna mosaic, the mosaicists were capable of reproducing the images of sheep without preliminary drawings. This brings up various questions regarding the planning phase of the mosaic, and especially the function of preliminary drawings or pattern books.

2.3 THE MATERIALS AND THE TESSERAE

Obtaining the materials could have been either the task of the artist or of the commissioner and in any case it seems plausible to assume that the choice of material depended, among other things, upon the financial means of the commissioner, especially in the case of glass tesserae or difficult-to-obtain materials and colours. Material analysis provided good results in relation to second-century mosaics of Antioch. Considerations for the area of Palestine and Transjordan in the sixth century, however, are quite different from the Syrian example. Tesserae for pavement mosaics in Palestine and Transjordan were produced mainly from natural limestone, which is the most readily available type of stone in the Near East. The most common colours of limestone are shades of beige, white, and grey. Different types of lime and dolomite stones provide other colours, such as light yellow, pink and brown. Artificial material, such as glass, was used for achieving colours that are rare in stone, such as blue, green and occasionally red and yellow, but on floors these were used sparingly. The amount of stone needed for the production of a mosaic is in fact rather limited, at least in comparison with the organization that was involved

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27 Some sources indicate the involvement of the commissioner in providing the materials for building projects. Cato refers to the building of a farmhouse and the owner was to provide, but not prepare, the materials (Cato, Agr. 14-16). Vitruvius and Pliny state that any patron desiring unusual or expensive pigments for paintings should supply the material himself (Vitruvius 7.5.8; Plinius, NH 35.30 and 35.44). Similar habits may have applied also for mosaic art.
in obtaining materials for building. A block of one cubic metre is estimated to provide enough tesserae to pave an area of about 50 square metres.\textsuperscript{28} As shown earlier, purchasing ready-made cut tesserae was probably possible during the Early Byzantine period. Also, buying elongated bars that could be cut into the desirable shape and size on site was possible. For the mosaicist, the quality of the stone, its colour, its hardness and its breakability measure were probably more important than the quantity of material that a quarry could provide. Despite the local nature of most of the materials, the diversity of the types and colours of stones and the use of glass, albeit in small amounts, suggests, that mosaicists maintained a certain network of contacts in order to obtain suitable materials from which tesserae could be made.

Materials could also be obtained from waste of architectural production, though practice shows that limestone used for mosaic is not always suitable for building (and vice versa).\textsuperscript{29} Other sources may have been waste product of sculptors, and there are even indications of re-use of mosaic tesserae.\textsuperscript{30} But it is also possible that at times quarrying specifically for mosaics was necessary in order to provide the material for a specific project. Artificial material, certainly glass, was produced especially for the production of mosaics and was applied for highlighting special details. An extensive application of glass as in the pavement of El-Hammam in Beth Shean, with its greens and blues, is rare.\textsuperscript{31} However, in wall mosaics glass tesserae were used extensively and glass tesserae for floors could be obtained using the same channels.

2.3.1 Limestone

Research concerning the specific quarries from which tesserae were obtained is still very limited. The general assumption that the material for tesserae was obtained locally, or at least regionally, is based mainly upon common sense and non-destructive inspections. Analyses that have been conducted in other regions, such as of a mosaic at Augusta Raurica in Switzerland from the late second or early third century AD, indicate that the vast majority of the materials were obtained from quarries within a radius of maximum 30 km around the site. The analysis in Switzerland identified as many as 42 distinct varieties of stone that were

\textsuperscript{28} Wootton 2012, 149; Dodge 1988, 68.
\textsuperscript{29} Dunbabin 1999, 280.
\textsuperscript{30} Wootton 2012, 148-149.
\textsuperscript{31} Ovadiah/Ovadiah 1987, 30-31, Cat. No. 27, Pl. XXV-XXVI.
presumably obtained from ten to twenty different quarries, as well as some glass and ceramic material.\textsuperscript{32}

Chemical analysis of the material can indicate sources, chains of commerce and the network that the mosaicist or commissioner maintained in order to obtain the raw materials. Identification of the source, however, is probably less suitable for the identification of workshops, as it may be assumed that one quarry served more than one team of producers, especially within a certain region.

The study of the tesserae used in mosaics from Daphne, the suburb of Antioch, includes a material analysis aimed at finding similarities in the chemical composition of the tesserae.\textsuperscript{33} The study focused on the triclinium mosaics of The Atrium House that were composed of six different panels.\textsuperscript{34} 46 tesserae were selected from different parts of the mosaic and their chemical composition was compared to tesserae from later mosaics (third to sixth centuries) from Antioch.\textsuperscript{35}

The results show, that the dark green limestone tesserae in all the mosaics are all quite similar in composition and could have originated from one quarry. The same is true for red and for violet. This means, that the same quarry was in use during the centuries that separate the second-century Atrium House Triclinium and the fourth-century Funerary Banquet Mosaic. The white tesserae, on the contrary, were derived from a different source in each mosaic. Similarly, the black tesserae from the Atrium House may all derive from the same source, but the black tesserae from the Funerary Banquet Mosaic are from a different source.\textsuperscript{36} Since white and black are the most common colours in use, it is very possible that at some point, one source was exhausted and another one came into use.

A steady source of material allows steady commercial activity and enables undisturbed continuity of production. The local availability of material is likely to create favourable

\textsuperscript{32} Dunbabin 1999, 280.
\textsuperscript{33} Becker/Kondoleon 2005, 62-74.
\textsuperscript{34} Mosaic of the Judgement of Paris in the Louvre, Mosaic of Dancing Maenad and Mosaic of Dancing Satyr from the Baltimore Museum, Mosaic of Aphrodite and Adonis from the Princeton University Art Museum, a fragment from the border of the Mosaic of Aphrodite and Adonis, in the collection of Wellesley College Museum and the Mosaic of the Drinking Contest between Herakles and Dionysos from the Worchester Art Museum (Becker/Kondoleon 2005, 63).
\textsuperscript{35} Dionysos and Ariadne from the House of the Sundial from the Worchester Art Museum, dated to the second half of the third century (Becker/Kondoleon 2005, 182-189), a mosaic of a woman's tomb depicting a funerary banquet from the necropolis of Antioch at the collection of the Worchester Art Museum, dated to the second half of the fourth century (Becker/Kondoleon 2005, 196-201) and the Hunt Mosaic from the so-called House of the Worchester Hunt, dated between 480-520 (Becker/Kondoleon 2005, 228-237).
\textsuperscript{36} Becker/Kondoleon 2005, 67.
conditions, less sensitive to shifts in broader economic circumstances or the loss of commercial relations abroad. Furthermore, the more readily available the material is, the more stimulating it may be for the emergence of small-scale workshops, which would not need a very complex network of contacts in order to obtain the raw materials for production. As long as the demand for mosaics existed, and material, manpower and technology were available, production of mosaics could flourish. The abundance of limestone in the eastern provinces of the Mediterranean can therefore be seen as a basic condition that enabled the continuity and availability of the art of mosaic in the area from the Roman to the Byzantine and further into the Early Islamic period.

An aspect that has not yet been studied is the relationship between the source of tesserae and of material for other crafts, such as sculpture or architecture. For example, if the chemical composition of the limestone tesserae of the Atrium House mosaic was identical to that of the material from which the theatre of Daphne was constructed, it could shed light upon the possibility of usage of architectural waste material as a source of tesserae production. Very little analysis of the material aspects has been conducted in relation to mosaics from Palestine and Transjordan. Analysis of the chemical composition of the tesserae has been executed during the conservation-work of the central medallion from the Church of the Apostles in Madaba, but only the tesserae of the central medallion were analysed, so no comparison is possible with the rest of the floor. The size of the medallion, its material and its stylistic unity indicate that it was produced as one artistic unit. A study conducted by Catreena Hamarneh, dedicated to four mosaic floors in Jordan, focused upon the chemical composition of the tesserae. Being primarily a geological investigation, Hamarneh was more concerned with the methods of analysis and less with the question of integrity of the material applied in the different floors and the implication of the results on the question of division of production. The altogether 28 samples from four different mosaics are in fact not representative enough to draw clear conclusions in the matter but were sufficient to indicate a local source.

37 The project was conducted by Luciana Notturni at the School of Mosaic Conservation at Ravenna. The main purpose of the work was to preserve and clean the mosaic, which details were becoming invisible. I thank her for letting me consult the detailed conservation report that was produced by the school.

38 The four locations are: the Hippolytus Hall, the Mosaics of Paradise and the Church of the Apostles, all three in Madaba and the Palace Mosaic in Gerasa. The samples were checked for chemical composition as well as for fossil remains and petrography. The study concluded that the limestone
An example for the use of local material is the case of the mosaics in the Besor region in the Negev. These mosaics share the use of a light green type of stone, which is available locally. This stone is recognizable without chemical analysis because of its characteristic colour, peculiar texture and measure of erosion and wear. It is apparently softer than the limestone tesserae that surround it and depressions were created over the centuries in the place of inlay of these tesserae (Fig. 15). This example is a case in point and raises the question whether the application of the same type of stone in various near-by floors is indicating that the same team worked at all sites where this stone appears. It is just as possible to argue, that different teams made use of the same source for that particular material.

It is not clear, whether a wide distribution system or organized supply of material for tesserae existed, but such a system could plausibly be analogous to that of material for sculpture or building masonry. Such a distribution network would make it easier to obtain the raw material, from which tesserae were cut, or perhaps even provide a framework for trade in ready-made tesserae. In some cases, reuse or recycling of tesserae from other mosaics has been suggested. Reuse is certainly relevant in case of reparations, when tesserae from a damaged floor were reused for its repair. Excavations show, that the cutting of tesserae may have often happened on the spot at the site of production, prior to the inlay work. In Masada and Ramath-Rachel large stones from which tesserae were cut were found at the site. It seems that often the preparation work of the tesserae was part of the task of the mosaicists or was at least performed under their supervision. Cutting of tesserae started at times already during the levelling of the under-layers, as indicated by the tesserae waste in the nucleus.

2.3.2 Glass

Next to nothing is known about the relationship between mosaicists and the producers of glass tesserae in Antiquity. Despite the widespread and specialized glass industry in the province of Palestine there is no indication so far that glass for mosaics was produced locally. It is uncertain whether glass workshops that produced vessels also produced tesserae for mosaics. The basic characteristics of glass tesserae differ from other glass products in that most glass

from which the tesserae were made was mostly local, originating from the ancient quarries that presumably surrounded the sites and provided the material for the mosaics (Hamarnah 1996, 127).

40 For distribution of material on Empire wide basis, see: Dodge 1988, 65-80.
41 Becker/Kondoleon 2005, 61; Wootton 2012, 151.
43 Becker/Kondoleon 2005, 49.
products are translucent, while many of the glass tesserae are opaque. It also seems, that glass workshops specialized in the fabrication of certain products, limited to a specific range of vessel types.\textsuperscript{44} It would therefore seem probable, that fabrication of glass for mosaics was a specialisation in itself. Glass appears in sixth-century mosaic pavements in Palestine and Transjordan in relatively small quantities.\textsuperscript{45} Gold and silver glass was seldom applied in pavement mosaics, and seems to have been used mainly in wall and vault mosaics.\textsuperscript{46}

In its most extensive form, a mosaic workshop or team could also have included glass-workers, who produced glass tesserae specifically for a certain project.\textsuperscript{47} But this appears not to have always been the case even in Italian Late Medieval mural mosaic production, where the amount of glass tesserae was large.\textsuperscript{48} The extensive use of glass tesserae in the mosaics of Antioch makes these mosaics an interesting case-study, and the earlier-mentioned study by Becker and Kondoleon confirms this. The amount of glass indicates, that Antioch must have had a vibrant tradition of glass production for tesserae already in the second century.\textsuperscript{49} The analysis of glass tesserae in the Atrium House Triclinium mosaics serves again as an excellent example, showing an impressive variety of colours: reds, blues, yellows, greens, oranges and violets as well as black, white, clear and even natural glass obsidian. Most impressive is the number of shades of each colour. There are eighteen shades of green, for example, in different grades of refinement from opaque to transparent\textsuperscript{50} and six shades of red.\textsuperscript{51} Each shade was

\textsuperscript{44} Weinberg 1988, 38.
\textsuperscript{45} And as has been suggested by Talgam, may be a reuse from other sources (Gorzalczany 2015, 68).
\textsuperscript{46} Gold glass seems to have been used in Palestine already from the fourth century on. In Lod gold glass was found \textit{in situ} (www.lodmosaic.org/conservation). Y. Gorin-Rozen attested a loose gold glass tessera under the fifth-century Sephori Synagogue mosaic, indicating that a wall or a vault in an earlier building on the same site was decorated with gold glass (Weiss 2005, 299). At the Bath-house at Beth Yerah gold glass of a wall or vault were found (Ovadiah/Ovadiah 1987, 42, 151, cat. no. 49), as well as at the Church of the Nativity in Bethlehem (Ovadiah/Ovadiah 1987, 161, cat. no. 19). In Transjordan, gold glass was applied in the apse of the Memorial of Moses on Mount Nebo, and also in Jerash wall gold glass mosaic has been observed (Saller 1941, 34-35). One of the most impressive gold-glass mosaics in the region is the sixth-century mosaic at the Monastery of St Catherine in the Sinai (Piccirillo 1992, 334, Fig. 712).
\textsuperscript{47} Becker/Kondoleon 2005, 49.
\textsuperscript{48} Harding 1989, 84-85.
\textsuperscript{49} Becker/Kondoleon 2005, 115, 135.
\textsuperscript{50} Becker/Kondoleon 2005, 50.
\textsuperscript{51} Red glass is more difficult to achieve because it demands more controlled firing conditions. It has been speculated that certain workshops specialized in the production of red glass and that this glass was more highly valued. Specialization of workshops in the production of red glass for tesserae is not always supported by the analysis of the Atrium House Triclinium (Becker/Kondoleon 2005, 52-54, 56). The analysis of the red glass tesserae from that mosaic suggests, that at least three workshops produced the red glass and that at least one of these workshops produced also one type of the green glass tesserae.
often applied as a separate colour. The analysis of glass tesserae from the Atrium House Triclinium included 109 samples, taken from ten different areas of the mosaic: the five figural panels, the two scroll borders surrounding the dining-area mosaics, and the three geometric borders around the entryway mosaics. The samples included at least one from every colour present in each mosaic element. The basic assumption of the researchers was, that if a glass worker was working permanently with the workshop or that the glass tesserae were ordered specifically for that project, the material would reveal consistency, whereas if glass was obtained from various suppliers, a variety in the composition of the tesserae would be expected. Since a glass maker may specialize in the production of a certain colour, the analysis was restricted according to categories of colour.

The analysis tried to determine, on basis of the composition of the glass, whether tesserae of the same colour also belonged to the same production-series (or ‘batch’). The appearance of glass deriving from one batch in more than one part of the floor may indicate that those areas of the floor were produced at the same stage. Of particular interest in comparing different parts of the mosaic are instances in which glass tesserae of the same colour have a different composition. This may point to the involvement of different glass suppliers. The results show that chemically, three types of red can be distinguished, one type of orange, and two basic types of green, which is the most common glass colour. Interestingly, one of the green types was used throughout the floor, indicating that all panels are of contemporary manufacture and that the producers relied on one main glass supplier.

Two of the main figural panels, the Judgement of Paris and the Aphrodite and Adonis panel, show material peculiarities: in no instance were tesserae from the same batch of glass found in both panels. Red glass is dominant in the Aphrodite and Adonis depiction, but while the interior panel red is of one type, the reds used in the border is of another type. In

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52 It should be stressed that glass melts are rarely completely homogeneous. Even within the same tesserae, differences can be observed. Furthermore, identical composition may at times yield different colour if the glass was exposed to different furnace conditions, such as longer firing time or higher temperature or if it were allowed to cool at a different rate (Becker/Kondoleon 2005, 52).

53 The orange glass shows extreme consistency from the Atrium House Triclinium (second century) to later mosaics in Antioch, such as the Funerary Banquet Mosaic (fourth century), suggesting either continuity in production methods using an identical recipe or material resources or that orange glass produced in the first half of the second century was still being used in the late fourth century (Becker/Kondoleon 2005, 55). For comparison of the chemical composition: p. 138 (samples 14-15) and p. 152 (samples 202-203).

54 Becker/Kondoleon 2005, 56.

55 This red is designated as Type 1. It is relatively high in lead, with comparatively high levels of potassium and phosphorus, which indicate a plant-ash alkali source (Becker/Kondoleon 2005, 57).
contrast to the Aphrodite and Adonis panel, red is completely absent from the Judgement panel and its border. White, clear and natural black glass obsidian are confined to the Judgement figural scene and appear nowhere else in the mosaic. This panel and its border are also the only parts in the whole pavement that contain blue translucent glass.

This investigation served the purpose of understanding the relationship of different parts of the floor in terms of derivation of material, which may in turn indicate the division of work or stages of laying the pavement. As will be shown later, in the case of the Atrium House, the material analysis supports the archaeological documentation. For example, the clear distinction between the bedding layer of the Judgement panel and its border suggests, that these were produced at two different stages, and not as one unit. This might also be true for the Aphrodite and Adonis panel and border, where different types of red tesserae were used. Furthermore, in no instance does glass from the same batch appear in both the Aphrodite and Adonis figural panel and its border, while eight out of the fourteen colours in the Aphrodite and Adonis border come from shared batches.57

These differences may reflect order of production, suggesting that the interior was produced earlier, or in any case as a separate unit to the border, but it may also indicate division of labour in the workshop, with borders and interiors produced by different mosaicists and different suppliers of the material.58

Other mosaics from Antioch where the chemical analysis has been conducted, show various patterns. At times, they seem support the stylistic observations: analysis of glass tesserae from three figural mosaics from the third-century mosaics in the House of the Drinking Contest59 shows consistency of colour, type and composition throughout the pavements. Glass of the same batch appears in more than one mosaic. The material consistency suggests, that a single mosaic workshop was working on the site, with one glass supplier.60

56 This red is designated as Type 3 (which has two variants, designated as 3A and 3B). These types contain no lead and no evidence of plant ash (Becker/Kondoleon 2005, 57).
57 Becker/Kondoleon 2005, 57.
58 Becker/Kondoleon (2005, 58) do not rule out also the possibility of prefabrication, which would influence the material component of the pavement, although these panels are clearly no emblema in the sense of prefabrication upon a tray.
59 The Drinking Contest Between Herakles and Dionysos Mosaic, the Mosaic of the Four Seasons and the Marine Mosaic. See: Becker/Kondoleon 2005, 58-59, 146-149 (material analysis), Figs 50-57.
60 Becker/Kondoleon 2005, 60.
The Funerary Banquet Mosaic from Antioch, dated to the fourth century, shows different results.\textsuperscript{61} The analysis included three panels: the funerary banquet where ten different glass colours were in use, and two panels representing personifications: Agora, with seven glass colours, and Eukapia, with twelve. Apparently, in no case was glass from the same batch used in more than one panel and even within one panel there is much inconsistency. The chemical analysis provides no specific pattern to draw clear conclusions concerning the division of production. It has even been suggested, that the diverse sources of material may indicate tesserae in secondary use.\textsuperscript{62}

Chemical composition analysis can in certain cases provide a promising method for understanding the production process of mosaics, especially those that include a majority of glass tesserae, which is an artificial, man-made material. At the same time, it can only give a general indication and the interpretation of the results may be just as inconclusive, as, for example, the case of the Funerary Banquet Mosaic.

The minimal use of glass in mosaic pavements in Palestine, however, makes chemical analysis less relevant for the study of work-division and workshop organisation in the region. The amount of glass applied in most Early Byzantine pavements in Palestine and Transjordan is too limited to justify the building of a glass-kiln at the site or employing a glass producer for that purpose. Glass producers could be operating as an independent business, which provided materials to order or maintained a stock of commonly used colours, that could be bought by any mosaicist. Otherwise, glass for mosaic tesserae must have been imported for that purpose either from the nearby production centres such as for example Garasa,\textsuperscript{63} or from further away: Antioch,\textsuperscript{64} Egypt, Constantinople or Italy.\textsuperscript{65} Since Antioch has already been identified as one of the sources of influence on Palestinian mosaic art,\textsuperscript{66} this city could also be a source for either the glass tesserae themselves or for the production technology.

For the study of production teams, the chemical analysis of glass may yield interesting results. Being an artificial material, the chemical composition may differ considerably from one producer to another. Application of glass from different sources in different parts of one floor may thus indicate different production-teams, who had different suppliers. Such a

\textsuperscript{61} Becker/Kondoleon 2005, 60-61, Figs 58-60.
\textsuperscript{62} Becker/Kondoleon 2005, 61.
\textsuperscript{63} Roussin 1985, 25.
\textsuperscript{64} Becker/Kondoleon 2005, 50.
\textsuperscript{65} Fiorentini-Roncuzzi/Fiorentini 2002, 59-96.
\textsuperscript{66} Talgam 1998, 76.
research, however, can only be conducted when the mosaic includes sufficient glass tesserae. The mosaics of Lod and the Al-Hammam mosaic in Beth Shean may serve for such an investigation. The excavators of Lod identify three craftsmen, whose work corresponds to the three phases of execution of the pavement. The first phase is the northern part including the fish panel. The second phase includes the southern mosaic with the free birds composition panel and the panel of birds and small animals. It is supposed that these two parts were inlaid by two different craftsmen. The third phase of execution is the long panel with the vine branches growing out of an amphora. This is the only panel in the floor where gold glass has been used and it is attributed to a third hand.67

2.3.3 Preparing the tesserae

The process of cutting the tesserae was undoubtedly a monotonous, time-consuming task. This was done by hammering the piece of stone, which was to be cut with a chisel-like blade. A funerary stele from Ostia (Fig. 16) probably depicts a work scene, in which two tesserae-cutters sit at the front, hammering pieces of stone into tesserae. At the feet of one of them lies a basket that contains what seems to be a block marked by lines into squares. Lawrence Becker and Mark Wypyski suggest that the material depicted could be glass,68 but it could also be a slab of stone marked to be broken up,69 or just a clumsy depiction of what was supposed to be a mass of tesserae pouring from the basket. In the background, two men are depicted carrying sacks on their backs saluted upon departure by a man, perhaps the supervisor of the works. Since the stele is fragmentary, it is difficult to distinguish the profession of the deceased. It may further be asked whether the depiction shows an atelier that only prepared the material, selling ready-made tesserae or a mosaic workshop, where the lost parts may have depicted further stages of the work. In a sixth-century Syrian mosaic now in the collection of the National Museum in Copenhagen, a mosaicist had depicted himself at work. He sits in a comparable position as on the relief from Ostia and holds a cutting-hammer.

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67 Talgam suggests the possibility that in the vicinity of the Lod mosaic once stood a building decorated with wall mosaics, of which the glass and especially the gold glass tesserae may have been reused (Gorzalezany 2015, 68).
68 Becker/Kondoleon 2005, 50.
69 Dunbabin 1999, 281.
in his right hand. The cutting-hammer as an attribute of a mosaicist may indicate that cutting the tesserae was part of the tasks of a mosaicist.\textsuperscript{70}

### 2.4 Direct Production or Prefabrication?

Production \textit{in situ} is made under quite different conditions than prefabrication in an atelier. In the second case, one would expect that a large stock of prefabricated panels or emblems could be made in advance and applied in different locations.

In the direct method tesserae are embedded directly in the uppermost lime layer of the floor at the site. After their insertion and the drying of the lime, the tesserae’s position is fixed. The advantage of the indirect methods is that they allow the craftsman to make changes in the inlay before the final insertion of the tesserae in the final bedding. It also allows to produce parts of the mosaic in advance, as a portable object that can be inserted later into the floor at the site, thus enabling a producer to hold a stock and develop mass production.\textsuperscript{71}

Whether mosaics of the Early Byzantine period were produced entirely directly at the site or could be partly prefabricated is still a matter of debate. If mosaics, or part of mosaics, were produced at the atelier before the work on the site began, then the organization of production and of the workshop can be expected to be different than in the case of direct inlay.

Prefabrication is associated with indirect production techniques, of which several methods are conceivable: production of an emblem, production in the reverse or double-reverse method.

#### 2.4.1 The emblem

Production of emblems are mainly, though not exclusively, associated with the Hellenistic mosaics and the \textit{Opus Vermiculatum} technique.\textsuperscript{72} Part of these mosaics could be produced at the artist’s atelier, on a tray or a frame, and were in fact isolated panels that could be

\textsuperscript{70} Pentz 1992, 50.
\textsuperscript{71} Dunbabin 1999, 288-289.
\textsuperscript{72} Ling 1994, 79.
transported later and integrated into any desirable location. Examples for such emblems are the two panels produced by Dioscurides of Samos which were integrated in The Villa of Cicero in Pompeii.\(^73\) They were produced on marble frames measuring less than half a metre on each side. The tesserae are nowhere larger than 0.25 cm and in many parts of the figures they are under 1 mm squared. The mortar between the stones was tinted to match the colour of tesserae in order to enhance the illusion of a painting. Since the signature of the artist identifies him as being from Samos, it has been suggested that the two emblems were imported into Italy from Asia Minor.

The word emblem has come to be used to designate a small-sized framed panel or any panel depiction. However, in contrast to the real emblems, such as the panels from the Villa of Cicero that were produced on a tray or another backing, in all other techniques the mosaics are an inseparable part of the architectural setting. Most of the panels encountered in mosaics are therefore not emblems and it is more appropriate to use the term semi-emblems or quasi-emblems for these panels. Conservation works in Early Byzantine mosaics show, that semi-emblems were not produced on a separate panel and that their tesserae are inserted directly into the bedding. This does not necessarily mean that they were produced by the direct method, as the reverse and double-reverse methods would also provide such a result. Another phenomenon related to the emblem is the so-called disguised emblem, which is the separate manufacturing of parts of mosaics in a technique that resembles the emblem, only the frame or tray would not be of marble (or another durable material), but of a material such as wood or canvas, which would disintegrate without leaving direct evidence.

Because the tesserae were not inserted directly into the permanent mortar, after the disintegration of the backing, the binder holding the tesserae together would become fragile and such panels often disintegrate quicker in the course of time. Evidence for such 'disguised emblems' was found in Italy, in a late Republican Villa San Rocco in Francolise in Northern Campania (c. 30 BC).\(^74\) In this mosaic, the threshold to the tablinum was decorated with a row of hexagons containing rosettes that were produced as semi-emblems, while the outer hexagonal geometric frame was laid directly in situ. The nucleus layer was incised with lines indicating the position of the central prefabricated hexagon that was to be laid in the middle of each section, and a set of guidelines marked the area that was to be filled around them in the direct method. Most of the central hexagons have disintegrated, leaving their empty spaces as

\(^73\) Dunbabin 1999, Figs 44-45.
\(^74\) Dunbabin 1999, 283, Figs 289-291.
evidence of their prefabrication (Fig. 17). There is, however, no evidence that this method was in use in Palestine or Transjordan during Late Antiquity.

2.4.2 The reverse and double-reverse methods

In the so-called reverse and double-reverse methods, the mosaic is first produced upon a temporary bedding. In the reverse method, the tesserae are fixed to a temporary setting (such as fabric) with their front side down. After completion, the whole mosaic is turned over and set into the permanent mortar. The temporary binder is then removed, revealing the mosaic. The advantage of this method is that the mosaic is ensured of a flat surface, which is a desirable result in the case of pavements.

In the double-reverse method, the tesserae are first set into a shallow layer of temporary binder, which does not dry (such as sand) or does not dry as quickly as mortar (such as clay). As long as the mosaicist uses the temporary binder, he may place, replace, correct or change the position of the tesserae. After he has set all the tesserae and reached the desired result, he fixes a fabric to the top of the mosaic, pulls the mosaic out of the temporary binder and transports it to the site in order to set the complete mosaic into the permanent mortar setting. After the mortar has dried, the mosaicist removes the fabric and reveals the mosaic. Filling-in the spaces between the prefabricated mosaic and the walls of the room is then done in the direct method, in situ.

Both the reverse and double-reverse techniques are used intensively in modern mosaic production. It has been argued, that these techniques were introduced in the nineteenth-century and that ancient mosaicists were not acquainted with them. An argument in favour of the technique, however, is evidence from the ninth-century that indicates technology for the removal of earlier mosaics for the purpose of reuse and inlay in a new setting. This procedure greatly resembles the technology that would be necessary for the removal and transportation of mosaics in the reverse and double-reverse methods. It therefore seems, that if ancient mosaicists did not use the reverse and double-reverse methods, the reason was not a

75 Ling 1994, 77-79.
76 Antony Cutler (2002, 560) explains the re-use of mosaic as due to a shortage of material supplies for the production of new mosaics. Another possible explanation, however, is growing admiration for the workmanship of the past and the general reuse of spolia from earlier structures.
lack of technology (given that suitable fabrics and adhesives seem to have been available in Antiquity), but the very motivation to do so.

Theoretically, whole floors or sections of floors, could be inlaid with the front side of the tesserae attached to a fabric, rolled up and transported to other locations. Evidence for such a practice, however, is still lacking. One reason to avoid the method is the high risk of disintegration during the transportation over long distances of a mosaic rolled upon canvas. The second reason is the availability of local knowledge and expertise of mosaic-making in the whole Roman realm, which made it unnecessary to import such works from afar. It was probably much safer to invite a mosaicist or a team of mosaicists to work locally. Furthermore, the commissioner of a transported mosaic would still need to commission a mosaicist who was capable of placing the mosaic in place and fill in the areas between the prefabricated mosaic and the actual walls of the room, in the direct method.

Excavations and conservation works of Early Byzantine mosaics in the region of Palestine and Transjordan did not provide hitherto sufficient evidence to indicate the application of prefabrication. One detail in the fourth-century mosaic of Hammath Tiberias, however, should be given some attention in that respect. The mosaic shows a circle of the zodiac with the twelve celestial constellations in their personified forms. A label with the name of each zodiac sign appears either above or adjacent to each image. All labels are correct, except the label of Aquarius, which appears as a mirror-image. This detail is unique and no reasonable explanation has hitherto been suggested to explain it. It should not be ruled out that the mirror-image of the label is the result of an inlay mistake that may indicate the application of the reverse method.

There is, however, insufficient evidence to indicate the application of indirect methods, while an argument in favour of the direct method in Late Antique Middle Eastern mosaics is the growing evidence for incisions and markings on the under-layers of mosaics. While incisions can also mark an inlay frame for a pre-fabricated piece, sinopia are only truly necessary in the case of production in the direct method. At the same time, sinopia has only been found in exceptional cases and more evidence is necessary to settle the question.

77 Dothan 1988, 46; Pl. 16, 7.
Most compositions were designed according to the principle of a framed panel, which consisted of a central space and an ornamental frame. Some of these designs are very complex and could easily cause confusion if not planned in advance, especially if work is divided among several mosaicists. An example of inconsistency as a result of failure in planning of the lay-out can be seen in the mosaic of the House of the Bound Animals from Tunis, dated to the third century (Fig. 18). The geometric design that surrounds the figurative central panel was probably produced by two mosaicists, each working from another end of the mosaic, advancing towards one another. Apparently, the design was not planned well enough and resulted in a slight discrepancy that can be observed along the upper vertical line where the two portions meet. This ‘mistake’ in the design is a rare indication for division of work among craftsmen.

Some suggestions have been made in the past concerning the possible division of work on various sites. Weiss, for example, suggested, that the symmetrical composition at the synagogue at Sepphoris was produced by two craftsmen working contemporaneously, each on another side of the symmetry axis.  

Other indicators of how work proceeded are ‘seams’, visible as a series of ‘gaps’ between tesserae, that form distinct lines, sometimes marked by fields of tesserae laid in different directions.

2.6 Summary

Prior to the inlay of the mosaic tesserae, various tasks had to be fulfilled: the first was the commissioning phase, which is generally obscure to us. This stage included a range of artistic choices, such as the lay-out and composition; the subject-matter and the choice of geometric designs, figurative and other motifs that were to be included in the decoration. The commissioner may have had much influence on the choice of themes, with the artisan ‘translating’ these wishes into a concrete visual scheme.

The technical steps following the commissioning phase included preparing the tesserae to be used for the production of the mosaic, cutting the material to the required size and shape

78 Weiss 2005, 173.
79 Wootton 2012, 162; Gorzalczany 2015, 68.
and grouping the tesserae according to colour and size. In some cases this stage occurred prior or parallel to the levelling of the nucleus (most probably in cooperation with the constructors, in the case of a new building), and was followed by preparing the mortar in which the tesserae were to be inserted.

The material aspects have not yet provided a clear method for indicating and identifying the team of producers and the division of work among its members, but a few of the developments within this field may yield promising methods in the future. Footprints, if indeed reflecting the working team, may give a general indication of the number – and in the instance of children an estimation of ages – of those involved in the production. The involvement of a relatively young worker as supposedly in the case of Lod may support the assumption that training began at a young age.

On the basis of the available material, it seems that mosaics in Palestine and Transjordan were commonly produced in the direct method. There is sufficient evidence that at least the lay-out was drawn or incised upon the floor prior to the inlay. Drawings and sketches were probably part of the preparatory procedure, but it is not clear how detailed these preliminary drawings were. They seem to have marked the general panel-division and intended situation of motifs in the form of frames as positioning indicators rather than use detailed figurative drawings. It may therefore be assumed that at least some mosaicists had the capacity to reproduce figurative representations without the aid of detailed drawings, as apparent from the ‘free hand’ production as in the case of the birds panel in the Lod mosaic.

A most valuable direction of investigation would be the identification of the giornate, or the section-division of the bedding lime. Such results would be most valuable for purpose of the present study.

The materials that were used for the production of mosaics were the locally available limestone as well as a certain measure of glass tesserae, which may have been imported. A few sites provided evidence that the raw material in the form of limestone blocks was brought to the site to be cut directly there. Assuming that this material provided the tesserae for the whole team of producers, disregarding the portion or section that was allocated to them, a chemical analysis of the tesserae composition would add very little for understanding the division of work among the craftsmen.

Exploration of the logistics of the coordination of work between more than one producing mosaicist, the order of progress and the distribution of work among the craftsmen, can be better approached from analysing the artistic evidence. As indicated by the House of the
Bound Animals in Tunis, a planning of the design was necessary in order to avoid production mistakes. As evident from that example, the floor surface was divided with each member of the team allocated a certain portion to produce. Work usually occurred contemporaneously on different parts of the same pavement. The question whether a more specialized division of work took place is left to a later phase in the discussion.

Exploring the inlay stage itself, the techniques and procedures that were involved in it, is the main objective of the next chapters, with the purpose of exploring the possibility of identifying teams, producers and workshops on basis of the artistic inlay, the repetitiveness of the inlay patterns and identification of procedures.
CHAPTER 3
MOSAIC WORKSHOPS AND CRAFTSMEN: SOURCES AND RESEARCH METHODS

3.1 WHAT IS A WORKSHOP?

A workshop is generally defined as a more or less permanent collective of craftsmen and/or assistants organized for production purposes. The definition became subject to various interpretations, from a strictly hierarchical organization\(^1\) existing for a few generations,\(^2\) sometimes owned by an entrepreneur or a part of an even more extended establishment,\(^3\) to a small-scale family-business or one that included a master and trainee.\(^4\) The direct evidence concerning the organization of mosaic production in Antiquity is scanty and often, rather than clarifying the structure, the usage of the term workshop confirms that modern research is in the dark about the actual organization of work. Though identification of mosaic workshops and even individual producers of mosaics is a field that receives more attention within recent studies, methods of study vary considerably.

Two main approaches were taken towards the study of mosaic workshops. The first approach refers to the structure of the workshop as an organization within the social and economic structure of Antiquity. This investigation includes the study of historical sources, financial legislation and inscriptions, which include data referring to the commissioners, donors and producers of the mosaics. The second approach is the archaeological and art-historical investigation, which attempts to identify a workshop on the basis of its artistic product. This chapter presents both approaches, their source material, the main research in which they were applied, the presumptions that guided those investigations and the conclusions that have been drawn concerning the organization of workshops in Antiquity.

\(^1\) Becker/Kondoleon 2005, 39.
\(^3\) “A workshop probably consisted of painters, carvers, sculptors and mosaicists, who were all members of a master’s or builder’s team” (Hachlili 2013, 473).
\(^4\) Dunbabin 1999, 276.
3.2 Structure and Hierarchy

3.2.1 The craftsman and the economy of Late Antiquity

Ancient literary sources mention practical aspects of the organization of artisans and craftsmen only incidentally. While authors were occasionally interested in the description of outstanding works of art or had been given the task of glorifying their patrons, they were much less interested in the builders and artisans, the conditions under which they worked, the organization of manpower or in the way art works came into being.

Only a few sources shed light upon the economic reality in which craftsmen operated. One source is a legal document, the Edict of Diocletian from AD 301. The purpose of this edict was to fix maximum prices for wages paid to craftsmen. Mosaicists are defined under two categories. One is the *musaearius*, who was paid sixty denarii a day – the same as a ship’s carpenter or a marble-worker. The other is the *tessellarius*, who was paid fifty denarii a day – the same as a wagon-maker, a blacksmith or a baker. The highest payment for a craft mentioned in the edict is that of painters; wall-painters received seventy denarii a day and the *pictor imaginarius* was paid one hundred and fifty, which is also the highest sum stated. It is not known what exactly the difference was between the professional tasks of the *musaearius* and the *tessellarius*. Roger Ling suggests a distinction between wall and floor mosaicists, the difference in wages expressing the danger of working at heights, but Dunbabin and Clarke find it more plausible that the difference is between the maker of fine decorative mosaics and the maker of plain tessellated floors. Distinction in work quality has thus been taken to suggest a division of tasks within the hierarchy of a workshop.

An edict from AD 337 by the Emperor Constantine mentions *musivarii* and *tessellarii* again, along with other craftsmen such as sculptors, painters and goldsmiths. This edict

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5 Such as Procopius’ *De Aedificiis* (Cameron 1985, 85-112; Swainson 1894, 21-34).
6 In rare instances the names of the architects were preserved, but the details relating to the workmen are kept to a minimum, such as Procopius on the Hagia Sophia: “The Emperor, thinking not of costs of any kind, pressed on the work, and collected together workmen (*technitai*) from every land” (Swainson 1894, 24).
7 For the Latin and Greek text of the Edict, see: Giacchero 1974. About the economic policy of Diocletian, see: Ermatinger 1996; Gregory 2005, 33-44.
8 Giacchero 1974, 150.
9 Ling 1998, 7. That such accidents actually occurred can be learned from the tomb inscription of a slave named Hermas who fell to his death while making a wall mosaic (Donderer 1989, 92-3, A61). On the other hand, there is no such distinction for wall painters, who also worked at heights (though painters were paid more in the first place).
10 Clarke 1994, 90, n.8; Dunbabin 1999, 276. Distinction according to complexity of design existed in relation to wall painters and might support this interpretation.
exempted these craftsmen from compulsory public service, in order to permit them to perfect
their art and train their sons in it.\textsuperscript{11} The edict refers to a broad range of producers of goods that
were considered essential for a stable society. It is interpreted as part of the fourth-century
policy to strengthen and stimulate the tax-paying social groups and ensure their continuity.\textsuperscript{12}
The reference in the edict to craftsmen training their sons in their profession supports the
interpretation that conceives the basic construction of ancient workshops as family businesses.

The price that commissioners paid for the execution of a mosaic pavement is not known.
Inscriptions rarely state the amounts paid, and even when sums are stated, it is not clear as to
which part of the building project they refer to. One such inscription in Aramaic appears in
the mosaic at the synagogue of Eshtamo: “Remembered for good be Lazar the priest and his
sons who gave one tr[i]-[m]isis from [his] property”.\textsuperscript{13} But it is not clear if the amount was
given for making the mosaic or sponsored another architectural or decorative element in the
building. Even if referring exclusively to the mosaic, it is not clear what the worth of that
amount exactly was, whether it covered the total costs or just a specific section. An
inscription in the mosaic of the synagogue of Caesarea records that “Julius in fulfilment of a
vow made […] feet of mosaic”.\textsuperscript{14} This may shed light on the pattern of sponsorship of public
building projects, where various donations were collected for the financing of the work. The
artistic result, of a floor divided into various panels, may reflect the amount of donors. It may
be assumed that an intermediary coordinated the donations for a full coverage of the floor
surface and communicated the necessary details to the craftsman who produced the dedicatory
inscription. How much Julius donated for his share of mosaic, and what this share was, is
unknown.\textsuperscript{15}

When working on a ‘free-lance’ basis, craftsmen could offer their services to meet the
demands of the market and to compete with each other. Payment on a daily basis (as in the
Edict of Diocletian) suggests short-term work relations between the craftsman and the

\textsuperscript{11} Cod. Theod. XIII. 4.2, repeated with slight changes in Cod. Iust. X.66.1 (Dunbabin 1999, 276).
\textsuperscript{12} The motivation for such legislation has been explained either as part of broader legislation that had
the purpose of limiting mobility between the social classes and preventing the aristocracy from
entering the senatorial rank, which was exempted from taxes (Gregory 2005, 93) or as part of
compulsory measures that were introduced to tackle the labour shortage: “The state compelled sons to
follow the professions of their fathers, apparently because it had become financially unattractive to do
so” (Blockmans/Hoppenbrouwers 2010, 14).
\textsuperscript{13} Ovadiah/Ovadiah 1987, 59.
\textsuperscript{14} Roussin 1985, 39.
\textsuperscript{15} The practice to donate the financial means for the production of a certain measure of mosaic is
knows also from other provinces. For example, see: Buzov 2011, 180-181.
employer, and could give the commissioner the possibility to dismiss the craftsmen before completion of the work if the quality dissatisfied him. But it is not impossible that payment was done on a project basis. A possible evidence for payment on a project basis comes from the fragmentary Aramaic inscription of Beth Alpha from the sixth century. According to the reading of Sukenik, the work was done for a payment of 100 measures of wheat that was donated by the whole village.\textsuperscript{16} If this reading is correct, it is unique evidence for a payment agreement in goods, and indicates that patrons and craftsmen could come to any type of payment terms as long as this suited both sides.

Payment for labour within the workshop, however, is a different matter from the payment of the patron for the work. The commissioner may have paid a lump sum, while the producers may have been paid by the entrepreneur on a daily basis. On the other hand, it is plausible that workshops that were based on family kinship operated in a different manner, certainly during the training period of the young craftsmen, who was in most cases a close family member. The question of how craftsmen and workshops operated within the economic circumstances of Late Antiquity remains unfortunately rather obscure.\textsuperscript{17}

3.2.2 Organization and hierarchy

A literary source that sheds light on the organization of work in Antiquity is the fourth section in the seventh book of \textit{De Civitate Dei} by Augustine (354-430). In this work, Augustine compares the idols, each with its specific domain of power, to a group of craftsmen in a workshop of silversmiths, each executing only one phase within the production process of a vessel:

\[\ldots\] like workmen in the streets of silversmiths, where one vessel passes through the hands of many craftsmen before it emerges perfect, although it could have been perfected by one perfect craftsman. But many craftsmen are employed in this way only because it is thought better for each part of an art to be learned by a single workman quickly and easily, so that all are not compelled to acquire the whole art slowly and with difficulty.\textsuperscript{18}

\textsuperscript{16} Sukenik 1932, 43-46.

\textsuperscript{17} For the economy of the sixth century in relation to agriculture and construction workers, but also with some references to crafts, especially pottery and metal, see: Morrison/Sodini 2002, 183-189, 201-206.

