

Music in Antiquity

Yuval



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Music in Antiquity

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and Edwin Seroussi

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Cypro-Archaic I period, 750–600 BCE.

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In Memoriam

Dr. Joan Goodnick Westenholz

(1943–2013)

Prof. Roberto Melini

(1960–2013)

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Preface

This volume constitutes the proceedings of the conference entitled *Sounds from the Past: Music in the Ancient Near Eastern and Mediterranean Worlds*, which was held at the Bible Lands Museum Jerusalem (BLMJ) on 7 and 8 January 2008. The conference and the present volume are the fruits of the collaboration between the Department of Musicology and the Jewish Music Research Centre (JMRC), both at The Hebrew University of Jerusalem, and the BLMJ. The conference was held in conjunction with the opening of the exhibition *Sounds of Ancient Music* on Monday, 7 January 2008. This innovative exhibition, curated by Joan Goodnick Westenholz, was the springboard that led to the conference and this subsequent volume. *Sounds of Ancient Music* was open until December 2008 and viewed by thousands of visitors. We would like to take this opportunity to acknowledge the help and support we received from all members of the museum staff, its founder, Batya Borowski, and its director, Amanda Weiss, in creating this exhibition and initiating the conference.

A basic and universal element of human culture, music was one component of the cultural continuum that developed in the contiguous civilizations of the ancient Near East and of Greece and Rome. Along this continuum, musical ideas and systems moved westward, while being reformulated in each culture along the path from the plain of Mesopotamia to the shores of the Aegean and Adriatic Seas. The main objective of the exhibition was to survey the range and gamut of this symbiosis, as well as to scrutinize specific geographical areas along this continuum. The primary importance of ancient Hebrew, Near Eastern, Egyptian, Greek and Roman civilizations to the development of later musical cultures (especially Persian, Arabic and Western European) has been repeatedly acknowledged throughout history from the early Church Fathers, through medieval philosophers and music theorists, to the beginnings of modern music historiography in the eighteenth century. The exhibition had as its goal to present these ancient musical cultures with all their resonances and reverberations in order to provide the public with a vivid impression of the rich soundscapes of ancient civilizations.

Sounds of Ancient Music opened with an overview of the typology of musical instruments, inspired by the first reference to music in the Bible in which the invention of musical instruments is placed in the dawn of time, in the antediluvian period: “His brother’s name was Jubal, he was the ancestor of all who play the lyre and the pipe” (Gen. 4:21).¹ This was followed by a survey of the place and

¹ The translation given here can be found in *Tanakh, The Holy Scriptures, The New JPS Translation* (The Jewish Publication Society 1998); *The Koren Jerusalem Bible* (Fisch 1992); and the 1971 *Revised Standard Version*. The musical instruments, *kinnor* and *uggav* were previously identified

function of music in the royal court. Various ancient kings prided themselves on their musical skills. As the ancient king of Ur from the late third millennium BCE proclaims: “I, Šulgi, king of Ur, have also devoted myself to the art of music” (A praise poem of Šulgi, *Šulgi B* 154f.) and “May my hymns be in everyone’s mouth; let the songs about me not pass from memory” (A praise poem of Šulgi, *Šulgi E* 240f.). From the royal court, the exhibition looked at various villages and towns of different periods, where music was an essential part of daily life in the home and the workplace, as entertainment and as lamentation. The next subject was music in mythology, for in the ancient pagan world, music was believed to be a gift given by the gods to humanity. This much was acknowledged in numerous accounts, such as in the following Greek Homeric Hymn: “It is through the Muses and Apollo that there are singers upon the earth and players upon the lyre” (*Hymn. Hom.* 25.2f.). The final section examined the temples of yore. The culmination of the exhibition was to the Second Temple of Jerusalem; here we attempted to evoke the period when the sounding of a trumpet from the Temple Mount ushered in the Sabbath.