The production process described by Augustine is comparable to mass production, in which each craftsman specializes in only one stage of the production process. Augustine is not mentioning this practice out of interest in the production of silver vessels, but he is using the workshop organization of silversmiths as an allegorical contrast for the rule of God in the world. It therefore may be assumed that this workshop practice was well known, otherwise the allegory would probably not be clear to the reader. Augustine’s account may therefore be seen as a reliable source for the organization of metal workshops in North Africa at the beginning of the fifth century AD. A much earlier source, the *Cyropædia* of Xenophon of Athens (c. 430-354 BC), indicates that this was probably characteristic not only for Late Antiquity. Xenophon nuances the aspect of specialization by contrasting the organization of work in the large cities, where high demand for goods existed, with the countryside. There, craftsmen could not permit to specialize, but had to take any commission they could in order to support themselves. In his text, Xenophon attributes the excellence of the Persian food at the court of the king to the number of specialized tasks of those involved in its preparation and draws an analogy to craftsmen.

“For just as all other arts are developed to superior excellence in large cities...in small towns the same workman makes chairs and doors and plows and tables, and often this same artisan builds houses, and even so he is thankful if he can only find employment enough to support him. And it is, of course, impossible for a man of many trades to be proficient in all of them. In larger cities, on the other hand, inasmuch as many people have demands to make upon each branch of industry, one trade alone, and very often even less than a whole trade is enough to support a man. One man, for instance, makes shoes for men, and another for women; and there are places even where one man earns a living only stitching shoes, another by cutting them out, another by sewing the uppers together, while there is another who performs none of these operations but only assembles the parts. It follows, therefore, as a matter of course, that he who devotes himself to a very highly specialized line of work is bound to do it in the best possible manner”.

The study by Mat Immerzeel, based on the earlier investigation by Klaus Eichner and dedicated to Roman fourth-century sarcophagi supports a similar model of organization. Examination of unfinished products showed that each sarcophagus was subjected to a

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19 Cyr. 8.2,5 (Roussin, 36, n. 12; Shelton 1981, 47, 51).
20 Immerzeel 1996; *idem* 2003.
production process of as many as nine phases. Although not all nine phases were always finished or fully executed, it seems that work organization was designed in a manner that demanded the involvement of more than one specialization in the production of each sarcophagus. The workshop consisted of highly specialized craftsmen next to less skilled ones, each of them executing a specific task within the production process. This resulted in mass production, with a relatively high level of standardization in stylistic features. Young craftsmen probably started their training as inexperienced assistants within the workshop, specializing in and learning the manual skills that were needed for one (or more) particular task. This ensured a constant flow in workmanship and manpower, but did not demand long periods of training. The workshop was highly flexible and during periods of high demand, a quick expansion and maximum exploitation of manpower was possible.

One of the principles of this workshop model is, that the workshop had an independent existence as an organization and was not dependent on its individual members. As such, the workshop could exist for a few generations and enjoy continuity in production, as long as market demand existed. The high degree of specialization reduced the individual influence of each craftsman to a minimum, and the end product was a result of teamwork rather than the expression of the style of an individual craftsman. Replacement of an individual craftsman did not have a fundamental impact on the organization of the workshop nor a profound influence upon the artistic style of the end product.

In both cases (metalwork as well as stone carving) the production process was divided into consecutive tasks and the structure of the workshop that has been suggested convincingly reflects the production process. This workshop model offers a more or less fixed structure of organization, in which the individuals who fulfilled the tasks may be permanent as well as temporary workers. But would this model also be applicable to mosaics? One question is whether mosaic production can be fragmented into consecutive tasks. A second question is whether the team of producers was a permanent or an ad hoc team.

Speculating upon a hierarchical structure for mosaic workshops, Lawrence Becker and Christine Kondoleon suggested the following: “The head of the workshop might be its foremost mosaicist, or the workshop could have included craftsmen of equal and even superior artistic ability. It is also possible that the owner of a mosaic workshop was not primarily a mosaicist but rather an architect, builder or entrepreneur. Below the master or masters were presumably artists of lesser stature down to the level of apprentice. When it comes to laying a pavement, tasks were allocated: the master took charge of the primary or
most demanding images, secondary but still important sections fell to the next level of craftsmen, and so on down to the apprentices, who might lay out repetitive borders or assist with preparatory tasks”\(^\text{21}\).

The hierarchical model for mosaic workshops according to Becker and Kondoleon conceives the division of work as reflecting the artistic ability of the producing individual, which, in turn, influenced the part of the floor allocated to that individual and the location of his product within the whole. Work was allocated according to the type of representation and the complexity of its production, indicating that different craftsmen could have been working at the same time on different parts of the mosaic. The organization in a mosaic workshop makes a distinction between different sections of the mosaic that could be carried out contemporaneously, differing in the level of refinement of the artistic result.

The model suggested by Becker and Kondoleon is that of a hierarchical organization in which the head or owner of the workshop did not need to be a mosaicist himself. The workshop thus operated as a unit that could be hired by any commissioner. The hierarchy was further defined by the specialization and the level of training of each member of the workshop. The measure of flexibility in such an organization was rather limited, especially in the higher ranks. Some tasks were laborious but not complicated to learn (such as tesserae-cutting). For these tasks the suggested model of a metal or stone carving workshop could apply well. Other tasks demanded a very specific specialization (for example, production of glass tesserae\(^\text{22}\)) which demanded specific knowledge that was possibly kept a professional secret. More so is the specialized artistic work, such as in the case of the master mosaicist, a profession that demanded a long training and in many aspects depended on the artistic expertise of the individual craftsman. Such craftsmen were not easily replaced and were essential for ensuring the quality of production. That these individuals left their specific artistic mark in their product is shown by the study of the mosaics of Antioch.\(^\text{23}\)

Furthermore, a workshop could enjoy continuity along a few generations only if it invested in long-term training of talented young craftsmen. This, however, is true also in the case of a small-scale family business in which the profession was transmitted from father to

\(^{21}\) Becker/Kondoleon 2005, 39.

\(^{22}\) The study of Becker and Kondoleon focuses on the mosaics of Antioch, where, in contrast to Palestine, glass tesserae were extensively used. They suggest that workshops in Syria may have included a unit that specialized in the production of glass for tesserae.

\(^{23}\) This takes an important place in the investigation of the division of work of the Atrium House Mosaic (Becker/Kondoleon 2005, 17-61).
son, although in a small-scale business one would expect that each member could fulfil a broader range of tasks. The hierarchic workshop would probably emerge in periods of constant high demand and little competition, operating optimally in economic conditions in which it could enjoy a monopoly status or in conditions of a long-term, large-scale commission that guaranteed continuity.

An investigation that yielded rewarding results for the study of workshop organization is the study of Hellenistic Rhodian sculpture workshops.\textsuperscript{24} Epigraphic evidence from 240 signed bases, recording names of 120 sculptors, enabled Virginia Goodlet to reconstruct the organization of the sculptural production of bronze ateliers. Eight workshops active between c. 340 BC and AD 7 were recognized, indicating that professional ties were established upon family relationships. The core of each workshop was a family, with two generations being active at any time, having one to five signing sculptors. Goodlet estimates that sculptors’ careers lasted 30-40 years at the most. Artists unrelated to the family could join the workshop. These artists arrived as trained adults and were brought in to collaborate with the workshop for a specific project. Sometimes these artists stayed after finishing their first job. Sculptors collaborating in one workshop may or may not have come from the same city and they did not necessarily share a common legal and social status. Some sculptors came from families who enjoyed some social distinction. The little we know about mosaic workshops may conform to this evidence, but such direct indications as the Rhodian signatures are unfortunately absent in Late Antique mosaics. However, those mosaics that were signed by their makers will be considered below.

The amount of external evidence changes only towards the late Middle Ages, when documentation of large-scale artistic projects provides at times a detailed picture of the organization of production.\textsuperscript{25} The mosaics of the Cathedral of Orvieto, which were produced over a period of several decades in the fourteenth century, are a good example. The mosaics themselves have been poorly preserved, but the documentation concerning the building and decoration work survived in the archives of the church and provides a unique opportunity to have a glimpse of the logistics involved in such a large-scale enterprise. The documentation

\textsuperscript{24} Goodlet 1991, 669-681; Tybout 1996, 364.

\textsuperscript{25} Early medieval evidence in Western Europe is poor. References to mosaics and other crafts is very limited. Some wall-mosaics of the Carolingian period, though not referring to workshop-construction, do distinguish between the \textit{pictor}, who supervised those laying the mortar and possibly the preparatory drawing on the wall, and the \textit{antifex}, who set the tesserae in the plaster bed (Harding 1989, 82). The possibility that such a distinction of tasks also existed for ancient pavement mosaics is very plausible.
goes into detail regarding the commissioning of artists and craftsmen, their salary and contracts, the purchase and production of material and the division of labour.\textsuperscript{26} A team of clergy was appointed to be in charge of the expenses, and this team documented every item that was involved in the work, from the wages of the work force to price of the smallest piece of material purchased. There appears to have been a \textit{capomaestro}, who was in charge of all aspects of production during his term of office.

The first \textit{capomaestro} active in Orvieto, Lorenzo Maitani, was commissioned in 1310. The decoration of the façade is specifically mentioned in his contract, and he was to submit a design for the gables (at that stage not yet built) of the cathedral. The surviving drawings indicate that there was some kind of master iconographic plan, although some freedom was allowed and some changes occurred between the design and the actual work that began in the 1350s and was not completed until 1390. The documentation reveals that the \textit{capomaestros} and other artists and craftsmen were professional individuals from different places in Italy, who were approached individually and invited to work in Orvieto. In 1345 the glassmaker Giovanni di Bonino was brought from Perugia, the \textit{capomaestro} Orcagna was commissioned in 1358 and brought from Florence, and from 1361 onwards the glassmaker and mosaicist Nello Giacomini, who came from Rome to approve Orcagna’s mosaic, stayed and participated in the production.\textsuperscript{27} As a result of the presence of these masters, local craftsmen were gradually trained as \textit{Magistri Mosaici}. These included Fra Giovanni Leonardeli, Ugolino di Prete Ilario, and Pietro Pucci.

Fra Giovanni first worked as a glassmaker at Orvieto in 1325. During the 1350s and 1360s he manufactured some of the cathedral windows, besides working on mosaics. He helped to lay the setting bed as well as cut glass for tesserae. He executed a preparatory drawing for the mosaic of the Baptism of Christ and executed the under-painting for that mosaic, which he produced with \textit{capomaestro} Orcagna. He also travelled to Venice to purchase glass and other material, and travelled elsewhere to train others in the making of gold glass. As a \textit{magister mosaici} he was apparently both \textit{pictor} and \textit{antifex}, and was assisted by two assistant craftsmen for the inlay. At that stage, he was provided with ready-made, pre-cut tesserae, made by a team of tesserae cutters, who were trained during the work, and were paid per

\textsuperscript{26} Harding 1989, 73-102.
\textsuperscript{27} Harding 1989, 86-87.
The capomaestro was paid monthly, but the final price of his work was assessed by a committee upon completion. This appears from the documentation to have been the usual procedure, but this, apparently, did not secure the quality of the work.

The work of Orcagna, apparently, deteriorated already during his term, and the contract of his successor, Nello Giacomini, included the condition that if the officials were to consider his work unsatisfactory, he was to remake the mosaic at his own expense. From 1364, Fra Giovanni worked with Ugolino di Prete Ilario, who also executed the frescoes inside the cathedral. They were paid the same wages. The third mosaicist, Pietro Pucci, was an assistant of Ugolino in the 1370s with the fresco work and was a glass-cutter for the mosaics of Giovanni. An inscription on one of the mosaics, dated to 1376 indicates that he had already been doing inlay work before he received his contract as a magister mosaici.

The documentation illustrates a pattern of training in which most mosaicists began their career as glass makers or beginning artists, gradually learning all aspects of the related arts of painting, mosaic work and glass-making, working their way up the hierarchy, and they could reach the highest level. An interesting aspect is the multi-functional artistic capability of most craftsmen. Two of the main mosaicists who worked in Orvieto, Giovanni di Bonino and Fra Giovanni Leonardelli, began their careers as glass-makers and later worked as mosaics. Orcagna was an expert in sculpture and painting, but was judged by the Orvietan authorities as competent to work in mosaic. The contract of Orcagna shows that apart from his duties as capomaestro, he was to sculpt, paint, and polish figures in marble, as well as work on the mosaics.

There appears to have been no guild for mosaicists during the Middle Ages, and Harding suggests that mosaic as artistic specialization did not exist as such. Artists were expected to be multifaceted, and be able to execute a wide range of crafts relating to the visual arts. This pattern is confirmed also elsewhere in Italy, where painters like Cimabue, Giotto and Pietro Cavallini also carried out work in mosaic. The multifaceted expertise that was expected from the artists at Orvieto was not an unusual phenomenon. This seems to differ fundamentally from the situation in Antiquity, where specialization in a certain type of art is

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28 Their work consisted not only of cutting tesserae, but also of sorting and inlay, and sometimes even other work. Such was the case of Andrea Nuti, whose contract was drawn up on 23 of May 1369 for a period of two years at a daily wage of nine soldi for cutting and working glass for the mosaic. However, he was also expected to dress stone for the Cathedral, if required (Harding 1989, 84).
29 Harding 1989, 86.
clearly mentioned in the sources (and, as the edict of Diocletianus shows, had an economic implication, stating that a painter had higher wages than a mosaicist).

The study of the work at Orvieto shows that the work construction was not that of a permanent workshop. This does not mean that there was no hierarchy. Hierarchy of labour is clear from the difference in rank, responsibility and wages. The composition of the team, however, is an *ad hoc* construction. Artisans were approached separately by the commissioning authority, and arrived from different places. Each individual signed a separate contract with the authorities, his wages and work conditions being subject to his bargaining position. As far as specialization is concerned, even the master was expected to be involved in the simpler production tasks and he was not only the one to paint or design, but also to do the laborious manufacture and inlay work. When necessary, the specialist had to guide the manufacturers and teach those whose training level was not satisfactory.

The medieval mosaic workshop model thus seems to have been an *ad hoc* team with an hierarchical composition. Despite the long duration of some of the contracts, the relationship between the individual craftsmen was temporary. The patron approached professionals who trained local craftsmen, teaching them the full spectrum of the production process. Work would then be divided among the team, but each mosaicist, even the master, was expected to be able to fulfil any aspect of the work, and far beyond (not only in the field of mosaics, but also in other arts). The number of mosaicists who were approached would depend upon the size of the project, but Harding shows that not more than six mosaicists were working on the production at the same time,31 which seems surprisingly low for such a labour-intensive enterprise. The nature of the work relation between the mosaicists themselves was also temporary, and after finishing the project or at the end of their contract, each mosaicist went on to the next commission, cooperating again with other artists, craftsmen or teams of producers.

Unfortunately, such detailed documentation as the one that sheds light on the organization of mosaic production in the late medieval period has not survived from Antiquity. The principle of payment per day of work, however, is an interesting similarity between the Edict of Diocletian and the practice that was documented in the archive at the Cathedral of Orvieto. In the late medieval period this was the payment arrangement for the simple labourers. It may be assumed that these workers were temporary, their task required no high qualifications, and

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31 Harding 1989, 83.
therefore they were easy to replace, or to dismiss at short notice. This is translated into low wages and short terms for payment.

The example of Orvieto is rather instructive, as two types of contracts can be distinguished: a personal contract, such as between the *capomaestro* and the church authorities, the second was a workshop contract, in which the contract was signed between the leader of a workshop and the commissioners (as, for example, in the case of the workshop producing glass tesserae). The tesserae cutters, however, seem to have been employed on a personal basis, paid per work-day, and not as part of a workshop-construction. As a result of the lack of comparable historical sources for the situation in Antiquity, the application of literary evidence for understanding the process of commission and the relationship between the craftsmen within the working team in Antiquity remains limited.

3.2.3 *Mosaic inscriptions – A contemporary source for the practice of mosaic production*

Inscriptions that were set in mosaics shed additional light upon the individuals who produced them and the relation between them. The very existence of mosaic workshops in Antiquity has been attested by mosaic inscriptions in Spain, Gaul and North Africa. In these inscriptions the formula *ex officina* appears, which may be translated as: ‘from the workshop (of)’, followed by a name in the genitive.32 The appearance of the name of the artist alone in the genitive may have the same meaning,33 but may also be understood as ‘this is the work of’, which would also demand a name in the genitive form. The formula *ex officina* strengthens the impression of the artistic result as being the production of a team, rather than of an individual craftsman.

As Dunbabin rightly remarks, there must have been considerable variation in size, training and practice of workshop organization from one period to another and from one region to another.34 Some mosaic inscriptions in Palestine and Transjordan that mention the craftsmen by their name, but a parallel term to *ex officina* is absent. Signatures, also in those cases where more than one craftsman is mentioned, usually fail to indicate which tasks were allocated to each individual, and the inscriptions are not specific enough for one to draw conclusions as to the relations within the team. Also in other regions such evidence is rare, and the few known

33 Dunbabin 1999, 272.
34 Dunbabin 1999, 269.
examples show in each case a different model for the organization of work and for the relation between the craftsmen.

A mosaic inscription from Thebes in Greece from the early sixth century mentions, in addition to the patron, two men who have made the mosaic: Demetrios who thought out the drawing, and Epiphanes, who executed it.³⁵ It seems that the production team was composed of two men who specialized in different aspects of the work (unless other people who were involved in the production work were simply not mentioned in the inscription). It is not certain, however, that the two had a permanent work construction. A similar division of work is attested in the mosaic of the Seasons and Months at Awza’i in Lebanon, mentioning cooperation between a painter and a mosaicist.³⁶ An inscription from Carranque in Spain, on the other hand, names Hirinius as a painter, but specifies that the workshop belonged to someone named Ma[...]us,³⁷ suggesting that the painter was not a permanent member of the workshop and was perhaps commissioned only for this specific project. The different inscriptions show, that in each case there was a different working relationship between the members of the team.

In an inscription from Tunisia, the signature indicates that the work was carried out without a painter.³⁸ As the artistic result may seem awkward to the modern eye, mentioning the absence of a painter may be apologetic, but it is also possible that the producer was genuinely proud of the artistic result and found it appropriate to mention the fact that the production was not guided by any additional or professional aid. Be that as it may, the very mention of the fact that no painter was involved in the work may indicate that normally such work would have involved a painter. The inscriptions do not specify the task of the painter and it cannot be established whether he specialized only in the design of the programme or also in the production of the preliminary drawings on the mortar, in which case he would have been present constantly at the site in order to provide the mosaicist with the necessary guidelines as work proceeded in sections. Furthermore, it is conceivable that he was also the one to establish the repertoire, collect patterns, draw or copy pattern-books if such existed, adapt and draw the pattern for every given project and be the one to receive the requests from the commissioner.

³⁵ Dunbabin 1999, 276-277, Fig. 285.
³⁶ Poulsen 2012, 132.
³⁷ Dunbabin 1999, 276.
³⁸ Dunbabin 1999, 276. The mosaic is shown in Fig. 286. This section is actually a later reparation of an existing floor, that probably took place in the first half of the fifth or early in the sixth century.
The evidence from inscriptions indicates, that work may have been organised in various ways and may have involved different constructions of cooperation, including the work of a single craftsman who was acquainted with all stages of production.

3.2.4 Unpaid labour

In addition to professional craftsmen, whose profession as mosaicists was their source of income, some cases of unpaid professional, semi-professional and unprofessional labour are mentioned in inscriptions, especially in the religious sphere of the monasteries. The paving of such buildings and the inlay of mosaics should be placed in the larger context of building activity for religious purposes. There is sufficient evidence to show that the monks themselves participated in the building of their own monasteries as an unpaid labour force.\(^\text{39}\) Cyril of Scythopolis describes how Sabas and his followers erected the monastery of Castelion within seven months of work.\(^\text{40}\) Elsewhere he tells how the monks, the spiritual leaders among them, built the Great Lavra, fulfilling simple and laborious tasks such as carrying water and collecting stones.\(^\text{41}\)

Other sources indicate that occasionally, among the monks themselves there were professional builders and craftsmen. Such monks were exercising their profession within the monastic sphere. Such were the two architect brothers, Theodoles and Galasius, who, upon their arrival at the Great Lavra, assisted Sabas with the completion of several of the buildings of the monastery and were involved in the building of other monasteries outside the Great Lavra.\(^\text{42}\) A burial inscription at the monastery of Choziba mentions a monk named Paulus, who was a deacon and a builder\(^\text{43}\), and an inscription from the Monastery of Saint Catherine in Sinai mentions a monk, who was a mason.\(^\text{44}\) A Georgian inscription that was found in the dining-hall of the monastery of Dir el Qutt, north of Bethlehem, mentions the maker of the mosaic alongside the names of the father of the monastery and the patron saint.\(^\text{45}\) Hirschfeld suggests that the mosaicist was himself a monk.\(^\text{46}\)

\(^{39}\) Bouras 2002, 544.
\(^{40}\) Hirschfeld 2002, 158.
\(^{41}\) Hirschfeld 2002, 162.
\(^{42}\) Hirschfeld 2002, 162.
\(^{43}\) Hirschfeld 2002, 162.
\(^{44}\) Sevcenco 1966, inscr. no. 8.
\(^{45}\) Ovadiah/Ovadiah 1987, no. 54.
\(^{46}\) Hirschfeld 2002, 162.
An inscription at the chapel of El-Maqerqesh in Beth Govrin (Eleutheropolis) mentions that the mosaic was made by the pupils or disciples of Obodianus, the priest, although their names are not listed: “I have decorated the house of Christ, the Universal Monarch, with mosaics, the floor and the entrance, through my disciples. (I) His blameless priest, Obodianos the Gentle”.\textsuperscript{47} According to one interpretation, Obodianos was at the same time a priest, a donor and the master mosaicist who trained his pupils.\textsuperscript{48} The pupils were obviously capable of producing a high-quality mosaic that included figurative representations. The lower mosaic of the Church of Kaianus at ‘Ayun Musa, in the region of Nebo, was commissioned during the term of Bishop Cyrus of Madaba and dates to the beginning of the sixth century. It seems that all four medallions that occupy the western side of the acanthus scroll included inscriptions, but only two have survived. One reads “O Lord, accept the offering of the most pious Obed, archdeacon, and of Salaman. These mosaicists did [the work]”\textsuperscript{49} and “By the care of Salaman, deacon and […], the church was [paved with] mosaics as a gift of Papion, the most pious deacon”.\textsuperscript{50} Apparently, two craftsmen produced the floor: Obed and Salaman. Obed is clearly mentioned as archdeacon as well as one of the mosaicists. It is not clear whether the Salaman mentioned in the first inscription and the Salaman mentioned in the second are the same person. If they are, then Salaman was a deacon as well as a mosaicist. It could be that both Obed and Salaman performed their work as unpaid labour, mentioned in the inscription as an ‘offering’, while the material costs were covered by Deacon Papion.

Commissioning professional personnel for the execution of specific works in monastic context is also mentioned in the sources. Such was the hiring of a plaster-worker named Mamas from Bethlehem, who was invited by the monks of the Great Lavra and arrived with his assistant in order to refurbish a water cistern. Possibly, only professional tasks that the monks were lacking the capacity to fulfil themselves, were carried out by craftsmen, who were hired for that specific job. Professional work-force could be hired by any patron and

\textsuperscript{47} Hachlili 2009 246-247.
\textsuperscript{48} Michael Donderer (1989 Pl. 21, cat. no. A30) regards the inscription as the work of apprentices of Obodianos and also Birte Poulsen (2012, 132) describes him as the owner of a mosaic workshop. It depends on whether the word ‘pupils’ is taken in the religious sense (‘disciples’) or the professional sense (‘assistants’), but it is well possible that the inscription intends both. It is not clear whether the mosaic of Obodianos and his pupils in Beth Govrin is a one-time project of monks decorating their own house of prayer or whether they also worked elsewhere, in which case Obodianos could be held as running a workshop.
\textsuperscript{49} Piccirillo 1997, 189.
\textsuperscript{50} Piccirillo 1997, 189.
these professionals were paid according to the work they carried out, while the monks fulfilled the unprofessional tasks.\textsuperscript{51}

Especially church mosaics inscriptions that mention the mosaicists as an anonymous group suggest employment of unpaid labour. The inscription in the Church of St Stephen at Um-al-Rasas reads: “O Lord, remember Your servants the mosaicists whose names you know”.\textsuperscript{52}

The reader cannot escape the impression that a religious motif is involved in commemorating the anonymous producers. Anonymity, however, is not in itself an indication of unpaid labour, but it is conspicuous that the majority of these inscriptions appear in religious context. At least one such case is known also from a synagogue.\textsuperscript{53}

3.2.5 \textit{Signatures from sixth-century Middle Eastern mosaics}

Mosaic inscriptions of the sixth century in Palestine and Transjordan are often dedicatory in nature. These may vary from a few words to inscriptions of considerable length. They often include valuable information, such as the names of patrons, donors (who are sometimes also portrayed in the mosaic), their titles, the blessings bestowed upon them, and the date of completion of the work. Signatures of mosaicists rarely appear in the main dedicatory inscription itself, but appear either as a secondary inscription or integrated within the decorative part of the mosaic. The terminology that appears in the inscriptions for the making of the mosaic has given rise to much debate. It is not always clear whether the verb ‘to make’ refers to the actual producer or to the donor who financed the work.\textsuperscript{54} For this reason, the

\begin{itemize}
\item \textsuperscript{51} Hirschfeld 2002, 163.
\item \textsuperscript{52} Piccirillo 1997, 47. This inscription is located at the eastern side of the nave and dates it to the time of Bishop Sergius the second. Another inscription placed on either side of the altar in the Church of St. Stephen at Um-al-Rasas names the two craftsmen Staurachius and Euremius who decorated the area of the presbyterium in the time of Bishop Job (Piccirillo 1992, 47,238).
\item \textsuperscript{53} Ovadiah/Ovadiah 1987, 36; Hachlili 2009, 245. In Beth Shean’s small synagogue B (known also as ‘the synagogue of the House of Leontis’) there is an Aramaic inscription in Hebrew letters: "זכור לשב אומנה עדב螳 יד אבdemand" ('Remember for good the artisans who made this work'). The name is not mentioned.
\item \textsuperscript{54} Overviews of the various opinions can be found in: Donderer 1989, 15-50; Balmelle/Darmon 1986, 235-249; Dunbabin 1999, 269-278; Ovadiah/Ovadiah 1987, 179-182; Hachlili 2009, 243-249. Most controversies refer to the interpretation of the terminology referring to the verb ‘to do’ or ‘to make’, or to the attribution ‘work of…’. Secure attribution is provided when the profession of the maker is stated to be a mosaist or a builder, such as in the case of אומנה (oman) in Hebrew, אומנה (omana) in Aramaic, and the various derivatives from the Greek \textit{psifothetai} or \textit{technitai}, as in the case of Beth Alpha that will be presented below. A recent debate arose in relation to the long poetic Greek inscription from the Nile festival building in Sepphoris. According to Di Segni (2002, 91-96) the inscription mentions two artists of Alexandrine origin, Procopius and his son-in-law Patricius as the makers of the Nile festival mosaics. Bowersock suggests a different reading, according to which, the inscription, situated four
\end{itemize}
present study refers only to those inscriptions, which signatures offer no controversy as to their reference to the actual producers.

The most extended group of mosaicists mentioned consists of three names. This is the case in the mosaic of the Old Diakonikon on Mount Nebo from AD 530: “Lord Jesus Christ, remember the clerics and monks and all others. Lord remember Soel, Kaium and Elias, the mosaicists and their whole family”. The reference to the word family in the singular suggests that the three had family ties to each other, although it is not clear how: they may have belonged to the same household, but need not have been actual blood-relatives.

The idea that mosaic-production teams were small family businesses, is further confirmed by the inscription from the synagogue of Beth Alpha. While the main dedicatory inscription is in Aramaic, dating the work to the time of the Emperor Justin (either Justin I AD 518-527 or Justin II AD 565-578), a second inscription, in Greek, names the mosaicists: “In honoured memory of the artists (τεχνιται) who made this work well, Marianos and Aninas”. The same names are also mentioned in the Greek inscription dating to the sixth-century renovation of a side chamber at the synagogue of Beth Shean (synagogue A, the so-called ‘Samaritan synagogue’): “[This is the] handwork of Marianos and his son Aninas”. This is the only case where possibly the same pair of mosaicists are mentioned in two different locations. They appear to have been a father and son, and comparison of the two works show that although

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55 Piccirillo 1997, 146.
56 I thank Rolf Tybout from the department of Greek language and culture at Leiden University for this nuance in the interpretation of the inscription.
57 Hachlili 2009, 244, first published by Sukenik 1932, 47.
58 Ovadiah/Ovadiah 1987, 179-180 confronts the question of whether the two are in the same team or people of a later generation (possibly, of the same family). If they are the same people, then the third stage of Beth Shean, which includes the signature, should be roughly contemporary to Beth Alpha. This would either mean lowering the third phase of Beth Shean to the period of Justin I (518-527) or dating Beth Alpha to the period of Justin II (565-578). For the dating of the so-called Samaritan synagogue in Beth Shean, see: Zori 1967, 154-156, 159, 167.
59 Another such case is in Zeugma, Turkey, where Zosimos of Samosata signed mosaics in two different houses from the third century. (Donderer 2008, a10 and a11; Poulsen 2012, 131,133). In the so-called House of Telete he signed a mosaic with a seated Aphrodite in a shell while in the other house he signed a mosaic with a scene from a play by Menander. Poulsen (2012, 133) notices: “The two floors seem extremely different, both in terms of style and inscriptions, and had it not been for the inscriptions we would hardly have connected them. This suggests that it may be difficult to identify the characteristic style of a workshop, perhaps because different tesselarii were at work. Or perhaps Zosimos was simply the owner of the workshop hired for the commissions?”.
they were capable of producing large-scale figurative works, they were sometimes employed in the production of relatively small and simple projects.

Three mosaicists worked in the Church of St George at Khirbet al-Mukhayyat. The mosaic is dated by its inscription to AD 535/36. The inscription mentions that the mosaic was the: “Work of the mosaicist Naum and Kyriakos and Thomas, for the repose of Sabinus, the brother of Martyrius”. Though the inscription does not specifically mention a family kinship, it still indicates a relatively small team of mosaicists. Other secure sixth-century signatures are those of a single craftsman, such as the inscription that surrounds the central tondo of the personification of the sea at the Church of the Apostles at Madaba, dated to AD 578: “O Lord God who has made the heaven and the earth, give life to Anastasius, to Thomas and Theodore. [This is the work] of Salaman the mosaicist”. A much more humble position is taken by the inscription of the mosaicist who laid the mosaic in a chapel at Khirbet el-Samra (Jordan), dating to the sixth century: “[Work] of Anastasius [son] of Domintianus the mosaicist”. The inscription was inserted in a simple oblong frame between the vine-scrolls that fill the surface of the floor. Also at the sanctuary of Lot, which was renovated and laid with mosaic in AD 572/3, the signature was inserted at a relatively hidden location, inserted into the decoration of the mosaic along the shoulders of an amphora, and reads briefly: “Cosmas [was the] Mosaicist“.

The mosaic at St Kyriakos at the village of al-Qwaysmeh, which may date partly or wholly to the renovation phase of the Umayyad period, carried three dedicatory inscriptions. The inscription in front of the altar included originally eight lines, but is almost completely damaged. The name of the craftsman, however, has remained: “Silanos, the mosaicist”. An inscription dated AD 756 in the Church of St Stephen in Umm al-Rasas mentions a father and a son, and an inscription in Evron mentions two mosaicists but does not mention whether

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60 Piccirillo 1997, 178, Fig. 248.
61 Piccirillo 1997, 106, Fig. 78. It is possible that Salaman was responsible only for the production of the central medallion that the inscription surrounds and that the rest of the pavement was produced by another team.
62 It is not clear whether the word mosaicist in this inscription refers to Anastasius or to his father Domintianus, but it is possible that it refers to both. The word is in singular, so clearly Anastasius was not working with his father at the time the inscription was laid, but was possibly trained by him.
63 Piccirillo 2002, 481.
64 Piccirillo 2002, 56, photo 3.
65 Piccirillo 1997, 268, Fig. 493.
66 Donderer 1989, A38.
there was a family relation between them. The case of Kefar Kana is not clear enough and may refer to donors.

In the mosaic of Meggido (Legio), a signature was added in smaller letters to one of the dedicatory inscriptions: “Gaianus, also called Porphyrius, centurion, our brother, has made the pavement at his own expense as an act of liberty. Brutius has carried out the work”. The centurion Gaianus is obviously the donor who financed the work, while Brutius is the mosaicist who produced it. The date of this inscription is not secure and the work was dated by its excavators to the third century. A third-century mosaic from Palmyra and the inscriptions in the Basilica at Zaharani (Lebanon) indicate that the practice of small teams, based upon family relationships, in which the craftsmen represent two generations, also existed elsewhere in the Near-East.

The inscriptions, also when they do not attest a family relation between the makers, indicate that they were small teams. In theory, it is possible that the signatures name only the master mosaicists, leaving assistants and trainees unmentioned. It is possible that the work force in practice was larger than what the inscriptions state. However, even if each master had one or even two assistants, this still implies that mosaic workshops were not a very large organization, varying from three to six workers. This would correspond to the earlier observation of Rhodian sculpture workshops that were not larger than five to seven workers, including assistants, and the observation of Harding concerning the Late-Medieval Orvieto with no more than six mosaicists working at any time.

Since dedicatory inscriptions mention only the completion date of a pavement (and not the starting date), it is not simple to calculate the exact duration of a mosaic project. A surface of a 100 square metres is not unusual for a church, and small-scale projects, like chapels or burial chambers, may reach a surface of 20-50 m². Quantitatively, there is no indication that the number of masters bears any relation to the size of the project: the mosaic of the Old

67 Hachlili 2009, 246.
68 Hachlili (2009, 245-246) follows Avi-Yonah who reads the inscription as signatures. Naveh (1978, 51-52) reads them as dedications of donors. The inscription of Kefar Kana mentions ‘Yoseh, son of Tanhum, son of Butah, and his sons, who made this pavement’. Interesting is an inscription in Sepphoris mentioning ‘Yudan son of Tanhum the son of…’. If Yoseh and Yudan were sons of the same Tanhum, it may attest to a family of a few generations of craftsmen. But these may also be family of donors.
71 The inscription mentions Sousias and his son Leontis (Doderer 2008, a26)
Diakonikon, where three mosaicists are named, is much smaller in size than the Beth-Alpha mosaic, where only two mosaicists are mentioned.

Employing less qualified workers who were responsible for the simple works would have shortened the time of production. Theoretically, employing assistants for the cutting and sorting of tesserae would free the master mosaicists for the more complex tasks. However, as has been shown in Chapter 2, the stage of cutting the tesserae sometimes took place contemporaneously to the laying of the lower strata of the whole floor, which means that when the inlay stage began, most of the material was already pre-cut. However, employing assistants for the more simple inlay works, such as the surrounding borders or the neutral white background would shorten the production time. Although the share of those assistants may be large in quantity, the artistic contribution of these parts of the floor is limited, which would be the reason to leave the names of these assistants out of the dedicatory inscription.

However, not all inscriptions ignore the assistants and it would probably be impossible to establish with certainty which work or portion was allocated to the assistant. An inscription from the third century in Lillebonne (France) was signed by T. Sextius (or Sennius) Felix from Puteoli (Italy) and mentions a discipulus (trainee). Also, a signed mosaic from a fifth century basilica in Um Hartaine in Syria mentions a master (Thomas) and his two pupils, Sergius and Ondas. Another inscription in the same aisle mentions the pupil Mara. And see also the case of Beth Govrin mentioned earlier.

These workshops were not large establishments. The evidence of inscriptions indicates, that the working teams consisted of relatively small, in some cases family-related, teams, or a single mature craftsman, who was responsible for the production and who was perhaps assisted by one or more trainees, who, during the training period, may have not always been mentioned in the inscriptions. But it is possible that some inscriptions name them without specifying their status as trainees. In any case, it seems that the mosaic workshops in Palestine and Transjordan were mostly small-scale businesses.

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72 Poulse 2012, 132.
3.3 IDENTIFICATION OF MOSAIC WORKSHOPS IN MODERN ART-HISTORICAL RESEARCH

3.3.1 Introduction

Early attempts to identify workshops occurred in large-scale projects, such as the Palace in Constantinople and the Piazza Armerina in Sicily, focusing upon the division of work among various teams by identifying the seam-lines visible between sections.\(^{74}\) In the mosaics of Palestine, the earliest observation that led to an identification of a workshop was advanced by Michael Avi-Yonah in his study of the so-called ‘Gaza workshop’, that was supposedly active in the Negev, the southern part of the province of Palestina Prima, during the Early Byzantine period.\(^{75}\) The observation promoted the hypothesis, that the workshop specialized in the production of a certain scheme of composition.

This hypothesis has been refined through the use of technical and partly formalistic criteria by Claudine Dauphin\(^{76}\) but has also been questioned by others, as will be shown later. Geometric and decorative designs were used as a criterion to identify workshops throughout the Mediterranean area.\(^{77}\) The use of iconography and subject matter will be illustrated by two examples: the first will deal with the case of identical scenes that appear within two sites in close proximity. The other example is the study of transfer of iconographic tradition in a group of mosaics from Pompeii.\(^{78}\) A few studies use a combination of criteria for the purpose of workshop identification. Such studies take into account a range of artistic phenomena. The study of workshops in Britain, for example, combines the study of recurring composition, iconography and geometrical designs.\(^{79}\)

John Clarke, in a short but persuasive study dedicated to workshops in Italy, introduced a combined method in which several criteria are used: external dating evidence, correspondence of motifs, formalistic similarities and inlay-patterns.\(^{80}\) He was probably the first to shift the focus of investigation from identifying the workshop to identifying the individual craftsman who produced a certain section. Two main approaches can be distinguished in identifying individual artists. The first chooses the ‘negative approach’, showing that two mosaics or parts of a mosaic were not produced by the same hand, attaching a measure of quality to each

\(^{74}\) Brett 1947, 87-91.
\(^{75}\) Avi-Yonah 1965, 377-383.
\(^{76}\) Dauphin 1976, 113-158.
\(^{77}\) Campbell 1979, 287-292; Poulsen 2012, 135-142.
\(^{78}\) Meyboom 1977, 49-93.
\(^{79}\) Smith 1975, 95-116.
\(^{80}\) Clarke 1994, 89-102.
hand (attributing high-quality work to the master, while the less articulated work is attributed to one or more assistants or trainees). The opposite approach seeks to attribute different mosaics or part of mosaics to the same artist. Recent publications acknowledge the importance of technical data for the study of the practical aspects of fabrication. The extensive investigation of the mosaics of the Atrium House triclinium from Antioch is the first methodological attempt to combine material analysis with iconographic study in order to come to a better understanding of the production process.\(^{81}\)

The application of so many tools by different scholars for the purpose of workshop identification illustrates the growing interest in this field of study, but also the lack of one method of investigation. A more detailed discussion of the criteria used by the various scholars will clarify the problems involved in each of them, and will explain the preference for the combination of criteria, focusing on the identification of the individual craftsman as the basis of the current investigation.

3.3.2 Seam-line as criterion for identification of work division

Seam-lines are important for establishing limits of field divisions, that in turn may be useful for understanding the steps of work progress,\(^{82}\) but they are less useful in establishing the number of teams or individuals working on a mosaic. It is reasonable to assume, that the production of large-scale projects was divided between different teams who worked simultaneously on different areas of the floor. One such project is the Great Palace in Constantinople, where the external measurements are 55.5 x 66.5 m with a width varying between 7.2 - 10 m. In its complete form it is estimated to have comprised some 1,900 square metres of mosaic.\(^{83}\) Another large-scale project is the mosaics of Piazza Armerina in Sicily, estimated at a total of 3,500 square metres\(^{84}\) of which the corridor of the Great Hunt alone measures 59,63 m by a width of 5 m.\(^{85}\)

Bret distinguishes nine workshops by the following method: “Where a line can be drawn across the mosaic without touching any figure, there is presumptive evidence of a division at that point between two workshops.”\(^{86}\) The division is therefore quite mechanical and is based

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\(^{81}\) Becker/Kondoleon 2005, 17-75.  
\(^{82}\) Wootton 2012, 161.  
\(^{83}\) Trilling 1989, 28.  
\(^{84}\) Dunbabin 1999, 131.  
\(^{85}\) Dunbabin 1999, 134.  
\(^{86}\) Brett 1947, 88.
upon the assumption, that a detectable division line marks a border between sections that were produced at the same time by different teams. This is, however, not the only possible interpretation. It could also be argued that only one team produced the whole floor in consecutive portions, moving gradually from one side to the other along the hall, fabricating the mosaic in sections. The arguments for attributing various sections to different teams is combined with differences in the scale of figures, lay-out and stylistic treatment. However, Brett also admits many similarities between different sections. Two examples will suffice.

In the description of the so-called ‘second’ workshop Brett writes: “The figures are arranged in regular lines, the same as those on which the figures of the first workshop stand; and the swan-necked appearance of the two horses resembles the goat” [i.e., in the section produced by the so-called ‘first’ workshop].87 In the description of ‘the third’ workshop Brett writes: “…the eye of the woman with the vase, the pink and green chequering on that figure and on the nymph, and the strong brown shades on the body of the nymph, closely resemble the work of the second workshop but the layout of the figures is different…”.88 The inlay of chequering or application of alternate lines of green and pink tesserae for the depiction of skin is a technique that recurs quite often in the mosaic89 and it could be that a broader investigation would suggest a more dynamic model for the production of the mosaic, in which artists constantly changed their work-position and did not stay working within the limits of one section or one team. A further investigation, however, is necessary in order to arrive at a new model to reconstruct the work division in the Great Palace mosaic.

The mosaic of the Great Hunt at Piazza Armerina has been attributed to a North-African workshop from Carthage, on the basis of style, composition and arrangement, themes, repertoire, and iconography.90 The work was attributed to several teams, following a method that resembles that of the Great Palace: “A series of ‘sutures’, or vertical seams, perceptible especially in the manner of laying the white tesserae of the background, allow seven main sections to be distinguished…variations in technique, for instance in the size of tesserae and the materials, also differentiate the sections”.91 These differences are taken to indicate the division of work among different teams, which executed more than one section each. Ampolo Carandini and his team distinguish four groups, each with a particular style (conservative

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87 Brett 1947, 88.
88 Brett 1947, 88.
89 Brett 1947, 69-86.
90 Dunbabin 1999, 137.
91 Dunbabin 1999, 139.
against innovative),\textsuperscript{92} although Dunbabin perceives the differences in style as minor and stresses the uniform effect of the overall design, suggesting that a single designer must have been responsible for the layout as a whole.\textsuperscript{93} In both examples, it is clear that a combination of criteria would yield more comprehensive results.

3.3.3 Composition as an identification criterion

The criterion of a shared composition, either as a sole criterion or in combination with other criteria, played an important role in the attempt to identify various workshops. Mosaic pavements are in their nature a flat surface, that involves the need to determine the compositional principles according to which the surface would be divided prior to the actual inlay work. By using certain compositional principles, setting an orientation, and planning the principles of distribution of the motifs upon the surface, the artist guides the viewer and determines his position in relation to that space. It may influence the observation position, designate restricted areas and determine the direction of movement within that space and upon that surface. The transition from Hellenistic and Roman art to Early Byzantine art was revolutionary for the compositional principles of mosaics in the Near East.

From the fourth century onwards, the Greco-Roman semi-emblem conventions were deserted in favour of abstract layouts.\textsuperscript{94} The traditional Hellenistic semi-emblem was popular in the East during the whole Roman period. Good examples are the early second-century triclinium mosaics of the Atrium House\textsuperscript{95} and the fourth-century Mosaic of the Women’s Funerary Banquet\textsuperscript{96} from Antioch. These classicistic depictions use the convention of a frame that opens a ‘window’ to another reality through the creation of an illusionistic space, in which naturalistically rendered figures are acting and relating to one another. Later artistic developments show a radical change in taste and the floors stress the two-dimensional quality of the surface. Kitzinger briefly defined the change as follows:

\textit{The most important and most fundamental phenomenon in the stylistic development of floor decoration in this area during the period concerned [350-450] is the elimination}

\textsuperscript{93} Dunbabin 1999, 139.
\textsuperscript{94} This stylistic shift has been thoroughly studied by Ernst Kitzinger (1965, 341-51; idem 1977, 91-92).
\textsuperscript{95} Becker/Kondoleon 2005, 19.
\textsuperscript{96} Becker/Kondoleon 2005, 196-201.
of devices which dissemble or contradict the material existence of the floor as a solid, opaque and unified surface and the introduction of others which imply an acceptance of that surface as a basis of the design.\textsuperscript{97}

This development stressed the concept of the pavement as a flat, two-dimensional geometric carpet, containing units that are often repetitive in nature and that Kitzinger defined as ‘multidirectional and endlessly expansible’. \textsuperscript{98}

This change can be recognized also in the mosaics of Palestine. The third-century mosaic of Achilles in Schem (Nablus) shows the Hellenistic trends and the use of semi emblems with figurative mythological depictions. \textsuperscript{99} The Dionysos mosaic from Tsippori continues the same trend but with a series of semi emblems that are oriented to the various directions in the room. \textsuperscript{100} Fourth-century mosaics, such of Hammath-Tiberias, already divide the surface into larger units, each with its own compositional principles. The fourth-century Lod mosaic contains panels and lay-outs that demonstrate the later developments towards carpet compositions.

It is not clear to what degree the local artists in Palestine were themselves innovators and initiators of this process of change. It seems that changes that initially took place elsewhere were imported into the region and continued their development locally. Be that as it may, the artists who were active in Palestine in the fourth century seem to have been up to date with the artistic trends of their time and implemented the recent new developments in an impressive number and scale of commissions. Despite the lack of documented continuity during the fifth century both in Palestine as well as in Transjordan, \textsuperscript{101} an explosion of

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\textsuperscript{97} Kitzinger 1965, 342.  \\
\textsuperscript{98} Kitzinger 1976, 89.  \\
\textsuperscript{99} Ovadiah/Ovadiah 1987, 129-130.  \\
\textsuperscript{100} Weiss/Talgam 2004, 47-48.  \\
\textsuperscript{101} Excavations in Transjordan did not yield yet mosaics dating to the fourth century. The lack of direct evidence and the uncleanness as to the continuity of the mosaic production during the fifth century, makes it difficult to trace a clear line of development. In the province of Palestine, a few mosaics can be securely dated to the fifth century on the basis of inscriptions, and include: Evron AD 415, 442/3 and 490 (Ovadiah/Ovadiah 1987, 59-60); Ashkelon-Barne’ a 493 and 499 AD (Ovadiah/Ovadiah 1987, 13-14); Horvat Karkara AD 477 (Ovadiah/Ovadiah 1987, 71); Beit Safa’a AD 491 (Ovadiah/Ovadiah 1987, 81); Shavei Zion AD 486 (Ovadiah/Ovadiah 1987, 129). The material is not conclusive as to the situation of mosaic art in Palestine during the fifth century. Most of the mosaics are geometric with minimal figurative depictions. It still needs to be investigated whether the mosaic industry in Palestine deteriorated or suffered some kind of crisis in that period. Although sixth-century mosaics do seem to continue - or revive - the fourth-century trends, the question of continuation remains open. It could be, that the earlier mosaics, up to the fourth century, were produced mainly by workshops from outside the area, while the late fourth-fifth centuries represent a process in which local industry evolved, an
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production according to the principles described by Kitzinger is attested in the local production of both provinces during the sixth century. These lay-out schemes were classified into three main types: panel division,\textsuperscript{102} free distribution,\textsuperscript{103} and the many types of carpet designs.\textsuperscript{104}

The carpet design known as the ‘inhabited scroll’, which includes a field in which a vine or acanthus scroll grows in the form of medallions to cover the whole surface of the mosaic field, has become one of the most popular lay-outs in this geographical area.\textsuperscript{105} Although it has been shown that the source of the design was in Hellenistic art,\textsuperscript{106} its extension to the form of a whole field covering the whole surface is a unique local variation that became popular in the Near East in the late fifth and during the sixth century.

A group of mosaics decorated with carpets of inhabited vine scrolls were interpreted by Avi-Yonah as the product of one and the same workshop. The first pair identified as the product of one workshop, on the basis of compositional similarities, was the church mosaic of Shellal\textsuperscript{107} and the mosaic of the Synagogue in Maon-Nirim.\textsuperscript{108} The two sites are located in the Negev desert in Israel, geographically a short distance away from one another and from the city of Gaza. The compositional similarities between the two floors are indeed conspicuous. They both belong to the type characterized by a field of inhabited scrolls, of a vine plant industry that reached its acme in the sixth century. However, it is not clear how local this phenomenon was and these observations need to be established by a broader investigation in the region.

\textsuperscript{102} Examples of panel-division floors are the Synagogue of Beth-Alpha, the so-called Samaritan Synagogue of Beth Shean, and the Synagogues of Susiya, Sephoris, Na’aran and Usfiya. Another example is the mosaic at Shaich Zuaid. In Madaba, the Hall of Hippolytus shows a similar three-panel division.

\textsuperscript{103} The Nile mosaic of Sephoris, the House of Leontis in Beth-Shean, the mosaic of Ein-Sheva (Tabga), Jabaliya, the old Diakonikon at Mount Nebo and the Church of Al-Khadir at Madaba.

\textsuperscript{104} Michael Tal (1997) dedicated his MA thesis to the study, classification and typology of the different compositional schemes appearing in Early Byzantine mosaics in Palestine and Transjordan. Talgam (2014) dedicated the third chapter of her book to the compositional trends in floor mosaics of the Byzantine period.

\textsuperscript{105} The Narthex of the Monastery of Martirius in Ma’aile Adumim and the lower Church of the Priest John in Khirbat Al Mukkhayyat, The lower baptistery in Madaba, the lower Church of Kaianus, ‘the burnt palace’ at Madaba, the Synagogue of Gaza, the synagogue of Maon-Nirim, the Church of Saint George, the Upper Church of Priest John, Be’er Shema’, Shellal, Al-Hammam in Beth-Shean, Kyria Mariah in Beth-Shean, the Synagogue of the House of Leontis in Beth-Shean, Sede Nahum, and the Bird Mosaic in the Armenian monastery in Jerusalem, are but a few examples. It appears that in Palestina most ‘inhabited scrolls’ are growing out of an amphora, from the centre towards the sides. In Jordan, also a variant of a scroll growing from all four corners of the hall to the centre can be found (Tal 1997, 41).

\textsuperscript{106} Toynbee/Ward-Perkins 1950, 2-43.

\textsuperscript{107} Trendall 1973;Henderson 1988, 35-43.

\textsuperscript{108} Ovadiah/Ovadiah 1987, cat. no. 176, PIs CXVI-CXIX.
growing out of an amphora that is located at the lower central row. The plant is spread out and covers the surface of the whole field in a symmetrical pattern that includes an uneven number of medallions in a horizontal direction. In both mosaics this number is five.

The central vertical row of medallions serves in both mosaics as an axis of symmetry and contains inanimate objects, while the animals that are depicted in the medallions on both sides of this axis, are facing it. Further details of similarities are the rings that connect the medallions in the vertical direction, and their connecting links in the horizontal direction. Avi-Yonah attributed both floors to a workshop that was presumably located in the city of Gaza.\textsuperscript{109}

To this pair, Avi-Yonah added the mosaic from the synagogue of Gaza that was excavated in 1966\textsuperscript{110} and extended the attribution also to the mosaic from the Armenian Church in Jerusalem,\textsuperscript{111} the mosaic of Ein-Hanniya,\textsuperscript{112} the third-phase mosaic from Beth Govrin (Eleutheropolis),\textsuperscript{113} the mosaic from Khirbet Asida\textsuperscript{114} and the Synagogue of the complex of ‘The House of Leontis’ in Beth Shean.\textsuperscript{115}

Avi-Yonah defined the common artistic characteristic of the ‘Gaza workshop’ in terms of the lay-out and the use of the uneven number of vertical scrolls, of which the central one serves as an axis of symmetry. Avi-Yonah sought to strengthen the compositional attribution by an iconographic argumentation, as the central axis often includes inanimate objects while the side rows depict animals. Furthermore, some of the motifs, such as the bird in a cage and the basket of fruit, appear on more than one floor attributed to the ‘Gaza workshop’. Avi-Yonah’s theory had an enormous impact upon the study of mosaics in the region and the ‘Gaza Workshop’ theory was soon adopted by others.\textsuperscript{116} This is illustrated by the tendency of excavators to attribute further mosaics to this workshop, for example the mosaic of Kissufim in the Negev\textsuperscript{117} and the mosaic in Be’er Shema’.\textsuperscript{118}

In 1987 the group of mosaics attributed to ‘the Gaza workshop’ was re-examined by Rachel Hachlili, who showed that the characteristics identified by Avi-Yonah were actually not shared by all the floors attributed by him to that workshop. Furthermore, she questions the

\textsuperscript{109} Avi-Yonah 1965, 377-383.
\textsuperscript{110} Avi-Yonah 1975, 191-193.
\textsuperscript{111} Ovadia 1968, 124-127.
\textsuperscript{112} Avi-Yonah 1975, 192.
\textsuperscript{113} Ovadia/Ovadia 1987, 18-20.
\textsuperscript{114} Hachlili 2009, 114, Fig. VI-3.
\textsuperscript{115} Bahat 1972, 55-57; Ovadia/Ovadia 1987, 36-37, cat. no. 31b, Pl. XXXIII.
\textsuperscript{116} Ovadia 1995, 367-372.
\textsuperscript{117} Cohen 1973, 24.
\textsuperscript{118} Cohen 1993, 281-282.
basic assumption that the recurring compositional schemes and certain iconographic details can define a workshop. She explains the similar characteristics by suggesting the use of common models and the derivation of the characteristics from similar visual sources, such as pattern-books. She also proposes, that the choice for the compositional scheme and the number of scrolls depended on the surface available and the size and form of the room where the mosaic was to be laid. For example, symmetrical compositions consisting of five scrolls in the horizontal row were chosen for large oblong rooms; compositions consisting of three scrolls in the horizontal row were chosen for very long and narrow spaces such as the aisles, while the nine-medallion composition, a scheme with 3x3 scrolls, was applied in small and square rooms.

Hachlili suggests further, that each of these schemes demanded a different production order: the production of the first scheme (of five scrolls in the horizontal row in long oblong rooms) began from the central vertical row of medallions, which is also the axis of symmetry. Subsequently, each couple of medallions was produced, creating a full five-medallion row. The craftsmen worked their way from the lower to the upper side of the mosaic, row by row. The second scheme, argues Hachlili, was produced in a similar fashion, starting with the lowest row and ending with the uppermost. The third scheme, that had a centrally oriented composition was produced, according to Hachlili, from the centre outwards. This division seems somewhat artificial. The strength of the inhabited scrolls composition, like other carpet-designs, is in its capacity to be applied in any given sized room. In fact, the advantage of the carpet-design is its flexibility. The composition can be extended to all sides and the number of medallions can be multiplied according to any given demand.

This flexibility can be illustrated by the composition of El-Hammam in Beth Sheam which includes 56 medallions in an arrangement of 7x8, the medallion composition at the monastery of Lady Mary in Beth Shean which includes twelve medallions in an arrangement of 4x3, while other arrangements are found in Jordan and Lebanon. Hachlili’s important contribution is her criticism of the composition as an identification criterion for mosaic workshops, and her insight that other factors may also be involved in the choice of a similar plan for the decoration of buildings that are geographically not very distant from one another and may express a local fashion. She also raises the discussion concerning the hypothesis of the existence of pattern books. Avi-Yonah perceived the books as containing patterns that were

119 Hachlili 2009, 264-266. Hachlili’s own identifications, however, are also partly based upon shared repertoire.
used exclusively by one workshop, possibly along a few generations, while Hachlili thinks of them as a shared source of images and patterns that circulate among artists and were widely used.

Claudine Dauphin gave the attribution of Avi-Yonah a further nuance by applying a classification method that rests upon computed codes. She limited her study to the composition of the ‘inhabited scrolls’ field and applied an alpha-numeric code system that was initially developed by Avi-Yonah as a means of offering an alternative for complicated verbal descriptions of geometric designs. Dauphin admits that composition alone does not provide the scholar with satisfactory tools for identifying ‘schools’ or ‘workshops’. Therefore, in addition to coding the compositions, she applied five additional comparison criteria: the width of borders, a tesserae count, the number of contour lines in the background that surrounds the figures, the diameter of the scrolls, and formal aspects such as the design of vine-leaves, grapes and tendrils.

All the mosaics investigated by Dauphin were consequently grouped on the basis of their geographical distribution, with the idea that a ‘workshop’ or ‘school’ was active within a certain limited region. The appearance of similar characteristics in terms of the criteria defined by Dauphin within a limited geographical area would indicate the existence of a workshop active in that region. Chronological criteria were ignored altogether. The results were far from conclusive. The computer comparison showed that rarely more than two floors in one region show similarity for all the criteria chosen. In fact, the computed results did not provide new groupings of similarities that had not been noticed before, including the two mosaics in the region of Gaza – Maon and Shelal – attributed by Avi-Yonah to the ‘Gaza workshop’. The method, however, does provide an ‘objective’ empirical framework for the recognition of these similarities.

The consideration of technical aspects for identification the makers of mosaics, as done by Dauphin, opens a new pathway for investigation, but the computing method is at the same time a limitation. Since a coded system necessitates a strict definition of categories into which the mosaics are divided, nuance is essentially limited. For example: the size of tesserae seems at first glance an easily measurable criterion, since the number of tesserae per square decimetre is an empirical characteristic that can be easily established. But even here, a range of sizes needs to be established and drawing the line is arbitrary.

Furthermore, mosaics of the sixth century show variety in the size of tesserae, with different density in different areas within one depiction. In the depiction of human figures, the
facial features are often depicted with tiny tesserae, the body with larger ones, and the background with even larger tesserae. Even more complicated is the criterion of formal features; the possibility of variety in the depiction of each motif in the mosaic is so great, that categories are difficult to establish. A good example is the colour and form of the vine-leaf. Although it is possible to establish this in the depiction of each and every leaf, the situation is complicated by the fact that on the same floor, more than one type of leaf can be discerned. The same is true for shapes of fruit and plants, while figurative depictions offer new challenges altogether.

Beyond the difficulty of classification, there are two other points that may influence the results of Dauphin’s study. One of them is the geographical range within which a workshop was active. Dauphin assumes as a rule that a workshop was active within a limited geographical range. Though reasonable for the sake of investigation, it should not be ruled out that mosaicists might have travelled long distances or were invited from other provinces in order to execute mosaic projects. Furthermore, since Dauphin only investigated the inhabited scrolls composition, the method would not be able to trace a workshop that utilized the same technical criteria in the production of floors with a different composition. It seems, therefore, that it is not the composition that should be the starting-point for the investigation of mosaic workshops.

### 3.3.4 Geometric designs as an identification criterion

Geometric designs are rarely used as the sole criterion for the identification of workshops. The reason is that most geometric patterns have become so common, that the possibility of them being exclusive to one team of mosaicists is perceived as untenable. A basic repertoire of designs had no doubt become common knowledge. Some patterns retained their popularity for centuries and appeared in all areas of the Greco-Roman world. Patterns, such as the wave crest, the meander and the guilloche, were used exhaustively. Geometric patterns are therefore mostly used in combination with other criteria, or when unique motifs appear in unique combinations.

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120 It is possible that some mosaicists or workshops were itinerant. An inscription on a funerary monument from Perinthos in Thrace, erected by the mosaicist Proklos for his father who trained him, records that the deceased, an old man of eighty, exercised his art in various cities. (Dunbabin 1999, 274). In an inscription from a third century mosaic from Chania in Crete, the mosaicist identifies himself as coming from Daphne (Antioch). It is not clear, however, whether the mosaicist was Syrian in origin but lived permanently in Crete, or whether he was invited only for the execution of that particular project. (Becker/Kondoleon 2005, 38).
This method is applied, for example, by Sheila Campbell, in her study of geometric designs in mosaics from south Turkey\textsuperscript{121} or by Demetrios Michaelides in studying the mosaics of Cyprus.\textsuperscript{122} Michaelides identified one workshop that worked in two different locations, on the basis of its preference for non-iconic fields in which certain combinations of geometric designs reappear. Also the very use of an abundance of inscriptions, which is in itself rather unique in Cyprus, and the manner of the incorporation of texts into the artistic elements is a recurring similarity.

Campbell stresses especially variations on standard geometric forms and repeated unique combinations as the main criterion of identification. She admits, however, that the unusual patterns could be transmitted by pattern-books rather than being a unique trait of a certain workshop or an artist. Some of the examples in her study, such as the twisted ribbon within a ribbon or the two-strand guilloche and stepped pyramid\textsuperscript{123} are interesting in the sense, that if a local artist or workshop wished to excel in the production of geometric patterns as an artistic specialization, the invention of genuine patterns or surprising variations could be taken to be an artistic signature.

A detailed study of the tangent 4-pointed star by Poulsen approaches the geometric pattern not merely as a design. It analyses the actual inlay as a characteristic of a workshop. It is thus not the application of a certain geometric design that identifies the makers, but the way it is executed. Poulsen suggests that despite the similarity of the design in various mosaics (in Cos, Cnidus Halikarnassos and elsewhere), small differences of inlay betray the different makers.\textsuperscript{124}

3.3.5 Iconography as an identification criterion

Another criterion that has been proposed for the identification of workshops is iconography. Avi-Yonah has already used an iconographic argumentation in order to strengthen his identification of the so-called Gaza workshop, and Dauphin in her article concerning Byzantine pattern books discussed iconography as a possible criterion for identifying an artist or a workshop.\textsuperscript{125} An example she uses is the iconography of the wine-pressing scene, which

\textsuperscript{121} Campbell 1979.
\textsuperscript{122} Michaelides 2001, 314-325.
\textsuperscript{123} Campbell 1979, 290.
\textsuperscript{124} Poulsen 2012, 141.
\textsuperscript{125} Dauphin 1978, 410-411.
is a subject that appears in a number of mosaic pavements. However, the comparison of similarities between these representations does not seem to support the idea that all depictions derive from a common iconographic origin. Some of the differences may even suggest that the designers were familiar with different processes and installations for wine production and thus reflect actual differences in the practice of wine production in different villages, indicating that artists at times changed their models according to personal observations.

The application of iconography as a criterion for identifying a workshop or an artist can be illustrated by the study of two mosaics from the city of Volubilis in North Africa. In two different houses, the House of Venus, and the House of the bathing Nymphs, the scene of Diana bathing is rendered in a similar fashion. However, it might be argued that both representations go back to a mutual model, rather than that the same workshop was at work on both sites.

A more thorough method for the use of iconographic analysis and its application for identifying workshops is a study conducted by Paul Meyboom, dedicated to a group of four Pompeian mosaics, on which various types of fish are depicted. The mosaics were produced in the *opus vermiculatum* technique and were dated to the first century BC. Meyboom compared the types of fish depicted on each of the mosaics, the manner of representation, their distribution around the surface and the artistic quality of their execution. He reached the conclusion that one iconographic model is shared by three of the four mosaics, and that the pattern derives one from the other. This supports the hypothesis that these three mosaics were produced in consecutive order, perhaps by the same workshop. The fourth mosaic is the one that is closest to the presumably original model, and was possibly an intermediate stage between the model and the other three mosaics.

Meyboom concludes that the derivation of the design of three of the mosaics one from the other as well as the use of the same scale of colours suggests, that all three mosaics were produced by the same workshop. Interestingly, in addition to the iconographic similarities between the three mosaics, Meyboom notices differences in quality and execution, convincing

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126 In the Church of St Christopher at Qabr Hiram, El-Hammam in Beit-Shean and the Church of the Holy Martyrs Lot and Procopius at the village of Nebo.
127 Dunbabin 1978, 277 (Volubulis 2d).
128 Dunbabin 1978, 277 (Volubulis 8).
130 Though this can be explained by the derivation of the material from the same source around the area of Vesuvius (Meyboom 1977, 72).
131 Meyboom 1977, 54.
him that the three mosaics were not produced by the same craftsmen. This is a most important observation as it may be questioned whether certain patterns or models belonged exclusively to a certain workshop. Although it is possible that a certain workshop chose to specialize in marine subjects, it is conceivable that once these had become popular and desirable subjects, copies could have been made directly by inspecting a completed mosaic, without being familiar with its original model. This manner of working is supported by Meyboom’s observation that the three mosaics are derived one from another and not necessarily from the original model.

The observation of Meyboom that the mosaics vary in quality and may be attributed to different hands is of great importance for the present investigation, since if other mosaics could be attributed to those hands, we could get a better glimpse into the mosaic production of Pompeii during the first century BC and the operation of craftsmen in the city. However, the observation by Meyboom is a sufficient basis for reconstructing a few possible models, according to which the structure of the mosaic workshop in Pompeii operated. If each fish mosaic was the work of one individual mosaicist, Meyboom’s conclusion that the difference in style represents individual producers, is likely to be correct.

A theoretical possibility that mosaic workshops in Pompeii worked as a team offers a different model. Since the tesserae in the Opus Vermiculatum technique are miniscule, the production area per day of work was certainly very small. Theoretically, each and every day, another mosaicist could have continued the work of the mosaicist who worked on the same mosaic the day before. Such a method of construction would have had two possible implications: one implication is that the work of one craftsman would not be distinguishable from that of another. The other possibility is that a few distinguishable styles may be identifiable within the same emblem. Since such a differentiation of style has not been observed by Meyboom, and it seems that each mosaic was produced by one craftsman, a third possibility may also be considered, and that is the possibility that mosaicists worked individually, without being bound to a workshop structure. Each mosaic would then be produced by one single craftsman, who gained the pattern for his product through direct observation and copying, or through obtaining the pattern from a colleague mosaicist.

In studies where iconography is the main research criterion but where the identification of workshops is the main objective of the study, observations regarding style, artistic quality, and the possible identification of the individual hand of the artist, play an important role and should receive an equal weight in reconstructing the process of production.
Stylistic analysis as a method of distinguishing between artists was applied by Nira Stone in her study of the two mosaics that were originally identified by Avi-Yonah as the product of the so-called ‘Gaza Workshop’, the mosaics in Shellal and Maon.\(^{132}\) Stone observed that despite the severe symmetry and strict compositional order of Shellal, the style of the figures themselves is highly naturalistic, with correct proportions, movement, foreshortening, gentle shadowing and anatomical details that create the illusion of three dimensionality. She compared the figure of the ram from Shellal to the ram from Maon, and showed how the very same animal was produced in a totally different manner – flat and motionless in Maon, lively and naturalistic in Shellal. She showed how the craftsman of Shellal used various shades of the same colour group in order to create gentle tonality and smooth transitions while the craftsman of Maon used colour lines and stressed section division in order to create the anatomy.

The investigation employed by Stone demands a much more detailed observation of aspects of style and inlay technique, which is a method that was seldom used at the time when her study was conducted (but see also Clarke, below). Stone was one of the first to focus entirely upon the formation of the design of the individual motif. The important aspect of Stone’s investigation is the focus upon the artistic tradition of inlay that the craftsman was applying, in order to indicate differences between individual mosaicists. She therefore deserted the vague terminology of *workshop* in favour of an individual identification according to stylistic traits. The conclusion of Stone, that the craftsmen who worked in Shellal could not have been the same craftsmen who worked in Maon, placed the whole theory of Avi-Yonah in a new light and proves that the investigation of forms and inlay-technique may be much more rewarding for understanding work constructions in Antiquity. Refining Stone’s method may open a whole new manner of looking at mosaics and identifying their makers.

Although it may be inferred from her study that Stone did conduct her investigation according to a certain theoretical framework in which methods and sets of criteria are present, she did not present her method in her publication and did not offer the future scholar the

analytic tools she had used in a way that would enable their further application. Her criteria refer nevertheless to form and style.

Similar criteria seem to have been applied by Michelle Piccirillo in his study of the mosaics of Jordan. He identifies a few similarities between mosaics that he attributes to the same team of mosaicists. Three of these teams worked in the city of Madaba, one in the adjacent area of Mount Nebo and one team at Umm-Al-Rasas. The first Madabean team identified by Piccirillo produced the mosaic of The Burnt Palace and The Hall of the Seasons. A second Madabean team produced the three mosaics known as The Bacchic Procession, The Panel of Young Heracles and The Mosaic of Achilles. The third Madabean team produced the mosaic of the Chapel of The Martyr Theodore and the mosaic at The Baptistery Chapel. The team active in the area of Mount Nebo produced the mosaic at The Church of the Holy Martyrs Lot and Procopius in Khirbat Al-Mukhayyat and the Mosaic at The upper Chapel of the Priest John at the same site. The last group produced the pavement of the Church of Bishop Sergius and the mosaic of the Church of the Rivers in Umm-Al-Rasas.

Like Stone, Piccirillo also did not present a clear method or guide-lines regarding the criteria which he applied for recognizing the teams that he identified. He does not always explain in which way these mosaics, or artistic motifs, resemble each other. It seems that he relies both upon iconographic as well as stylistic and some technical criteria. The use of the term ‘team’ by Piccirillo avoids the use of the term ‘workshop’, but at the same time does not offer a new definition of the term. It suggests that the work of one member of the group is indistinguishable from that of another. But it may also suggest a looser formal connection between the members of the group, and is therefore preferable to ‘workshop’. Be that as it may, mosaics, as will be shown later, are far from being uniform in their details. Technical and stylistic differences may be discerned within one and the same mosaic, suggesting that

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133 Piccirillo 1997,76.
134 Piccirillo 1997, 77.
135 Piccirillo 1997, 118.
137 Piccirillo 1997, 240.
138 During a meeting with Piccirillo in Jerusalem in spring 2005, he pointed out to me some technical aspects he observed, such as the shape of tesserae as a criterion for identifying the production teams. He also indicated the similarities between the mosaic of the Church of the Lions in Umm-AL-Rasas and the Theotokos Chapel on Mount Nebo, as well as between the Lower Chapel of the Priest John and the Lower Chapel of Kaianus, although he did not publish these observations.
artists who worked together did not always adopt the same work methods or shared stylistic traits.

### 3.3.7 Combined methodologies

Combining different methods and criteria is a logical consequence in this field of study. It assumes that if a team had a certain artistic ‘signature’, it would manifest itself in more than one aspect. This may combine a preference for a certain subject matter with a certain composition or a specific range of geometric motifs, and this combination would be repeated at different sites. Such a combined method was applied by David J. Smith in his study of the mosaics of Britain. According to this theory, a team (or, as Smith prefers to call it: a school) specialized and retained a certain iconographic tradition. It applied certain motifs and a fixed combination of a certain geometric repertoire with certain compositional patterns. This enabled Smith to trace three different groups, which represent, according to him, three different mosaic schools.

Smith further argues that each school enjoyed a monopoly in and around a particular town. He recognizes the Corinian School, established in the city of Corinium (modern Cirencester in Gloucestershire), the Durnovian School based in Durnovaria (modern Dorchester in Dorset) and a third – the Petuarian School established in Peturia (modern Brough-on-Humber in East Yorkshire). Methodologically, the argumentation is close to that of Avi-Yonah; the appearance of a comparable composition in sites relatively close to each other is sufficient to permit the attribution of the mosaics to the same school. The appearance of comparable subject matter, common motifs or geometrical designs in some of them, strengthens the identification. Since the source material is sometimes based upon aquarelles and drawings of mosaics now lost or severely damaged, a more detailed stylistic or technical analysis is not always possible. The unclear relative chronology among the floors makes it difficult to trace influences among them. There is still active debate about whether the distribution of subjects, compositions and designs between the three schools is so clear-cut as to define each of them with confidence. Smith admits borrowings and influences between the schools themselves. In relation to the Petuarian school, Smith draws attention to the poor design of figurative details. On the basis of this criterion, he attributes two other mosaics to

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139 Smith 1975, 96.
this school, mosaics that do not share the compositional principles of the other mosaics attributed to this school and thus come into conflict with the basic method of his study.

Another investigation method is offered by John Clarke in his study of workshops at Pompeii and Ostia. He applied four criteria to the identification of workshops or individual mosaicists: external dating evidence, the correspondence of motifs, formal preferences of the individual mosaicist and similarities of inlay-patterns.

The first criterion, i.e., that of dating, indicates a generation of mosaicists. Clarke holds the opinion that a workshop may have been active with more or less the same members for no longer than a period of about 20 years. For the analysis of the correspondence of motifs, Clarke rightly remarks that it is not necessarily the case that workshops specialized in one type of representation, but it is easier for the modern researcher to observe similarities that occur on two different floors, when the same motifs are depicted. The third criterion is based on the assumption that an artist had a preference for certain formal characteristics, while the fourth is based on tracing the inlay patterns of tesserae and the identification of repetitive patterns. With this criterion, Clarke focuses upon formalistic rather than stylistic elements. It reintroduces the principle according to which artists betrayed themselves by the manner in which incidental details such as ears, eyes, hair or folds of clothes were depicted. Clarke further introduces the term ‘definite match’ to cases in which two different sites show an identical depiction, interpreted as being the product of the same artist, and a ‘near-match’ as to general similarity in motifs and form but with differences, such as proportions and quality.

Clarke discusses the difficulties and possible pitfalls of this criterion in relation to case studies from Ostia and Pompeii. In discussing the mosaic of Neptune from The Baths of Neptune in Ostia, Clarke identifies one of the traits of the mosaicists as the manner in which they form the locks of hair and beards in a V-shape and the use of S-curves for the depiction of the abdominal stomach muscles of the naked figures. He thus recognizes the figures of the mosaic from The Tablinum of the House of Bacchus and Ariadne and those of The Baths of Neptune as a ‘perfect match’, a term that Clarke applies for depictions of such high consistency that supports the attribution of the depictions to one and the same artist. The dates, he argues, 139 to The Baths of Neptune and 130 to The Tablinum of the House of Bacchus and Ariadne, are provided by the stamped bricks, and fall within the twenty-year range for the activity of a workshop. A ‘near match’ to the figure of Neptune is identified by

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140 Clarke 1994, 89-102.
Clarke in the depiction of the Neptune with *quadriga* from the Villa at Risaro, near Ostia, where both scale as well as the technique of inlay of the white lines differs from that at The Bath of Neptune.\footnote{Clarke 1994, 89.}

Another workshop active in Ostia in the first half of the third century, is the one entitled by Clarke ‘the Baths of Porta Marina workshop’, after one of the most elaborate mosaics attributed to it. Clarke identifies most of the mosaics of this workshop as an ‘approximate match’ and not as a ‘perfect match’: “The fact that a search for other mosaics close enough in motif, drawing, and figural style to these two from the Baths of Porta Marina yields approximate matches but no perfect matches leads me to suspect that the workshop of the Baths of Porta Marina assigned less important commissions to a less skilled artisan in the workshop”.\footnote{Clarke 1994, 98.} Clarke attributes the similarity in general form versus the difference in workmanship to the artistic freedom that the pattern allowed and the expertise of the individual craftsman: “The lesser uniformity of internal white line drawing in the mosaics produced by the workshops of the Severan period may mean that patters were reduced to mere silhouettes, and that the internal white line drawing was left to the individual mosaicist”.\footnote{Clarke 1994, 102.}

A comprehensive approach was applied in the recent study of the Atrium House Triclinium from Antioch, now at the Worcester Art Museum. The chemical analysis of the limestone and glass tesserae has already been discussed earlier, but the investigation also involved a new reading in the excavator’s notes, inspection of the original documentation including photographs that were taken directly after the excavation and during conservation works (showing details lost since then), tesserae count, and literary, iconographic, stylistic and technical investigation of every part of the mosaic. When all five panels of the mosaic were reassembled in the year 2000 for the first time since their excavation (some parts of the mosaic are on permanent exhibition at the Louvre, while some are at the Worcester Art Museum), the difference in execution and artistic quality became conspicuous. The investigators concluded that four different mosaicists produced the five panels.\footnote{Becker/Kondoleon 2005, 42}

The three large panels (the Judgment of Paris, Aphrodite and Adonis enthroned and the Drinking contest between Hercules and Dionysos), were produced by three different mosaicist. The two small panels (depicting a Satyr and a Maenad), which match closely in
concept, execution, style and material, were produced by a fourth mosaicist. The mosaicist who produced the Satyr and Maenad panels is identified by Becker and Kondoleon as the least qualified one, and this supports their opinion that mosaicists were organized in a workshop where hierarchy determined the distribution of work according to expertise; the most qualified executed the refined work while the less qualified ones executed less important sections. The material and chemical analysis of the tesserae supports the stylistic observations of the scholars, thus confirming the integrated method as a most rewarding investigation. Regrettably, not in all cases such a comprehensive analysis is possible.

Recently, and specifically in relation to the mosaics in Palestina, Hachlili suggested an identification of a few groups of producers, based upon two main criteria: the repertoire and, as Hachlili terms it, the technical idiosyncrasy of the inlay. She identifies the artists relating to specific sites, such as the Hammath-Tiberias synagogue, Beth Alpha, Sepphoris, Tabgha, Kissufim and Petra. She also identifies teams and workshops that were active in a certain region and thus can be identified as working in a few sites. For example, she attributes the mosaics of the Leontis House complex to the same team that produced the mosaics of the Monastery of Lady Mary. She also identifies the team that produced the Gaza synagogue as the same team that produced the mosaic at Jabaliyah near Gaza, and the team that worked in Maon as the same team that worked in Be’er Shema’. Some of these sites will be discussed later on in the current investigation, offering a detailed analysis of their formal characteristics and an assessment of Hachlili’s suggestion. However, the valid observations of Hachlili also fail to present a method according to which these observations can be tested.

3.4 Summary

External sources add only very little to our understanding of the organization of mosaic production in Antiquity. Signatures, on the other hand, are direct written sources found in the form of inscriptions that were incorporated into the mosaics themselves. It is interesting that signatures appear rarely as part of the main dedicatory inscription, and are more often inserted in an available ‘free space’. This seems to support the idea that these inscriptions were an

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145 Becker/Kondoleon 2005, 44.
146 Hachlili 2009, 249-280.
initiative of the mosaicists themselves and were added by the makers as homage to themselves and their relatives.

Signatures include three names at the most and thus create the impression that the artistic teams were rather small and often based on family kinship. As such, it may also be assumed that such workshops operated as a family business with a permanent core ranging from one to three leading adult professionals, and may have included assistants and trainees who were not mentioned in the signature. Possibly the signature mentioned only the leading mosaicists who executed either the largest part of the inlay, or the most complex part of it, leaving out assistants, trainees or the supportive workers. Not all teams, however, were family businesses, and not all mosaicists were bound to a workshop as paid professionals. As shown, some mosaicists, especially within the ecclesiastical establishment, were involved in production of mosaics in addition to other responsibilities and duties within the church.

The shift in the scope of the investigation of mosaics from understanding the message concealed in them to their production method, represented primarily by Stone and Clarke, and more recently by Becker and Kondoleon, marks a shift towards a more comprehensive understanding of production methods, which involves technical methods of production as well as a deeper understanding of the organization of workshops and acknowledging the importance of the study of the artistic characteristics of the individual mosaicist.

The division of the mosaic into large sections, as shown for the Great Palace and Piazza Armerina, does not necessarily indicate the division between workshops, but may rather indicate the division of work in terms of its progress. This would perhaps be less obvious in the relatively small-scale mosaic projects of the Early Byzantine period in the Near East, but when such divisions are available, they may reveal some of the practical aspects involved in the order of production and the division of work into portions.

The study of composition as a criterion for identification of workshops has rightly been criticized as unreliable as a sole criterion. Notwithstanding the possibility that artists and workshops had their preference or specializations, it seems hardly tenable that a workshop or an artist would specialize in a single type of composition, let alone reject employment opportunities on the basis of the compositional demands of the patron. The study of composition is of great importance for the work division within a team, in that sense that different lay-outs may demand a different allocation of work, but as an identification method

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147 This has been suggested in relation to the signature of Beth Alpha (Sukenik 1934, 77).
it should be combined with other criteria in order to yield convincing results. Also the study of geometric designs seems in itself not sufficient to establish an identification of a workshop or an artist, certainly in a region where the repertoire of designs was limited to a set of standardized, repetitive designs that appear and reappear in endless combinations in hundreds of different mosaics, scattered throughout the whole region.

The same may be said about iconography, as some subjects enjoyed great popularity on mosaic floors and certain types of subject matter and iconography were repeated and spread throughout the region. Study of the repertoire of church decoration indicates, that certain subjects were conceived as appropriate for the floor and appear repeatedly in various combinations.\textsuperscript{148} Therefore the theory that certain iconography was exclusively produced by a certain workshop is not tenable, although this does not exclude specialisation or preference for certain themes by certain producers. It appears that none of the methods hitherto applied for the study of the team provide full and convincing results without taking in account the technical aspect. The search for an empiric method in the technical sphere of production guides the present research and explains the interest of contemporary scholars in the exploration of production techniques.\textsuperscript{149}

The questions that the current study seeks to focus upon are the practical aspects of production in terms of repetitive application of inlay patterns as an indication for the application of procedures, with the purpose to shed light upon the division of work within the team and the order of progress of production. Methodologically, as Clarke has indicated, the study would benefit enormously if individual artists and their oeuvres could be identified. Identification of individual artists is, however, a most difficult task. The method that relies upon the assumption that artists betray themselves in the design of certain details, such as the form of hair or the form of muscles, is not devoid of pitfalls. As long as it is not clear who was responsible for the design of these details - the designer or the mosaicist – it is not possible to take this criterion as a single piece of evidence, and a combination of aspects is necessary for its support.

The introduction of production procedures as a new criterion of investigation needs further exploration, as it may provide the key for understanding repetitive patterns of production and the identification of the producers. Clarke’s study shifted the very focus of investigation from

\textsuperscript{148} Hachlili 2009, 111-207.
\textsuperscript{149} As evident from the volume \textit{Ateliers and Artisans in Roman Art and Archaeology} (Kristensen/Poulsen 2012).
the vague term *workshop* into the concrete identification of the individual artist. Promoting the principle that different artists could have produced different parts of one and the same floor, Clarke rightly struggled with the implication of nuances in form and quality of similar motifs within one and the same mosaic on the composition of the production-team. Although the current study is focusing on a different period and region than the one that Clarke studied, the principles that Clarke formulated are of crucial importance for the present study.

Another scholar who advanced the identification of individual mosaicists on the basis of the artistic result of their work is Stone. Her study stressed stylistic analysis, with much attention for the pattern of inlay. This is a method that modern study has not yet fully explored, and which may offer highly rewarding results. The investigation employed by Stone, although not worked out into an empirical method, seems to have been one of the first studies that dared to step into the challenging field of investigation of the individuality of mosaic art in the Near East. Her pioneer work (published in Hebrew) did not attract the attention it deserved, and was limited in the sense that it was confined to the articulation of differences between artists and did not address the identification of an oeuvre by one artist, the way Clarke attempted to do. Furthermore, it seems that Stone assumed that all figurative motifs on one floor were produced by one artist, which may not necessarily always be the case, and therefore her method needs some refinement in order to be applicable to further investigation. In the light of the growing attention to individuality in production in recent studies, it is the exploration of the inlay patterns as a practical method for the identification of individual producers that the current study focuses on.

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CHAPTER 4

THE MOUNT NEBO REGION

4.1 INTRODUCTION

A large number of mosaics dating from the end of the fifth century to the seventh century were excavated in the Mount Nebo region, some of them on superimposed levels of the same church or structure. The village of Nebo (Khirbat al-Mukhayyat) yielded four different mosaics, the Siyagha yielded the large complex of the sanctuary of Moses, while other churches were found at the ‘Ayun Musa Valley and Wadi al-Kanisah.¹ The present study focuses on the sixth century mosaics, with the mosaics from the Church of the Holy Martyrs Lot and Procopius at Khirbat al-Mukhayyat as a starting point for the investigation.

Michele Piccirillo has already suggested that the team that produced the mosaics of this church is the same team that produced the mosaics at the Upper Chapel of the Priest John at the same site,² though he did not offer an argument to support this observation, nor a method that can guide future scholars regarding the identification of teams. It is the intention of the following discussion to re-examine Piccirillo’s observation in the light of the seven criteria suggested in Chapter 1. The discussion focuses on the repetitive characteristics of inlay in the Church of Lot and Procopius at Khirbat al-Mukhayyat, which, in turn, will be compared to those of the later mosaic from the Chapel of the Priest John.

The initial purpose of the analysis of the mosaics from the Church of the Holy Martyrs Lot and Procopius is to explore the artistic data that shed light on the organization of production within the constraints of one particular mosaic. The first aspect to be discussed are the peculiarities in the position of the various panels in the mosaic in relation to one another. These peculiarities might reflect an initial stage in the organization of production, such as recognizing which parts of the mosaic were produced before others. The second aspect is the analysis of the repetitive characteristics of the actual inlay of tesserae, which will focus on the human imagery, but will refer also to the animals and the vegetal elements. The comparison

to the floor at the Chapel of the Priest John will follow in the second stage of the investigation, with the purpose to re-examine the attribution of both mosaics to the same workshop as suggested by Piccirillo. The observation of Piccirillo serves as the point of departure for the investigation of repetitive characteristics in mosaic art as indicative for identification of a team, bearing in mind the assumption that technique forms the basis of the training of the ancient mosaicist. Therefore, other mosaic pavements will also be included in the discussion at a later stage, such as the mosaic of the Old Diakonikon and the mosaic from the Church of the Deacon Thomas.³

Two additional examples for groups with comparable repetitive production procedures will be presented. The first is the group of the Theotokos and the Baptistery chapel at the memorial of Moses on the Siyagha, related to the Church of the Lions at Umm-al-Rasas. The second includes the fragment from the central nave of the memorial of Moses on the Siyagha, related to the sanctuary mosaics at the Northern Church of Esbus.

4.2 THE MOSAICS OF MOUNT NEBO REGION – LOCATION AND HISTORY OF THE RESEARCH

Excavations on Mount Nebo and in Madaba yielded rich and diverse mosaics. Nebo is located some 9 km west of Madaba and the sites are now connected by a road that provides good access to the pilgrim site of Nebo. Eusebius does not mention Madaba and indicates that Mount Nebo is located eight miles from Esbus.⁴ Nevertheless, from the inscriptions that were found on the mosaics in the Nebo region it seems that the area was part of the bishopric of Madaba, at least from AD 530, the date of the inscription in the mosaic of the Old Diakonikon, which names the bishop of Madaba as the patron of the work.⁵

³ Not all the mosaics in the region can be treated in the present analysis. The mosaics that are discussed are the ones that seem technically the most closely-related to the team investigated by Piccirillo. The Church of St George at Khirbat al-Mukhayyat, the two superimposed mosaics from the Church of Kaianus at the spring of Moses, and the pavement at the monastery of the Theotokos at Wadi al-Kanisah will not be considered in the present study either, because they show technical characteristics that are too remote from the mosaics that serve as the starting-point of the current investigation, or, as in the case of the monastery church at Wadi al-Kanisah, because the figurative depictions suffered much damage in later centuries.
⁴ Taylor 2003, 147.
⁵ The ecclesiastical division of the province Arabia included the Episcopal sees of Madaba, Esbus, Philadelphia and Gerasa, with Bostra as the metropolitan city (Piccirillo 1997, 43)
The summit of Mount Nebo rises from the Jordanian high plateau to a height of some 800 metres above sea-level. Associated with the location from which Moses watched the land of Canaan before his death as recorded in Deuteronomy 34, the holiness of the area found form in the establishment of a memorial church at the easternmost edge of Mount Nebo, called the Siyagha. The area was inhabited by monks and became an attractive pilgrim site already during the fourth century. By the sixth century, the sanctuary of Moses was extended and included a prosperous monastic community.