The goal of the conference was to examine the formation and function of ancient musical instruments, their sounds and their place and purpose in the lives of the diverse peoples in the ancient Near Eastern and Mediterranean worlds, including Mesopotamia, Egypt, Greece and Rome. It consisted of two days of lectures and presentations by scholars working in the fields of Musicology, Assyriology and Archaeology, and included keynote lectures given by Prof. Anne Kilmer and Prof. John C. Franklin.

Several sessions of the conference were devoted to the role that music played in temple cults and in the theology of ancient societies. The power to move the human spirit has always been attributed to music and it was thus of considerable importance in the liturgy of the temple service. In every temple in the ancient world, from Sumer to Jerusalem and beyond, communication with the divine was expressed through music, song and dance. The sacredness of music is exemplified by the deified instruments of the ancient Mesopotamian worship. In the Greek world, the philosophical system built on the music of the spheres, credited to Pythagoras, became the foundation on which most cosmological systems were built for the next two thousand years.

One session was devoted to music in ancient Israel, from both an archaeological and a textual perspective. This session bridged the gap between the papers on ancient Near Eastern music and those on the classical world. It was a major

as the “harp and the organ” (cf. King James and Douay-Rheims). On the *kinnor*-lyre, see Braun’s (2007a: 15) discussion in the catalogue *Sounds of Ancient Music*, and for the *uggav*-pipe, see Braun 2007b: 17.

goal of our conference to compare and contrast the music of the Israelites and the Temple with that of the ancient world.

Similarly, the music of the Israelites in their historical context within antiquity has been a priority of the JMRC since its founding in 1964. It was only natural, then, that when the BLMJ approached the JMRC with the idea of sharing the organization of the academic conference associated with the exhibition *Sounds of Ancient Music*, the response would be a most positive one. Following the conference, the BLMJ and the JMRC agreed on a joint publication of a collection of articles based on the conference. Albeit most studies included in this volume do not offer any direct insights into the music of ancient Israelites/Jews, it was decided that they would be published as a volume of *Yuval — Studies of the Jewish Music Research Centre* — for they illuminate the background against which Israelite and Jewish musical cultures developed in early and late antiquity.

Perceived today from a critical perspective, the inclusion of the music of the ancient Israelites in the original plans of the JMRC can be interpreted as an acceptance of a grand narrative, fueled since the late nineteenth century by modern Jewish nationalism, comprising a unilinear history of “Jewish music.” This narrative endorsed the continuity of transmission of certain musical patterns among Jews from antiquity into the contemporary period, applying this concept mostly to liturgical practices and embodied in the reading patterns of Scripture.

An intellectual force behind the study of musical antiquity among the Israelites was Bathja Bayer, one of the first researchers of the JMRC and former Head of the Department of Music of the Jewish National and University Library (JNUL). Bayer envisioned an innovative contextual approach to the study of the music of ancient Israel/Palestine, juxtaposing scholarship on biblical philology with the then-incipient field of musical archaeology. She articulated her ideas in very few publications, of which the most succinct ones are the short articles titled *Biblical Period* and *Second Temple* that constitute the first section of the entry “Music” in the 1972 edition of the *Encyclopedia Judaica* (see also the 2007 edition, volume 14: pp. 640–643, available online). Bayer suggested that all musical data transmitted by the biblical text had to be examined vis-à-vis the non-Israelite cultures in the midst of which the people of Israel resided.

Mesopotamian civilization was of particular importance for the understanding of the musical pageantry around the Jerusalem Temple as it provided the context in which biblical texts about music were written. To this topic, Bayer dedicated a full monograph titled *Mesopotamian Theory of Music and the Ugarit Notation* on which she worked for most of her scholarly career. The monograph was intended to be published as the second volume of JMRC’s monograph series — *Yuval*, founded by Israel Adler in 1974. After the monograph was completed and as it was being prepared for publication, Bayer withdrew it for further revi-

sions and updates, which, unfortunately, were never completed when she died in 1995. The whereabouts of her manuscript were unknown, and it was only several years later that it resurfaced at the JNUL in a box containing more of her written materials. Finally, it was the conference *Sounds from the Past* that provided us with the appropriate opportunity to publish Bayer's manuscript and do justice to her pioneering contribution while filling a thirty-year-old gap in the inventory of publications of the JMRC.

The decision to publish Bayer's manuscript was not simple. In addition to the problems created by the physical state of a pre-computer era manuscript typewritten on deteriorating paper, there were manifold additions and modifications made by Bayer that were added on manuscript notes, as well as on tiny pieces of paper cut and pasted over the text or stapled to it. We assume that several of these pieces of paper fell off the manuscript once the glue was dry and were lost. In editing this manuscript, there was also the issue of language. Bayer wrote this work in her sophisticated English, which, nevertheless, was heavily influenced by her mother tongue, German. Furthermore, her work became outdated as research in the field of music from ancient Mesopotamia developed impressively in the past two decades. An updated version was needed, and Prof. Anne Kilmer graciously agreed to take on the task of revising the new Assyriological sources and addressing the recent publications on this subject. The result of this editing process is a historiographic summary of the development of the study of musical documentation from ancient Mesopotamia. It presents Bayer's search to uncover and comprehend the earliest cuneiform sources that reveal an orderly organized system of diatonic scales, depending on the tuning of stringed instruments in alternating fifths and fourths. These sources extend our knowledge of the history of the diatonic scale back over a thousand years.

Faithful to Bayer's contextual and multidisciplinary approach, this volume of *Yuval* endorses the idea that a better understanding of biblical and post-biblical evidence about the music of the Israelites/Jews of early and late antiquity is possible only by reading it against the music of the surrounding cultures, as suggested by recent research (Braun 2002; Burgh 2006). Thus, while the mandate of the JMRC to investigate the music of the ancient Israelites remained steadfast since the work initiated by Bayer in the mid-1960s, the present publication represents a step forward.

The studies included in this volume further clarify the context in which the music of the Israelites in biblical times as well as the emergent post-biblical Jewish music culture in the Greco-Roman milieu of late antiquity were embedded. Attitudes toward music in the Mishnah and later in the Talmud cannot be detached from Greco-Roman (pagan and Christian) and Safavid Persian musical practices. The issue at stake is not always the "influence" of these cultures on the

music of the Jews but rather the consolidation of various Jewish musical selves in dialogue with and in contrast to the soundscapes of the surrounding societies. Separating the Jewish soundscape from that of the gentiles engendered diverse attitudes in early rabbinical Judaism, ranging from the embracing of the sounds of the other to their flat rejection. For example, Jewish attitudes to instrumental music and to the voice of women in post-biblical rabbinical literature can now be reconsidered against the Greco-Roman musical practices well known to the Jews, and the quest for differentiating the Jewish soundscapes from those of the pagan temples and places of entertainment of the late Roman Empire (Friedheim 2009). The article by Mira Waner included in this volume continues this line of inquiry with special focus on the findings of the impressive excavations in Sepphoris, an article in which she expands earlier discussions in this field by her and other scholars (Waner 2007; see also Weiss 2005).

Another objective — also promoted and informed by Bathja Bayer (1968a, 1968b, 1981) — the identification and description of the musical instruments mentioned in biblical and post-biblical texts, finds extensive expression in this volume. Modern studies have been prolific in expanding the study of this subject.² Bayer's work on the biblical musical instrumentarium is echoed in several studies included in this volume: Annie Caubet on the musical instruments in Ugaritic culture, Uri Gabbay on the *balag* in ancient Mesopotamia, Michael Lesley on the instruments of the Persian orchestra mentioned in chapter 3 of Daniel,³ Sam Mirelman on the *ala* and Dahlia Shehata on musical instruments in ancient Near Eastern religious contexts.

Other studies appearing in this volume address a wide spectrum of issues. Ora Brison examines the relation between music and seduction, Mariella de Simone discusses the problem of Orientalism, John Franklin contextualizes the epic in its musical environment, Roberto Melini relates the role of music in religious cults and mysteries, and Antonietta Provenza evaluates music therapy.