The site of Khirbat al-Mukhayyat is located on the southern spur of Mount Nebo at a height of 790 metres above sea level and has clear natural boundaries in the form of deep wadies on all sides except of the north. As such, it is almost isolated from its surroundings. To the west is Wadi al-Mukhayyat, to the south is ‘Ain Jideid (in Arabic: ‘the new spring’ meaning also ‘the abundant’ or ‘plentiful’) and to the east Wadi al-‘Afrit. It was identified as the Moabite and Biblical village of Nebo.

Khirbat al-Mukhayyat was probably the largest of the settlements that were founded around the water sources in the area of Mount Nebo. Despite the dry desert climate, a few springs serve as a constant source of water, which provided the needs of the inhabitants and of the prosperous local agriculture. Seventeen water reservoirs, cisterns and wells were located in Khirbat al-Mukhayyat, varying in size and capacity. Besides these, within each church there is a cistern for liturgical purposes. The springs were also used for irrigation and cultivation of the land. The evidence for intensive agriculture in the region is the existence of at least a dozen presses for oil and wine.

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6 Saller 1941; Piccirillo 1976.
7 The site is mentioned in early pilgrims’ accounts; Pilgrim Egeria visited the site at the end of the fourth century and related in great detail her visit to Siyagha (Wilkinson 1981, 106-107). Also the Pilgrim of Piacenza, during the second half of the sixth century, mentions the location where Moses died and the hot springs of Livia (Limor 1998, 224-225). Theodosius, in his *On the Topography of the Holy Land*, dated to the first half of the sixth century, mentions that at the city of Livia, east of the Jordan River, pilgrims could visit the location where Moses made water flow from a rock, the place of Moses’ death and the hot springs of Moses. However, it is not certain if this account is the result of an actual visit to the places mentioned or literary editing of earlier sources (Limor 1998, 167-194).
8 Saller 1941, 108-208; Alliata 1990. Excavations still take place at the site.
9 Saller/Bagatti 1949, 204-209; Taylor 2003, 147.
10 On the Monastery of Wadi ‘Afrit and the Monastery of Wadi al-Kanisah, see: Piccirillo 1973 and 1989, respectively.
11 Saller/Bagatti 1949, 13-14.
The archaeological remains in and around Khirbat al-Mukhayyat show, that the area was inhabited at least from the end of the third millennium BC.\textsuperscript{12} It is from the Late Roman period onwards, that literary sources also mention the site. In the Onomasticon of Eusebius (AD 313-325),\textsuperscript{13} the village, called Nabau, is indicated as an abandoned site. Jerome, writing about 70 years later, repeats Eusebius’s account,\textsuperscript{14} but it seems that the site was resettled some time during the fourth century. Peter the Iberian ascribes the founding of the church at Siyagha to the people of the town of Nebo and their neighbours. If the account of Peter the Iberian is reliable, it indicates that the village predates the establishment of the centre at Siyagha, which existed beyond a doubt already during the 80’s of the fourth century, the time when Egeria visited the site. Her description indicates that at that time, the initial phase of the church at Siyagha was already standing and gaining fame.\textsuperscript{15} The literary testimony is supported by the excavations that ascribe the earliest phase of the memorial of Moses on Siyagha, such as the trefoil structure of the altar and the graves underneath, to the fourth century.\textsuperscript{16} The churches that were explored at Khirbat al-Mukhayyat and in its vicinity indicate that the late fifth and sixth century were a period of prosperity. The village of Mukhayyat itself, however, seems to have been abandoned already during the seventh century. What the reason for the abandonment was, is not clear. As the masonry was reused in later periods, it is not possible to establish whether there was a pattern in the collapsed architectural structures, which could indicate an earthquake. Saller and Bagatti argue that by the time the roof of the Church of Amos and Kasiseus collapsed, the church was already out of use,\textsuperscript{17} which suggests that the destruction was not the reason for abandonment, but rather an outcome of disuse.

At the beginning of the 20th century, the territory of the village of Nebo belonged to the Beduin tribe of al-Ghaneimat, which included some 90 tents of nomads. At times, they camped at the Mukhayyat ridge. To store their grain and other belongings they cleared a few caves (some of which yielded archaeological material) and erected several buildings. The erection of such a construction in 1913-1914 above the foundations of the Church of the Holy Martyrs Lot and Procopius (Fig. 19, structure 2), revealed the mosaics there. In 1932 the

\begin{flushright}
\footnotesize{\textsuperscript{12} For an overview of the early periods, see: Piccirillo/Alliata 1998, 86-131.}
\footnotesize{\textsuperscript{13} Taylor 2003, 3.}
\footnotesize{\textsuperscript{14} Taylor 2003, 75.}
\footnotesize{\textsuperscript{15} Saller/Bagatti 1949, 215.}
\footnotesize{\textsuperscript{16} Piccirillo 1992, 144.}
\footnotesize{\textsuperscript{17} Saller/Bagatti 1949, 38.}
\end{flushright}
Custody of the Holy Land managed to acquire a large part of Khirbat al-Mukhayyat and initiated development works, such as the road linking Mukhayyat to the road from Madaba (located some seven kilometres southeast in aerial line), to Siyagha. The building that was built by the Bedouins above the Church of Lot and Procopius, which excluded the sanctuary and caused the nave mosaic some damage along its eastern and western edges, was removed, and a new building that comprised the whole Church was constructed in order to provide shelter for the remains.

Also the Church of St George (Fig. 19, structure no. 3) was cleared and its mosaics documented and repaired. In 1933, 1935, 1937 the Church of Amos and Kasiseus (Fig. 19, structure 1) was excavated and in 1939 Father Bagatti explored the Chapel of Priest John in that church. In 1949 appeared the publication by the Studium Biblicum Franciscanum, which comprised all that was known about the site of Khirbat al-Mukhayyat and its churches at that time. It provides documentation, an iconographic study of the mosaics, interpretation of the representations and a study of the inscriptions. It also gives a general survey of other mosaics that were found in Jordan up until that time. During the 70’s and 80’s, when the mosaic of the Chapel of Priest John was removed for restoration, an older pavement was discovered underneath. High quality colour photos, including some fine details of the mosaic of the Holy Martyrs Lot and Procopius were included in Piccirillo’s The Mosaics of Jordan and in the full publication of Mount Nebo. In 2007 the mosaics of the Church of Lot and Procopius were removed for conservation and the site developed in order to open it to the public and encourage tourism to the region.

Only very little ancient damage can be traced in the mosaics at Khirbat al-Mukhayyat. It can thus be assumed that by the beginning of the eighth century, when other mosaics suffered from iconoclastic activity, the churches were not in use. The condition of the mosaics show

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18 Custodia Terrae Sanctae has the purpose to ensure the continuity of Franciscan presence in the Middle East and strengthen the Christian interests in the region. Offering infrastructure for pilgrimage, exploring the history and heritage of Christian presence in the Middle East and maintaining a dialogue with other religions in the region are part of the activity of the Custodia.
19 Saller/Bagatti 1949.
21 Piccirillo 1997, 152-165.
23 That the figurative mosaics that escaped mutilation were already covered and therefore invisible to the eighth-century iconoclasts has been suggested by Robert Schick (1995). It is, however, also
that they were either never repaired or suffered minimal wear, which may indicate that they served their purpose for a rather short period.

4.3 The Church of the Holy Martyrs Lot and Procopius

The Church of the Holy Martyrs Lot and Procopius (Fig. 19, structure no. 2 and Fig. 20) has the plan of a basilica with a central nave and two aisles. Each is separated from the nave by means of three pillars, of which only the foundations remain. The sanctuary, destroyed down to the foundation, has a diameter of about 3 metres. There were two small pastoforia, one at each side of the altar. The position of the westernmost opening at the northern wall of the church marks the position of the original main entrance to the church. Except for the stone structure that is positioned just in front of the main entrance, and may have been the base for steps that are gone now, the whole church was paved with mosaics.24

The panel in front of the altar depicts two sheep heading towards a fruit-bearing tree. The size of the two sheep is the largest among the images of the mosaics of Lot and Procopius. The panel on the right side of the altar is largely destroyed, but it is still possible to recognize a bird resembling a crane or a heron.25 Such a panel in all probability appeared also on the left side of the altar, where the mosaics are now destroyed. At the eastern end of the nave is a long dedicatory inscription in Greek, which reads: “At the time of the most holy and most saintly Bishop John Your holy place was built and finished by its Priest and Sacristan Barichas in the month of November of the times of the sixth indiction. O God of Saint Lot and of Saint Procopius, receive the offering and the present of the brothers Stephen and Elias, the children of Cometissa. O God of the holy martyrs, receive the present of Sergius and Procopius his son. For the welfare of Rabatha [the daughter] of Anastasia and for the repose of John [the son] of Anastasius and for those who contributed; the Lord knows their names”.26 The inscription is a cycle of 15 years that was determined for the purpose of tax payment. The inscription does not include a date according to the calendar of the province of Arabia, but a

possible that iconoclastic activity did not occur everywhere in the same intensity (Bowersock 2006, 95-96).

24 In the southern sacristy no traces of tesserae were found. The northern sacristy, however, was paved with a plain white mosaic made of large tesserae, which were found in situ (Saller/Bagatti 1949, 67).

25 Saller/Bagatti (1949, 55) had mistaken it for a palm tree.

26 Saller/Bagatti 1949, 184 (inscription no. 12).
date according to the year of indiction at the time of Bishop John, which is equivalent to AD 557.  

The main field of the nave is decorated with a vine scroll composed of four vine plants, each growing from an acanthus-plant that is positioned at each corner of the panel. Each plant spreads to create five medallions, covering one quarter of the field. The total field has twenty scrolls, in rows of four per horizontal row, except for the eastern and western ends, where, because of the acanthus-plants in the corners, there is space for two scrolls only. The subjects are: lion hunt, rabbit hunt, wine production, a fox, a pastoral scene, bear hunt, and two partridges. The western field of the nave is a square composition of diagonal trees and antithetically arranged animals. The inter-columnar spaces include figurative emblems. From the five original panels, five have either fully or partly been preserved. They include depictions associated with water: a fisherman and a boatman, fish-tailed beasts, ducks, deer nibbling on a tree and a free composition of fish and water-birds.

4.3.1 Position

A central question in the current investigation is the organization and distribution of work among the craftsmen and the order of its completion: were there a few teams that were working simultaneously on different fields, or was it one team that moved about completing one area after the other? And if the second model is the case - can the order of completion be traced? For example, did work begin with the nave, moving to the inter-columnar spaces ending with the aisles? Or does the position of fields suggest a different order? A careful observation of the general position of fields in the chosen case-study reveals some peculiarities that deserve attention.

27 Other mosaic inscriptions provide the possibility to cross information and calculate the date of the mosaic. For example, The Chapel of Martyr Theodore in Madaba states that it was completed in the year 457 according to the calendar of Arabia (equivalent to AD 562), at the 11th indiction. It also states that it was at the time of Bishop John. (Piccirillo 1997, 117). The 6th year of indiction can therefore be placed 5 year earlier and should thus be the year 452 of the province of Arabia, equivalent to the year AD 557.
A) The inscription

The easternmost section of the nave was reserved for the dedicatory inscription. The inscription is in Greek and located in a tabula ansata, which is a common framing for inscriptions. The panel is located off centre, towards the left side of the space.

The producer of the inscription was well-trained in the art of writing. The inscription is monumental, measuring 292 by 52 cm, consisting of six lines, 8 cm each on average. The letters are nicely designed, some of them with curves that are obviously added for the beautification of the letters. This often demanded the use of rather thin and finely-shaped tesserae, of the kind that were applied elsewhere in the mosaic for fine details such as facial features and the thinnest outlines. Two types of plants appear along the text, as markings for the end of a sentence and sometimes as space-fillers.

The inscription may have been produced at a late stage of the production-work and in any case, after the outer decorative frame of the central vine-scrolls panel was complete. The indication for this is that the frame of the inscription leans directly upon the outer side of the decorative frame of the vine-scrolls panel, lacking at its lower part the outer framing of the tabula ansata, which do appear on the other three sides. If the inscription was produced before the framing of the main field of the nave, the framing of the tabula ansata would probably have been continuous also on its lower part.

That the inscription is not located in the centre of the space that was preserved for it, seems to be the result of a slight difference between the planning of the length of the upper line of letters and the actual space it took to produce the letters in practice. It seems that the producer expected the upper line to be longer than it actually became, thus dictating the length available for the following lines. The uniformity in the length of each line of the inscription was apparently extremely important for the mosaicist, as he avoided crossing the edge that was dictated by the uppermost line. He measured the next lines to fit that length, even when words had to be divided or where, due to lack of space, he had to position the letters much closer to one another. This is especially clear towards the ends of the second and the fifth line, where the letters become much thinner, in order to fit the length that was determined by the upper line.

Inscriptions mark the date in which production ended. Some inscriptions are so accurate as to mention the day of completion, suggesting that the inscription must have been the last element to be produced. In the case of Lot and Procopius only the year and the term of the Bishop are mentioned, which give a longer range for planning. On the role of the Bishop in the commission of church decoration, see: Ashkenazi 2004, 201.
B) The inter-columnar panels

All the figures in the panels between the pillars are positioned towards the nave and were meant to be observed from that direction. It is generally assumed that in the case of the production of figurative images, artists (and mosaicists among them), worked facing the image under production. The actual position of work of the producers was thus facing the aisle and with the back towards the nave. At the same time, the ground-plan reveals that the panels are aligned not along the edge of the nave, but along the edge of the aisles. Therefore, the panels seem to have been planned and produced along the straight line formed by the outer frame of the aisle. This would suggest that the direction of work was not from the centre to the aisles, but the other way around, from the aisles to the centre. It seems therefore that the aisle mosaics were produced first, then the panels between the pillars, leaving the central area of the nave to be produced last.

Another element of the production that suggests a clear division between the inter-columnar area and the central nave is the direction of inlay of the white tesserae between these fields. Observing the lower part of the inter-columnar panels (seen well in the fish and birds panel) shows that the tesserae in the inter-columnar area are in a straight position to the panel, and the tesserae towards the nave are diagonal in position. This indicates a clear division between those fields, and supports a consecutive production order.

C) The scroll field

The most elaborate design was reserved for the central area of the church. At the Church of Lot and Procopius, this includes a rich figurative program, with two panels, of which the eastern is the largest in dimensions and includes the vine-scrolls field (Fig. 20). At first glance, it is difficult to determine whether the scrolls field was produced from west to east, the other way around, or in another direction altogether. A few observations may provide a principle guideline. It is generally assumed that in the case of the production of figurative images, the mosaicists worked facing the image under production. It may therefore be assumed, that the physical position of the mosaicist or mosaicists towards the images is the western side of each scroll (sitting with their back to the entrance). Secondly, it seems

29 This principle has also guided the reconstruction suggested by Hachlili (1978, 46-58) in relation to the vine scrolls in the region of Gaza.

30 Piccirillo 1997, Fig. 211.
probable that the producer would avoid stepping or sitting upon freshly-made mosaic, as long as the under layer was still damp. 31 The planning of a work-order in a manner that would allow them to position themselves upon a mosaic-free area was not too complicated, and it is therefore assumed that this simple measure would be preferred whenever possible. If so, the most logical direction of production of this field would be from east to west, with the mosaicist facing east, proceeding ‘backwards’ towards the entrance.

4.3.2 Production procedure

The figure of the old man carrying a basket of grapes (Fig. 22) is used here as an example for identifying the application techniques that were applied in the production of the vine scroll field at the Church of Lot and Procopius. Other figures will be discussed later on. This will be done applying the seven criteria, which were formerly introduced in Chapter 1.

A) Illusionistic overlapping

It is assumed that foreground elements in the design were laid first, followed by others that were meant to be understood as lying behind them. This principle of image overlap has already been described in the scroll with the figure of the old man carrying a basket of grapes his back (section 1.5.1), with a reconstruction of the order in which the various elements were laid (Fig. 23). It has been shown how the figure’s right foot overlaps the scroll, itself composed of two elements: the ‘primary’, continuous scroll, made up in a width of two tesserae, and the thinner ‘secondary’ scroll, which is made up of just a single row of tesserae and appears in sections as if partially ‘hidden’ by the primary scroll.

It has also been shown how, since both scrolls are made in the same reddish coloured tesserae, a distant glimpse creates the illusion that the secondary scroll is wrapped around the primary scroll, while in fact the secondary scroll is ‘hidden’ by the primary scroll. This is consistent throughout the mosaic.

The secondary scroll carries most of the leaves, bunches and tendrils. The tesserae of the white background clearly follow the outlines of the figure, the leaves, the bunches of grapes and the tendrils.

31 Although, if necessary, sitting on cushions or stepping upon boards that would spread the body-weight is possible. Building a scaffold is also a possibility, but in such a large area as the nave-panel this would complicate the work and would be an expensive solution.
The same principles of production order can also be illustrated by the other scroll-depictions. A good example is the scene of wine-pressing (Fig. 24).

The first element that may have been produced in this composition is the central press, which divides the scroll and defines the space for each figure. It overlaps the hands of the two figures, who apparently holding hands behind it, and its lower side borders with the mass of grapes. At the lower side of the scroll However, it seems unlikely that the press would have been produced after the mass of grapes, due to its central position and its direct relation to the figures. It is more probable that only the lower part of the press was left to be produced at a later stage (together with the grapes).

The two figures were produced next, followed by the primary scroll and the secondary scroll. The right figure overlaps the scroll in three places: with the edge of the head, with the outstretched hand and with the foot. The hand and the foot are not surrounded by a white line and ‘touch’ the scroll directly. The scroll is consistently overlapped by the figure, the secondary scroll by the primary scroll, and the lower mass of grapes ‘disappears’ under the scroll and was obviously the last stage in the execution of the depiction and the first stage in the filling of the background. Due to a lack of space, no leaves or bunches decorate this medallion on the inside.

This application order can be traced in all medallions where an overlapping occurs: the medallion of the lion hunter, the donkey, the bear-hunter and the shepherd.

The production of the figures prior to the scrolls or other background elements is traceable in other mosaics as well, and is not unique in itself for the mosaic at the Church of Lot and Procopius. However, the choice to place the images in a particular way within the medallion frame and treat the frame repetitively in a particular way is characteristic for the mosaic at the Church of Lot and Procopius. A comparison to the mosaic of Nahariah (Figs 25-26) illustrates the point.

The bird-catcher (Fig. 25) is depicted partly as the foreground object and partly as a background object in relation to the scroll: His head, left arm, the stick he holds in his right arm and his left foot hide the acanthus scroll in his background. His right leg, on the other hand, is covered by the scroll as if to suggests that the figure is stepping ‘out of the frame’. This enhances the spacious illusion of the depiction, but implies that the order of production

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32 This principle was noticed in de analysis of the Petra mosaics (Waliszewski 2001, 221).
was somewhat different than in the Lot and Procopius mosaic, and that parts of the figure were left to be produced after the exact location of the scroll was determined.

The sheep (Fig. 26) may even have been produced in its entirety later than the scroll. Not a single part of its body is placed in the foreground, and both the rear of the body and both forelegs are hidden by the scroll. It is also conspicuous that the scrolls here are ‘fuller’ than in Lot and Pocopius, and there is only very little white background space, which was clearly produced as closed portions. Also the method of filling the background is somewhat different than at Lot and Procopius. The mosaicist laid one row, and at times two rows of white tesserae along the outlines of the main elements and filled in the rest of the space in parallel lines, either perpendicular or parallel to the direction of the outline.

An example of a different approach towards the production of the vine scroll can be seen in the mosaic of St Stephen (Fig. 27). In this mosaic, the secondary scroll is completely entwined around the primary scroll and the two must have been produced during the same stage.

B) Internal division

Though the figure within each medallion was produced first, it is not clear how large each portion of production was. One possibility is that the whole figure was produced as a single section. It seems more probable, however, that the figure was produced in several stages (Fig. 28). These sub-sections are more difficult to trace, but a few indications in the figure itself may provide some suggestions. Let us assume for the moment that the mosaicist began with the production of the head and face. This is one of the most complicated parts in the whole figure, since the tesserae applied in the faces of the figures are the smallest in the whole mosaic and must have been cut especially for that purpose. Some of the tesserae shapes that appear in the faces of the figures are not found anywhere else in the mosaic, like the round tesserae of the iris of the eye. Despite the relatively small area of the face, it seems that this area demanded special attention, time and care.

The mosaicist would probably begin with the setting of the out- and in-lines, like the line of the bald head and the linear elements of the facial features. He would then continue with the small details of the features, like the eye, shaping of the lips and beard, ending with filling-in the fields of the forehead and cheeks. The next stage could be the upper part of the body, the right arm and right hand and only then the left arm and hand, which holds the other side of the basket’s rim. This order is dictated by the fact that the left arm is overlapped by the
rim that is held by the right hand, indicating that the right hand was produced first, according to the principle that the hiding object was produced first and the hidden object at a later stage.

It can be postulated that the production of each section began with laying the tesserae of the outlines. These probably followed the estimated position of the guidelines (if such detailed drawing or guidelines for the figure existed) and marked the section. The mosaicist could then set the tesserae of the inner fields, moving on to the next section after completion of the former. Work progressed gradually, in small sections, so that the mortar would not dry before the mosaicist laid the whole section. This implies that the mosaicist must have had at his disposal a large variety of tesserae of different shades and forms that were produced in advance, and that he could switch easily from one colour to the other, when necessary. This includes also the white background tesserae; although most of the background was produced at a later stage, the mosaicist may have had to set some of the white tesserae during the production phase of the figure, such as: the tesserae between the arms, the white tesserae of the rim that holds the tunic, etc.\textsuperscript{33} The mosaicist could now continue to produce the lower part of the body: first the lower side of the tunic, applying again the principle according to which darker lines first set the outlines and possibly also the in-lines, followed by filling in the inner fields. He would then produce either the right leg and then the left leg, or the other way around but set a line of white tesserae only around the foot that steps beyond the limits of the scroll. The tesserae that surround the other foot already take account of the scroll-line that was produced at a later stage.

The following stage in the production was that of the scroll. The scroll around the old man continues the scroll above it, but it is difficult to tell where exactly the upper scroll ended and where the scroll that surrounds the figure of the old man exactly begins. As Dauphin remarked: “The craftsman’s skill is borne out by the fact that it is clearly always impossible to detect on the surface the joining points”.\textsuperscript{34} The mosaicist apparently left the edges of the scroll in such a position, that it was easy to continue it without leaving a clear trace. Apart from the section around the right foot of the figure, the scroll is continuous and is reduced in width from two tesserae-lines to a single line when it is about three-quarters round. It ends with a leaf and a tendril. The primary scroll always overlaps the secondary scroll. The secondary

\textsuperscript{33} These fillings close this section as a unit that could be left to dry, as other sections continued to be produced. That the background was generally made as the last element is suggested from the linearity of the white tesserae that take account of the other elements in the scroll, such as the vine leafs and tendrils.

\textsuperscript{34} Dauphin 1976b, 155.
scroll is also the one that carries most of the depictions of bunches of grapes, leaves and tendrils that fill up the spaces between the figure and the scroll.

The background was the last stage in the production and the order of its production is intriguing; a careful analysis of the method of filling the background indicates, that this seemingly artistically insignificant part of the work was also guided by a consistent working procedure. Following the inlay, it is easy to show that most of the background was produced once all other elements already existed. Production took place per area, filling-in the free space between the figure and the nearest surrounding elements, such as the scroll, leaves and bunches of grapes. Tesserae were placed along the outlines of the existing elements, creating closed sections, which were then filled-in with gradually-shortening lines towards the middle of each section. The method is especially discernible by the fact that the white line around the figure is segmented and follows the pattern of sections that were applied for filling-in the background fields.

The linearity of the background is consistent throughout the panel and moves from along the outlines of each group of elements. The mosaicist did not set the tesserae in a horizontal or vertical direction but along the outlines of the leaves, grapes, and central figure, forming a flowing, natural pattern.

C) Repetitive gestures
The figures are depicted with lively gestures, appealing proportions and convincing anatomy and movement. None of the figures are conceived as frontal, despite the frontal positioning of the shoulders of most of them. The three-quarter position is convincingly enhanced by the turn of the heads and eyes, which corresponds to the direction towards which the body turns. Knees are slightly bent and the three-quarter position of the feet is depicted with convincing foreshortening. In those cases where both arms are depicted as turning in the same direction, the torso is also slightly turned. Despite the depiction of each figure as engaged in a different activity, similar gestures are repeated. A good example of this is the identical body-gesture of the grape-picker, the old man carrying a basket of grapes and, in mirror-image, the flute-player. Although a rather limited range of positions and gestures are used, the representation is not boring, thanks to the depiction of each figure as engaged in a different activity and the variation in clothes, colour, hair style and other details, the depiction is rich and lively.

D) Recurring features
The tendency for repetition can be noticed in the design of facial features, feet, arms, and clothes with their folds. These motifs are repeated with attention to variation, which creates visual richness. The standardized treatment of feet is a good example. Whereas one foot is often depicted in profile, showing the big toe and the adjacent
Facial features are another repetitive feature of the design; the outline continues from the cheek to create the chin, stopping at the jaw. Eyes have a single upper line and a half circle underneath; the pupil is a single black tessera and the white of the eye is indicated. Lips are shown by four lines: the upper lip uses two triangular tesserae in dark pink and beneath it is a black line marking the shadow between the lips; the lower lip uses tesserae in light pink and beneath it a long black tessera marks the shadow that falls under the lower lip. The nose is connected to the eye’s upper line in the direction in which the face turns, and a T-form is created between the eyebrows and the nose. The cheeks are patches in pink in a darker shade than the rest of the face.

Repetition is also seen in the treatment of the dress. The upper part of the tunic falls in a soft fold above the line of the girdle. The lower part creates a pattern of three triangles, of which the outer two, roughly equal, stand on their side and the middle one stands on its point. At the same time, variations create different visual effects: some of the tunics are decorated with circular patches, while others, especially those worn by hunters, have embroidery on the shoulders and the breast. The representation of the hair of the hunters is different from the hair of the peasants, though such differences may be a matter of differing social status and not simply due to the mosaicist’s wish to enrich the depiction.

Fig. 29 illustrates the repetitiveness in the elements of design in the human figures. These include the figures in the central panel of vine-scrolls, as well as the panel with boatman and fisherman. These figures show the same principles of design.

E) Size and shape of tesserae
The size of the tesserae in the mosaic of the Church of Lot and Procopius varies in its different parts. Tiny stones are used for the facial features. Elongated black tesserae are used for creating the black outlines of the legs, arms, faces and sometimes also the clothes. Especially the details of the hands, fingers and toes are made of elongated tesserae, which are as small in size as the tesserae of the facial features and just a few millimetres thin. Large square tesserae are used for body and clothes, but width and length may vary considerably. The largest tesserae are used for the background.

Gradation in the size of tesserae is not unique for the mosaics of the Church of Lot and Procopius and the application of smaller tesserae in the faces of human figures even seems to have become a convention. The reason for applying smaller tesserae in the face is functional, as it serves the possibility to grant more refinement to the facial features. However, not in all mosaics where smaller tesserae are applied in the faces, full use was made of the potential that
it offers.\textsuperscript{35} At the Church of Lot and Procopius, on the other hand, full use is made of the artistic possibilities that the smaller tesserae offer, by application of various colours and tints, stressing the importance of this aspect in the mosaic. The consistency of application of the thin black tesserae for hands, feet and face may have to do with the wish for convincing depiction of these details, which demands the use of smaller tesserae. In other parts of the depiction, where no such detailed treatment is necessary, such as in the depiction of tunics and folds, the mosaicist sometimes makes use of the elongated black stones or the coloured square tesserae, probably in order to enrich the depiction.

F) Colour and sorting level of the tesserae
A wide range of colours is applied in Lot and Procopius, and it is conspicuous that each colour was sorted into its different tints. At least three tones of pink are applied for the faces and exposed body parts, three tones for the depiction of folds of each tunic, and at least two for the depiction of hair. This high measure of sorting enabled the creation of smooth and gradual changes of tone and a convincing illusion of volume.

G) Inlay patterns
In all figures, the dark outline forms the main guide of the figural depiction. This outline is not always continuous and may vary in colour and thickness. As shown above, each figure was composed of several units, each of them relatively easy to trace as they are indicated by a contour. As suggested before, these express the sections that guided the mosaicist in his work and reveal the order of progress of production.

A few tints of each colour were set in a gradual manner in order to create the illusion of three-dimensionality and volume. A special technique is applied for the creation of an illusion of three-dimensionality of limbs: the limbs are divided into sections, usually two, with preference to the joints, such as the knees and elbows, but sometimes also along the limb. At least three different tones of pink are applied for creating the colour of the skin, with ocre at the outermost edge of the limb. The gradual tonality is given one direction in the one section, and exactly the opposite direction in the section next to it. At the same time, there is no visual break in the linear inlay direction of the tesserae between the sections. The change is only in colour. The result is a convincing illusion of volume of the human body. Another

\textsuperscript{35} As, for example, in the faces of the figures in the mosaic of the chapel of Suwayfiyah (Piccirillo 1997, Figs 456-457).
characteristic of the inlay is the variation in width of lines by the application of gradually diminishing tesserae. This method is applied consistently, which means that the mosaicist must have had a method of organizing his tesserae also according to size, and not only according to colour.

One exception in the inlay pattern appears in the naked bodies of the figures in the grape-pressing scene. In both, the parallel inlay method is dominant, but the neck of the right figure is made with diagonal inlay, which is unusual in figurative depictions. The treatment of the facial skin of the man leading a donkey and the flute-player is different from the other figures in their continuous linearity from one cheek to another, along the chin.

4.3.3 Other elements

A) Animals

Animals appear not only in the central scroll panel, but also in the western panel, the intercolumnar panels and before the altar. The animal figures show great consistency in their design as far as repetitive gestures and recurring features are concerned. An interesting comparison is the hare chased by a hound (Fig. 30). The body and tail of the hound are slightly longer than that of the hare, but except for their head and colour, their body is designed in an identical way: the backbone is creating three small curves from the neck down to the buttocks. The hind legs of the hound are practically identical to those of the hare, including the sharp nails. The leg closer to the viewer is dark and the other one lighter. This change in colour is reversed in the forelegs: the one closer to the viewer is lighter and the other one darker. The forelegs of the hound are identical in form to those of the hare. The light falls from below. The eyes of the two animals also resemble each other, with two wrinkles at the outer edge. The craftsman paid much attention to details such as teeth, nails, tongue, etc. The inlay pattern of the body is mostly the parallel inlay.

At the same time, other animals show other types of inlay patterns, which can mainly be detected in the filling of body surfaces. Next to the parallel inlay (which is well attested by the hound and hare), some animals show an inlay pattern where the tesserae lines form a radial pattern (such as the left ram in the area before the altar; Fig. 31). Other animals even show an exceptional geometric inlay: especially the second sheep on the third row is exceptional, with the three concentric circles on its body. Also the gazelles in the intercolumnar area display a geometric treatment. This treatment is very different from both the radial pattern of the sheep
and the parallel treatment of the hound and hare, where the lines follow the length of the body. It thus seems that three different inlay patterns can be identified in the animal figures.

The lion in the lower medallion is not in profile as all other animals are, but at the same time it possesses the same quality and attention to detail as the hare and hound.

B) Plants and flowers
Two floral designs are dominant in the decoration of the mosaic: the motif called flower-buds and the vine plant with the bunches of grapes, leaves and tendrils. The design that received the name flower-buds is reminiscent of a flower, but may have its origin in a different source of influence, such as woven carpets or textile. Due to the repetitive nature of its application, the element is usually treated as a geometric element. Flower-buds have become one of the most common designs in floors of the region, and there are dozens of different variations of them.36

Flower-buds appear at Lot and Procopius around the nave frame as well as the frame of the southern aisle, and they form an important element in the design of the carpets of the two aisles. Not all buds in the different areas of the floor are identical in form. A comparison of the inlay-pattern that forms each bud-type shows, that the buds that appear around the central nave frame are identical to those that appear outside the frame of the southern aisle, but are different from the diagonal buds in the southern aisle and different from the buds in the northern aisle. The buds that form the diagonal grid of the southern aisle (Fig. 34, bud no. 3) are a variation on the buds of the northern aisle (Fig. 33, bud no. 2), with the addition of a dark tessera at the top, which forms a sharp triangular head, creating the impression that the bud is about to flower. Though the difference is only one tessera, this one tessera turns it into a different design. Furthermore, the pattern of colour-inlay within each type of bud is different. These differences in colour-inlay are the most influential as far as the visual perception of the bud is concerned, but demanded also the cutting of different colour tesserae.

The northern aisle is decorated with rows of flower-buds (Fig 35). There is a difference between the buds of the aisle (Fig. 33, bud no. 2) and the buds that surround the central frame at the nave. The buds of the frame (Fig. 32, bud no. 1) include the inlay of triangular tesserae.

36 Ovadiah/Ovadiah (1987, 238-340, F1-F34) identify 34 types of buds. The buds along the decorative frame at Lot and Procopius are not identical to any of the types they describe, but are closest in their form to variants F31 and F32.
for the upper edge of the bud, while in the aisle buds all tesserae are square. This demanded an extra handling and cutting of the tesserae into triangles.

The southern aisle is decorated with a field of diagonally-arranged flower-buds, creating a web of diagonal square frames (Fig. 36). This design is a very common one in the region. Each side of a square is made with four flower-buds, arranged symmetrically in pairs of two. Each frame contains an ivy leaf, arranged in diagonal rows of yellow and blue. The triangles along the frame hold an alternating design of a corn-like plant and half a rosette. Also these elements are very common. The flower-buds that create the diagonal grid of the southern aisle are different from the flower-buds that appear elsewhere in the pavement of Lot and Procopius. The outer edge of the frame, however, is decorated with a row of flower-buds that are identical in their form to the flower-buds that surround the central nave panels.

Though the bud seems to be an element that is too common to trace, a careful inspection shows that the application of identical bud-forms is not as common as one would expect. The differences may seem slight, but the repetitiveness and consistency in the choice of buds indicates a serial, almost ‘mechanical’ type of production. The bud design was meant to create an impression of repetitiveness. It was therefore important that no deviation occurs in the type of bud within one design, as the slightest deviation distorts the repetitiveness. Therefore, within one field we find the same type of buds.

The vine plant at Lot and Procopius is made in a reddish-brown tint, and is composed of two scrolls. A primary scroll, which is made up of two rows of tesserae, and a secondary scroll, depicted as though it is ‘wrapped’ around the primary scroll, and which is made with a single row of tesserae. The primary scroll is reduced to a single tesserae-line towards the end of the edge of each medallion, and ends in either a bunch of grapes or a leaf. The vast majority of leaves, tendrils and bunches, however, are carried by the secondary scroll and fill in the empty spaces within and between the medallions. Three types of tendrils can be identified, all based on a simple curl: the first type is depicted as a small round curl emerging from the scroll (Fig. 37, example 1). The second type has a beak-like form with a curl at the edge (Fig. 37, example 2), while the third type adds three lines and an extra curve at the top of each curl (Fig. 37, example 3). At times, two types appear on one and the same medallion, but never all three.

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37 The design has been coded as H7 (Ovadiah/Ovadiah 1987, 246).
The leaves (Fig. 38) follow a pattern in which the heart of the leaf is the edge of the scroll. This edge splits into three. Each leaf is divided into three and sometimes five parts. The edges of lines end with a triangular tessera that creates the sharp contour of the leaf. The leaves have a relatively uniform colour, made in tints of dark green, grey and black.

The bunches of grapes (Fig. 39) are made in two ranges of colours, some in shades of pink and some in shades of grey, but they are always produced following the same inlay-design. Each grape is made in the shape of a hexagon, created by three pairs of tesserae, in three gradual tints, from white to grey (example 3), white to black (example 1) or white to red (example 2). The lightest pair consists of two triangular tesserae, the middle tint of two square tesserae, and the darkest tint again of two triangles, forming together an elongated hexagon. Each hexagon is framed by respectively black or red tesserae. The black frames are shared by each two closely-positioned hexagons.

The most conspicuous aspect of the vine plant is the high degree of consistency in its production. There is no deviation from the described form, even when grapes are depicted as part of a figurative scene, such as in the pressing-scene or in the collection of grapes in baskets. Such consistency strengthens the impression that production-procedures went through a process of standardization.

4.3.4 Synthesis

The analysis of the various aspects of production leads to a number of observations. First, it seems plausible that the order and direction of decoration went from the aisles to the centre, and from east to west, leaving the inscription for the end. The inlay of the central scroll panel at the Church of Lot and Procopius follows a strict order that was applied repetitively, beginning with each figure, followed by the primary scroll, the secondary scroll with leaves, tendrils and grapes, and ending with the background. All of the scrolls seem to follow an identical order, which indicates that this was a procedure-guided activity.

The human figures were subject to a strict patterning in terms of internal division and a standardized set of formal principles in terms of gestures, foreshortenings and inlay patterns. The analysis of inlay patterns shows, that the figures display a consistent set of forms and designs and form a ‘perfect match’ in terms of outlines and inner lines, the consistent pattern of section division within each figure, application of tesserae with respect to their size, shape and range of colours, and a consistent pattern of linework inlay. This high degree of
consistency allows the suggestion that the human images in this mosaic were all guided by one and the same producer, who followed a strict production procedure.

The animals show a more complex production procedure. They are well-formed, with much attention to detail, especially of the faces. The filling of the animals' bodies, on the other hand, shows three different types of treatment, each reflecting a different inlay pattern (parallel, ray and geometric).

The geometric elements that decorate the aisles show a high degree of precision with a high level of repetition, but a variety in the shape of bud elements. This may indicate a search for variety within a strict design, but perhaps also a personal preference of each producer. The design, whether deriving from a flower or not, was reduced to a repetitive geometrical shape, with a strict inlay order of tesserae. In the case of the bud fields, the repetitiveness in the inlay is essential in order to retain the visual unity of the design. It is probably for this reason that no variation can be detected in the form of the buds within each field. But the particular choice for a specific bud within a certain field may indicate the individual preference of the producer who made that particular part of the mosaic. However, whether the appearance of three types of buds may indicate the work of three different hands is difficult to tell with certainty. The appearance of three types of tendrils, however, may give additional support to this idea.

The vine scroll, which forms a lively design, is made with highly consistent and repetitive forms. Repetitive forms are also identified in the shape of grape-bunches, leaves and tendrils.

The main panel of the Church of Lot and Procopius depicts a rich figurative decoration. Despite the variety that the design offers, the treatment of the various elements shows an extremely consistent plan and a highly consistent application procedure. This has been shown to be the case in the human figures as well as in the background filling.

How can this consistency help reconstruct the workshop organization? The high degree of consistency may be interpreted in more than one way. It may be interpreted as reflecting the task division between highly specialized craftsmen. According to this interpretation, the figurative images, which are the more complicated elements in the depiction, would have been produced by one mosaicist. Upon the completion of each image he would be replaced by a craftsman who proceeded with the production of the vegetal elements. After completion of the vegetal elements, a third craftsman would take up the task of filling up the background. Alternatively, the high degree of repetitiveness may suggest, that the production of the central panel in the mosaic was dominated by a single mosaicist who
followed a strict procedure, starting with the human figure, moving on to the scroll and ending with the background, moving systematically from one scroll to the other.

Which of the two interpretations is preferable? The first interpretation relies on the hierarchical model, which suggests that work was divided according to artistic complexity and the ability of each craftsman, beginning with the master down to the apprentice.

The master artist of Lot and Procopius would probably not confine himself only to one type of representation: as the leading mosaicist, he would probably be involved in all aspects of production, also of the less artistic parts of the mosaic. This is supported by details of the design itself: the bunches of grapes are highly consistent in their design all over the panel, whether they are part of the scroll or part of the human depiction (the men collecting the grapes, for example). If the scroll was produced by a different craftsman than the master of the human figures, we could expect a certain inconsistency between those bunches that are carried by the scroll and those which are depicted directly in relation to the figures. The high consistency supports the interpretation, that the master was also producing the scroll and perhaps was even involved in producing the white background in the central panel.

A question that arises as a result of this discussion concerns the specialization among the members of the team. Specifically in the case of Lot and Procopius it may be asked: did the mosaicist who produced the human figures specialize only in this type of representation, leaving the rest to less qualified assistants, or was it the same mosaicist who produced the human figures as well as the animal figures, the vegetal elements and possibly the geometric decoration?

The consistency in the treatment of the human figures in the mosaic of Lot and Procopius seems to indicate the work of one leading, experienced mosaicist. If helped by others, his peculiar traits have left a clear mark upon the artistic result. The question is still open as to the production of the other elements in the floor: animal figures, vegetal elements, geometric designs, and even the letters of the inscription. As has been shown above, the production at Lot and Procopius shows a high degree of consistency. This is apparent also in the design of tendrils and grapes that seem to express the traits of one particular craftsman, who specialized in human figures, but also produced the surrounding elements with the same measure of consistency and accuracy. However, others assisted him, as the animals seem to have been produced by at least two and perhaps by three different hands. The flower buds as well as the tendrils, with their three different variations, may also have been produced by three different hands. The identification of three practices in the various elements suggests, that the mosaic at
the Church of Lot and Procopius was probably produced by a team of at least three mosaicists.

There was probably a dynamic division of work, depending both on artistic ability as well as division of space between the various producers. It has been noted before that the movement of production was from the isles to the centre. If each bud form represents each of the three hands, it is possible that one artisan worked in the northern aisle (where one type of bud is consistently applied), while two worked at the same time in the southern aisle (where two types of buds were applied, one in the field and another around the frame). Upon completion, all three moved on to the intercolumnar, nave and altar areas. The master specialized in the production of the human figures as well as the relatively complex heads of the animals (though it is possible that these were produced by another artisan). The filling of the animals bodies, on the other hand, shows three different types of treatment, each reflecting a different inlay pattern (parallel, ray and geometric). It may be concluded that the production of the complex representations in the Church of Lot and Procopius was done by a master with at least two assistants. The master applied a very consistent set of application techniques. This does not rule out, that he also participated in the production of the scrolls, buds, tendrils and other aspects of the design. The other artisans helped the master with the animals, scrolls and other supportive tasks. It seems that though certain areas were allocated to a certain producer, there was a dynamic degree of movement and the craftsmen ‘moved about the floor’ to assist wherever they were necessary.

To sum up, the inlay of the human figures at Lot and Procopius shows a high degree of consistency with only minor deviations. The consistency in the design and patterns of the human figures at the Church of Lot and Procopius could be attributed to the production of a master, who was helped by at least two assistants.
4.4 The Upper Chapel of the Priest John

The chapel is located in the northern annex within the larger complex of the Church of Amos and Kasiseus (Fig. 19, structure no. 1) in Khirbat al-Mukhayyat. Saller and Bagetti suggest that the earliest phase of the Church of Amos and Kasiseus may date as early as the fourth century. The mosaics that were preserved there come from the northern chapel, which was decorated twice and yielded two superimposed pavements. The lower, earlier floor, dates to the end of the fifth century and shows a vine scroll growing out of an amphora that is located at the lowest row. The scrolls are decorated with figural images.

The upper mosaic (Fig. 40) was partly destroyed at its western side, but is otherwise well-preserved. The mosaic covered the whole surface of the chapel. Within a frame of meander design square panels appear with figural depictions. The central field was divided into at least two panels (the western part of the composition is unfortunately destroyed). The panel at the east depicts an architectural façade with an inscription, candlesticks, a pair of peacocks, hens and plants. The large central field is decorated with a scroll composition of acanthus leaves that create rows of three medallions in a horizontal direction. Within each medallion appears one figure, either a personification, human or animal. The upper row represents a lioness and a bear-hunt, the second row depicts the personification of the earth in the central scroll, and a young man offering her a basket of fruit on each side. The third row shows a shepherd protecting a lamb by shooting a stone at a wild boar. The lowest row to have been preserved is fragmentary and shows a dog and female figure carrying a basket full of fruit. The meander frame includes emblems depicting birds and portraits, probably of the donors.

According to the dedicatory inscription at the east of the panel, the mosaic was produced some eight years later than the mosaics at the Church of Lot and Procopius: “At the time of the most pious and most beloved by God, Bishop John, the holy place was renewed and finished, by the zeal of the priest, John. It was finished in the month of August in the 13th indiction for the salvation of, and as a present of, those who have made offerings and [those] who intend to make offerings. Amen”. If crossed with the information provided by inscriptions that do include both the date according to the province as well as according to the

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38 The names Amos and Kasiseus refer to two benefactors of the church, whose names were carved on the two chancel posts (Piccirillo 1997, 174).
39 Saller/Bagetti 1949, 48.
40 Piccirillo 1997, 176-177.
indiction, it appears that the thirteenth indiction during the episcopacy of Bishop John is
equivalent to the year AD 565.

4.4.1 Production procedure

A) Illusionistic overlapping
The composition is divided into medallions of acanthus leaves with a single figure within
each one. The pattern of illusionistic overlapping is clearly indicated by the figure of the
young shepherd, protecting a ram from a boar by shooting a stone at it. His left foot ‘steps’ on
the acanthus leaf of the frame. The leg and foot are surrounded by a line of white tesserae,
indicating that the figure was produced before the frame.

B) Internal division
A few lines indicate the general division of each figure and the application of black tesserae
for contours help recognize the sections. The right youth bearing a basket serves as a good
example. The head and neck down to the collar line serves as one section, his left arm is a
closed section, the girdle-line serves as a division between the upper and lower parts of the
tunic, while each leg was treated as a closed section. The palm of the right hand, grasping the
basket, was produced as a loose section in space and was produced prior to the basket. The
treatment of each section in itself seems to have distracted the attention of the craftsman from
the whole, with the result that the figure has a less convincing appearance and the arms seem
disproportionally long. Proportions are significantly better in figures where all sections are
‘attached’ to one another, as in the figure of the shepherd shooting a stone.

C) Repetitive gestures
The gestures of the figures are lively and convincing. Bodies show movement, in gestures and
through foreshortenings and three-quarter positions, with the typical depiction of the feet one
from above and the other in profile, the hands grasp objects, and there is a conscious attempt
to create voluminous effects by partial hiding and the treatment of folds and clothes. A good
example is the cloth that wraps the body of the shepherd who shoots a stone, which functions
as an element that strengthens the illusion of three dimensionality. Like in the figures of the
Church of Lot and Procopius, the range of gestures is rather limited, but a variety in details
makes the depiction lively. The two figures of karpophoroi (Figs 41-42), carrying full baskets
to the personification of earth at the centre of the composition, are mirror-images of one another. A few figures are completely frontal, for example the personification of earth in the centre of the composition.

Two other frontal figures appear in the outer frame of the mosaic. One of them seems to be a church official, a priest or a monk. His mantle wraps his body in a clear attempt to strengthen the three-dimensionality of his body. The other figure is a woman, lavishly adorned with jewels. It seems that, in contrast to the other figures in the mosaic which are generic in nature, these two figures are meant as portraits, with attention to realistic details: moustache, beard and a typical head-cover for the man, fleshy lips and a somewhat different treatment of the hair for the woman. They have been identified as persons involved in the organization and financing of the building or decoration works.

D) Recurring features
The human figures show a high degree of repetition in the shape of facial features. The eyes are designed as an upper line with half a circle underneath, with the white of the eye indicated. The lips are made in four lines: dark red for the upper and light red for the lower lip, and two lines of black indicating the shadow between and under the lips. The nose runs as a continuous line from the eyebrow in the direction to which the figure looks and has a sharp lower part. The hair is made with alternating, zigzagging brown and black tesserae lines. Other details also show a high consistency, such as the treatment of fingers (each finger and toe is separated by a black line from the ones next to it and fingernails are indicated), and the treatment of drapery with parallel linear inlay with no special fold design in the lower tunic.

E) Size and shape of the tesserae
There is an application of elongated black tesserae for the outlines and these tesserae were made especially for that purpose. There is a clear differentiation in size of stones between various parts of the human body: faces are made with the smallest tesserae, body and clothes with larger tesserae, and background is made with the largest tesserae.

F) Colour and the sorting level of the tesserae
There is a high measure of sorting in the tints of the tesserae. At least three tints of pink and two tints of ochre were applied for the exposed body parts and three tints of gray for the scarf that wraps the body of the shepherd shooting a stone.
G) Inlay patterns
The parallel inlay is applied throughout the mosaic. A special effect is achieved by the treatment of the exposed body-parts by parallel application of tesserae of gradual tonality along the limbs, including the reverse of the order of inlay at the parallel sections of the arms, at the elbows, creating the same reverse effect that was observed in the human figures of the mosaic at the Church of Lot and Procopius.

4.4.2 Other elements

A) Animals
The animals at the Upper Chapel of the Priest John show a remarkable similarity to one another in their design and inlay patterns. A good example are the figures of the lioness and the ram (Figs 43-44). Though depicting two entirely different animals, the depiction of the body is almost identical. The backbone line runs from the back of the head continuously down to the tail, the hind leg is formed by two curving lines in which the outer curve reaches the middle point of the inner curve. The linework of the filling of the body is an elaborate example of interlocking lines between three fields of colour, creating a smooth transition from the dark back to the light belly. The animal is given its identity only by its head and paws, for the rest the craftsmen applied an identical production formula, which creates a ‘perfect match’. At the same time, the choice to show the head of the lioness in a forward position is exceptional.

B) Inscriptions
The two inscriptions at the eastern side of the mosaic differ in the height of the letters, but apart from that difference the letters in the two inscriptions are identical in form and shape. Typical are the two short lines above the ‘W, the short line dividing the upper and lower parts of the ‘Y’ and the short decorative line of the small ‘k’ (though this detail is less consistent within one and the same inscription). The letters are generally composed of straight lines, have little decoration and tall proportions.
C) Scroll
Each figure is surrounded by a medallion composed of four acanthus leaves, richly designed with sharp edges. Where two leaves meet, a flower-like design is depicted, from which the following leaf emerges. The outer petals of these flower-like elements, as well as the uppermost part of each leaf, have a smooth edge (in contrast to the sharp edges of the rest of the leaf). The acanthus leaves are made in three colours: grey, red and yellow/ochre. The contour line is made with dark tesserae that also form the heart-line of the leaf. Two gradual tones of the same colour are applied in order to give the leaf its plasticity. In some cases two different colours appear on each side of one leaf. The method of production of the vegetal elements is rather consistent. The acanthus leaves seem to have been produced in sections, marked at times by a white line. Each leaf covers about a quarter or, at maximum, half of the circumference of a medallion. Furthermore, certain sections of the acanthus are shared by two medallions, a feature that demanded a certain degree of planning. It may be assumed that the division was drawn as a preliminary guideline.

Elsewhere in the field of the mosaic flowers and plants appear (for example in the square-like areas that are created by the acanthus frame between the figurative medallions) or fruit (in the fruit-baskets and the mantle of the personification of earth in the centre). Among the fruits in the mantle there is also a bunch of grapes, which is designed in the same way as the grapes in the scroll of the mosaic at the Church of Lot and Procopius.

D) Background
The background filling is treated in much the same way as in the mosaic at the Church of Lot and Procopius. Though the composition is much more condensed and there is much less empty background space, it seems that the filling of the background begins from the white outlining of each element, creating closed sections between adjacent elements, and working from the outer into the central area of each section.

4.4.3 Synthesis
The mosaic at the Upper Chapel of the Priest John shows a high degree of consistency and repetitiveness in the production of each element: the human figures, the scroll and the animal figures indicate a high measure of consistency and professionalization. All human figures within this floor are a ‘perfect match’ and seem to have been produced by the same hand,
some of the animal figures seem to be a ‘perfect match’ as well, and the same is true also for the scroll element, which shows a high measure of consistency. However, it is more difficult to tell whether the hand that produced the human figures has also produced the animals or the scroll.

The hierarchic model would imply that work was divided according to artistic complexity: all human figures were produced by the master mosaicist, the animals by another, the scroll by a third and so on. However, at first glance the various elements show no deviation in design or inlay that would suggest the work of more than one hand. However, the interlocking inlay in the bodies of the animals is an inlay pattern that is completely absent in the human figures. If the artistic result reflects the work of one and the same mosaicist, we would expect the usage of similar inlay patterns in both human and animal figures. It thus seems that at least two mosaicists produced the mosaic at the Chapel of the Priest John.

4.5 The Craftsmen of Mount Nebo – Discussion

As mentioned above, it was Piccirillo who was the first to suggest that the team of mosaicists who produced the mosaic at the Church of Lot and Procopius was the same team that produced the mosaic of the Upper Chapel of Priest John. This observation was undoubtedly based on the human depictions in the mosaic. The present discussion shows, that the analysis of production techniques supports this observation in many aspects. But matters become more complicated when the comparison is made not only within one mosaic, but between two different mosaics.

According to its inscription, the mosaic of the Upper Chapel of the Priest John was made in AD 565, eight years later than the Church of Lot and Procopius, that was produced, according to its inscription, in 557. A gap of eight years seems perfectly possible for attributing the production to one and the same team.

A few basic differences in the design of both mosaics should nevertheless be mentioned. In the Upper Chapel of the Priest John the medallions are formed by an acanthus plant rather than a vine scroll. A difference can also be detected in the choice of themes: The personification of Ge (the Earth) in the centre of the mosaic of the Chapel of the Priest John gives a more allegorical dimension to the depiction, while the mosaic from the Church of Lot

and Procopius seems to concentrate on genre scenes. But these differences may lay in the sphere of the commission and the preferences of those who ordered the work. Other differences belong to sphere of design: in the Upper Chapel of the Priest John we see more frontal positions (portraits of the donors, Ge and the lion). Such a difference is fundamental in terms of change in recurring gestures. A craftsman who was not trained in the depiction of frontal positions would not likely have changed the gesture, unless he felt himself confident enough to experiment with new positions. This may, alternatively, indicate the involvement of a different painter, the application of other models or the involvement of a second producer.

From a technical point of view, the observation of Piccirillo is certainly based on traceable similarities. The order of production and pattern of overlapping, indicated by the feet of the figure that ‘hides’ the scroll, shows that the order of procedure was the same - the figures were made first, followed by the scrolls and the background last. The inner division of the figures is similar in both mosaics, though the figures of Lot and Procopius make a more lively impression, while those of the mosaic of the Priest John are somewhat stiff. For example, the hand of the youth on the right holding a basket is too far from the shoulder, creating a disproportionate and an unnaturally long arm with an awkward relation to the shoulder. But despite this awkward depiction, the foreshortenings and three-quarter poses are convincing and the figures at the mosaic of the Priest John do resemble those of the Church of Lot and Procopius with the characteristic positioning of the feet, facial and other details, such as the hands that convincingly grasp objects, and the repetitive body gestures.

The execution of the two youths who offer fruit baskets to the central personification of the Earth and the youth shooting a stone at a boar are very similar to the figures in the Church of Lot and Procopius in the treatment of the foreshortening, the division into sections, and their inlay patterns. By contrast, differences may be detected in the treatment of the lower part of the tunic and the shape of the fingers and toes. Technical similarities (observed also by Piccirillo) are the varying size of tesserae in different parts of the human body (smallest in the face, larger in body and clothing and largest in the background), the application of elongated black tesserae for the outline, and, most importantly, the treatment of the exposed body parts and the creation of three-dimensionality by applying tesserae of graduated tones, including the reversing of the order of inlay at the parallel sections of the arms.

The human figures at the Chapel of the Priest John and at the Church of Lot and Procopius can certainly be considered as a ‘perfect match’ in accordance with the observation of Piccirillo. However, one must also consider the small differences between the human figures
in both mosaics. Comparing the human figures at the Church of Lot and Procopius and the later produced Chapel of the Priest John, one notices that the earlier mosaic excels in design as well as in details. Though one may attribute differences to the personal development in the style of an individual that may be detected during the gap of eight years, it may rightly be asked whether a producer who was appreciated for his high artistic expertise would produce figures of somewhat lesser quality. We may attribute this to overconfidence, style decadency, or, simply, to the older age of the mosaicist. Despite the differences mentioned above, the similarities, observed by Piccirillo are still valid.

A comparison of the animal figures between the mosaic at the Church of Lot and Procopius and those at the Chapel of the Priest John proposes interesting challenges. One similarity is shown by the figure of the hound in both mosaics (Figs 46-47). The similarity can be especially noted in the inlay patterns of the heads of both animals. The similarity is conspicuous and includes the design of the head, ears, the open mouth with sharp teeth and the red tong visible. The smooth colour change from dark at the top of the head to light at the jaw and small details such as the two wrinkles at the eye and the pink nose are practically identical. Also in the body of the hound a few similarities can be detected, such as the form of the upper foreleg, the interlocking inlay and the design of the paw (though not the same detailing of sharp claws).

An interesting comparison is that between the figures of the ram from the Chapel of Priest John (Fig. 44) and the sheep from the Church of Lot and Procopius (Fig. 45): just like in the case of the hound the head is very similar, but the body and its inlay patterns show very little in common: the spine of the sheep from Lot and Procopius is not drawn in a smooth line, but is divided into three curves, and nowhere appears the interlocking inlay pattern that dominates the ram figure from the Chapel of the Priest John.

It should be stressed again, that the body of most animals in the Chapel of the Priest John are a ‘perfect match’ (as shown earlier in the comparison of the ram and lioness). It is thus surprising to observe that the heads show a ‘perfect match’ with the mosaic of Lot and Procopius, while some of the bodies do not.

This observation is of importance for the attempt to trace the composition of the team. It has already been observed, that more than one hand was involved in the production of the animal figures at the Church of Lot and Procopius. The similarities with the Chapel of the Priest John may indicate a further division or specialization: one mosaicists may have
produced the complex details such as the head, while the other(s) did the overall filling-in of the body.

If the human figures in both sites were indeed produced by one and the same mosaicist, but at least one of the craftsmen who produced the animal figures at Lot and Procopius is not the same one who produced the animal figures at the Chapel of Priest John, it may be inferred that some members of the team may have been replaced, or that a new member joined the team. Thus the investigation supports the observation of Piccirillo only in relation to the human figures, but not concerning the animals. If both mosaics were produced by a team that was composed of the same specialized members, we would also expect that a perfect match would appear in the animal figures in both sites and not only in the human figures, which is not the case. The similarity of the animals heads in both sites indicates, that it is either the human figures master who also produced the animals heads, or that there was an additional artisan who worked in both sites. The assistant(s) who did the body inlay, on the other hand, appear(s) to have been replaced in the course of the eight years between the production of the two mosaics. Another possibility is, that the team of producers was an ‘ad hoc’ team of specialists who occasionally worked together on the production of a certain project, but did not necessarily continue working together again in later commissions. In that case, the observation of Piccirillo traced the hand of a specific mosaicist (who specialized in fine figurative depictions, such as human figures and animals heads) and not of a team, and our concept of how a ‘workshop’ was operating needs certain revisions.

Identifying the difference in the treatment of the animals in both sites is important for the question of specialization: it shows that a division of work according to repertoire (in this case: human figures and animal depictions) did exist in the case explored above: in both sites, the master who produced the human figures helped perhaps producing the heads of some of the animals, but the craftsmen who produced the bodies of the animals did not participate in the production of the human figures. This may indicate, that in some cases, a certain hierarchy and specialization did exist within the producing team.
The Old Diakonikon mosaic is part of the large complex of the memorial of Moses (Fig. 48). The fourth-century church originally included the eastern trefoil construction with the vestibule at its west. This was turned into the altar area of the later complex that was built as a basilica with two aisles and chapels to the north and south. In the sixth century the church grew into a monumental complex that was decorated in stages, during the sixth and up to the seventh century, with a few superimposed mosaics.\(^{43}\)

In the early sixth century, the church had a basilical plan with a large nave, trefoil sanctuary, and two side wings with functional chapels. The central nave of the church was decorated by a figurative depiction, from which only a fragment has survived.\(^{44}\) The south wing of the church includes the New Baptistery Chapel and the Theotokos Chapel that were decorated in the second half of the sixth century.\(^{45}\)

The north wing that formerly functioned as a Diakonikon changed its function during the first half of the sixth century and was rebuilt as a baptistery. The area before the baptismal font was decorated with a figural mosaic in a free composition, lined in four registers. It includes the following themes from east to west: Lions-hunt on foot, wild beasts hunt on horseback, a pastoral scene of a shepherd with four sheep and a scene of an African and a Phrygian leading exotic animals. The figures are not life-size, but they are relatively large in dimensions, and the standing figures reach some 120 cm. The Old Diakonikon includes two inscriptions: one is the dedicatory inscription at the eastern side of the mosaic, the other is the two-line inscription, inserted in the free space along the western panel. While the long dedication at the east names the commissioners and the date, it is the shorter, two-lines inscription that names the artists. It is conspicuous that the craftsmen were not named in the primary dedicatory inscription.\(^{46}\) The dedicatory inscription reads: “By divine grace, at the time of our Father and Bishop Elias, beloved by God, the holy Diakonikon of God was rebuilt and adorned with the basin of regeneration it contains and with the splendid ciborium, by the good office of Elias, egumen and priest, under the consulate of the Flavii Lampadius and Orestes, in the month of August, in the 9\(^{th}\) indiction of the year 425 of the Province [of Arabia], for the salvation of Muselius, advocate, and Sergia, his wife, and for the salvation of

\(^{43}\) For an excellent overview of the building phases in the Siyagha, see: Piccirillo/Alliata 1998.

\(^{44}\) This will be discussed below in Section 4.10.

\(^{45}\) These mosaics will be discussed in Section 4.9.

\(^{46}\) The inscription concerning the artisans is already discussed in Chapter 3.
Philadelphus, advocate, and of all their kinfolk. Amen, Lord”.\textsuperscript{47} The year 425 of the Province Arabia and the ninth indication is a year equivalent to AD 530.\textsuperscript{48}

The mosaic of the Old Diakonikon (Fig. 49) is one of the earliest dated mosaics at the site and was completed in the year AD 530. It was produced, according to the evidence of its inscription, by three leading mosaicists, who signed their work and are mentioned by their name: Soel, Kaium and Elias. The division of tasks among them, however, is not specified.

The surface was divided into three fields. The easternmost field decorates the area around the baptismal font at the eastern side of the chapel and includes a fan-design with a flower bud in the centre of each fan. At each corner of the baptismal font is a complex geometric design. One of them shows four interwoven 8-shapes with a bunch of grapes in the centre.

The central panel is a framed figurative mosaic, and the western field is a small panel decorated with a diagonal flower buds grid. The panel is framed by an interlaced design with the long dedicatory inscription placed at the east. The figures are organized in four registers in a lay-out of free distribution. Each figure (or group of figures) is depicted as ‘floating’ with no ground-lines to stand on. Assuming that the preference of producers of figurative depictions is always to produce the figure in a front position (sitting before the figure rather than producing it ‘on its head’), the work seems to have proceeded in the general direction from east to west.

\textit{4.6.1 Production procedure}

A) Illusionistic overlapping

The organization of figures in a free distribution lay-out results in a minimum of overlap among them. When there is overlap between figures and plants – the human and animal figures overlap the plants, but one exception to this rule shows that variety in the procedure did occur. The exception, where a plant overlaps an animal, is the rightmost lamb (which is also the only one that is directed to the right, while the others head to the left). A clear overlapping is created between the body of the lioness at the upper right corner of the mosaic and the tree behind her. It clearly indicates that the lioness was produced first, the tree during a second stage, and the background last. That the white background was not set until the secondary elements of the landscape were in place is clear from the linearity of the

\textsuperscript{47} Piccirillo 1997, 146.

\textsuperscript{48} Piccirillo/Alliata 1998, 273-287.
background tesserae. Although two white tesserae lines follow the outline of the lioness’s head, they do not continue along her back, but are blocked by the trees’ leaves, that reach up to the lioness’s outline in that section. Apparently, the white line that separates the lioness’s buttocks and the tree, was set as part of the surrounding of the outline of the tail, but was not continued to connect to the line that surrounds the fore of the animal. Such discontinuity can be demonstrated throughout the floor, indicating that the background was worked on in localized sections.

B) Internal division

The figures at the Old Diakonikon are conspicuously larger than figures in other mosaics in the region. The only figure that conforms to an average size is the sitting shepherd, which is 76 cm high. All other standing figures range between 107-120 cm. Due to their size and complexity, their production must have been done in sections. The internal division of the figures follows the elements in the design. For example: all the figures of hunters hold a lance in their hands. The lance divides their body into an upper and lower part. The measure of this line, from hand to hand, was taken as a basic natural division of the body. The inlay patterns of the background (see also the analysis of aspect G below) support this reconstruction, as in not a single case is the surrounding line of a figure continuous between the upper and lower part of the body. Other lines that could have served as natural division-lines are the sleeves and lower edge of the tunics.

C) Repetitive gestures

Four gestures appear in the mosaic: the hunters on foot lean slightly forward with a lance in their hands, pointed at the animal that they kill. Their legs and foot position are identical. The arms of the right hunter are more widely spread and he holds the lance only with one hand, having a shield in the other. The hunters on horseback sit in an identical position, the sitting shepherd has no other match in this mosaic, and the men leading exotic animals stand in the same position, their head turns slightly left while their body is frontal. The gesture of the African man is identical to that of the hunters on foot. The range of gestures is strictly limited to three basic types with minimal variation.
D) Recurring features
In all figures the heads are formed in a similar way, by a line that starts with one ear, forms the cheek, chin, and ‘fades’ into the jaw. Whether this line is one the left or right side corresponds to where the figure is heading. The nose is in one line with the eyebrow in the direction to which the face in heading, and ends with a sharp hook. The mouth is made up of triangular tesserae and follows much the same pattern: two ‘lines’ of red tesserae, with black tesserae in-between to mark a shadow line between the lips, and at the four corners. The eyes, however, show some variety. The eyes of the lion hunter are completely round, while most of the other figures’ eyes are designed as a horizontal upper line with a half circle below. The iris of the eye pupil is a roughly round black tessera and the white of the eye is shown.

E) Size and shape of the tesserae
The size of the tesserae is variable. Faces show the smallest size of tesserae, while in the body, clothes and background a larger size of tesserae was applied. Exposed body parts, such as arms and legs, are outlined by darker tesserae. These tesserae have an elongated shape when outlining delicate details, such as hands and fingers. However, the outlines of clothes and of the animals is not different from the standard cube in shape and size. Triangles are often applied for the depiction of details, such as the lips, or the claws and teeth of animals. For the flowers also triangular tesserae were systematically employed and these were produced especially for that purpose, as they seldom appear elsewhere in the mosaic.

F) Colour and the sorting level of the tesserae
The tesserae were sorted carefully into different shades of pink and were applied in a way that creates an illusion of depth and three dimensionality. This can be seen in the exposed body parts, the faces and the treatment of folds of the tunics.

G) Inlay patterns
Following the linearity of the background, no clear seam-lines can be detected between the individual figures or between the registers. Furthermore: some lines of the background filling can be traced cross-registers. As noted before, the white contour line that surrounds the body is not continuous, but is divided according to the division of the human body, along the lance that divides the depiction. It thus seems, that the background was produced after every half-register or two halves of two following registers were in place.
The figures seem to have been produced in several stages and show, at times, different inlay methods. A good example is the body of the lion hunter and the treatment of his limbs. The arms show parallel inlay, with reverse at the elbow (an inlay method that does not appear in the lower body), while the legs show interlocking and interchanging inlay, an inlay method that does not appear at all in the upper body. This difference is fundamental in terms of work procedure, as with the first method the craftsman works along the limb and parallel to the contours, while in the second the craftsman does the inlay in a direction that is perpendicular to the outline. The same phenomenon can also be seen in the hunter of the lioness. Here, the interlocking inlay appears in the upper part of the tunic, while the lower part of the tunic (with the lance indicating a clear division-line), is dominated by parallel inlay.

4.6.2 Other elements: Plants and flowers

The plants and the flowers are treated as a repetitive element. The flowers are shown in three stages: closed, half-open and fully open (details in Fig. 51). The closed stage has the shape of a leaf and is filled in either yellow or grey. The half-open stage has a triangle-like form in three colours from light to dark. The open flower has a heart that is made with two white triangular tesserae, two arches of pink and three petals in red, formed each by a square tessera with a triangular one on either side. The depictions are reasonably consistent. An interesting detail is the exceptional treatment of the branches and leaves of the second tree to the right in the shepherd and sheep register (Fig. 50). While all branches in the other trees grow upwards, the branches in this tree grow downwards. It could be argued, that the artist meant to depict a certain type of tree, a tree which branches grow downwards. However, such a growth direction in fruit-trees is rather exceptional, and it can therefore be suggested to seek the explanation for this unusual detail in the production process. As has been indicated earlier, it can be generally assumed that the mosaicists always faced the figure or object that they were depicting as positioned before them. Those depicting the trees sat with their face to the east and back to the west, depicting the branches as growing upwards and create the right growing-direction of the fruit-tree. It seems that the mosaicist who produced the second tree

49 The closed flowers are identical to the treatment of the tree in the so-called Mosaic of the tree in Madaba (Piccirillo 1997, 132, Figs 160-161). Also the figures of sheep reseble those of the Old Diakonikon, and it is very possible that the mosaicists of the Old Diakonikon were also involved in the production of the Mosaic of the Tree. However, the Mosaic of the Tree does not include human figures and will therefore not be treated in the present study.
from the right sat the other way around, or in other words: with his face to the west and back to the east. However, he produced the branches of the tree as he saw them – growing upwards. But since he was sitting in the opposite position, the impression is that the branches grow downwards. We should not attribute botanical ignorance to the mosaicist – it seems that artistic habits are at times stronger than the striving for realistic accuracy.

But why would the mosaicist change his position in relation to the depiction? A conceivable explanation for this is, that this tree was produced by two craftsmen working at the same time: one sat before the tree to produce the stem, while the other sat opposite him and helped with the production of the branches. This, apparently, was not the usual way to work and therefore resulted in the somewhat exceptional treatment of the tree. However, this may indicate that more than one craftsman was working on the production and that work was done simultaneously.

4.6.3 Synthesis

The choice for a free distribution lay-out in the mosaic of the Old Diakonikon and the organization of the composition in the form of registers, makes the units and sections of work less clear to trace. However, following the inlay of tesserae it is apparent that the direction of work did not always follow the composition and that the figures as a rule were produced before the background elements. The figures are consistent in gestures and show (with the exception of the shepherd in profile) application of one basic model of frontal shoulders and a face in a three-quarter-view.

The inlay methods, however, do not show consistency, as has been shown to be the case with the hunters of the upper register. Inconsistency between various figures can be interpreted as production by various hands. In the Old Diakonikon, and especially in the lion hunter, inconsistency has been identified within one single figure. This inconsistency may be the result of a division of work, in which different hands produced various parts of the body of the same figure. As has been shown, the size of the figures at the Old Diakonikon mosaic is exceptionally large for mosaics in the region (up to 120 cm) and it is not unthinkable that each figure was divided into several sections in order to allow consecutive production, perhaps by more than one hand for each figure. The information provided by the inscription, which mentions three names of what seems to be equally trained craftsmen, supports the artistic
observation that more than one mosaicist produced the mosaic. Furthermore, the observation of inlay methods shows that although they were applying different patterns, they were all equally capable of producing large human figures of excellent quality and had good cooperation between them, with no apparent hierarchy in terms of artistic specialization.

A figure that deserves some attention is the sitting shepherd in a full profile (Fig. 51). The outline of his body is made with elongated, thin black tesserae, while the mantle he wears is made with regular square tesserae. His half-bald forehead is indicated by three darker lines and short grey hair, made of inlay of white and grey tesserae that also form the beard. The revealed ear is a very unusual detail in mosaics of the period. The tesserae of the face are much smaller than those of the body. The eye is formed as a straight upper lid, with a half-circle underneath forming the lower lid. A round black tessera makes the iris and the white of the eye is indicated. The skin is made in several shades of pink, in linear inlay, which successfully forms the illusion of volume. The fall of the fabric is less convincing and creates a stiff impression, that resembles some of the depictions that appear in the mosaics of the Church of St George, but do not reflect the more lively treatment of fabric at Lot and Procopius. The treatment of the body, however, shows strong affinity with the inlay methods that were applied later in the mosaic of the Church of Lot and Procopius.

Two other figures at the Old Diakonikon that show conspicuous similarity to the figures of the Church of Lot and Procopius are the upper body of the lion hunter (Fig. 52) and the figure of the Phrygian (Fig. 53) with the typical treatment of facial features. The resemblance between the treatment of some of the figures in the mosaic of the Old Diakonikon and the figures at Lot and Procopius may be explained in several ways.

It may be suggested, that the mosaicist who produced the sitting shepherd, the upper torso of the lion hunter and figure of the Phrygian at the Old Diakonikon was an individual, whose work can be connected to the later producer of the figures at Lot and Procopius through a relation of training. The Old Diakonikon was produced, according to its inscription, in the year AD 530 by three mosaicists whom we know by name. This is a difference of some 27 years with the Church of Lot and Procopius and 35 years with the Chapel of the Priest John. It may be inferred, that the mosaic at the Old Diakonikon reflects an early stage in the career

51 In this case, we may assume that the artisan enjoyed old age. An example for a mosaicist that reached extremely old age comes from a now-lost gravestone of the second century from Perinthos, Turkey. The gravestone was erected by Proklos and was dedicated to his father, who was a mosaicist and died at the age of 85 (Donderer 1989, A32; Poulsen 2012, 130-131).
of the master from the Church of Lot and Procopius, which means he was one of the three mosaicists who are named in the inscription: either Soel, Kaium of Elias. He was perhaps the youngest of the three and when the other two retired, he started his own workshop or started to work as an independent mosaicist, cooperating with different craftsmen. Otherwise, the similarity may reflect successive generations of producers, and a training-relations between different mosaicists.

4.7 Other Pavements in the Mount Nebo Region: The Church of the Deacon Thomas

The nave of the well-preserved pavement at the Church of the Deacon Thomas (Fig. 54) in the valley of ‘Ayun Musa depicts a field of vine scrolls growing out of an amphora that is located in the lowest row and surrounded by a leopard at each side. The outer frame shows a continuous acanthus scroll with birds and heads at the corners, while the vine scrolls in the central field show a carpet of 24 medallions, eight in the vertical and three in the horizontal direction. The field fits nicely between the columns that divide the nave from the aisles. The themes that appear in the mosaic include the repertoire of the hunt, and pastoral and vineyard scenes. Each scroll depicts one figure, though the upper row shows a freer approach with the figure of the fruit-picker in motion towards the central scroll, the trees growing beyond the scroll-frames and the bear stepping out of the central scroll towards the left, where the scroll was omitted altogether.

This mosaic does not include an inscription, and the exact date of its production is not known. Assuming a linear stylistic development, Piccirillo dated the mosaic at the Church of the Deacon Thomas to the first half or the middle of the sixth century, and in any case to an earlier date than Lot and Procopius, based on what Piccirillo defines as stylistic features that are “lagging behind” those of Lot and Procopius. However, the observation that the human figures in the mosaic at the Church of Deacon Thomas seem somewhat awkward and are less convincing in their gestures and movement, does not necessarily indicate their relative date of production. Piccirillo's method reflects a broader methodological pitfall regarding methods of dating that depend on style. The general observation of stylistic features indicates, that fifth

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52 Piccirillo 1997, 181-188
century mosaics generally show a less naturalistic approach. Dated sixth century mosaics from the same region show, that the later mosaicists came to master more convincing artistic representations. Applying this principle as a methodological tool for dating, the date of Piccirillo may be conceivable. However, the number of exceptions to the rule applied by Piccirillo demand a more careful approach.

An alternative approach is, that the mosaic of Deacon Thomas may have been produced by individuals who are contemporaries of the craftsmen who worked in the Church of Lot and Procopius, but whose artistic capacities in the production of human figures were inferior. The actual date of production may be just as well later in the same century or contemporary. It is therefore of importance that beside his observations concerning the style of the human figures, Piccirillo also admits the high quality of some of the animal imagery at the church of the Deacon Thomas and equals them to the stylistic quality of the animals at the Church of Lot and Procopius. In the following section, the production procedures of the human figures at the Church of the Deacon Thomas is analysed according to the seven criteria.

4.7.1 Production procedure

A) Illusionistic overlapping

In all cases where figures are depicted beyond their scroll frame, the central depiction overlaps the scroll. This is clear in the figure that picks pomegranates from the upper tree, in the fox eating grapes from a basket, or in depictions that extend over two adjacent medallions, such as the hound hunting a deer, a man leading a donkey or the hunter killing a lion with a lance in the lower section. The scroll is made with two lines of tesserae, one line in red and the other in yellow. The red line is clearly the primary part of the scroll, while the yellow changes its position, either on the outer or the inner side of the red line. The three vine branches that form the medallion composition grow from an amphora, positioned at the lower side of the composition. Two branches grow out of the amphora and reverse their direction of growth. The left branch forms the left vertical row of scrolls, while the right branch splits (above the lance of the hunter killing the lion) into two branches to create the central and right

54 The mosaic of the Lower Chapel of Priest John is a good example (Piccirillo 1997, 176). At the same time, the splendid figurative mosaics from the House of the Nile celebration at Tsippori (Sepphoris) are dated on stratigraphic basis to the 5th century (Weiss/Talgam 2002, 60).

55 This observation is essential, and a further comparison may be rewarding in order to understand the relation between the two mosaics.
vertical rows of scrolls. Assuming that the continuity of lines mirrors the direction and order of work, it appears that each vine scroll was created along the vertical axis, with the red scroll growing in half circles in a ‘slalom’ motion around the figures. The other half of each red medallion was added afterwards. At this stage, some of the red branches that carry the leaves, tendrils and grapes were also added. In most cases, it was only after this stage that the secondary yellow line was laid. This consistency is present up to the third horizontal row, with the shepherd, goat and hound. This portion covers about a half of the surface of the floor, and might indicate the larger portion into which work was divided. From this point upwards it appears, that the yellow tesserae line was mostly laid before the bunches of grapes and leaves were added. In any case, this area is less consistent than the larger portion of the lower field.

B) Internal division
Similarly to the figures at the Church of Lot and Procopius, elongated black tesserae indicate the contours and the general division of each figure and help to distinguish the sections. In the figure of a man picking pomegranates\textsuperscript{[56]} four sections are clearly recognizable: head, torso and arms, loincloth, and legs (each of them is a separate unit). This systematic division can be recognized in most figures. The craftsman was secure enough to make variations and add sections as necessary, such as in the mantle that hangs loosely over the shoulder of the hunter or when the figure is fully dressed. An interesting case is the torso of the grape-picker, whose unnatural twist demanded a different division.\textsuperscript{[57]} The right arm was treated as a unit (as is apparent by the clear line of tesserae where the arm attaches to the shoulder), but the craftsman avoided the application of the black tesserae for ‘closing’ that unit from all sides. He tried to maintain the illusion of a single unit in the torso, although he did not have the capacity to really produce it as one section.

C) Repetitive gestures
There are a few basic body gestures with some variety in the position of arms and legs. Though the craftsman attempted to create lively depictions, the foreshortenings are not completely correct, with the result that the movement is somewhat unconvincing. Furthermore, the inlay of colour is not gradual enough to create a convincing illusion of three dimensionality. Though shoulders are mostly depicted as frontal, the heads are turned in a

\textsuperscript{[56]} Piccirillo 1997, 183, Fig. 256.
\textsuperscript{[57]} Piccirillo 1997, 181, Fig. 253.
three-quarter position, arms and legs are bent in movement and the figures are occupied with various activities. When the artisan repeats the form of one element, he changes another in order to enrich the illusion of movement. There are, for example, four leg and feet positions. The lion hunter and the man leading a donkey have the same leg/feet position, depicted as mirror image. To compensate for this ‘duplication’, the artisan changed the arms-position of the two figures. The man picking a fruit from a tree has an identical leg/feet position as the man leading a donkey, but the arms are again depicted in a different position. Like in the mosaic of Lot and Procopius, it is the variation that enriches the depiction.

D) Recurring features
Features are highly consistent and show a high degree of repetition. A few such details are the depiction of the loin-cloths or lower part of the tunics. There is clearly an attempt to depict the legs under the garment. The treatment of hair and facial features is repetitive and similar in all figures. There is attention to details such as fingers, but nails are not consistently indicated. Naked torsos are marked by linear pattern that stresses the chest and the belly-button.

E) Size and shape of the tesserae
There is a high degree of sorting of tesserae according to size: the smallest are applied in the faces of the figures, larger in the bodies and largest in the background. Black elongated tesserae are applied for marking the outlines, while circular tesserae, which are not used elsewhere in the mosaic, mark the iris of the eye and were made especially for that purpose.

F) Colour and the sorting level of the tesserae
There is a high degree of sorting colours into tints. This is especially clear in the exposed body parts, where at least three tints of pink and three tints of ochre were applied. However, the high measure of tonality-division was not maintained in the depictions themselves, failing to create the same highly convincing three-dimensional effects as appear in the mosaic of Lot and Procopius.

G) Inlay patterns
The body inlay is a combination of parallel with interchanging inlay. This creates a somewhat inconsistent impression. The figure picking pomegranates from a tree is a good example. His arms and legs show a regular parallel inlay. The arms and legs show also the reverse effect at
the elbows and knees. The torso is lined with a pattern stressing the chest and belly-button, while the tonality of colour is laid in a somewhat clumsy interlocking pattern from dark at the side to light along the centre (the torso line). It seems as though the artisan was not completely confident about the inlay method.

4.7.2 Other elements: Animals

The animals are generally well formed, with convincing anatomy, movement and much attention to details such as eyes, teeth, nails etc. When necessary, the artisan applied smaller tesserae and specially cut tesserae (triangle for teeth and claws, circles for the eyes). The number of colours applied in the animal imagery is rather limited, and the artisan tried to create the illusion of three dimensionality in various ways. In the body of the fox eating grapes from a basket, he applies a combination of parallel with interlocking inlay, while in the depiction of the hound catching the hind leg of a mountain-goat the parallel and surface inlays are dominant, so there is no overall consistency in the inlay patterns. One conspicuous similarity is the head of the sheep at the Church of Deacon Thomas (Fig. 55) to that of the sheep at the Church of Lot and Procopius (Fig. 45).

Although the Sheep from Lot and Procopius is static and the one from the Church of Deacon Thomas is opening its mouth to graze, the features (especially the delicate treatment of the eyes) are similar. At the same time, it seems that the artisan who filled-in the body of the sheep from the Church of Deacon Thomas failed to match the quality at Lot and Procopius in creating a convincing effect of three dimensionality. If the producer of the animals heads in both sites is the same craftsman, it means that he cooperated in each case with a different apprentice who filled-in the body, as well as with a different master who produced the human figures. This supports again the theory that mosaicists may not always work as a fixed team and occasionally worked in an ‘ad hoc’ construction.

4.7.3 Other elements: Plants

The vine scroll is consistent in the six lower rows, but the upper two horizontal rows show inconsistencies as stated above. The shape of the leaves, with a red cross in the middle and trefoil shape, is highly consistent, as well as the division of colour: one half is lighter than the other. The shape of the grapes is almost circular. Each grape is made up of five square tesserae shaped as a cross, with four triangles, one at each side. This is consistent in the lower
six rows. In the seventh row, however, appears incidentally a different form of grape, one that is identical to the grape shape that appears also in the mosaic at the Church of Lot and Procopius.

4.7.4 Synthesis

The scroll mosaic in the nave of the Church of the Deacon Thomas shows high inner consistency in the images of the human figures. The human figures are less convincing in proportions, foreshortenings and illusion of three-dimensionality in comparison with the Church of Lot and Procopius and the Chapel of Priest John, but they all share the same repetitive awkwardness. Compared to the human figures, the animal figures are much better proportioned, convincing in their movement and are rich in details. But the in-filling of the bodies is less consistent and fails to achieve a convincing illusion of volume. The scroll and bunches show consistency in the lower six rows, while in the upper two rows the consistency is broken. It appears that one craftsman produced the human figures, but that more than one artisan helped with the production of other elements in the mosaic.

Despite the differences in quality between the mosaic at the Church of Deacon Thomas and the Church of Lot and Procopius, some affinity in the basic inlay techniques can be traced between the two mosaics. The size of tesserae follows the same gradation pattern, with application of tiny tesserae in the face, elongated black tesserae as outline, with attention to colour tonality. Also the parallel application of square tesserae along the limbs, and the application of a thinning tesserae-line in the middle of the limb is a technique that the craftsman of the Deacon Thomas shares with the craftsman of the Church of Lot and Procopius. The reversal of the parallel patterning along the limbs, however, is absent in the figures of the mosaic of Deacon Thomas. In design, at the Deacon Thomas, too, the figures are in action and avoid a full frontal position. And yet, despite this affinity, the figures at the Deacon Thomas differ in their proportion and foreshortenings and are not as convincing in their naturalism as the figures at the Church of Lot and Procopius. The graduation of colour fails to create the same effect, the details of fingers and hands grasping object is not as refined, the inaccurate foreshortenings and the awkward three-quarter depictions – all these create a visual difference that identifies the craftsman of the figurative depictions of the Deacon Thomas mosaic as a different individual than the one who worked at the Church of Lot and Procopius and the Chapel of the Priest John.
A comparison of all figurative depictions at the Deacon Thomas mosaic shows a consistency-pattern that suggests, that all human images throughout the mosaic of the Deacon Thomas are the work of a single craftsman. It is possible that this craftsman was himself trained by the mosaicist who worked at the Church of Lot and Procopius, but failed to match his master, or that both received their training from the same master, but their ways parted and they were employed by different commissioners.

The animals, and especially the attention to details of their faces, eyes and teeth, do show strong affinity to some of the animals at the Church of Lot and Procopius. Especially the face of the grazing sheep shows a surprising similarity to the sheep at Lot and Procopius. Even if it was not the same hand that produced the two, suggesting that the artist who produced the animals of the Church of Deacon Thomas received his training from the master of Lot and Procopius would be possible. Such close similarity indicates a shared training-pattern or a local tradition of mosaic production.

4.8 Relation between the mosaics of the Mount Nebo region

The observations discussed above call for a re-evaluation of the relation between the mosaics of the mount Nebo region, from technical and formalistic points of view. It seems that the identification of an individual producer is a most complex issue. Though the attribution of Piccirillo may be accepted in relation to the human figures of the Church of Lot and Procopius and the Chapel of Priest John, other elements do not seem to reflect the work of identical teams. The human figures and the animals seem to have been produced by other mosaicists and the members of the team seem to have been replaced during the course of time.