Finally, the successful realization of this volume is the result of the input of three persons without whom it would not have seen the light of day. We would first like to express our heartfelt indebtedness to Carolyn Budow Ben-David who organized the myriad details of this publication, oversaw all the logistics of the

² These identifications are based on linking the biblical names to the contemporary musical instruments of the areas in which the scholars lived. See, for example, the identifications of musical instruments by Saadia Gaon in his Judeo-Arabic translation of the Bible (Shiloah 2004), those in a Moroccan Judeo-Arabic translation of the Bible (Bar-Asher 1998) and the identifications in Maimonides' commentary of the Mishnah (Seroussi 2003). Besides the works by Braun (2002) and Burgh (2006) mentioned above 2, see also Jones 1986, 1987; Mitchell 1992; Škulj 1998.

³ Probably one of the most studied biblical texts describing musical instruments. See, for example, Dyer 1990; Avalos 1991; Mitchell 1999.

communication between authors and editors, kept us all working on schedule and provided unceasingly of her energy to the project. We also must give due credit for the indispensable help provided by Inbal Samet who edited and reviewed all the English text for this volume and whose efficiency and accuracy have been most valuable. Furthermore, we would also like to acknowledge the arduous work of Tali Shach on converting the typed manuscript of Bathja Bayer's article into a digital article.

Work on the editing of this volume started in 2008 in the aftermath of the conference *Sounds from the Past: Music in the Ancient Near Eastern and Mediterranean Worlds*. The process of preparation of the final manuscript was lengthy and complex; for this reason Music in Antiquity reflects the state of scholarship on the pertinent subjects up to 2010. Further bibliographical updates would have delayed the publication unnecessarily.

We would like to express our profound appreciation to all those who made the publication of this volume possible. To the staff of the Jewish Music Research Centre of the Hebrew University in Jerusalem, the editorial board of *Yuval: Studies of the Jewish Music Research Centre* and to the staff of Magnes Press we are grateful for their dedication and support. Grants from the Faculty of Humanities of the Hebrew University of Jerusalem and from the Cases-Hirsch Fund at the Jewish Music Research Centre facilitated the completion of the editing of this book. Finally, the publication of this volume could not have been possible without the enthusiastic and highly professional support of De Gruyter and its staff, in particular Bettina Neuhoﬀ and Andreas Brandmair.

Joan Goodnick Westenholz, Yossi Maurey, Edwin Seroussi, editors

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I Prologue

Anne Draffkorn Kilmer

A Brief Account of the Development of the Field of Music Archaeology

The Twelfth Congress of the International Musicological Society was held at the University of California in Berkeley in 1977. A round table discussion group had been formed for the occasion on the topic “Music and Archaeology.” The participants in this group were Berkeley Professors Richard L. Crocker (Chair) and Anne D. Kilmer; other members of the group were Bathja Bayer (Jerusalem), Mantle Hood (Los Angeles), Charles Boiles (Mexico), Ellen Hickmann (Germany), Cajsa Lund (Sweden) and Liang Ming-Yueh (China). All the participants were eager to hear the views held by music historians on the values of the recovery of ancient music (including prehistoric music) and on the benefits of recreating ancient musical instruments. Those contributions, presented either in summary form or in full, were published in the reports from the Twelfth Congress.¹

The 1977 round table group effectively launched the “Study Group on Music Archaeology,” founded within the International Council for Traditional Music (ICTM) in Seoul (1981), and recognized by ICTM in New York (1983) after its first meeting in Cambridge (1982). The Study Group on Music Archaeology went on to hold international conferences in Stockholm (1984), Hannover/Wolfenbüttel (1986), Saint Germain-en-Laye (1990), Liège (1992), Istanbul (1993), Jerusalem/Ramat-Gan (1994/1995, together with the ICTM-Study Group for Iconography) and Limassol (1996).

Subsequently, the *Music Archaeology Bulletin (MAB)* was created of which six issues were published (*MAB* 1–6) between 1984 and 1986. In 1987 it was replaced by a new “magazine” called *Archaeologia Musicalis*, spearheaded by Ellen Hickmann, Cajsa Lund and Catherine Homo-Lechner (Paris). Six issues of *Archaeologia Musicalis* were produced between 1987 and 1990, whose contents included scholarly articles on ancient and medieval musical instruments, reports of meetings and conferences, book reviews and reports on the research activities of members of the Study Group. The studies and discussions were international in scope and were in part concerned with the appropriate scholarly affiliation of this developing field of inquiry, e.g., “cultural musicology,” or “historical ethnomusicology.” After the Limassol conference it was decided to open a space for archaeologists to join in and leave the ICTM — an umbrella that was mostly circumscribed to musicologists. The Study Group, renamed the “International

1 Hertz, D. and B. Wade, eds. 1981. International Musical Society Report of the Twelfth Congress: Berkeley 1977. Basel.

Study Group on Music Archaeology” (ISGMA), works in cooperation with the Deutsches Archäologisches Institut (Berlin). Between 1998 and 2004 biennial ISGMA conferences were held at the Kloster Michaelstein, Landesmusikakademie (Sachsen-Anhalt), sponsored by the Deutsche Forschungsgemeinschaft. In 2006 and 2008 ISGMA meetings were held in close collaboration with the Abteilung Musikethnologie, Medien-Technik and the Berliner Phonogramm-Archiv at the Ethnologisches Museum in Berlin. In 2010 the ISGMA met for its seventh symposium outside of Europe for the first time. The meeting at the Tianjin Conservatory of Music in China was a landmark in the recognition of the field of music archeology as a global scholarly endeavor.

In 2000 ISGMA initiated a new series called *Studien zur Musikarchäologie* (SM), created as a sub-series of *Orient-Archäologie*, to publish papers read at the ISGMA meetings, as well as independent monographs.

SM I, edited by E. Hickmann and R. Eichmann, included the papers presented at the meetings of the Study Group held in Jerusalem/Ramat-Gan (1994–1995) and those of the meetings in Limassol, Cyprus (1996), in addition to other contributions that were far-ranging geographically and chronologically. The “Introduction” to SM I, by E. Hickmann, presents an illuminating survey of the history and growth of music archaeology, which includes a comprehensive bibliography.

Since the advent of SM I in 2000, seven further volumes have been published. They truly represent the current state of the art of the now well-recognized and vibrant field of music archaeology that expands well beyond its initial goals.²

Younger initiatives have further broadened the field of music archeology, also known as archeomusicology, by emphasizing regional studies. Of major relevance to the present volume is ICONEA, the Near and Middle Eastern Archeomusicology initiative of the Institute of Musical Studies at the School of Advanced Studies of the University of London. ICONEA, too, meets regularly and publishes proceedings of its meetings.³

In conclusion, *Sounds from the Past*, adds an excellent major new body of material for our compelling and exciting area of scholarly inquiry.

² Details about the SM volumes and about the activities of ISGMA can be found on the website <<http://www.musicarcheology.com>>.

³ For details, see <<http://www.iconea.org>>.

II Studies

Bathja Bayer

The Mesopotamian Theory of Music and the Ugarit Notation – A Reexamination

Introduction: Discoveries and Problems

At the present writing,¹ research on the Mesopotamian theory of music has already been going on for more than fifteen years. In 1960 Anne Kilmer published two lists of so-called key-numbers or coefficients for various computations — similar to today's collections of “useful tables.” In one of these, the tablet known by the *siglum* CBS 10996, a section appeared that had not been known previously from similar mathematical lists; it presented pairs of numbered entities, each apposed to an entity of another class. Benno Landsberger who had suggested the publication of CBS 10996, noted that these paired entities appear singly in the lexical text U.3011 (still unpublished at that time), where they represented a paradigmatic sequence of strings. In the Key-Number Table, therefore, each pairing of strings denotes “something,” but it was not yet clear what these were (for this first presentation and discussion of CBS 10996, see Kilmer 1960: 274–275, 278, 281, 289–300). It should be mentioned, in parenthesis, that shortly before this time (1959) it had been proved that the “Babylonian notation” presented by Curt Sachs in 1923 had not been a notation at all (see here Appendix A, Excursus 1).