The observations seem to indicate a pattern of specialization, in which one mosaicist produced all human figures, while another mosaicist specialized in the production of the animal imagery, but used the help of others during the work. Although individual artists are difficult to recognise, some of the traits seem to have been a shared local tradition that can be identified as a local artistic characteristic. For example, some work procedures seem to have been shared by various mosaicists: the order of production indicates a preference for the human figures that were produced first, followed by the vegetal scroll, with the background as
last. Even in the free distribution lay-out of the Old Diakonikon, the linearity of the tesserae suggests clear priority for the human figures as the first stage of production.

It may be rightly asked whether this principle is unique to the Mount Nebo region. Indeed, this criterion may reflect procedures of production, that were applied by mosaicists producing compositions that are dominated by figurative depictions (as is also the case in the mosaics of the Gaza region). The preference for depictions dominated by the human figure, however, should not be underestimated as a regional characteristic, as in other regions geometric carpet designs may have dictated a priority for the frames, like in the procedure reflected by the mosaic at Nahariah (see above), or in the preference for small figurative images within geometric frames where the order of production may have been different.58

Also the application of different sizes of tesserae in faces, body and background seems to be a broader phenomenon in the production of human figures, and not only a characteristic of the Mount Nebo region. However, the application of the elongated black tesserae for the outlines is a more limited phenomenon, that can be traced also in Madaba, albeit not as systematically and repetitively as in the Mount Nebo region. This feature, however, is not traced elsewhere. It should be mentioned, that the variation in tesserae size is typical for human figures, but is less frequently applied to animal figures.

The most typical for the Mount Nebo region are the criteria of repetitive gestures, where certain body gestures seem to be repeated again and again, recurring features such as the set of the shape of eyes, hands, feet, and clothing. The inlay patterns, however, may be the most individual aspect of mosaic work and as such may betray best the hand of the individual producer. The preference for parallel inlay at Lot and Procopius and the reverse along limbs, which is also dependent upon a choice of a certain colour-tonality, does not appears to be a widely applied procedure, but a very specific characteristic.

The repetitiveness of inlay criteria strengthens the identification of one single mosaicist, as in the case of the Church of Lot and Procopius. But although such an identification is possible to a high extent within one mosaic, it becomes extremely complicated when two different mosaics are being compared. It should be mentioned that, although Piccirillo’s observation of the similarity between the Church of Lot and Procopius and the Chapel of the Priest John seems to be confined to the human figures, this identification also shows deviation in small details, such as in proportions and details of the fingers and clothes. It may be argued, that

58 Such as the geometric carpet in the Church of Elias, Maria and Soreg (Piccirillo 1997, 296).
these differences can be interpreted as a result of the chronological gap between the commissions and thus reflect a natural development in the traits of work of one single mosaicist. Such differences, however, pose a barrier for secure identification of the hand of the artist. Despite these reservations, the observations of Piccirillo seem convincing as far as the human figures are concerned, while the animal figures show, that the relation between the craftsmen was more dynamic and that the compositions of teams changed occasionally. In any case, the observations indicate the existence of a strong local artistic tradition that was shared by various mosaicists who worked in the region, and may indicate a training pattern in which artistic traditions and techniques were transmitted from one generation of producers to the next. This leads to the conclusion, that a regional training pattern existed in the Mount Nebo region.

4.9 Other case studies: The case of the gazelle

In the second half of the sixth century and the beginning of the seventh, a group of mosaics can be distinguished on the basis of the production characteristics of their animals, especially the gazelle. The latest of the group is the panel mosaic of the Theotokos Chapel in the Memorial of Moses at Mount Nebo (Fig. 56). This mosaic is now partly damaged and was produced according to its inscription in the first decade of the seventh century (603-608 AD). The mosaic at the New Baptistery Chapel at the same site (Fig. 57) was at all probability produced by the same mosaicist and is dated according to its inscription to 597 AD. Unfortunately, the figurative part of the mosaic suffered damage. A third mosaic that shows strong affinity to the two former ones, is the mosaic from the Church of the Lions at Umm-al-Rasas (Fig. 58), dated according to the inscription that names Bishop Sergius to either 574 or 589 AD.

These mosaics are characterized by an elongated panel depicting animals and plants in a symmetrical composition. Both the Theotokos and Baptistery chapels are located at the southern wing of the sanctuary of Moses on Mount Nebo (Fig. 48). Despite their technical affinity and physical proximity, they were produced at a chronological difference of some ten years. This difference is indicated by the inscriptions. A depiction that shows affinity to the two mosaics of the Memorial of Moses derives from the altar panel at the Church of the Lions in Umm-al-Rasas.
4.9.1 The Theotokos Chapel at the Sanctuary of Moses at Mount Nebo

The panel in front of the altar at the Theotokos Chapel (Fig. 56) depicts a symmetrical composition, with a central architectural structure and two bulls, above which the biblical inscription in Greek is written: “Then they shall lay calves upon Thy altar” (Psalm 51:21). The figures were later mutilated, and the only figure that survived is a figure of a gazelle with a bell around its neck at the left side of the panel.

An inscription at the eastern end of the hall reads: “O creator and maker of all things, Christ our God, the entire work of the Theotokos was finished with the permission of our holy father, Bishop Leontius, by the exertion and pains of Martirius and Theodore, priests and abbots”.59 It is known that Bishop Leontius was in office between 603-607, which indicates the possible time frame in which the mosaic was produced.60

The gazelle (Fig. 59) is produced in six colours: black, grey, white, yellow, ochre and brown. The colours are homogeneous and no shades can be distinguished within the same colour. The body tesserae are rather uniformly square. Elongated tesserae are applied where delicate details are depicted, triangular tesserae are set at the end of lines. A single round tessera forms the eye pupil. Trapezoid tesserae are applied in the inlay of curves. The black contour creates a continuous effect, forming with thin and elongated tesserae the delicate area of the upper lip and nose, curving to create the scull, disappearing behind the horn and ear, curving again, thicker now, to create the back, disappearing again under the rim with the bell, and curving up until the tip of the tail. The tail is designed as a circular lump of hair, with a pronounced curve and hair ending in triangular tesserae. The illusion of three-dimensionality through hiding is created also by the contour that marks the neck and belly, which is hidden by the rim holding the bell, the left foreleg, and ending behind the hind leg of the gazelle.

Along the inner back contour, a dotted black-and-yellow line is used for creating the change from the dark contour into the lighter body, in a minimalistic variation of the interlocked inlay method. The yellow line continues into the tail. It seems that the body of the animal was divided into sections according to a well-planned program. The head and neck form one unit, the upper part of the body another unit, the lower part of the body and belly is a third unit, buttocks and hind leg is a fourth unit, the foreleg is a fifth one, and the other legs follow. Each of these units seems to have a rather clear linearity. A good example is the

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59 Piccirillo 1992, 151, Fig. 198.
60 Piccirillo 1997, 151.
treatment of the buttocks as an inlay of a dark crescent and a yellow mass that indicates the hind of the animal and goes down to form the hind leg, which upper muscle is embraced by black lines. The design of the foreleg is an inlay pattern that is repeated also elsewhere in the body of the gazelle, and is made up of two black lines that embrace the upper muscle and that reduce their width as they continue down to the joint. The white almond-shaped highlight within an ocre outline enhances the illusion of volume. The belly is marked as a dark crescent, and the upper part of the body is then filled with homogeneous ochre tesserae. The mosaicist uses white accents to mark highlights that support the illusion of three-dimensionality. By marking the line along the neck, for example, the artist creates separation between the yellow section, which marks the profile of the animal and which is directed towards the viewer, and the grey section beyond it, which marks the section of the neck that curves to the front. It is the only section where the artist uses gradual tonality of white-grey-and the black of the contour, to support an effective illusion of volume.

White outlines surround the body of the animals, at times as many as eight lines surround at least part of the body. The upper lines were set in a horizontal linearity that follows the frame line, and were perhaps set after the frame was completed. That the black frame was produced later than the figure is clear from the fact that the black line of the frame is interrupted by the horn of the gazelle. If the lower line of the frame was also produced at that stage, it would mean that those elements that lean against it, such as the plants and the central shrine, may also have been left to a later stage of the work. The production-order of this panel may thus be reconstructed as follows: the figurative elements first, then the frame, then the elements leaning against the frame, then the inscription and the horizontal filling of the background as last. This demonstrates that different producers preferred – and applied – different procedures for the order in the sequence of production.

4.9.2 The Baptistery Chapel at the Sanctuary of Moses at Mount Nebo

The panel decorating the mosaic just in front of the baptismal font shows a symmetrical composition with five trees and various animals between them. These have been mutilated in antiquity and only parts have survived: at the right end a guinea hen and between each of the two following trees there was a gazelle (Fig. 57). Of the left gazelle, only the legs, tail and some of the buttocks are left. Of the right gazelle the whole back body has survived, and a careful inspection will show that it was produced according to the same formula and received
an identical treatment as the depiction of the gazelle at the Theotokos Chapel. This can be discerned when the formula of division of the gazelle’s body is analysed. The buttocks and hind leg are one unit, in which a crescent of dark tesserae marks the buttocks, and the ochre tesseræ of the hind-leg muscle echo the same linearity. The black contour embraces the leg down to the joint, and the tail is designed as a curly mass with triangular edges. The section of the belly is designed as a crescent, creating a field at the upper part of the body, which is filled-in with uniform ocre tesserae. This formula is practically identical to that which appears at the Theotokos chapel in the same church. It is, however, interesting to note the chronological difference in the production of the two mosaics. In medallions located at each side of the baptistery font, the following inscription appears: “With the help of our Lord Jesus Christ the construction of the holy church and the baptistery was completed under the most pious Bishop Sergius and the most God-beloved priest and hegumenos Martirius, in the 15th indiction of the year 492”. According to the calendar of the province of Arabia, this year is equivalent to the year AD 597, which suggests a difference of at least six and up to ten years to the later Theotokos Chapel.

4.9.3 The Altar panel from the Church of the Lions at Um-al-Rasas

Although the two former examples would be sufficient in order to illustrate the phenomenon of similarity in inlay-patterns and the identical sets of design applied in both mosaics, a third example will accentuate the problems involved in the identification of an individual producer. The panel before the altar in the mosaic of the Church of the lions at Umm-al-Rasas (Fig. 58) depicts again a gazelle (Fig. 61), which can be compared in its pattern to the two former examples. Like the other two gazelles, the figure here is well-proportioned, with a body-mass carried upon thin legs and a pronounced anatomy that indicates joints and muscles. The whole figure of the gazelle is made with only five colours, which are of the most common limestone: black, brown, yellow, white and a greyish-green, which is only applied for two linear accents, one along the lower neck and one around the buttocks. The tesserae are rather uniform, large and square, triangular tesserae are applied as edges of lines. One circular tessera is used, for

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61 The inscription is not very legible at this section. Piccirillo read this word as Econom, who was involved in financial matters of the church (Piccirillo 1997, 150). However, it is possible that the Greek word in this inscription should be read Hegumenos, that is: the head of a monastery.
62 Piccirillo 1997, 150.
63 Piccirillo 1997, 150.
the pupil of the eye. The artist is applying trapezoid tesserae in order to create a smooth linearity and in order to be able to form curves and circles.

All effects are produced by lines, and no shades are used for gradual change of colour in order to create an illusion of volume. Despite the relative flatness of the depiction, its three dimensionality is appealing and convincing, through the use of hiding and contrast. This is well illustrated by the contour. The black contour is applied to create an illusion of continuous long lines, forming the line of the upper lip and nose with thin and elongated tesserae, curving to create the skull, disappearing behind the horn and ear, curving again, thicker now, to create the spine, up until the tip of the tail. The tail is designed as a circular lump of hair, with a pronounced curve and ending sharply with triangular tesserae. The illusion of three-dimensionality is created also by the contour that marks the neck and belly, which is hidden by the left foreleg of the gazelle. Along the back, a dotted black-and-brown line is used for creating the change from the dark contour to the lighter body in a rather minimalistic variation to the interlocked inlay method.

Each leg is formed by two lines: a black back line and a front brown line. This very difference in colour is sufficient to create an illusion of volume. An effect of naturalism and anatomy is achieved by sophisticated linearity: At the top of the foreleg, both lines embrace the muscle, marking its anatomy. The lines gradually reduce their distance until they touch each other and immediately separate to create the joint. Then they meet again and depart at the lower joint. The usage of linearity for the creation of an illusion of foreshortening and recession of the body volume at the belly is illustrated by the alternating short white and yellow lines at the lower side of the body and along the neck. A red crescent marks the section of the belly, a green crescent the section of the buttocks, echoed again by the ocre lines that continue down to create the hind leg. The upper body is filled with homogeneous flat yellow tesserae. The tendency for linearity is even apparent in the background lines that surround the figure of the gazelle. At the front it comes up to seven lines that still follow the original form of the contour. Elsewhere, like around the buttocks, this is reduced to two lines that are rather continuous.

Fortunately, a medallion carrying an inscription dating the completion of the mosaic at the Church of the Lions has survived at the nave. It reads: “At the time of the most pious Bishop Sergius this holy temple was completed in the month of Desius of the seventh indiction”.64

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64 Piccirillo 1992, 236, Fig. 378.
The seventh indiction year during the term of Sergius as Bishop is equivalent to either the year 573 AD or the year 588 AD.\footnote{The inscription of The Church of the Lions at Umm al-Rasas does not mention the exact year in which the mosaic was completed. It does name Bishop Sergius, in which term the mosaic was made and the 7th year of indiction. Thanks to other dated mosaics it is possible to establish that the term of Bishop Sergius was long enough to include two years of a 7th indiction. It is therefore possible to date the floor either to the year AD 573 or to 15 years later, the year AD 588.} In any case, it appears that the mosaic at the Church of the Lions was produced prior to the other two mosaics.

4.9.4 Comparative study

The two depictions at the sanctuary of Moses show identical characteristics, and despite the chronological difference in their production, the figures are a ‘perfect match’. The similarity in inlay patterns reaches here the level of a repetitive formula and may identify an individual producer.

The gazelle at the Church of the Lions shows again the same characteristics that were applied at Mount Nebo, but is more finesse in details. This can be seen in the treatment of the legs, for example. While at Mount Nebo the contour, embracing the upper leg muscles, ends at the joints and the legs themselves are made in two colours with no distinction in the colour of the joint, the legs of the gazelle at the Church of the Lions are formed with their own contour. This gives the legs a stronger impression. The alternating lines along the neck and belly at the gazelle at the Church of the Lions create the illusion of volume with interlocking inlay, which is completely absent at the other two mosaics. At the same time, the formulae of the design are identical in all three sites (Fig. 62): note the form of mouth, nose, and eye, the linearity that forms the back, the form of the tail, and the treatment of the body in sections, divided by the crescent form at belly and buttocks.

An additional point of resemblance between the panel at The Church of the Lions and the Baptistery Chapel is the form of the trees, which are a ‘perfect match’.

The question whether the similarities are a result of the use of a shared pattern by three different mosaicists or whether all three gazelles were produced by the same hand, illustrates the type of problems one encounters when trying to interpret the implications of such visual similarities. If arguing for a shared pattern, it should be assumed that the pattern included instructions of a procedural nature such as the division of the figure and even went into the detail of the inlay and position of the individual tessera. The nature of the material does not
support such a patterning, as it would result in identical, standardized imagery. On the other hand, one cannot ignore the preference for parallel inlay at the belly of the gazelle at the Theotokos and Baptistery chapels as opposed to the interlocking inlay at the Church of the Lions.

Also, the chronological difference between the earliest possible production-date (Church of the Lions, AD 573) and the latest possible example (Theotokos Chapel, AD 607), shows a difference of 30 years, which could, theoretically, still fall within the range of production of a single individual. The qualitative differences between the Church of the Lions (which is earliest of the three) and the two later mosaics from the Memorial of Moses, which are so identical as to suggest one and the same hand, may indicate a transmission between two generations of producers. The mosaicist of the Church of the Lions would then be indicated as the one who trained the mosaicist who was later commissioned to work at the Memorial of Moses, on two different occasions. The affinity between the depictions, however, is recognizable at all three mosaics through the conspicuous similarity in the methods of inlay, formal characteristics and the artistic result.

4.10 Other case studies: The church of Esbus

The following case illustrates that the same method that has been applied above and allows for the identification of similarities in formal and inlay-patterns, can also be applied with success upon undated mosaics, where artistic transmission can be indicated. This case is the ram from the nave of the Memorial of Moses (Fig. 63) and the mosaics of the sanctuary at the northern church at Esbus, modern Hesban, located about ten km to the north of Madaba (Figs 64-65). The nave mosaic at the Memorial of Moses is one of the areas that received only little attention, perhaps because the mosaics in this area are largely destroyed. The nave had, so it seems, a rich geometrical design, which, as an inscription in the southern aisle reveals, was a later renovation work and not part of the original decoration. As a result of the renovation, the original decoration was completely destroyed. The only fragment that escaped destruction is the area of the floor under the ambo that was apparently built on top of the earlier mosaic, prior to the renovation. This small section included a figurative decoration that differs

\[\text{Zohar 2009, 135.}\]
markedly in its style from the rest of the figurative decoration in the church. Despite the skin texture that is reminiscent of that of a tiger, the animal can be identified as a ram, recognizable by the shape of the hooves. Behind it is a tree. The body of the ram hides a plant with a thin stem and branches. The style of the depiction is rather flat and angular, the body is filled by a single yellow colour, and the angular texture in brownish-red was perhaps meant to express locks of wool. The body is not designed with curvy lines, but with an angularity that diminishes the naturalistic impression. The hooves are split and are directed forward, and the tail is long and ends in a small curve.

At the Northern Church of Esbus (Fig. 64), the decoration around the altar area reveals two rams facing a dedicatory inscription, and a field of animals and birds in diagonal flower-buds frames. The rams show an explicit similarity in style and form to the ram at the Memorial of Moses (Fig. 63). The bodies show the same flatness and angularity, the same shape of split hooves and long tail ending with a curve. The same characteristics can be recognized in the three animals that decorate the front panel, though none of them has the skin-texture that was applied in the ram of the Memorial of Moses. A second element of similarity to the depiction at the Memorial of Moses is the treatment of the plants behind the altar-rams, with thin, curvy branches.

Unfortunately, none of the inscriptions at Esbus include a date or a name of a bishop, which would help to date the mosaics. Stratification and pottery material that was excavated below the floor of the church in Esbus suggest, that the structure was built either in the early decades or in the middle of the sixth century. This period is equivalent to the episcopacy of Bishop Elias or the early phase of episcopacy of Bishop John of Madaba, but an inscription was not preserved to confirm this. However, since the phase of the Old Diakonikon that was initiated by Bishop Elias in AD 530 predates the nave, Piccirillo assumed that the Esbus mosaic predates the nave mosaic of the Memorial of Moses. The style would therefore reflect the work of a workshop or an individual originating from the city of Esbus, who was invited to work in Mount Nebo. That the trend of the Esbus stylistic characteristics is foreign to the stylistic trends that appear in the region of Mount Nebo and Khirbet al-Mukhayat is quite clear, and the Nave mosaic is therefore conspicuously exceptional among the mosaics of

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67 The stylistic similarity between these mosaics was already noticed by Piccirillo (Piccirillo/Alliata, 1998, 291-293).
68 Piccirillo and Alliata (1998) prefer the earlier date.
69 Piccirillo/Alliata 1998, 291-293.
the region. The similarity between the Esbus mosaics and the Nave mosaic at Mount Nebo suggests that either the same craftsman worked in both sites, or that a pattern of transmission took place between the mosaicists who worked in both sites.

4.11 Summary

The case studies that were presented in this chapter demonstrate how the analysis of the micro-level of production can provide more insight in issues of work organization, while analysis of consistency in application and inlay-techniques can assist the identification of the producing hand.

The order, design and inlay-techniques in the human figures of the mosaic at the Church of Lot and Procopius share a consistency that may be attributed to the ‘handwriting’ of an individual mosaicist. In the case of the Church of Lot and Procopius, the reconstruction of the order of production, together with the identification of the traits of the leading mosaicist, makes it plausible to suggest that the work was divided between at least three craftsmen, of which the master specialized in figurative depictions. Theoretically, a few artisans could have produced different areas of the mosaic at the same time. Dividing the ground plan of the church of Lot and Procopius into areas, the specialized master would work on the central nave, leaving the less elaborate areas, such as the border areas and filling details to the other members of the teams.

It has been shown, that the position of the panels between the pillars follow the edge of the aisles carpets, indicating that the aisles were produced prior to the intercolumnar panels and apparently also prior to the nave. The direction of work apparently moved from the flanks to the centre, and at all probability from east to west, while the space for the inscription was reserved to the end and was the last element to have been produced. Furthermore, it has been shown that the design of the boatman and fisherman in the panel between the pillars share the same inlay techniques as the human figures in the central panel and were apparently produced by the same master. Thus the observation that one mosaicist produced all human figures suggest, that mosaicists may have had a certain degree of specialization. Work was not simply divided in such a way that a mosaicist received a designated area, but it rather seems that mosaicists moved about, depending on the type of representation that they specialized in, and the type of representation that was commissioned for each part of the floor. A different model,
however, seems to be applicable to the mosaic of the Old Diakonikon, where different hands were involved in the production of the figures.

Identification of an individual mosaicist appears to be possible within one mosaic. However, identification of an oeuvre of an individual in various mosaics appears a rather complex matter. As has been shown, artistic kinship can be traced in the production of some of the human figures at the Old Diakonikon from AD 530, the human figures of the mosaic at Lot and Procopius from AD 557 and the mosaic of the Chapel of Priest John from AD 565. The consistency may be interpreted as an expression of work of one individual, who had an extremely long career of at least 35 year. It may be argued, that the earliest work reflects his training period, while the later his mature stage. It could, however, also be interpreted as an expression of transmission of artistic techniques that reflects continuation between two generations of producers. This would mean, that the observation of Piccirillo is not accurate and that the producer of the human figures at Lot and Procopius is not the same producer of the human figures at the Chapel of the Priest John, but another mosaicists who was trained by the former. If that is the case, then he succeeded to transmit his expertise to the following generation in a way that can hardly be distinguished from his own work.

The affinity of the mosaic at the Church of Deacon Thomas to Lot and Procopius indicates more clearly the existence of a transmission pattern in the area of Mount Nebo. The region has generated sufficient commissions to have stimulated local artistic production and created such conditions that justified maintaining the craft and sustaining its continuation by training a young generation of producers. This created undoubtedly a network of locally-trained mosaicists. Though it is difficult to establish the exact relation within the team of mosaicists who worked at the Church of Lot and Procopius, it seems that an ad-hoc relation should also be considered as a possible work-relation. The case of the gazelle shows, that individual identification is not an isolated example.

The same can be said about the mosaicist of Esbus church, whose producer of animal figures has been identified as the same individual who produced part, albeit fragmentary, of the nave of the Siyagha. It appears that at times mosaicists were invited to work outside their strict region.

This shows that the identification of individual producers may be a rewarding factor in the study of mosaic production, but it also shows that the study of application procedures has the potential of becoming a starting point for understanding the spread of artistic traditions on a regional basis, even when the identification of individual producers is uncertain. Thus the
study of local repetitive characteristics that are shared by more than one individual, gives the researcher the possibility to formulate and identify the local trends of a region and may even allow to trace influences between regions.
CHAPTER 5

THE MOSAICS IN THE GAZA REGION

5.1 INTRODUCTION – GAZA AND ITS REGION

Gaza was an important cultural centre in Palestine throughout Antiquity. The Hellenized local population kept the pagan traditions as late as the fifth century, when the Marnenion, temple of Cretan-born Zeus\(^1\) was demolished and on its ruins the cruciform church of the Eudoxiana was constructed.\(^2\) Empress Eudoxia, whose name the church carried, inaugurated it on Easter 407. On the Madaba map from the sixth century, Gaza appears as a fortified town with colonnaded streets crossing its centre with squares, monumental buildings and possibly a theatre.\(^3\)

Since the city itself has not been properly excavated, most of the knowledge about the monuments of Gaza comes from literary sources and excavation that have been conducted in the broader region. Literary sources indicate that Gaza fulfilled a prominent cultural function in Palestine and beyond. It was famous for its school of rhetoric, yielded prominent Christian scholars and was a centre of arts and crafts. An example for public art in Gaza is the Ekphrasis (description of lost art objects) by Procopius of Gaza referring to a clock decorated with the twelve labours of Herakles and a painting with the mythological story of Theseus and Phaedra.\(^4\) Christian sources reveal the existence of several churches in Gaza, whose remains are still to be discovered. One of these is the earlier-mentioned Eudoxiana.

The architecture and decoration of the sixth-century church dedicated to St Sergius, are described at length by Choricius (who was himself a student of Procopius of Gaza) in a panegyric addressed to Marcian, the bishop of Gaza, who initiated the works and contributed to its building.\(^5\) The church was decorated with mosaics and paintings of high quality.

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1 On the Pagan remains and cults in Palestine during Late Antiquity, see: Ovadiah/Mucsnik 2009.
2 Mango 1986, 30; Ovadiah 1995, 448; Ovadiah/Mucsnik 2009, 221-222.
3 Piccirillo 1997, 81-95 and especially Fig. 69 on p. 90.
5 Ovadiah 2002, 449; Penella/Amato 2009.
Choricius concentrates on describing the ceiling vaults where the annunciation, birth and the adoration of the shepherds were depicted in painting, followed by events of the life of Christ: the miracles, his passion, glorification and ascension. The church was also decorated with wall mosaics, as is apparent from the description of the apse: “The latter [central apse] is adorned with gilded and silver mosaic, and displays in the centre the Mother of the Saviour holding on her bosom her new-born Son […]. In the aforementioned lateral [apses] there grow ever-burgeoning trees full of extraordinary enchantment: these are luxurious and shady vines, and the zephyr, as it sways the clumps of grapes, murmurs sweetly and peacefully among the branches […] Most elegant of all is the vase containing, I imagine, cool water. The airiness of the church leads one to suppose this. The artist has rightly rejected the birds of the poets, the nightingales and the cicada, so that not even the memory of these fabled birds should intrude upon the sacred place; in their stead he has artistically executed a swarm of other birds and, [in particular] a flock of partridges.” The baptistery, he adds, was decorated with “various shapes made of fine, densely-set mosaic”.

The only mosaics that have been hitherto unearthed in Gaza are of building located outside the city itself, like the recently excavations of St Hilarion’s monastery in Jabaliya and the mosaics of the synagogue at Gaza Maiuma. Gaza Maiuma, the port of Gaza, was founded as an Episcopal see by the time of Emperor Constantine in the fourth century. This suburb was apparently inhabited in Antiquity by the Jewish minority of the city. Many other mosaics, however, have been excavated in the region: the mosaic at the synagogue of Maon-Nirim, the churches of Shellal, Kissufim and Be’er Shema’.

The territory of Gaza (Fig. 66) reached beyond the city and bordered in the north with the city of Ascalon, in the east with Eleutheropolis (Beth Govrin), in the south it bordered with Raphia and two estates in imperial possession: Saltus Gerariticus (on the eastern bank of the Besor river) and Saltus Constantinianus (on the western bank of the Besor river), which seems to have included the site of Kissufim along the Besor river. The sites of Shellal and Be’er Shema’, on the other hand, were located in the territory of Saltus Gerariticus, one of the private estates of the Emperor. It seems reasonable, however, that all settlements in the region were influenced one way or another by their vicinity to the large urban centre of Gaza.

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6 Mango 1986, 60-68.
7 Choricius, Laudatio Marciani I, 29-32; Mango 1986, 62.
8 Laudation Marciani I, 24; Mango 1986, 61.
Clearly, the commercial influence of Gaza went beyond its direct territory. The calendar of Gaza was used in buildings and documents found in sites along the merchant route between Gaza and Petra.\textsuperscript{11} The position of Gaza on the crossroads to the sea made it a significant port city. It formed the junction of land routes that connected to the Via Maris, running from the Transjordan through the Negev connecting Gaza to Eleutheropolis (Beth Govrin), Be’er Sheva and to Eleusa, which formed part of the historical ‘Spice Route’, the Nabatean merchant routes of goods arriving from India and South-Arabia.\textsuperscript{12} Gaza possessed a key-position for trade and commercial activity, which was essential for the prosperity and wealth in the city and the surrounding villages.

In the sixth century Emperor Justinian built a series of forts forming a line from the Mediterranean to the Dead Sea in order to protect the southern border area of Palestine from plunder and raids by desert tribes. This fortification line is known as the \textit{Limes Palestinae}.\textsuperscript{13} The relative security probably led to an increase in prosperity and population, stimulating the small rural communities.\textsuperscript{14} In the sixth century the region was dotted with villages and monasteries (Fig. 66), which have only been partly excavated, and a more thorough study is necessary to establish the range of influence and the connections between these settlements.

The question whether a mosaic workshop was active in the region of Gaza played an important role in the study of mosaic production ever since the definition of ‘the Gaza workshop’ by Avi-Yonah in the 1960s.\textsuperscript{15} The hypothesis that led Avi-Yonah to identify ‘the Gaza workshop’ was based on the assumption, that the workshop specialized in a particular compositional lay-out and had a preference for a certain thematic and iconographic repertoire. Avi-Yonah assumed, that the Gaza workshop existed during several generations and transmitted its iconographic repertoire from one generation to the next, presumably in the form of a pattern-book that was used exclusively by the members of that workshop.

This identification was embraced by some\textsuperscript{16} and criticized by others: Rachel Hachlili has shown that the iconographic repertoire of the pavements that are designated by Avi-Yonah as produced by the ‘Gaza workshop’ do not share all the characteristics he summarized, while

\textsuperscript{11} Di Segni 2004, 55. The Era of Gaza began its counting with the Roman foundation of the city on 28 October 61 BC (Henderson 1988, 40).
\textsuperscript{12} Hirschfeld 2004, 62-63.
\textsuperscript{13} Gichon 1975, 153; Henderson 1988, 36.
\textsuperscript{14} Hirschfeld 2004, 61-88.
\textsuperscript{15} Avi-Yonah 1975; 191-193.
\textsuperscript{16} Ovadiah 1995, 452; Britt 2003, 275.
other pavements, that are not attributed to the ‘Gaza workshop’ include some of them as well.\textsuperscript{17} Nira Stone showed that the stylistic differences between the mosaics of Maon and Shellal are conspicuous, indicating that these mosaics were not made by the same craftsmen.\textsuperscript{18}

Others have not disputed the existence of a workshop, but its location. Dauphin suggested that the mosaics of the Gaza region were derived from a school that was located in Jerusalem.\textsuperscript{19} Recently Hachlili suggested that the centre should be placed in Ashkelon.\textsuperscript{20} As mentioned earlier, the presumable physical location of a workshop is secondary for the purpose of the current study, which focuses on the question whether a team developed a genuinely identifiable trait and the means to define it. As shown in the previous chapter in relation to the craftsman from Esbus who worked in the Church of the Siyagha, mosaic producers could occasionally execute a commission in another city or another region, even if not working as travelling craftsmen.

The purpose of this chapter is to re-examine the earlier identification of the ‘Gaza workshop’ in light of the seven criteria that have been suggested in Chapter 1. The present investigation will apply the study of technique and inlay procedures for the purpose of examining the identification of the so-called ‘Gaza workshop’, leaving aside the question where the workshop, if it existed, was actually located.

It is not the purpose of the study to discredit Avi-Yonah’s observations. Despite the criticism, some of his observations are still valid and cannot be ignored. The compositional affinity between Maon and Shellal is conspicuous, and, as the coded study of Dauphin shows,\textsuperscript{21} technical aspects such as the size of tesserae and density per decimetre square define these two pavements as belonging to the same technical category. At the same time, Dauphin stresses that the Gaza region mosaics as a whole could not have been made by the same workshop, or alternatively, by the same producers (for Dauphin, like other scholars, there seems to be no distinction between the two), due to the chronological difference of their production.\textsuperscript{22}

A further discussion is therefore necessary in order to determine the type of affinity that can be attributed to these mosaics. It seems that Avi-Yonah’s conviction that the similarities

\textsuperscript{17} Hachlili 1987, 46-58.
\textsuperscript{18} Stone 1988, 207-214.
\textsuperscript{19} Dauphin 1976a, 136, 141.
\textsuperscript{20} Hachlili 2009, 269.
\textsuperscript{21} The coded method that Dauphin applied in her study has been discussed in Chapter 3.
\textsuperscript{22} Dauphin 1976a, 130.
indicate the work of a single workshop prevented him from considering other possible interpretations for the similarities that he observed. A closer look at the inlay-patterns and formalistic principles of the figurative depictions in the mosaics of the Gaza region may help to focus the discussion upon the question of transmission of artistic and technical applications as a reflection of the dynamics of production and work division among individual craftsmen, who did not necessarily form a workshop.

The current discussion of the Gaza-region pavements is guided by the principles of investigation that were applied earlier to the mosaics of the Mount Nebo region, with special attention to the aspect of inlay-patterns and work procedures.

Fortunately, some of the pavements in the region preserve inscriptions that allow the reconstruction of the chronological order of their production. The mosaics that will be discussed are the following: the vine scroll field from the synagogue of Gaza (AD 508/9) the synagogue of Maon (Terminus ante quem AD 538); the mosaic from the church of Shella (AD 561/2); the mosaics from the church of Kissufim (AD 575/6); and the church of Be’er Shema’. The latter does not carry an inscription or a date, but its mosaic can firmly be attributed to the sixth century. Its affinity to the group adds a new dimension to understanding the traits that appear in the region’s mosaics. A few remarks will also made as to the recent discovery at Jabaliya.

5.2 THE SYNAGOGUE OF GAZA

The mosaic at the southern aisle of the synagogue of Gaza is one of its better preserved parts. The nave mosaic, except for a fragment of the figure of King David surrounded by animals, is unfortunately completely destroyed. The discussion thus focuses on the southern aisle, where a composition of a vine scroll in a lay-out of three scrolls per horizontal row (Figs 67-69) was preserved. The design covers the whole field. The central vertical row function as a symmetry axis. Each central medallion depicts an animal, towards which the two

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24 A fragment of a mosaic depicting King David surrounded by animals has been preserved in the central area of the synagogue. This figure will not be treated here, since there is too little comparison material to human figures in other parts of the floor. It has been suggested that the mosaicist who produced the figure of King David was a foreigner or an itinerant mosaicist. Hachlili compares the animal figures and concludes that the mosaicists who participated in the production of the aisle participated also in the production of the central mosaic (Hachlili 2013, 502).
outer ones are orientated, often with the intention to create a relation between them. This is especially clear in the case of hunting scenes.

The date of the mosaic is given by its dedicatory inscription: “Menahem and Yeshua the sons of the late Isses, wood-merchants, as a sign of respect for a most holy place, have donated this mosaic in the month of Loos 569”. According to the calendar of Gaza, this date is equivalent to July/August AD 508/9.

Though the general lay-out shows symmetry, the designer allowed enrichment of the depiction, for example: the row that shows a lioness suckling her cub represents in the symmetrical medallion a tiger hunting a wild donkey (Fig. 69). As in other Byzantine mosaics, the animals are fitted into the frame of the scroll in which they are depicted. Some animals cross the border of the scroll and are partly depicted in the intermediary space, like the heads of the giraffes and the peacocks.

In all cases where overlapping between the central depiction and the scroll can be observed, the pattern of overlapping indicates that the figures were, without exception, produced prior to the scroll. In this aspect the order of production is comparable to that of the mosaics in the Mount Nebo region.

Each two outer scrolls split from the central row of medallions to create a row of three scrolls. Though the central row of scrolls is continuous, the side scrolls do not intersect and there is no overlapping with the scrolls above and below them. Where the outer scrolls split from the central scroll in the horizontal direction, the split is marked by a knob. Such knobs appear also elsewhere along the scrolls, often where the scroll splits to depict a vine-leaf or a bunch of grapes. In terms of production procedure, however, they may indicate the end of a production section, as the knob shows the end of one set of tesserae-lines. This means that the scrolls were not produced as one continuous unit, like the scrolls at the Church of Lot and Procopius.

The order of production as reflected by the illusionistic overlapping shows that images were consistently produced before the scroll. The inner division of the body of the animals is minimal. Even the head is not always created as a visibly separate unit. The figure of the lioness (Fig. 110) is a good example: although she turns her head backwards, no division is made between head and body.

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26 Ovadiah/Ovadiah 1987, 61.
The body is generally divided into front and back parts by a crescent line that splits down from the spine. This line, however, does not separate the two body parts completely, but dissolves around the belly. The mosaicist skilfully concealed the division-line to create the impression that the body was produced in a single session. The turn of the head is well depicted, testifying that the designer was a well-trained individual.

In their design, the animal figures show a relatively high stylistic unity. All of them are convincingly naturalistic in their appearance, depicted in motion and with a clear three dimensional approach. The animals are in profile, and foreshortenings are convincing.

The symmetrical lay-out allows the viewer to compare similar types of animals, and makes the consistency of the Gaza depiction evident. Details of design such as the feet of birds are all identical. Such is also the case for paws of beasts, ears and eyes of the various animals. This creates a sense of unity and standardization. This unity is also visible in the execution of the scroll, leaves and grapes.

The tesserae show a wide range of colours, applied in order to create a gradual tonality enhancing the illusion of volume. The crescent lines splitting from the spine (often dissolving at the belly) divide the body of animals into front and rear, and often mark a reverse-pattern in the application of colour. The front and central body parts often show an inlay pattern from dark along the spine to light along the belly, creating the illusion that the body is lighted from below. At the hind of the body the direction is often reversed and the inlay of colour is from light above to dark below, creating an illusion that the body is lighted from above. Though this treatment may sound inconsistent, the visual result is one that enhances the illusion of movement, anatomy and volume. This treatment of the animal figures is illustrated by the foxes (Fig. 68), the wild donkey (Fig. 73) and, to a lesser degree, the lioness with her cub (whose body shows less gradual tones).

In some of the animals a continuous line of black tesserae is set as an outline along the spine (Fig. 110). Though outlines appear also along the limbs and belly, these lines often penetrate the body and function as anatomy markers. The outermost black spine outline, on the contrary, is completely external and seems to have been added after the image was complete. Where the outer line does penetrate the body (Fig. 78) it seems to mark the end of a section. Anatomy lines are usually delegated to the inner contour line, often marked with a different colour. The outer outline anticipates the indentations that are created along the spine, suggesting that it was indeed added after the completion of the body or the section. In the figure of the lioness as well as the panther and other figures, the black outline is continuous.
and runs from the head along the back and up to the tip of the tail. As such, it differs fundamentally from those of the figures at the Church of Lot and Procopius, where the outline is marking the borders of each section, and differs also from other outline formations, where the outline itself penetrates the body and becomes an in-line that defines anatomical details (as is also the case in the animals at the Old Diakonikon).

The Gaza figures characterize by a smooth treatment that enhances the naturalistic impression of the animal’s body. Even in figures that have one or more crescent-lines to indicate divisions between front and rear or between the foreleg and neck, these lines dissolve towards the belly and do not function as full division-elements.

A good example for a mosaic where such crescent-lines do function as full division elements can be found in the sixth-century Worchester Hunt mosaic from Antioch (Fig. 670), and especially in the figures of the deer (Fig. 71) and the hound (Fig. 72). In both figures the body is divided into seven closed sections. A clear traceable line marks the lines that outline these sections. The order of production can be traced easily by the fact that each additional section leans against the section that was produced priorly. Each section is filled-in by tesserae lines and patterns confined to the limits of that particular section.

In both the deer and the hound, a circular line defines the central body as a closed section, clearly separated from the hind section. The circular line creates a completely closed section that is filled-in with tesserae lines that are confined to that specific area.

In some of the Gaza figures, a similar method of division can be attested, such as in the wild donkey (Fig. 73). Although its figure is partly destroyed, a clear oval line marks the highlighted belly. At the same time, the shadow between the highlighted area of the belly and highlighted buttocks is not treated as a clear-cut line, but in gradual tones of grey. This work method camouflages the section division. The highlighted area of the belly is filled with parallel lines in gradual tones. This technique is an effective method for forming the illusion of three dimensionality of body volumes, and concealing division-lines.

The Gaza mosaicist apparently followed a procedure that made the inner line divisions less traceable. This was achieved by avoiding clear border-lines that stand out in colour as well as camouflaging section-lines with inlay of gradual tonality. As a result, the working procedure of the Gaza mosaicist is more difficult to reconstruct. Especially the animals that have a rich skin-texture, such as the zebra (Fig. 74), giraffe (Fig. 68) and tigress (Fig. 75), show a

continuous tesserae linearity, with the texture, presumably, employed effectively to conceal the section-divisions. The figure of the tigress illustrates this well. Its skin texture is irregular to such an extent that no linear division can be suggested with certainty.

An image that illustrates the intensive use of parallel inlay by the Gaza mosaicists is the left leopard (Figs 76-77). The body of the leopard shows a division by means of crescent-lines as well as parallel lines. It is partly due to the spotted skin texture that the division of its body is better visible. A reconstruction of the production of the inlay suggests a division in ‘length-strokes’, which is alien to the methods that were applied in the Mount Nebo region, but, as will be shown, is applied intensively also in other mosaics of the Gaza region.

The division into strokes, laid in parallel lines, can be identified also at the hind of the fox (Fig. 78), the lioness (Fig. 110), and the wild donkey (Fig. 73). It seems to be a fundamental part of the production procedure of the animals. The anatomy of most animals in Gaza is designed by means of the crescent lines and reversed light-fall with gradual change of tint from dark to light. The procedure of division of the bodies in length-strokes was applied consistently, especially in the back part of the body. In the case of the leopard (Figs 76-77), the length strokes run along the full length of the body and are applied also in the front, which, even in the case of the images of Gaza, is not a consistent feature. This is well illustrated by the body of the fox (Fig. 78), in which a division line can be traced around the belly, and where the front body shows a different inlay than the hind.

It is such inconsistencies that suggest that more than a single craftsman produced the figures of Gaza mosaic. Distinguishing the craftsmen, however, is a difficult task, as they generally did apply a similar repetitive set of application methods, with clear preference to the parallel inlay.

A repetitive procedure can be identified also in the inlay of the scroll and the white background. Unlike in the Church of Lot and Procopius, the inlay of the background within each scroll in the Gaza mosaic is generally made in parallel horizontal lines. A single white tesserae-line surrounds the outline of the figurative depiction. This white line is not continuous around the whole figure, as areas that overlap the scroll have no surrounding white line. This may indicate that the surrounding line was laid as part of the inlay of the background tesserae, and not during the production of the figurative images.

The scroll, bunches of grapes, tendrils and leaves (Fig. 79) also appear to be consistent throughout the mosaic: each grape is made around a single light-coloured central tessera, surrounded by tesserae of slightly darker colour in a cross formation with triangles in the
corners (Fig. 96). The surrounding outline is in dark tesserae. Leaves have two forms: frontal and profile. The profile position is depicted in the form of half a leaf. The tendrils are made as a single spiral, sometimes with the addition of external shortening lines. The treatment of these details is consistent throughout.

The consistency in the southern aisle of the Gaza mosaic indicates that the application was done according to a standard procedure at all levels of production – from the complex figurative depictions down to the inlay of the leaves, grapes and tendrils, down to the white background tesserae.