The first musicological study of the two new texts was undertaken by Marcelle Duchesne-Guillemin (1963). In 1965, Kilmer and Duchesne-Guillemin published adjoint studies on the same texts (Kilmer 1965; Duchesne-Guillemin 1965). Kilmer introduced a third text, which had already been known for more than forty-five years, but misunderstood; she explained how it related to the Key-Number Table and to the String List. This is a section of the large Song Catalogue from Assur (KAR 158, published in 1919; see Ebeling 1919) that sums up the number of songs in each of the seven categories. Stephen Langdon had interpreted these cat-

¹ This monograph was written by Bayer over a long period of time. The present manuscript dates from 1978 when it was intended for printing as volume II of *Yuval — Monograph Series* of the JMRC. Few additions and corrections were made by the author from 1978 until her untimely death in 1995. The manuscript was recovered from her estate when it was brought to the National Library of Israel long after 1995. Bibliographical updates and a critique by Ann Kilmer appear at the end of this article. For an update see: J. Rahn, *The Hurrian Pieces*, ca. 1350 BCE: Part One — Notation and Analysis, *Analytical Approaches to World Music Journal*, vol. 1, no. 1 (2011) http://www.aawmjjournal.com/articles/2011a/Rahn_AAWM_Vol_1_1.htm (accessed November 15, 2012).

egory terms as instruments (Langdon 1921: 173, 183, 186ff.). In this case, Langdon cannot be blamed: what he did not see was, after all, not visible at that time. Neither was it visible a generation later, when we find Langdon's interpretations adopted by Farmer in his survey of Mesopotamian music in *NOHM* 1 (Farmer 1957; note that Galpin 1937 is now totally outdated and of value only to the history of the research). The seven category terms in KAR 158 were now recognized as identical with seven of the fourteen terms that are apposed to the string pairs in the Key-Number Table.

A fourth text became available soon afterward, in 1968: U.7/80 (known in literature as the "Tuning Text"), discovered in the British Museum by Edmond Sollberger and published by Oliver R. Gurney with an adjoint musical analysis by David Wulstan (Gurney 1968; Wulstan 1968). Here, the string terms and the seven song-categories are related by the description of a procedure: how to change the "instrument" from one state to another, by doing something to one string (in certain cases to two strings). By that time it had become clear that the categories represent modes, in the sense of scalar constructs. The Key-Number Table, however, seemed to imply that the categories were intervals; these two implications were reconciled and correlated by various explanations — today already in controversy. Further studies, until 1969–1970, were undertaken especially by Duchesne-Guillemin, and also by Wilhelm Stauder (1967, 1970) and Hans Martin Kümmel (1970). These publications mark the end of a period, for reasons that I shall explain presently. Meanwhile, the readings of the texts as such were also improved: the process can be observed most instructively through Kilmer's survey of 1971.

These four texts are all that we have until now from Mesopotamia itself. More precisely: four texts that have been recognized as "theory texts" (see below), have been brought to the attention of musicologists, and are available through publications that included a transcription as well as a hand-drawn facsimile ("autograph") and sometimes a photograph of the tablet. Since the vocabulary of the theory has been identified, at least in part, more texts of this kind can surely be expected. A fifth text is already being prepared for publication by Kilmer. But the discoveries will continue to come singly and slowly. The theory of music was a part of higher education in Mesopotamia. Yet, as in all other cultures, it was not a core subject in the curriculum: not every scribe would — or indeed could — be trained as a *musicus*. An avalanche of texts cannot be expected even under the best of circumstances. However, the circumstances themselves have at least improved. The incessant sifting of the huge museum tablet collections, which now come to several hundreds of thousands of specimens (many of them fragmentary), has always had to be governed by known research priorities. Nowadays, a text about music turns on a "red light"; this would not have happened

prior to approximately 1965. Indeed, I have been told that the Key-Number Table CBS 10996 had already been examined and rejected during the preparation of Neugebauer and Sachs' *Mathematical Cuneiform Texts* (1945; note: Abraham Joseph Sachs, not Curt). What still lies below the ground cannot be estimated — only hoped for.