5.3 THE SYNAGOGUE OF MAON-NIRIM

The mosaic at Maon-Nirim (henceforth: Maon) was found during road works that took place in that area in the 1950s. Only the synagogue has been excavated, although the large amount of pottery and ancient building debris, scattered and visible on the surface in the large area surrounding the public building, indicates that Menois (ancient Maon) was a densely-inhabited village. The synagogue was dated on basis of the numismatic find. In total there were 81 coins found in the synagogue and accompanying structures, such as the ritual bath. The coins under the level of the mosaic floor (but above a lower mosaic floor that existed underneath) date to the fourth century. Ten coins were found directly on the floor. The latest date to Tiberius II (578-582) and Maurice Tiberius (584-585) and five date to the period of Justin I (518-527) and Justinian I (from minting earlier than 538). One of these was found between the foundation stones. It has been concluded that the building works of the synagogue, which culminated in its decoration, took place prior to AD 538 and that the synagogue was still in use in AD 582.

The mosaic includes a dedicatory inscription, written in Hebrew, but unfortunately it does not state the date of completion. It is written in somewhat clumsy letters and has been translated: “[Remembe]red for good be the whole congregation [who ha]ve contributed this mosaic [and further]more Daisin and Thoma and Judah who have donated (the) sum (of) two denariii”.

29 Rahmani 1960, 85.
30 Yeivin 1960, 36.
Dating the construction and the mosaic on basis of the minting date can only be taken as a guideline. The sixth-century coins were all minted in Constantinople, and one wonders what was the span of time that took them to reach Palestine. A coin may have been some twenty years in use before it was ‘lost’ in the foundations of the floor, in which case the mosaic could be dated to as late as the middle of the sixth century. The absence of coins from the reign of Justinian after AD 538 may therefore be a matter of chance, but the find of five coins from the period of Justin I and Justinian I in direct relation to the floor date the mosaic without doubt to the sixth century.

The mosaic shows a vine scroll growing from an amphora (of which only a fragment has survived) that was located at the lower row, spreading over the whole field of the floor. The vertical row has eleven scrolls and the horizontal row shows a strict symmetrical lay-out of five scrolls per row. Each scroll represents an animal or an object (Fig. 80). The central vertical row is a symmetry axis and includes mainly inanimate objects (an exception is the lower medallion in the central row, that depicts an eagle). The animals in the outer scrolls are arranged facing the central axis, and the symmetry of the depiction is in a strict mirror-image on both sides. Each scroll measures c. 65 cm in diameter.

The form of the scrolls at Maon suggests that they were not produced as a continuous element, as each scroll in the vertical direction is connected to the next one by a ring. This demanded a section-treatment for the scroll. The depiction of the vertical rings indicates that the scrolls could not have been produced as a continuous element, since each ring is partly overlapped by two juxtaposed scrolls, but at the same time overlaps those two scrolls at two different points (upper and lower rings, Fig. 87). Since the production of each scroll depended on the scrolls above, under and, at times, the scroll next to it, it seems that the production of the scrolls in Maon had to be divided into quarter sections.

Most animals fit into the scroll’s frame without overlapping. The few exceptions where overlapping is visible, like the lions and peacocks where the figures occupy two scrolls, show that these animals were produced prior to the scroll. This would suggest that the other animals were produced in the same way. There is, however, one exception to this rule, the figure of the right gazelle (Fig. 91). While the foreleg of the gazelle seems to slightly overlap the scroll, the hind leg is hidden by it.

Avi-Yonah stressed the naturalism of the Maon representations, both in the living creatures as well as in the inanimate objects such as the menorah, the amphora and the feathers of the
He struggled with the question of the religious identity of the artist and suggested that the mosaicist was a foreigner: his crude Hebrew letters may indicate that he was not familiar with the Hebrew script. The realistic representation of the menorah, however, indicates that he was familiar with Jewish subjects. Avi-Yonah therefore chooses a middle way, and suggests that the mosaicist was a “Greek-speaking Jew, possibly from the diaspora” and that “The community which employed him was sufficient rustic in character not to pay too much attention to the suggestive parallelism in his work” Avi-Yonah does not clarify how the identification of the craftsman as a foreigner can be reconciled with his identification of the ‘Gaza workshop’ as a local team. Since he supposes that the artist of Maon also participated in the production of the later mosaic of Shellal, Avi-Yonah perhaps assumed that the craftsman migrated to Palestine. However, if the mosaicists(s) of Maon arrived as mature, trained craftsmen, Avi-Yonah’s identification of the ‘Gaza workshop’ as a local team who started its artistic career with the mosaic of Gaza, needs some revision.

Hachlili attributes the production of all the figures in Maon to one craftsman. Her argumentation is based on the formalistic approach: “A distinctive technical idiosyncrasy which characterize the Maon artist is the muscular bulge on the shoulder of almost all the animals and beasts; another trait peculiar to the Maon artist is the eyes of all animals and birds, created as a round circle with a dot in the centre” The muscular bulge, however, does not appear in all animals, and the formation of the eye as a circle with a dot appears also in many other floors (not only in Maon and the Gaza region), as, for example, in the mosaic of Beth Alpha. This identification shows the pitfall of relying upon a single identification criterion and the need to take more than one criterion in consideration in order to attribute the work of a certain mosaic to a certain hand.

The analysis of the animal images from the mosaic of Maon according to the seven criteria that are suggested in the present study reveal a much more complex pattern of production. Moreover, it reveals three different approaches towards the figurative images within this one

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31 Avi-Yonah 1960b, 29, 33.
32 Avi-Yonah 1960b, 34.
33 By parallelism Avi-Yonah refers to the similarity of lay-out and iconography to Christian models, specifically the near-by Shellal mosaic. However, if we accept the dating of Maon to around AD 538, this parallel cannot be drawn to the contemporary commissioners, as the Shellal mosaic is dated by its inscription to AD 561/2). The scroll composition was a popular scheme and appears in Jewish and Christian context alike (Tal 1997, 29-53).
34 Hachlili 2009, 266.
mosaic. A comparison of the figures of the leopard and the elephant illustrate the point. In the figure of the leopard (Fig. 83), the body is formed with continuous lines and only the head and the right foreleg can be recognized as completely separate units (Fig. 84). The body has a continuous parallel inlay-pattern, with no clear division-lines. The anatomy is indicated in soft tonality moving from dark along the spine to light along the breast, belly and hind leg. A continuous line indicates the neck and back and continues all the way to the tip of the tail. This continuity creates the impression that almost the whole body of the animal was produced as a complete unit, in one stage of production.

A totally different approach to the production is illustrated by the elephant (Fig. 81), which was clearly gradually built-up from consecutively-produced sections, in a very similar approach to that of the Beth Alpha figures (see Chapter 1). Each section was surrounded by a traceable dark outline, and each unit borders on the formerly-produced one. The head and trunk form one complete unit, the neck is a second section as it borders with the outline of the head, the saddle is a third section, the hind leg and tail a fourth, the belly is a fifth section and each of the other legs makes a section in itself, with a clear outline that leans against the outline of the belly. The right foreleg is clearly made as a section in itself, with surrounding border lines (Fig. 82). This section-work approach cannot be detected in the other figures in Maon, and is strongly opposed to the approach of the producer of the leopard. This suggests that the elephants (both the right and the left elephants show the same treatment) were produced by a different mosaicist than the one who produced the leopard.

The leopard has a continuous linear inlay, while the elephant is produced out of small units, made of clearly outlined sections, each marked by a dark line. Other differences are in the treatment of anatomy and three-dimensionality: in the leopard smooth gradual hues, while in the elephants colours are set linearly. Also in formalistic terms the two figures are very different, and the eye of the leopard does not share the circle of other figures in this mosaic. These differences indicate that more than one producer was involved in the production of the mosaic of Maon. But both the leopard as well as the elephants are exceptional in Maon. The majority of beasts in Maon can be characterized as sharing a third set of application method, illustrated by the figures of the bull (Fig. 102), the hound (Fig. 90), the ram (Fig. 87), the dear (Fig. 89) and the rabbit (Fig. 88). In these figures, the mosaicist tried to conceal the sections, and this is indicated by the absence of darker border lines that surround the sections, so clearly marked in the figures of the elephants. Instead, the mosaicist applied tesserae in the
same colour of the inner body inlay, concealing the division effectively. This can be illustrated by the figure of the lion (Fig. 85).

The visible lines are those lines that are indicating anatomy, such as the spine that forms a crescent that penetrates the body to create a body-division, the sections of the ribs, and especially the muscular bulge on the shoulder, which is made as a closed round unit. The border lines of the sections are not fully outlined by a darker colour such as in the figure of the elephant, as shown above. The sections can nevertheless be well identified, through an analysis of the inlay pattern of the tesserae. This is nicely illustrated by the figure of the lion (Fig. 86), which is composed of five main sections: head and mane, muscular bulge on the shoulder, foreleg, front body down to the crescent division, and the back part of the body including the hind leg. This general division can be identified also in the other animal images from this group.

The design of most animals in Maon depicts them in profile and in a resting position. There are, however, a few exceptions that may indicate that the designer of Maon relied on external models: the hound, depicted as running (Fig. 90), is probably taken from the hunting repertoire. Symmetrically positioned animals show, that a similar model (in mirror image) was applied to both sides of the axis and it seems that certain details appear in certain types of animals, for example: the indicated ribs appear often as a characteristic of the predators. Repetitive elements of design can be identified in the position of birds and the formation of wings and claws, but the frontal position of the eagle forms again an exception that does not fit the other bird depictions. Recurring details in a group of animals can be identified, as noticed by Hachlili, in the muscular bulge on the shoulder (Figs 85, 87-90, 102), which is made as a closed round unit, and the form of the eye, designed as a dot in a circle. This detail is shared by many of the animals of Maon (but the lion and leopard are again an exception and have an elongated eye).

Inlay patterns in the figures of Maon are formed with tesserae that are relatively regular in shape. The division according to tints show, that the makers sorted the tesserae according to colours and gradations, in order to allow the smooth transitions that create the illusion of three-dimensionality. The tesserae of the figures are slightly smaller than the background tesserae, and at times are even smaller in facial details. There seem to be no further peculiarities in the relation colour/size of tesserae and position of the tesserae for the depiction of certain details in the figures.
The inlay patterns are dominated by the inner division and the relatively gradual colour application that creates the illusion of a three-dimensional effect. In most figures where crescent-lines divide the body and create the inner anatomy, this line appears at the hind part of the body, while the front is dominated by the muscular bulge on the shoulder. The bulge received a concentric treatment, with dark shades on the outside, becoming gradually lighter towards the centre. This method is consistent in all animals that share this detail. The crescent line that marks the hind division of the body is marked in dark and the colouring becomes gradually lighter towards the front. Where the ribs are indicated, they are marked by dark lines on light background, with no gradual colour transition. Typical to Maon is the application of outlines in two tesserae-lines in dark colours along the spine, usually black but at times red. These outlines are often continuous. The images of the deer and gazelle (Figs 88, 90) has a single outline and the outer line was not applied. Again, this is suggesting that the outer outlines were applied after the figure itself was already complete – a characteristic that has already been pointed out in the Gaza mosaic.

These characteristics are consistent for a large group of the beasts of Maon, but as pointed out earlier, the leopard of Maon is different from the other animals in that mosaic in the lack of inner division and the clear continuous linearity of the tesserae-inlay (Fig. 83). It also differs in the absence of the round shoulder bulge. Its shoulder is indicated by a crescent line, the way it appears in the majority of the Gaza images. Furthermore, both in the leopard of Gaza and in the leopard of Maon, the colour of tesserae changes gradually from dark at the back to light at the belly. Formalistic details such as the form of the paws and the cross-like form of the spots that create the skin-texture (the spots of the Gaza leopard are not a complete cross), contribute to the similarity. The Maon mosaicist who produced the leopard seems to have been familiar with an inlay technique that derives from Gaza in his attempt to avoid the visibility of the sections. However, the Maon leopard does not show the same treatment of length strokes that appear in Gaza, though parallel linearity is prominent.

A shared characteristic between the beasts of Maon in general and the Gaza images is the manner in which the crescent splits from the secondary inner outline. The outer outline is not penetrating the body to create anatomy but is continuous and external to the body. The secondary, inner, outline is the one that functions also as an anatomy marker.

The differences between the images in the Maon mosaic suggest that the mosaic was produced by more than one mosaicist. It is very probable that the individual who produced the
leopard was influenced to a larger degree by the producer of the Gaza mosaic, but it is not likely that he participated in its production.

The most exceptional figure in Maon is that of the elephants (Fig. 81). Clearly, the procedure employed by the producer of the elephants from Maon is alien to the region. The application methods of the other beast images of Maon show no consistent affinity with the Gaza mosaic in terms of internal section division and inlay patterns, but they do share the stress of the spine line as well as some formalistic details, such as the shape of the paws of the paws.

Other elements in the design, such as the scroll, leaves, tendrils and bunches of grapes are also of significance for the analysis of the production. It has already been pointed out by Avi-Yonah that the scroll in the mosaic of Maon is identical in its lay-out and depiction to the mosaic of Shellal, which will be discussed later. The central row of medallions, which creates that axis of symmetry, is a continuous interwoven line of two vine branches that grow vertically out of the central amphora on the lower side. From this central axis grow the horizontal medallions, two on each side. This basic lay-out resembles the lay-out of Gaza, but the medallions of Maon are connected to one another in the vertical direction by rings that are depicted with an illusionistic depth and are absent in Gaza.

The shape of the leaves is different than the leaves at Gaza: in Maon each leaf in depicted with two colours: one half is light green and the other half is dark. Between the two halves appear a dividing line in ochre (Fig. 83). The leaves in Gaza have no division and the whole leaf has one colour (Figs 73-74). The half-leaf form, that appears in Gaza quite often, is absent in Maon.

The shape of bunches of grapes in Maoan is very different from that of Gaza. Whereas each grape in Gaza is made in a concentric form (Fig. 96), the grapes of Maon are coloured from light at the lower part to dark at the top (Fig. 97).

The tendrils are again shaped similarly to those at the Gaza mosaic, but the shortening lines above the curls appear in Maon more consistently.

5.4 THE CHURCH OF SHELLAL (EIN HABSOR)

The mosaic of Shellal (Fig. 92) was unearthed on 17th April 1917 by troops from Australia and New-Zealand after the second battle of Gaza (WWI) on the summit of a hill at the site
known now as Ein Habsor, some 22 km south-east of Gaza. The hill was located at a strategic point on the main road from Egypt to Jerusalem and was chosen by the Turkish forces to station a machine-gun position on the summit. While digging their position, they reached the mosaic. After the battle, the find was reported to the British officer and the troops received permission to uncover the mosaic and document it. Parts of the mosaic disappeared in the process as many tesserae were taken as souvenirs.  

The mosaic was subsequently lifted, packed and transported to the Cairo museum. After the war it was transported to Australia, where it is now exhibited at the War Memorial Museum in Canberra. Originally, the mosaic decorated the nave of a church that has not been excavated well yet. The location had clear advantages, controlling the route from Aila (Eilat) to the Mediterranean port at Gaza and having a permanent water supply from the Ein esh Shellale spring.

The size of the mosaic, 8.23 x 5.49 meters, and the find of a column base suggest that the church was a basilica with a nave and two aisles. The design of the mosaic is of the vine-scroll type, and its lay-out is very similar to that of Maon. It differs in the number of horizontal rows and includes forty-five medallions in an arrangement of nine rows of five each. The vine scroll was produced in much the same way as in Maon, with the horizontal scrolls splitting from the central axis, with rings connecting the scrolls in the vertical direction and knobs in the horizontal direction. The form of tendrils is identical to that in Maon and Gaza, but there are three different forms of bunches of grapes, and it is possible that each reflects the work of a different craftsman. The symmetry is less strict than in Maon, and at times, animals of different species are placed in the respective symmetrical position. The designer, however, did choose animals of the same group per horizontal row, or tried to establish a relation between them, creating cycles of hunting and pastoral scenes. Like in Maon, the central vertical row, which is the axis of symmetry, consists of inanimate objects and the lateral animals face the axis.

The dedicatory inscription is located at the east, just in front of the sanctuary. Though partly damaged, it is possible to reconstruct some of the missing parts. The inscription is written in Greek and records the date of construction: “This temple [was] decorated with a rich mosaic [by] our most holy Bishop…and the most God-loving George, priest and

35 Henderson 1988, 36.
36 Henderson 1988, 36.
sacristan, in the year 622 of the era of Gaza, in the 10th year of the indiction.”37 This year is equivalent to the year AD 561/2.

The pattern of illusionistic overlapping indicates that the figurative images were the first to have been produced, followed by the scroll. The internal division of figures does not have a consistency that allows the identification of a single production procedure. Bodies are often divided into two or three masses, stressing anatomy by shadowing and gradual tonality from dark to light, but in different animals the method of inlay varies.

The animals are designed with a degree of liveliness, achieved by their three-dimensionality, three-quarter position and movement. Recurring details can be identified, especially in eyes and ears, but also a repetitive manner of designing the heads of all grazing animals, for example, can be seen.

As mentioned earlier, the treatment of the animals' bodies in terms of the inlay-patterns is not very consistent. A comparison between the left ram and the right goat will illustrate the point.

The left ram (Fig. 93) shows a division into three units, achieved by crescent-lines that create a division of the hind of the body and an open joint at the shoulder. Each of these units has an internal half-circular parallel inlay in which tonality is applied from dark at the top to light in the lower part, creating an illusion of volume (similarly to the front body of the fox of Gaza, Fig. 78). The right goat (Fig. 94), on the other hand, has a continuous parallel inlay along the spine and an inverted crescent-line that penetrates the body from the belly up (and not from the back down as in the figure of the ram). The highlight is placed roughly in the middle of the belly. Next to the parallel inlay, some interlocking lines and even diagonal inlay can be identified.

The voluminous effect is convincing in both figures, but it is achieved by a different method in each case. Formal details, however, especially the form of the heads and ears show a high degree of similarity and despite the difference in inlay-methods, the overall naturalistic effect is convincing in both cases. It is therefore possible that the heads were made by one craftsman, while the inlay of the body was executed by more than one mosaicist. The inconsistency of the application methods in the floor of Shellal can be further demonstrated by the figure of the hound (Fig. 95), that shows smooth tonality and delicate colour inlay for the indication of anatomy. The ribs are treated with a smooth tonality of parallel inlay in

37 Henderson 1988, 38.
gradual tones and a continuous outline runs along the spine, starting from the neck ending at the tail. Though very different from the treatment of the ram and the goat, the inlay patterns of the hound resemble those of the lion from the same mosaic (Fig. 112). The two images may be attributed to the same maker and may indicate that at least one of the mosaicists who worked in Shellal possessed a certain measure of artistic integrity that can be identified.

Three forms of bunches of grapes can be identified: type 1 (Fig. 96) has a centralistic treatment (as also appears in Gaza) and appears at times in a diagonal position. The second type has a gradual tonality in three colours – either light below and dark above or vice versa (Fig. 97). Both types of bunches (types 1 and 2) can be seen in the hound medallion (Fig. 95). Both types are round in shape. A third type of bunch has a different form and the grapes are elongated with a sharp point (Fig. 98). This has led some to believe that this should represent a cluster of dates rather than grapes. These bunches grow nevertheless from the vine scroll. This shape of bunches has a parallel in one of the panels in the near-by church of Kissufim, that will be treated later on. In the panel of a man leading a camel, the man is holding a similar bunch of grapes in his hand. It is further worth pointing out the parallel between the shape of the grapes and the manner in which the mane hair of the lion in the same pavement is shaped (Fig. 112). This may be an indication that the work-division in Shellal was not so strict and that the craftsmen who produced the animals were also the ones who produced the less artistically-complex part of the floor.

5.5 THE CHURCH OF BE’ER SHEMA’

The church of Be’er Shema’ was discovered in 1989 as a result of agricultural work in the area. Prior to the find of the church the site was identified as one of the fortified posts along the Limes Palestinae by a podium of about 80 m² that rises to a level of two meters above the Besor plain. The excavations revealed a basilica of 12.5 x 21 metres with a nave and two aisles. The apse was flanked by two pastophoria that each included hexagonal structure that probably functioned as reliquaria and contained bones of saints. There was probably also a second floor of galleries. Ten inscriptions have been revealed, but none included a date. They do mention that the benefactor of the church was named Stephanos and that the church was

38 Tsafrir 1993, Pl. XXII C.
dedicated to St Stephen. The excavators date the mosaic on stylistic grounds to the last third of the sixth century.

The nave mosaic of Be’er Shema’ (Fig. 99) shows a field of vine-scrolls growing out of an amphora, spreading across the whole field of the nave, in nine rows of five scrolls per horizontal row. The central vertical axis, which is the symmetry axis, includes also figurative and even human depictions, and thus forms a thematic deviation from the other mosaics of the Gaza region. Like in Maon and Shellal, the scrolls split from the central axis and the medallions are connected by rings in the vertical direction.

The pattern of illusionistic overlapping shows that, like in other examples from the region, the images at the centre of each scroll were produced first. The internal division of the images shows a pattern similar to that of the large group of Maon. The body is divided by a crescent that splits from the outline of the spine and divides the front part of the body from its hind. A good illustration of this pattern is the lion’s figure (Fig. 114). A reconstruction of the sections on the basis of the tesserae inlay demonstrates the inner division of the body (Fig. 115). This division allowed the craftsman to produce the body in stages. The crescent line that forms the front of the body sets the direction of inner inlay in the form of a series of crescents, that create the ribs by a careful gradual application of three alternating tints, while the hind section is formed in parallel inlay. Here also, as in Gaza, Maon and Shelal, the black continuous outline along the spine appears. The outline along the spine may have been added after the image was finished.

The horse (Fig. 100) shows a similar inner division, but its execution is not completely consistent with that of the lion. The body of the horse is divided into three masses by two crescent lines, of which the first marks the foreshortening of the breast, the middle section is a closed unit that includes the whole belly with a crescent sub-division in parallel inlay. The back part includes the hind leg and tail, and here as well the parallel inlay is prominent.

The design of the animals in Be’er Shema’ shows elongated proportions. While in Maon the long proportions appear only in the images of the lions, in Be’er Shema’ the elongated proportions is paired with somewhat awkward foreshortenings.

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39 Gazit/Lender 1993, 274.
40 Gazit/Lender 1993, 276.
41 Hachlili (2009, 266, 269) attributes Maon and Shellal to the same workshop albeit by different craftsmen.
42 In both Be’er Shema’ and Maon, the lions are considerably larger than the other animals and were designed to cover two scrolls. This possibly reflects the symbolic significance that the commissioners
The general design and treatment of most figures in Be’er Shema’, with the forced attempt of a three-quarter view, have no parallel in the design of Maon. The rounded shoulder bulge (Figs 101, 103) in Be’er Shema’ is treated in a concentric fashion but has a different pattern than in Maon. In Be’er Shema’, furthermore, this detail does not appear consistently and does not seem to have a genuine constructive part in forming the animal’s body.

A comparison between the crouching bull from Maon (Fig. 102) and the crouching bull from Be’er Shema’ (Fig. 103) can illustrate the similarities as well as the differences. The similarity can be indicated both in design as well as application. The position of the animal, it’s tail and hind legs, the presence of the rounded shoulder joint, the attempt for gradual tonality and the linearity that runs parallel to the spine, are all similarities that may support affinity between the two mosaics. This similarity convinced Hachlili that Maon and Be’er Shema’ can be attributed to the same workshop.\(^{43}\) However, Hachlili also rightly suggests that the mosaics were not produced by the same hands.\(^{44}\) There is a contrast between the delicacy in which the Maon figures are depicted and the unnatural gesture and clumsy foreshortenings of the Be’er Shema’ depictions, and even the formalistic similarity of the rounded shoulder joint shows a different concentric treatment: while in Maon the gradual tonality from dark outside to light inside is consistent and creates a convincing illusion of three dimensionality, the application in Be’er Shema’ is moving from dark to light and dark again, which turns the circle into a mere decorative element.

The scroll leaves in Be’er Shema’ are identical to those in Maon. Be’er Shema’ shows two types of grape bunches. In both the grapes are completely round as can be seen for example in the surrounding of the lion (Fig. 114). One type is concentric with a white dot in the middle and a darker surrounding, the second has three lines of light tesserae at the lower part and dark at the top, creating an illusion of lighting from below. Both types appear also in Shellal. The rounded grapes at Be’er Shema’ create the illusion of ‘fullness’ of the ripe grapes. The most conspicuous similarity of the vine scrolls of Be’er Shema’ to both Maon and Shellal is in the lay-out and the rings that connect the scrolls in the vertical direction. This may indicate that the craftsman who produced the scroll at Maon may have participated also in the production of the scrolls at Be’er Shema’ and Shellal.

\(^{43}\) Hachlili 2009, 268.
\(^{44}\) Hachlili 2009, 269.
The site was exposed in a salvage excavation after it was discovered accidentally in the fields of Kibbutz Kissufim. The Christian basilica of 16 x 13 m was originally decorated with mosaics, but suffered much damage and only the inter-columnar area and side-panels of the aisles remained. The whole central composition of the nave, which may have included a vine-scroll, has now completely disappeared. Of the nave mosaic only the inscription in a *tabula ansata* was preserved and reads “In the time of our most holy and pious Bishop Michael and of Theodoros, most beloved by God, by the grace of God deacon, monk, sacristan, and abbot [of the monastery] of St Elias, this mosaic was made on the eleventh of the month of Loos in the year 636, the ninth year of the indiction”. The inscription provides the exact date on which the mosaic was completed, and this date corresponds, according to the calendar of Gaza, to the 4th of August AD 576. The mosaics of Kissufim, now at the Israel Museum in Jerusalem show themes with hunting and pastoral scenes, various animals and a donation-scene that includes the portraits of the female donors, which is rather unique in Palestine.

The animal-figures are of relatively large dimensions (each panel is about 80 cm high and 140 cm long) and show a high quality of artistic design. One of the panels depicts a horseman hunting a panther (Fig. 104). Above the scene appears the inscription ΕΡΓΟΝ ΑΛΕΞΑΝΡΟΥ. There has been debate whether the inscription ‘work of Alexander’ that appears above the leopard hunter refers to Alexander the Great or to the master mosaicists who led the production. The excavator of the mosaic suggests that the inscription describes the scene below as a heroic deed of Alexander the Great on basis of three arguments. First, he argues that the name of the maker never appears within the artistic depiction, but in a separate dedicatory field. Secondly, he points to the wide spreading of the Alexander romances from the Hellenistic through Roman period and into Late Antiquity. Furthermore, a fragment of a

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45 Cohen 1993, 277.
46 Cohen 1993, 277.
47 Cohen 1993, 277. The mosaic at the synagogue of Gaza was also completed in the month of Loos, the Seleucid month that corresponds to July/August. One wonders whether mosaic making was seasonal labour. Unfortunately, most inscriptions do not record the month of completion and it may be a coincidence that both mosaics were finished in the same month.
48 For the description of subject matter and iconographic parallels, see: Ovadiah/Mucsnik 1983, 459-480.
Coptic tapestry showing a pair of horsemen crowned by Victoria, carries an inscription that leaves no doubt as to the identity of the depicted: Alexander of Macedon. However, the depiction in Kissufim does not deviate from the hunt iconography that appears in Early Byzantine churches and does not possess the victorious connotation of the Coptic tapestry. Moreover, the observation that craftsmen did not sign their work as part of the artistic depiction appears incorrect. There is not one rule for the location of the signature, and the corpus of inscriptions we possess today shows that a signature in the dedicatory inscription is the exception rather than the rule.

Signatures were often placed in a free space that occurred between panels, and the Alexander inscription may suit this definition. Ovadiah mentions that the term ΕΡΓΟΝ in this period was applied more often in the sense of crafts and less in the meaning of acts or great deed. But it is possible that the ambiguity is conscious. In this case, the reference to Alexander the Great could have a double meaning and serve as a smart disguise for the name of the artist. The choice of the artist to sign his name, Alexander, in this specific panel is not a matter of chance – the artist may have created the space for the signature consciously in that panel in order to compare his creation to a heroic deed.

The mosaic is of high artistic quality, with tesserae that are at times as small as 5 mm. The craftsmen invested much effort in creating the illusion of three-dimensionality, naturalism and liveliness of movement and volume. Unity of style and methods of application of inlay patterns can be identified in several of the figures, but here also, like in some of the other floors, more than one method can be recognized.

Starting with the lower panel that depicts grazing rams (Fig. 105), the illusion of volume of the bodies is created by the sharp contrast between the dominant black apine and crescent-lines that form the division of body masses, in contrast to the white highlight of the masses’ centre. The right figure illustrates well the division of the body in sections (Fig. 106). The prominent initial unit seems to be the front shoulder joint and leg (as opposed to the head and

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50 The tapestry is in the Textile Museum, Washington D.C.: Weitzmann 1979, 91, Fig. 81; Cohen 1979, 19-24.
51 Most of the signatures mentioned in Chapter 3 do not make part of the official dedicatory inscription. Most of them are inserted in a free space that occurs between panels. In Hellenistic and Roman examples, however, signatures do appear within the artistic frame itself. For a partial list see: Ovadiah/Mucsnik 2002, 460-461, n. 3.
52 For which the term Πραξεις was used more often: Ovadiah/Mucsnik 2002, 462. For parallels, see: Donderer 1989, 16, 25, 27.
neck in previous examples). The other units seem to lean against this initial section. The front leg is literally a ‘pillar’ on which other units on both sides lean: head and neck from one side, belly and hind part of the body from the other. The body is formed by three clear masses, each produced as a unit: the foreleg, belly, and the buttocks with the hind leg. The dark outline along the spine, with the tail, seems to form the last section in the order of production. The left ram shows a similar formation pattern, in which the shoulder-joint and foreleg are a prominent unit, upon which the sections next to it lean. The head and shoulder form one unit, while the buttock and hind legs form the other (the mosaic is somewhat damaged in this area, so it is not clear how the tail was formed). The illusion of three dimensionality is created by concentric parallel lines of tesserae, from dark outside to light in the centre.

This division is recognizable in the vast majority of the animal images in Kissufim, and is a consistent characteristic of the application method of the mosaicist who produced them. The figure of the lioness illustrates this well (Fig. 113). The formation of the foreleg and neck as the initial section against which other units “lean”, is practically identical to that of the ram. The body of the lioness has elongated proportions and delicate tonal inlay that marks the anatomy and black outlines well. The body of the lioness is divided by means of repetitive crescent-lines that effectively form the illusion of ribs in a manner similar to the lion of Be’er Shema’. The application of gradual colours within clearly-indicated body sections creates a convincing illusion of volume and three-dimensionality and is applied consistently in the bodies of predators and grazing animals alike. This is illustrated by the body of the bull attacked by a lion (Fig. 107), the hind of the lion, and the figure of the white horse (or zebra?) (Fig. 108). In all three (as also in other images), the buttocks are divided into strokes, each filled in a parallel-inlay in a gradual manner from dark along the outline to light towards the belly. The high consistency of application patterns among the animal images of Kissufim seems to indicate the “signature” of a leading master. The only animal that shows an exception in its inlay pattern is the bear. His body is also divided into length strokes, but these were not filled in the regular parallel inlay, but by interchanging inlay (see description in Chapter 1), which was not applied elsewhere in the mosaic.

A repetitive element of design in the various images of Kissufim is the robust design of the lower legs, paws and claws of the lion, lioness, cub and leopard and is even apparent in the legs of the giraffe.
5.7 The Mosaic of Jabaliya

From 1995 to 2005 the Ecole Biblique was involved in excavations in the Gaza area. A large complex of St Hilarion monastery at Jabaliya (Tell Umm Al Amer) to the north of Gaza city was unearthed. The location was thought to be related to Hilarion, the fourth-century hermit that was one of the founders of monasticism in the Holy Land. It appears that the complex is not situated in an urban setting, but rather in a burial area. It thus seems that it commemorates a grave location or was built on the location where veneration of a tomb took place, although the relation to Hilarion is not clearly attested. The mosaics have not yet been fully published, but it seems that the complex was built and decorated in stages. The earliest inscription dates a mosaic to the fifth century, while the latest to as late as the eighth century AD. The complex was probably destroyed as a result of an earthquake. The mosaics of the baptistery were signed by the makers, apparently, two craftsmen from the nearby city of Ashkelon. The various mosaics show free compositions where images and groups ‘float’ in space and are arranged in a closer relation to one another, such as in the mosaic at Cheikh Zouède and the Orpheus mosaic from Jerusalem. Although no good photographs that permit a study of the inlay-patterns of the mosaic are available yet, even a superficial look at the bull and rabbit in the one panel (Fig. 109) show similarity to other floors in the region, in the application of the parallel inlay and the stress of the upper spine-line, with crescent lines that penetrate the body, which are so characteristic to the mosaics of the region of Gaza. Thus some of the imagery of the mosaic fits well into the tradition of the region.

The appearance of human figures in this mosaic makes this mosaic especially interesting. Some of the figures suffered some damage in later centuries, a phenomenon that has been noticed elsewhere. One of these figures is a sitting shepherd, another is a villain trying to move a stubborn goat and another seems to have depicted a farmer milking the goat. An interesting detail is the man who seems to be pulling a shoe off the foot of a reclining figure or treating his foot due to injury. Such scenes seem much closer to genre scenes of every-day life, far more so than in other mosaics. Stylistically, the figures seem less well-formed than

53 Elter and Hassouna published the inscriptions (Elter/Hassouna 2005, 37). For a preliminary publication by archaeologist Jean-Baptist Humbert, see: www.christusrex.org/www1/ofm/mad/articles/HumbertGaza.html.
54 This may support the theory of Hachlili (2009, 269) that a mosaic workshop from Ashkelon was active in the Gaza area.
56 Ovadiah 2002, 427-446.
those in Kissufim, but some parallels may be found in the mosaics of Petra Church. It can only be hoped that more material will be published soon, to allow further observations.

5.8 COMPARATIVE STUDY

The mosaics from the Gaza region present the scholar with a peculiar challenge. It is tempting to attribute the many similarities that are detected in them to the work of one workshop as Avi-Yonah has suggested. However, in accordance with the observations of Nira Stone and Hachlili, the matter appears much more complex. Though some mosaics show a high degree of consistency and unity, suggesting a single mosaicist or a prominent master who produced the figures (such as the unity observed in Kissufim), in other floors such unity is less obvious, and in some cases it seems evident that more than one craftsman was involved in the production work (such as in Shellal and in Maon).

Defining the degree of similarity in inlay-patterns between the floors is therefore no simple task. The following discussion therefore focuses on a representative image, that of a predator (the figure of the lioness or the lion), as in most mosaics this figure seems to be representative of a group of animals (within the same floor), and is therefore applied as a starting point for comparison between the various mosaics.

In the following, the comparison will focus on the seven criteria that were presented in Chapter 1:

A) Illusionistic overlapping

It seems that the procedure employed by all mosaics in the Gaza region followed the production order in which the image was produced prior to the scroll or the background. The single exception is the gazelle at Maon, which can be explained as a result of a contemporaneous inlay in that particular area of the mosaic. The repetitive pattern in all mosaics, however, show that as a rule, when illusionistic overlapping occurs, it is the image that overlaps the scroll. In the panels from Kissufim, which has a composition that is not arranged in vine-scrolls, the images usually overlap the surrounding plants, except when the plants are a direct part of the depiction and not just background-filling. Such is the case with the plant and tree in the scene of grazing rams. Here, the leaves of the tree clearly “hide” the mouth of the left ram, and the plant is clearly depicted as overlapping the mouth of the ram on
the right. The plant was apparently seen as an integral part of the depiction and was not left to be depicted as part of the background-fillings.

B) Inner division
Though no single approach has been observed in all the mosaics, some similarities can be ascribed to groups within each mosaic.

In the images of Gaza, a combination of two methods for inner division can be pointed out: one is the division by a crescent line that splits from the inner spine line and divides the body. The second is the method of length strokes division. However, the exact method of application that appears in Gaza is not repeated in the later mosaics. While the Gaza crescent dissolves towards the belly, the images at Maon, Be’er Shema’ and Kissufim show a crescent division that completely separates the front part of the body from the hind, and at times, additional portions in-between. The division in length-strokes is a prominent aspect in the treatment of the bodies of various animals, especially the predators, and can be detected in Maon, Kissufim and Be’er Shema’. In Maon, the shoulder joint forms a consistent unit that appears in a large group of animals. This characteristic appears in some of the animals in Be’er Shema’ but not in the figure of the lion. Shellal shows very little consistency in the inner division of the figures, where only the predators show some affinity to one another. Kissufim shows the most consistent pattern, in which the shoulder-front leg unit forms a fundamental unit in the section division, a characteristic that does not appear in the other floors. At the same time it shares with Gaza and Be’er Shema’ the length-strokes, albeit in the hind section of the images’ body, and applies systematic and repetitive division by means of crescents, which appears to have become a shared characteristic to the floors of the region.

C) Repetitive gestures
Somewhat elongated proportions is a characteristic that appears to a certain degree in all mosaics of the Gaza region, though not in all images. Especially elongated are those figures that occupy two scrolls, such as the lion at Maon. However, the elongated proportions appear also in Kissufim, where the scroll composition is absent and the animals stand in a free setting within a panel, and in Be’er Bema’. Certain gestures seem to be coupled with certain animals. For example: the hound is often in a running-position, the lions or lionesses are striding, goats are grazing and bulls are lying down. These may be a result of applying a shared model. An interesting example for repetitiveness in gestures is the case of the wild ass in Gaza and the
white horse (or zebra) in Kissufim. The positioning of the body in such a swift motion, in which the animal is almost turned upside down towards the ground, is so exceptional, that the two depictions demand a comparison. Both depictions are unfortunately damaged, but it can still be recognized that the wild ass from the Gaza mosaic has a reverse colouring pattern (that appears also elsewhere in the images of the same mosaic). The front of the body is dark along the back while the hind of the body reverses. Despite the damage of the figure in Kissufim, the high consistency of the images in that mosaic allows us to assume that such a reversal would probably not have taken place in the white horse figure. In any case, the hind of the white horse from Kissufim shows a division in length strokes, creating the illusion of volume by gradual tonality from dark along the back to light towards the belly, and is thus the opposite of the Gaza depiction, though the length strokes are certainly a characteristic that appears also in Gaza.

D) Recurring features
Taking the image of the lion/lioness as an example for shared characteristics between a group of images in the various mosaics, similarity of details can be seen in the rounded form of the head in a three-quarter view (with the exception of Be’er Shema’, that differs in its sharp features from the rest of the mosaics). Though the mosaicist of Gaza depicted the foreshortening more convincingly, while Maon has a somewhat awkward three-quarter view, the form of the nose, rounded towards the mouth and its meeting-point with the upper lip, is very similar. The same form appears also in Kissufim with the open mouth and tongue hanging out. This seems to be a characteristic detail that was repeated in many of the mosaics of the region. As such, it may be argued that some of the mosaicists of the region shared affinity with a certain set of designs. The lion images also share the form of the lower leg and paw. The early depiction of the lioness’ paw in Gaza is rather delicate, but has a similar shape. In the later depictions, most obviously in Be’er Shema’ and in Kissufim, the paw is immense and the protruding back bone of the lower foot becomes a massive design that is repeated in the various depictions.

Though it may be argued that details of design were shared by means of copying (either from earlier floors or from a shared model), these details seem to have become part of a repetitive scheme that has been transmitted from the one generation of producers to the next and has become a local artistic tradition.
E) Size and shapes of the tesserae
There seems to be a difference between the various mosaics regarding the aspect of size and shape. While the mosaic of Maon shows the least variation in size and shape, the mosaic of Kissufim shows a high degree of differentiation in the type of tesserae applied in the mosaic. Especially the human figures show variation in size, with much smaller tesserae in the faces than elsewhere, but also in the animals images, the attention to small details in the face demand a finer sorting of the tesserae according to size and shape. The difference in size and shape between the various mosaics results in a difference in the manner of application. In Be’er Shema’ and Kissufim the aspect of specification of a certain size or shape of tesserae to a certain purpose is more prominent. Triangular tesserae were produced especially for the depiction of sharp teeth and claws, or for the edge of hair locks.

F) Colour and sorting level of the tesserae
In all the discussed mosaics of the region there is attention for sorting the tesserae according to tonality of colour in order to allow a gradual change in tones for the sake of illusionistic three-dimensionality. When an exception occurs, such as in the elephants of Maon, the images are rightly marked as exceptional.

G) Inlay patterns
The lioness of Gaza stands out among the five mosaics in its delicate treatment and continuous linearity. Colouring is gradual, with reversal of shadowing and highlights around the middle of the body. Length strokes in a parallel inlay are clear at the back of the body and a continuous line along the spine defines the unity of the body. The length strokes, that have been identified as the basic application method of the Gaza mosaic, appear also in the later mosaics, but there the method was combined with a section division of the animal’s body.

Dark outlines function as a unifying element that turn the various sections of the animal’s body into a coherent unity.

The Maon lion is divided into sections and the gradual colouring takes place within each section in a parallel inlay. It still resembles the Gaza inlay in the reversal of the direction of shadowing between the front of the body and its hind. In Shellal, length strokes were applied selectively and the reversal of colouring is not consistent. The lion figure, however, shows delicate tonality that create the anatomy of the ribs and the outer line along the spine. Be’er Shema’ applies length-strokes within each section, relying strongly on the crescent divisions
of the body. The colour patterning is dark along the back and light at the belly with no reversing.

In Kissufim, the division of the body has become a consistent procedure. The application is repetitive and systematic and appears both in the grazing animals as well as in predators. In this application procedure, the fore leg forms a basic element against which the other elements lean. On the one side – the neck and head and on the other side – the body section with the intensive crescents-division formation. The colouring pattern is consistent and follows all crescents in the same direction – dark outside and light towards the inside, with no reversing along the body. The animal images from the mosaic of Kissufim have the most consistent set of repetitive patterning, and as such have a high measure of artistic integrity.

5.9 Summary

The analysis of the Gaza region mosaics shows that to a certain extent a shared artistic tradition did exist, in terms of design, order of production and application techniques. At the same time, each of the mosaics shows a different interpretation to the production procedure as a whole. Some mosaics show a coherent artistic integrity, in which all images (or a large group of them) can be indicated as ‘perfect matches’ by all seven criteria. Kissufim is a good example. Maon seems to have been made by three mosaicists where each hand can be distinguished, while Shellal shows a much less coherent artistic integrity. But similarly to the Mount Nebo region, comparison between floors does not always yield specific results.

Surprisingly, comparison between the various mosaics in the Gaza region shows no ‘perfect match’ in any set of figures, and the images of each floor seem to have been produced by different individuals. At the same time, these individuals do have a shared tradition, and a continuity in training pattern between the mosaicists of the region can be identified on basis of the observed similarities. Though perhaps not forming a workshop, it is possible that at least some of these craftsmen were trained together or that the mosaicists from the earlier generation trained those who produced the later mosaics.

The conclusion that was formulated by Nira Stone concerning Maon and Shellal can be broadened to the other mosaics in the region as well; the craftsmen who produced these mosaics were certainly not the same individuals, and the similarities cannot be explained by a production by the same group of artists. Hachlili suggests that Maon and Be’er Shema’ were
produced by two individuals “who might have been trained in a similar manner but had somewhat particular tendencies”.\textsuperscript{57} In the terminology of Clark this is the definition of a ‘near match’. Though Clark identifies the individuals whose work show a ‘near match’ as members of one workshop, I prefer to interpret the ‘near match’ as craftsmen who either followed the same training, or as an indication of transmission and for regional continuity from one generation of producers to the next. In that case, the mosaicist who produced the large group of animals in Maon may have trained one of the craftsmen who later worked in Be’er Shema’, but we lack the evidence of them working together as a team.

The chronological data places the mosaic from synagogue of Gaza clearly as the earliest of the five floors, at a date of AD 508/9, followed by Maon at a date probably around AD 538. Shellal has a secure date at AD 561/2 and Kissufim at AD 575/6. Be’er Shema’ is the only mosaic that cannot be dated by external evidence and was placed by the excavators in the last third of the sixth century. It is tempting to suggest a linear development between the five mosaics, pointing to a gradual change towards the full artistic integrity of Kissufim as one of the latest mosaics. If one wishes to discern a linear model of transmission between them, then the most conspicuous development indicates a change from subtle, delicate forms (Gaza, Maon) to robust design (Kissufim, Be’er Shema’). But it would be misleading to define the earlier floors as possessing less integrity and to portray the sixth century as the period in which the process of defining the artistic procedure of the region has taken place. Gaza, the earliest mosaic in the region, already shows at the beginning of the century well defined artistic traits, the work of well-trained mosaicists, while the later inconsistency of Shellal may be either a result of the various hands that produced the various images or an inconsistent production pattern that was applied by craftsmen still in their training period.

There seems to be only one case of a ‘perfect match’ between two or even three of the floors of the Gaza region, that is, the scroll in Maon, Shellal and to a certain extent, Be’er Shema’. It seems that the individual who produced the scroll in Maon was also involved (together with other individuals) in the production of the scroll in Shellal and perhaps the scroll of Be’er Shema’.

The overall impression of production in the Gaza region seems to indicate an inconsistent cooperation pattern between more than one producer: Some figures in Maon have a relatively close parallel in Be’er Shema’ but other figures in Be’er Shema’ have relatively close

\textsuperscript{57} Hachlili 2009, 268.
parallels in Kissufim. But since none of these parallels form a ‘perfect match’ (except for the earlier mentioned scroll), it seems that the individual craftsmen seldom cooperated in the field (though, the mosaic of Jabaliya might add new information in the near future).

A comparison of the inlay-patterns reveals that the inner division of figures - with the intensive application of crescent forms and the division through parallel length inlay at the back of the body, where each stroke is laid with one colour, creating together a gradual change from dark along the back and light along the belly - is a general regional trait of the animal figures. These characteristics derive mainly from the patterns of inlay. A second shared characteristic of these figures is the formalistic aspect, such as the gesture, the shape of hind legs and paws of predators and other animals. These may derive from using a shared model or simply copying an existing, earlier example. A third characteristic, that has also been indicated elsewhere, is the outline along the spine. This seems to be a characteristic shared by the Gaza region mosaics.

As stressed earlier, despite the similarities, the inter-floor analysis shows that the depictions of animals cannot be attributed to the same makers. Gaza shows a much more delicate approach to the animals and is chronologically too remote from the later mosaics to allow the same producer to be involved in them. Maon shows three attitudes from which only one seems to have some affinity with Be’er Shema’ (but this affinity is not sufficient, in my opinion, to justify the attribution, suggested by Hachlili, of both mosaics to one workshop). Be’er Shema’ shows, furthermore, some affinity with Kissufim, but the integrity and procedure of Kissufim does not appear in any of the other mosaics.

Comparison between every two mosaics that are directly consecutive in date, shows a certain affinity, both in aspects of design as well as in inlay patterns. However, mosaicists were probably aware of all previous pavements in the region and not only the immediate predecessors or contemporary pavements. It is thus worth investigating to what extent the Gaza mosaic, for example, was also a source of inspiration for the maker of Kissufim. That the depictions of Kissufim are different from those of Gaza is in itself not surprising, as there is a chronological difference of 67 years between them. In the course of more than half a century changes occurred in fashion, taste, stylistic trends and technical preferences. The two mosaics were produced by different individuals, who applied different work procedures. At the same time, in subject-matter and design, the Gaza mosaic may have remained a source of inspiration for later mosaicists. Such affinity may be a result of direct observation and it is
plausible that the maker of Kissufim was familiar with the Gaza mosaic, which was located just a few kilometres away.

Iconographic affinity in the Gaza region has already been noticed by previous studies. While Avi-Yonah saw this as supporting his attribution of the mosaics of the region to the ‘Gaza workshop’, Hachlili and Dauphine suggested shared patterns. Direct observation of previously produced mosaics in the limited geographical region of Gaza could contribute to the geographical distribution of repertoire of subject matter and formalistic details. Transmission by training, however, may have been an important factor as far as the application methods are concerned.

A direct training relation, however, though plausible, is difficult to prove. The similarity, noticed by Hachlili, between the bull of Maon and that of Be’er Shema’, for example, is contradicted by the fundamentally different inlay-patterns that were applied in each case. The ‘dominant’ mosaicist of Maon, the one who produced the majority of beasts, applied methods that show inner unity of style and inlay patterns that differ from the Gaza predecessor in their section-division, but the figure of the panther, who possesses a much smoother treatment with no traceable sections, may have been in some way trained by one of the Gaza artists. The producer of the elephants in Maon cannot be identified elsewhere in the region and has apparently left altogether after his short involvement in the Maon mosaic.

Despite the lack of general integrity in Shellal, the group of predators such as the lion and hunting-dog from this mosaic show the length-strokes that go back to the Gaza images and can be recognized also in the later floors of Be’er Shema’ and Kissufim.

This has been shown also with regards to the lion of Be’er Shema’ and the lioness of Kissufim: they share a robust body volume, massive paws, length strokes and a stressed spine, but, in each case, an individual interpretation results in a different artistic expression. Since Be’er Shema’ carries no specific date, an attempt to place this mosaic in the chronological order of the region would suggest a date close to Kissufim.

These two mosaics are clearly the later ones and differ in their robust design from the Gaza floor, though iconographically and thematically (see the discussion concerning the kicking zebra) they may have still been inspired by the Gaza examples. Kissufim and Be’er Shema’ show only a vague reminiscence of the delicacy of the design of Gaza. This is especially clear in the robust design of Kissufim and the treatment of crescent lines that divide the body: it is still splitting from the secondary outline, but has become an element in itself. It involves a whole section (and not just a single or a couple of lines) that define the masses of the body.
The mosaic of Jabaliya seems to share this trait as well. The gradual filling of each section has become a repetitive procedure. The animals of both Kissufim and Be’er Shema’ show a robust body and monumentality, whose beginnings can perhaps be recognized already in Shella. Kissufim provides the richest repertoire and the most consistent set of procedural applications among the mosaics of the region. Though the images in Kissufim may have been produced by more than one master (at least the treatment of the bear is a unique method that does not appear elsewhere in the floor), most images show an artistic integrity that can be clearly identified and attributed to one leading master. Especially the figures of the lions and hunting animals show high consistency, but the figures of the bull and zebra can be attributed to that single master as well.

This pattern suggests that changes did take place with every generation of producers. Every generation of mosaicists was thus familiar with the local tradition and repertoire, but did not just take over the previous elements. In each new commission a reminiscence of the formerly-produced mosaics may be recognized, but mosaicists did add an enrichment of their own. They were aware of the mosaics that were produced previously, within that specific local milieu, but probably also beyond (as apparent from the example of the Worcester Hunt from Antioch). The artistic expression, however, received a very individual interpretation in each case, a situation that brought the region an extraordinary rich stylistic expression. To sum up: the present analysis shows that the mosaics of the Gaza region do show affinities with one another, but not of a whole procedural set (order, design and inlay patterns), but rather in a partial selection of the procedural aspects (especially the parallel inlay of strokes, crescent lines for division of bodies and a prominent spine-line). The lack of a clear transmission pattern of artistic procedures and the lack of ‘perfect match’ among the floors does not support the identification of a permanent workshop in the Gaza region, but rather a diffused local tradition that gave the freedom to each individual mosaicist to shape his own artistic traits.
CHAPTER 6

CONCLUSIONS

6.1 MOSAICS AS THE SOURCE MATERIAL

With the lack of external sources that shed light upon the organization of labour and production of mosaics in Antiquity, we are bound to use the artistic objects themselves as the main source material and develop methods of observation and investigation that rely on the mosaics themselves.

The present study suggests a new approach towards understanding the production of mosaics, in which the investigation is focused on tracing repetition and patterning in production techniques and application procedures. When a high degree of repetition is traced in all aspects of production procedure, it provides the basis for the identification of a rationalized production procedure. This may either indicate an artistic signature of an individual producer or be an indication for a transmission pattern of a definite set of production methods.

The case of Lot and Procopius has shown that these criteria allow the identification of a ‘perfect match’ within one and the same mosaic. At the same time, the case of Maon shows that it is possible to distinguish between the producers of one and the same mosaic, when each of them is characterized by a different set of procedures. It is much more difficult to identify a ‘perfect match’ among floors at different sites, but where this is possible, is where the discussion about the workshop and its construction becomes exciting.

6.2 SEVEN CRITERIA

The seven criteria that were applied throughout the study function as an empiric observation method, with which the production procedures of figurative mosaics can be explored and analysed, and an inlay tradition can be identified. These seven criteria are of three types: order of production (illusionistic overlapping, internal division), form (repetitive poses and
gestures, recurring features) and inlay methods (size and shape of tesserae, colour and sorting level, inlay patterns). A few examples were presented already at the outset for the sake of illustrating the characteristics of each criterion, but an application of the whole method on a test case has been preserved for the case studies.

The exploration of the methods of investigations used by scholars so far in order to identify production teams show that material investigation may be very promising for future study. Field archaeologists in recent years show high awareness of this aspect and it is likely that future excavations will yield more information concerning the pre-inlay steps of the production, with data that allows a better understanding of the composition of the production team and its organization. The artistic aspect and the data it provides remains, however, the main key for identification of individual producers and their inlay traditions.

6.3 Exploring ‘the workshop’

The definition of the workshop is one of the more complex issues in the study of production teams due to the lack of external evidence. For this reason, much attention was paid to the very methods that modern scholars have applied for understanding the organization of labour.

Three approaches towards the exploration of the organization of the ancient production teams have been discussed. The first approach is that of economic history, which conceives the craftsmen as a unit that operated within the economic reality of the Early Byzantine period. Much research is still needed in order to understand how the Early Byzantine economy operated, and how craftsmen of the lower classes of labour made their living within these economic conditions. Mosaicists appear to have shared their social status with bakers, carpenters and blacksmiths.

As has been shown, despite the data provided by the Edict of Diocletian, which indicates that craftsmen received a daily payment, the reality of the sixth century may have been different. The evidence provided by the inscription of Beth Alpha indicates payment in grain. This suggests that conditions of employment may have differed per case, and the situation in rural areas may have been quite different compared to the Imperial urban centres of that time. An intriguing aspect of the Late Antique economy is that of unpaid labour, especially in the sphere of the monasteries and churches as exploits of professional expertise provided by monks who volunteered their professional knowledge for the benefit of their community.
Since actual mosaics that carry external evidence for this practice in the form of inscriptions are too few, it is difficult to estimate the impact of the phenomenon in artistic and economic terms. If the floor at Eleutheropolis (Beth-Govrin) was indeed produced by the local monks, it serves as evidence for the high artistic quality that these workers produced, undoubtedly under the guidance of a master. But can such a team be identified as a workshop, or rather as an ad-hoc team? And did this team produce this one single work, or can we hope to trace this team elsewhere? These fascinating questions are left for a future study.

The second approach towards the study of the ancient production teams concerns their structure, the division of tasks within the team and the relation between its members. This aspect relies mainly upon literary sources as well as authentic inscriptions that were laid in the floor as part of the mosaics themselves. The evidence of Xenophon concerning crafts and that of Augustinus concerning the ancient metal workshop are sketching the workshop as a hierarchical organization, where the division of labour was based on specialization in tasks. This structure also seems to fit the material evidence of sculpture and sarcophagi production. The functioning of the hierarchical model in relation to mosaic production was expressed by Becker and Kondoleon in relation to Antioch.

However, the inscriptions from the regions of Palestine and Transjordan indicate, that mosaic production teams operated as a relatively small-scale business, often based on family ties, with a group of leading producers consisting of one to three mosaicists at the most. One of the difficulties that arise from this evidence is, that the small scale of the teams seems to contradict the scale of the projects and number of mosaics that were excavated. It would be more plausible to assume, that a flourishing industry of such a scale demanded considerable amounts of manpower and an advanced infrastructure in terms of source material, quarrying, transport and production organization. It may be concluded that the high demand for mosaics in the region during the sixth century created a multitude of small-scale teams, rather than a few dominant large workshops. It is also probable that several forms of workshop organization existed side by side, but that the small family teams signed their work more often as a token of workmanship pride. That other producers did not sign their work (or that the signature has not survived), may distort the evidence but even then, the artistic diversity supports a different model than a monopoly of one large establishment that dominates the production of the region.

That at least some of these small-scale teams were based upon family kinship is supported by the inscriptions, and seems to be a result of mosaic art as a craft, that was taught from
father to son or other members of the family. Beth Alpha includes an old and a young generation, clearly referring to a construction of father-and-son. It seems plausible that Marianos, the father, trained Aninas, his son, who gradually became familiar with the full range of production processes and various stages of the work. In such a work environment, where production is based on a small-scale team with a high measure of loyalty, it is imaginable that a measure of artistic continuation is more likely to be identified. This seems to be true in the case of Beth Alpha. Other teams seem to have been formed around a leading individual, but whether the existence of these teams was long lived or these teams should rather be seen as ad hoc constructions, is not clear.

The third approach towards the study of workshops focused upon the attempt to identify teams and craftsmen through their artistic output. This approach involved various art-historical approaches, none of which is devoid of pitfalls. Almost all of the suggested methods – from shared compositional and lay-out principles, through iconography and the repertoire of geometric designs, appear controversial or insufficient as a sole criterion. A more promising approach is that, which was applied by Clark to Italian black-and white mosaics, and by Stone for Late Antique Near Eastern mosaics. These approaches, each in its own way, stress the shared traits of either style or technique as a means for identification of a team of mosaicists or even an individual producer. The study of inlay patterns plays an important role in these approaches, and was therefore chosen as a prominent aspect in the present investigation, with the intention to apply it to a group of mosaics. Thus for methodological reasons, the current study has set aside the study of repertoire, subject matter and iconography, in order to focus on the potential of the analysis of application methods and the study of production procedures for identification of individual producers and for understanding the production stages followed by them.

6.3.1 Case study I: Mount Nebo

The Mount Nebo region is the first case study. The seven criteria were applied in detail to the human figures from the mosaics in the Church of the Holy Martyrs Lot and Procopius at Khirbat al-Mukhayyat, which serves as the point of departure for investigating the artistic traditions in the region. The analysis of the human figures in the mosaic of Lot and Procopius reveals the systematic and structured procedure of the mosaicist who was in charge of the production of those images. Most images in Lot and Procopius appear in the nave, with two
additional figures appearing on one of the panels between the columns. The high consistency in the human figures at Lot and Procopius identifies them as a ‘perfect match’ and expresses the leadership of a single mosaicist. His highly structured method of application resulted in an artistic integrity which can be recognized as an individual artistic trait.

The identification of traits of the mosaicist who produced the human figures at Lot and Procopius brings up the question of specialization. In first glance it seems that the conditions of production in which an intensive project is produced by a small team (as shown earlier: three mosaicists in the case of the Old Diakonikon and two in Beth Alpha) would not allow specialization. In other words: all mosaicists in such a small team had to be able to produce all types of images and ‘replace’ one another if necessary. We would expect that in such conditions each craftsman was trained in the full spectrum of designs and acquainted with the full procedure of production. The observations at Lot and Procopius, however, show, that it cannot be ruled out that certain individuals excelled in certain types of representations and developed a certain specialization. Wherever such a craftsman was involved in a mosaic production, the elements in the floor that corresponded to his specialization were naturally allocated to him. In the case of Lot and Procopius the producer of the human figures is such an example, as it seems that one craftsman was in charge of the production of all human figures on that the floor, inside the vine scrolls as well as those on the panels between the columns.

This does not rule out that the same mosaicist was involved in the production of other elements as well, for example the animal figures and even geometric patterns. It has been shown in Chapter 4, that the animal figures in Lot and Procopius show three types of inlay patterns. One set of patterns is characterized by parallel linearity, great precision and detail, and gradual tonality of colour that creates the illusion of volume and three dimensionality. The other inlay method applied a radial inlay pattern, while the third filled the body in a somewhat clumsy geometric fashion. It is tempting to associate the producer of the ‘naturalistic’ animals with the producer of the human figures. Similarly, the mosaicist who gave a geometric treatment to the body of the animals may have produced other elements in the floor, such as the complex geometric designs, which were executed with much precision. Thus on the question whether mosaicists specialized in a certain repertoire or were trained with the intend that by the end of their training they would be able to produce all types of designs, the answer is not definitive. It may be presumed that, whether desirable or not, specialization was bound to occur due to the conditions of training as part of the actual work.
on certain commissions. The more diverse these commissions were, the broader the training pattern that the trainee received. Even if a certain individual could produce any desired commission – we cannot rule out that he had his own preferences and delighted in the creation of a certain type of design, which he would repeat more often wherever he had the artistic freedom to do so.

It is difficult to tell with certainty how many mosaicists did the inlay of the mosaic in the Church of Lot and Procopius. One may choose for a ‘minimal’ approach as opposed to ‘maximal’. In the ‘maximal’ approach, the production may have been divided between two teams: one that specialized in the figural decorations that included the human figures and the animals, while a second team specialized in the geometric designs and the carpet fields of the aisles. The first team seems to have been composed of at least three craftsmen: one is the leading master whose hand has been identified and whose work is so dominant in the human figures. He may have also been involved in the animal figures, but it is also possible that there was a second craftsman who specialized in animal figures. Like the human figures, the animals are also of a high artistic quality. As mentioned above, the analysis of the inlay of the animals identifies at least one and possibly two other hands that assisted in the filling work. The second team, which participated in the mosaic inlay according to the ‘maximal’ view, may have specialized in geometric designs. The geometric inlay of the floor and especially the inlay of the decorative frames is work that demanded a measure of expertise. It is repetitive and highly accurate, and was certainly produced by a most precise craftsman. The application of three types of flower-buds may suggest that the team that produced the geometric parts was possibly composed of at least three craftsmen. The team that produced the mosaic at Lot and Procopius could thus be as large as six craftsmen. Next to them, another team was possibly in charge of the supportive work of production such as cooking and spreading the lime and cutting the tesserae. This team, however, is not visible in the artistic result.

As opposed to the ‘maximal’ approach, one can choose the ‘minimal’ approach. It is then possible to show, how the production of the Lot and Procopius mosaic would fit well into the model of a workshop, which was led by a single prominent artist. The ‘human figures master’ may be seen as the artistic leader of the team. He was probably the most experienced mosaicist and as such, he was involved to varying degrees in all the elements of the design and production. The master produced the human figures, but was also involved in the production of animals and may have also been involved with the more complex geometric
frames and the fields of the aisles. The whole inlay may have been done by only three craftsmen: the ‘human figures master’ himself, a second mosaicists who produced the heads and body of the animal figures (and was involved with other tasks as well) and a third who helped with the filling in of the bodies, geometric designs and other supportive works. This approach brings the number of producers of the floor at the Church of the Holy Martyrs Lot and Procopius to three individuals at the most (see table below).

As shown in Chapter 4, the order of work in Lot and Procopius seems to have moved from the aisles to the centre: first the northern and southern aisles were produced, and consequently the inter-columnar panels and nave panels were aligned in accordance. Following the minimal approach, each flower bud type may reflect a personal preference of each of the three individual producers of the mosaics at Lot and Procopius and the following pattern can be suggested: bud type 2 appears only in the northern aisle; both bud type 1 and bud type 3 appear in the southern aisle; type 1 is the only type that appears also in the frame that surrounds the panel of the central nave. We may conclude that one craftsman worked exclusively on the carpet field of the northern aisle, while the two others worked at the same time in the southern aisle. Given that the central nave was for the largest part produced by the ‘human figures master’, it is tempting to attribute bud type 1 to his work as well.

Just like with the buds, the infilling of the animals' bodies show three approaches: a parallel linear approach, a radial inlay approach and a geometric approach.

If the proposed model is correct and the team of producers was composed of one leading master with two trainees, it is plausible that the two received a broad training from the master and formed the following generation of mosaic producers. It is perhaps their hand that can be recognized in other mosaics in the region. A further investigation of the mosaics of Madaba may identify the artistic heritage of the human figures master of Lot and Procopius and the transmission of his methods also to other mosaics.

That some of the characteristics of the figures of Lot and Procopius are identified in other sites in the region, serves as an opportunity to explore the findings in their regional context, and in a securely dated environment, as each of the involved mosaics carry a dating inscription.

Two floors in the region of Mount Nebo show similar procedures to Lot and Procopius (AD 557). These are the mosaic of the Chapel of Priest John (AD 565), at the same site of Khirbat al-Mukhayyat and some of the figures of the Old Diakonikon (AD 530) in the church of the memorial of Moses on Mount Nebo. The production procedures of the human figures at
the Chapel of Priest John have been shown to have high affinity with those of Lot and Procopius and are almost a ‘perfect match’. The Old Diakonikon shows a ‘perfect match’ to the Lot and Procopius figures only for part of the human images (the sitting shepherd, the upper body of the lion-hunter and the face of the Phrygian). The inscription at The Old Diakonikon names three craftsmen, and it seems that one of them can be recognized as being involved in the later mosaics in the region as well.

The similarities between Lot and Procopius and the Chapel of Priest John were observed already by Piccirillo, who attributed them to the same team of producers. These two pavements were produced within a period of eight years. The analysis of their production methods in chapter 4 supports the observation of Piccirillo. The Old Diakonikon, however, is dated to AD 530, and creates a gap of 27 years with Lot and Procopius and 35 years with the Chapel of Priest John. However, the inlay patterns of the upper body of the lion hunter are a ‘perfect match’ to the figures of Lot and Procopius.

One approach would attribute the similarities to the work of one and the same hand, an individual who specialized in the inlay of human images and who had an extremely long career. A further nuance would suggests to seek the explanation for the similarity in the process of transmission, conceiving the similarities as representing the work of successive generations of mosaicists where the older trained the younger generation, resulting in the application of similar procedures, inlay-patterns and stylistic traits. According to this suggestion, it is possible that one of the mosaicists who produced the figures in the mosaic of the Old Diakonikon in AD 530 trained the mosaicist who produced the figures at Lot and Procopius in AD 557 and in the Chapel of Priest John in AD 565. Another plausible possibility is, that the mosaicist who produced the figures at the Old Diakonikon was at that time still a trainee, as he did not produce all the images in this mosaic, but only a few. It is thus possible that he began his career as a human figures specialist in AD 530, produced Lot and Procopius in AD 557, where he also trained the mosaicist who produced the human figures at the Chapel of Priest John eight years later. Such a line of transmission suggests a local production continuation, which identifies the mosaicist of the human figures of Lot and Procopius as a local craftsman, who transmitted his knowledge to the next generation, and who was commissioned for the production of local projects. However, he must have also been involved in other projects, that are still to be identified (or excavated).

The animal figures show another pattern: some of the heads of the animals are a ‘perfect match’ with the Chapel of Priest John and with part of the animals from the mosaic of the
Deacon Thomas. Since the human figures from the Church of the Deacon Thomas are very different from the figures of Lot and Procopius, it is clear that the master of the human figures did not participate in the mosaic of the Church of Deacon Thomas. The producer of the heads of the animals thus cooperated with one other different craftsman, who participated in the production of the animals’ bodies at the Chapel of the Priest John (where the animals are dominated by the interlocking inlay – a method that is absent at Lot and Procopius).

A reconstruction of the possible cooperation of craftsmen according to the ‘minimal approach’ can be seen in the following table:

Table of possible ‘perfect match’ identifications in the Mount Nebo region (‘minimal approach’):

<table>
<thead>
<tr>
<th></th>
<th>Old Diakonikon AD 530</th>
<th>Lot and Procopius AD 557</th>
<th>Priest John AD 565</th>
<th>Deacon Thomas ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human figures</td>
<td>Craftsman 1 (produced the sitting shepherd, upper body of the lion hunter and upper body of the Phrygian). Applied parallel inlay.</td>
<td>Craftsman 1 or a student of his (human figures)</td>
<td>Craftsman 1 or a student of his (human figures)</td>
<td>Craftsman 8 (a student of craftsman 1?)</td>
</tr>
<tr>
<td>Head of animals</td>
<td>Craftsman 4 (heads of animals)</td>
<td>Craftsman 4 (heads of some animals) Craftsman 6 (heads of the other animals)</td>
<td>Craftsman 4 (heads of some animals)</td>
<td>Craftsman 4 (heads of some animals)</td>
</tr>
<tr>
<td>Body of animals</td>
<td>Craftsman 2 Craftsman 3</td>
<td>Craftsman 1 or a student of his (parallel inlay) Craftsman 4? (radial inlay) Craftsman 5? (geometric inlay)</td>
<td>Craftsman 7 (interlocking inlay)</td>
<td>Craftsman 9</td>
</tr>
</tbody>
</table>

Although this reconstruction is suggestive, it is very interesting to examine the possible patterns of cooperation among the craftsmen. According to the minimal approach, the team may be reduced to a group of three craftsmen in each of the mosaic-projects. Artistically,
there seems to be an element of continuation (the cooperation between craftsman 1 and craftsman 4), but other elements are also involved and it is evident that the teams were not operating as a permanent ‘workshop’, but had a more dynamic composition; some of the craftsmen may have passed away between AD 530 and AD 565, but some may have been replaced for other reasons. Such a replacement would hardly be expected in a team based on kinship or in a family-business.

This discussion again brings up the question of the organization of ‘the workshop’. Was ‘the workshop’ a permanent organization or an ‘ad hoc’ construction? If we accept the identification of the artists of the human images from Lot ad Procopius as the trainee who produced some of the human figures in the Old Diakonikon, we are bound to admit that the later workshop that was led by him had an ‘ad hoc’ construction. Even if we assume, that the three mosaicists who produced the Old Diakonikon were members of one family (as suggested by the inscription) and that the human figures artist was thus one of them, it appears that at a certain point he became independent and worked for a time with the master of the animals heads (craftsman 4 in the table). If the Chapel of Deacon Thomas was produced later than AD 565, then the cooperation between the two mosaicists lasted at least 8 years (as it can be traced in two sites: Lot and Procopius and the Chapel of the Priest John). In this period, the two perhaps formed a permanent team. Shortly afterwards, the master of the human figures possibly passed away and the master of the animal heads cooperated with other craftsmen who cannot be identified elsewhere in the Mount Nebo region, to produce the mosaic at the Chapel of Deacon Thomas. A further study in the Madaba region may shed new light on their work. It should be stressed, that if the mosaic in the Chapel of the Deacon Thomas was produced prior to that of the Chapel of the Priest John, then the master of the human figures and the master of the animals heads did not form a permanent team and their working together in the two locations may be an ‘ad hoc’ coincidence.

The reconstruction on the table, based on the ‘minimal’ approach, shows that the mosaics of the Mount Nebo region were made by teams of varying individuals (choosing for the ‘maximal’ approach would probably make the mobility even more intensive).

In other case studies that have been presented in Chapter 4, such as the gazelle figures at the Memorial of Moses and the Church of the Lions, the attribution of the work to a single craftsman seems highly plausible. The dates of the mosaics are relatively close to one another and the application procedures show high consistency. The same is the case for the Esbus church mosaic and the fragment from the central nave at the Memorial of Moses (both
attributed to the sixth century but not specifically dated). Here, the procedural characteristics are practically identical and are definitely a ‘perfect match’. Although both mosaics are undated and it is thus difficult to assert the relative chronology between them, the high probability of the attribution of both to the same individual limits the range of the gap between them. It can thus be concluded, that the working hypothesis according to which an individual producer can be identified on the basis of his preferred work techniques, application procedures and inlay patterns, does produce positive results.

6.3.2 Case study II: The Gaza region

The ‘Gaza workshop’ has been discussed extensively in the study due to the identification of Avi-Yonah. The earliest dated mosaic in the region is that of Gaza, in the first decade of the sixth century (AD 508/9), while the latest is that of Kissufim (AD 575/6). The total period could be marked by the work of two or three generations of craftsmen, who were at least to some degree trained locally. The patterning of similarities in the region of Gaza appears to be a complex question. The analysis shows that within each mosaic more than one set of procedures was applied. This suggests that more than one craftsman was involved in the inlay of each floor, and that these craftsmen applied different production procedures.

In the Gaza region, a ‘perfect match’ can only be found within one and the same floor (a good example is the mosaic of Kissufim) and there is usually one craftsman who made a larger portion of the images than the others (such as in Maon). The work of that mosaicist is thus more dominant (or more conspicuous).

The only ‘perfect match’ that can be observed between floors of the Gaza region is the mosaicist who produced the vine scroll and part of the grapes bunches of Maon (AD 538), Shellal (AD 561/2) and possibly Be’er Shema’. It seems that one craftsman was involved in all three mosaics (though, as in Shellal, he did not work alone). Though the date of Be’er Shema’ is not known, we may assume that it can be dated to sometime between Maon and Kissufim. Thus the craftsman who worked on the background in those three mosaics had a long career of about 25 years. During this time he cooperated with other different mosaicists who produced the figures. This example supports the impression of the team of producers as an ‘ad hoc’ construction rather than a permanent organization. This observation does not support the suggestion of Avi-Yonah, that attributes the mosaics of Gaza, Maon and Shellal to
the same workshop, but it does explain the affinity that Avi-Yonah observed in the scroll formation of Shellal and Maon.

Despite the differences that have been shown between the Gaza region mosaics, a few shared traits between several craftsmen may be observed. Such is the treatment of the body in length strokes (especially at the hind of the body), gradual tonality, application of crescent-lines and the stressed external outline along the spine of the animal. These characteristics indicate, that there was a general set of shared preferences by mosaicists who were active in the area of Gaza. Thus to the shared trend of fashion, the iconographic themes, and repertoire of designs as the source for the similarities in the Gaza region pavements, one may add that the craftsmen also shared certain production techniques, albeit each gave them his own individual signature.

These observations do not support the existence of an organized workshop in the region of Gaza, a workshop that was responsible for the production of all the mosaics in the region. It can be established, however, that there was a regional tradition that evolved as a result of close interaction and artistic exchange on a regional level between individuals that were familiar with the mosaics that preceded their own work. Where transmission can be identified, it is in the delicate continuities that stayed constant within a process of change that was taking place within the region. The shared characteristics, however, may indicate that these mosaicists were trained locally and each generation was acquainted with the already existing artistic production in the region.

That the only ‘perfect match’ in the region of Gaza involves the scroll production is an interesting detail. This craftsman may have specialized in the production of scrolls, ornamental and plant designs. His identification supports the ‘ad hoc’ character of the organization of production teams. The individual who produced the scroll was apparently active at least in the period c. 538-562 (Maon, Shellal, Be’er Shema’), but did not cooperate in every case with the same mosaicists who produced the figures (as Stone observes, Maon and Shellal were produced by different craftsmen, and as Hachlili observes, even the ‘near match’ of Maon and Be’er Shema’ were not the same individuals). The individual who produced the scroll apparently worked in a different composition of craftsmen at each commission (in Shellal at least three craftsmen produced the grapes bunches). These observations support an ‘ad hoc’ team construction rather than a permanent workshop.

It is interesting to compare the two case-studies to one another. In the region of Gaza, where composition and lay-out of the floors show high affinity, production procedures do not
yield identification of individuals who are responsible for the continuation. Despite the high quality of the mosaics and the high artistic integrity of some of the producers, the evidence as a whole does not support the existence of a permanent local workshop, a fixed team or even allow an identification of one individual who worked at more than one site in the region (with the exception of the producer of the vine scroll). In the region of Mount Nebo, on the other hand, the human figures imagery – and to a certain extent the animal figures – indicate a continuous local tradition that was dominated by a talented individual.

The study illustrates how, when repetition, consistency and systematization of procedures and application patterns are associated with the work of a specific individual, this identification may contribute to a better understanding of the local artistic tradition. It may shed further light upon the division of work among the producing team and give effective results when one wishes to explore the mechanism of local continuity. Both the Mount Nebo as well as the Gaza region give good examples for the insights that can be gained from the identification of individual producers, despite the different conclusion attached to each case: a steady continuation at Mount Nebo next to strong individual characteristics in the Gaza region. The seven criterion method seems to operate well when consistency exists, and when this consistency is repetitive in its nature. However, every region and every example needs to be analysed individually and the conclusions concerning one region cannot be applied to another.

6.4 PERMANENT OR ‘AD HOC’?

There is probably no single answer that can be given to the question how mosaic teams were organized in the Near East during Late Antiquity, but the available sources, both in the form of inscriptions as well as the artistic evidence, confirm that these were relatively small scale teams and that a dominant individual could have left his imprint on the artistic result. The craft of mosaics in Late Antiquity in the Near East thus seems to have been practiced by a multitude of small scale teams, rather than a single regional large scale institution that dominated the local market. The most basic team was the family-business and continuation was achieved by training young family members, on basis of internal training. The team of mosaicists was small and efficient, and seems to have ranged between one dominant master to three individuals. Next to the family-based training there were teams that were composed ‘ad
hoc’ for the production of a specific commission. These were probably also relatively small teams. Despite the geographical proximity of the sites (sometimes in one and the same village, as in Khirbat al-Mukhayyat), teams did not necessarily form permanent production units.

There seems to have been no standard team organization. In some cases, one leading artist seems to have dominated the production work (such as at the Church of Lot and Procopius), while in other cases the mosaic may be the result of a cooperation between more than one mature mosaicist, equal in capabilities, each applying a different procedure (such as the Old Diakonikon and Maon). The contribution of the current investigation to the study of mosaic is in the formulation of a method for identification of a production procedure and its implementation for the sake of understanding the composition of the team of producers. Identification of repetitiveness in the full spectrum of production within one and the same floor functions as a key for understanding the division of production.

When procedural similarities appear in different floors, the place of the application method within its regional context becomes a factor of importance. But rather than identifying it as the work of ‘the same workshop’, the current study stresses the application procedure as a tool for identifying the individual producer and understanding the mechanism of transmission of artistic traditions and continuation of regional production by individual craftsmen.

The analysis on the basis of seven criteria that have been suggested in the present study is shown to be rewarding for the identification of repetitive characteristics of production in terms of division of images, their order of production and their inlay process. As has been shown in more than one example, certain formal and technical characteristics repeat themselves throughout a mosaic. Understanding the procedures of inlay turn the mosaic and its images into a coherently divided whole.

Often, more than one procedure can be distinguished within one and the same floor. In fact, the case of the Church of Lot and Procopius, with its strong repetitiveness in the human images, is rather rare. In most cases, several approaches can be distinguished and at times they are intermingled to such a degree that even a careful analysis makes the task of identification a complex issue.

The present study suggests to attribute procedural differences to the individuals who formed the team of producers. Since a concrete signature is absent, this remains an interpretation, but it is certainly an interpretation that opens a new possible course of investigation. It gives the research a tool for defining regional procedures as well as
understanding the mechanism of development of regional trends. In that case, the seven criteria can be applied as a method for tracing technical similarities and shared techniques, that define a certain artistic environment. The seven criteria have been shown to reflect production methods that define a certain creative milieu – and in a few cases the possibility to identify the individual producer. The formulation of a procedure allows the identification of transmission of traditions and techniques from one generation to the next. As such, it becomes a powerful mechanism that may explain the formation of local tradition that is shared by a few producers, and which generates an impulse of continuation, as is the case in both the region of Mount Nebo as well as Gaza.

The method has been applied here on a limited range of case studies in sixth-century mosaics of the Near East, but it may be applied on a broader scale, on mosaics in other regions as well as the later Byzantine period as well as to wall-mosaics. The greatest potential of the proposed method is in providing insight in the procedures of work and repetitive steps of production as a tool for understanding the organization of production and the composition of the working team, a field that draws growing interest in current mosaic studies.
Duration of production was affected by a number of factors. The size of tesserae, the degree of detail of the representation, and the work experience of the producers. Production capacity surely varied from one craftsman to the other depending on the experience of each mosaicist and the complexity of the design. Figurative representations would presumably take longer to produce than simple, repetitive designs, which in turn may have taken longer to produce than a plain white mosaic pavement. Assuming that the Byzantine mosaic was mainly produced in the direct method, the mosaicist had to be aware of the area he was able to produce per day of work. The layer of lime into which the tesserae were placed had to stay wet as long as the inlay work took place and thus work was done in sections. The larger the tesserae were, the quicker the mosaicist could fill up the available space. This, in turn, would influence the artistic quality, since the larger the tesserae are, the less nuances of details can be achieved.

Hardly anything is known about the duration of work and attempts to determine the rate of production yielded results that vary quite significantly. Unlike in fresco-work, in mosaic it appears quite difficult to detect the exact portion that was produced per day, as the seam-lines between successively spread areas of the same binder are not visible. It is only possible to detect areas that were repaired and laid anew at a later stage. Such repairs were executed often, due to destruction as a result of earthquakes, deliberate demolition or natural wear and tear. These changes are visible due to the difference in the quality of inlay-work and interruption in the continuity of the artistic design. However, such repairs tell us nothing about the stages of production of the original mosaic.

Identified portions of work are claimed to have been detected by the restorer who conserved the mosaics at the Domus dei Coiedii near the city of Ancona in Italy. A second-

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1 I thank Luciana Notturni, the Director of the School of Mosaic Conservation in Ravenna, who drew my attention to this aspect. This has been confirmed by other restoration specialists, but see in Chapter 2 the new research concerning the Lod mosaic by the restoration division of the Israeli Antiquities Authority.

2 Abu-Aysheh 2003, 33-34.
century mosaic from that complex was apparently produced in a relatively low quality. The mosaic, produced with simple white plain relatively large tesserae of about 1-2 cm squared, without any other colour or decoration, covered an area of eight m² (3.95x2 metre). Due to poor workmanship, deep break-lines appeared across the whole surface, dividing the floor into 22 rather equal rectangles of about 30x90 cm each. The restorer of the mosaic is convinced, that this is an area that was produced by the (apparently not very well trained) craftsman per session of work. If it indeed represents the capacity of a day of work, it means that the craftsman completed that mosaic within 22 (perhaps not directly consecutive) days, assuming he was working on that section on his own. Considering the extreme simplicity of the mosaic that was laid in straight lines without any artistic ambition, the capacity of that craftsman was about 0.5 m² per day. The restorer suggests, that the mosaicist was a young inexperienced assistant, who was still in his training period. This way he explains the low quality as well as the low production capacity.

I.F. Roncuzzi, former director of the mosaicists association of Ravenna, estimates a day-product of a half to one m² per day per mosaicist, but other estimations of wall-mosaics reach up to four m² a day. The difference is explained by the fact, that wall-mosaics differ from pavement in the degree of evenness required for the mosaic surface. Though the estimation of Cutler seems rather extended, it indicates that the functionality of the pavement and the need for it to be completely even is an important factor in the estimation of production duration.

Wootton estimates 1.5 m² for undecorated and 0.21 m² for decorated mosaic per 12 hour workday. In the Near East, where pavements of 100 m² and more are not unusual, it is clear that mosaic production was a time consuming enterprise, that could take several months to complete. But how long did it take a mosaicist to complete a figure? Especially the division of pavements into small portions by application of the carpet-fields, such as the wine-scrolls, may suggest that the size of the figures may have been dictated by practical factors, such as the range of arm-reach and the area that could be applied in a day’s work. It is conspicuous that the scroll medallions have an average size of some 70 cm. The largest figures appear in the free-distribution floor of the Old Diakonikon at Mount Nebo (up to 120 cm). The

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3 Abu-Aysheh 2003, Tav. XXV.
4 During a talk with Isotta Fiorentini Roncuzzi in August 2006 she was kind enough to share with me her rich mosaic experience. This estimation is based upon the work-duration of modern production in the direct method.
5 Cutler 2002, 559.
6 Wootton 2012, 164-165.
exceptional size of this mosaic has been mentioned and discussed before, in relation to what seems to have been a necessity to divide the image into consecutive stages of production and the virtuosity that the craftsmen developed in order to conceal those divisions. Some of the scroll images, however, such as in the Gaza floor, do seem to have been produced without an inner division. It is thus possible that the size of the figures was dictated by the possible daily portion of work.

The following experiment has been conducted by the author and was initiated in order to test in practice the time that the inlay would have taken. The image that has been chosen for this experiment is the detail of the goose from the mosaic of Maon (Fig. 117).

Work has been divided into two stages: preparation of the material and the application of tesserae. The question was limited only to the application phase, and to the image alone. It was not the intention to make a replica of the mosaic, thus neither the material nor the colours are duplicating the ancient work.

Stage 1

a. The photograph of the goose was enlarged to the real size of the image, which medallion is 67 cm in diameter.

b. The tesserae were traced by placing transparent paper upon the photograph, resulting in a tracing-map of the exact location and the size of each tesserae. The tracing-map was copied in mirror-image with a pen containing soluble ink, so that at a later stage the tracing-map can be used in order to transfer the pattern unto the wet lime.

c. Tile tesserae have been cut to fit the exact size of each tessera in its location. This has been a rather laborious stage, which does not reflect the duration of this stage of work in Antiquity. As had been stressed before, the material and colours do not reflect the original work (Fig. 118).

Stage 2

a. A wooden frame, slightly larger than the scroll was made to serve as an under-layer for the bedding.

b. Lime was spread across the surface.
c. The mirror-image pattern was set unto the wet lime, creating an exact copy of the linear pattern and transferring the exact location for the tesserae to be set.

d. The prefabricated tile tesserae were inserted, one by one, into the lime, each tessera into its marked location.

This working method does not reflect the ancient method of production, but the need of the experiment to stay as close as possible to the pattern of the image that was chosen dictated sub-stages that were not applied by the ancient craftsman. The stage that the experiment was aimed at is the duration of actual inlay. The total duration time of the image was four hours, without taking a break. The most difficult aspect of the work was to produce an even surface. However, the production of an even surface was probably part of the early stage of training in the process of inlay. It may therefore be assumed, that by the time a craftsman was entrusted with the production of a figurative mosaic, he had already mastered the technique of achieving an even surface. If the earlier mentioned estimation of Cutler is correct and due to the need to create an even surface a floor mosaicist would produce a quarter of the surface otherwise produced, it may be estimated that an image, that takes a non-professional four hours to produce, may still be achieved by a professional within less than a day’s work. It should be stressed, that the experiment focused on the figure itself, without the background or scroll. More complex figures, however, may have demanded longer time to complete and the earlier-mentioned estimation of William Wooton of 0.21 m\(^2\) seems reasonable.

This result shows that work progress and capacity of production may have influenced the division of the mosaic; the size of the scrolls was suited to that capacity, and in the case of complex images the inner division of the image may have been dictated by the surface that could be produced per day of work.

How long did it take to inlay the mosaic at the Church of Lot and Procopius? Despite its size, work could have advanced quite rapidly. The total of the interior of the church is some 128 m\(^2\). Many of the human and animal figures needed considerable time to complete, and the estimation of Wootton would certainly apply here. Geometric fields could be completed more rapidly Assuming that preparing the lime and cutting the tesserae were tasks that were done either entirely or partly in advance or continuously as work advanced by a team who specialized in this task, the following estimation for the inlay work may be proposed: based on an average of up to four days per metre squared of mosaic, divided among three producers, the work would take up to six months to complete.
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ABBREVIATIONS

AJA – American Journal of Archaeology
ECA – Eastern Christian Art
OJA – Oxford Journal of Archaeology
DOP – Dumbarton Oaks Papers
OCD – Oxford Classical Dictionary
OJA - Oxford Journal of Archaeology
PBSR – Papers of the British School at Rome
QDAP – Quarterly of the Department of Antiquities in Palestine.

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