At this point it becomes necessary to define what kind of document should be considered as a theory text, but before that, we must agree on a minimal definition of a “theory of music” (the regress stops here — without a definition of “theory” and “music”), I would say that in all cases there must be a highly systemic concept in which (a) abstracted pitch-values are the nuclear entities; (b) further entities, and relationships between them, are postulated at and between several levels, the cardinal relationships being pitch: pitch, scale: pitch and scale: scale; and (c) in at least one domain of musical performance, the performance constructs (“the music”) are being related to (a) and (b), and thus also to each other with respect to this system. The definition thus excludes the two other systems that constrain performance — the technological and the ideological. These two can be seen, each in its own way, as a “science of doing.” A theory of music, as defined here, is no doubt a “doing of science.”

A theory text, then, would have to contain terms that are used in the theory. But this is not enough. The statement must also be in itself systemic: it must present at least two entities and one relationship between them, as conceived by the theory. The Key-Number Table and the Procedure Text do so very obviously. In the Song Catalogue (KAR 158), the systemic sequence of the classification is not obvious by itself, but is known to be so once we have the two other texts. The listing of the names of nine strings in their ordinal sequence in the lexical fragment U.3011 is systemic because the sequence is ordinal, and (as we shall see) the scalar points of various modes are mapped on it. Kilmer assembled a rich assortment of Sumerian and Akkadian citations in her studies of 1965 and 1971, but these come from statements that are not theory texts (at least those that I have checked so far). Here it must be mentioned that the probability of finding texts of the treatise type is almost nil. At the most, a didactic-discursive or speculative-discursive text or passage could perhaps be expected in the Seleucid period, in some acculturative context. The Mesopotamian scribal tradition communicates even the “doing of science” only in the form of ready-made lists, tables and exercises (further on this, see below, p. 30). Musicologists must make an adjustment in their conceptions here, and this is not easy.

The nontheoretical texts are nevertheless of importance for our work on the theory and its texts. What lexical support they may give to the theory texts is a matter to be handled with caution: it is the theory texts that can explain what happens to the terms in other texts, not vice versa. But a nontheory text may bear

witness to the time and place of its composition, within a more-closely circumscribed range than the lexica and tables and exercises; this may help to throw some light on the historical development of the theory.

At present, the theory and its texts exist for us almost outside time and place. Such a condition is as intolerable here as it would be for a collection of artifacts. The texts are published with assignments to certain historical periods, mostly by graphic and linguistic criteria. But these date the specimen, i.e., the particular tablet, and not its content. The “scribal-religious complex” of Mesopotamian culture to which these texts belong is founded on continuous copying. If there is no evidence to the contrary, a tablet could be considered a copy. The archaeological data (often unsatisfactory when it comes to the older museum collections — another problem!) and the scribal and other characteristics of the tablet yield only the crudest *terminus ante quem*. In the present study, I shall not try to solve the chronological problem, but the little information that is available will be used.

The central problem has been, and remains the small amount of evidence on which all the reconstructions of the theory have hitherto been based. A pessimist might well conclude that the devoted efforts invested in the task by Assyriologists and musicologists have been in vain. The situation is partly analogous to the decipherment of an unknown language and/or script. And here the experience of the archaeological and military code breakers has yielded some cautionary insights, which may at least moderate an undue optimism. One quotation from a work on this subject will suffice here; a few others from the same author will help us later on:

For determining any particular [i.e., specific] linguistic information, of course, larger amounts of text give us more reliable statistics. Anyone who claims to have deciphered a script for which only 241 signs of non-alphabetic text are known must expect his genius to go unrecognized until more texts turn up. *Not only is there not enough statistical information for him to prove his claim, but by the same token there is not enough for anyone else to disprove it.* [emphasis mine B.B.] (Barber 1974: 19)

In our case, the situation is not quite as hopeless as a purely statistical assessment would imply. Because of the highly systemic character of the theoretical construct, and the formulaic style of the texts, we are able to carry out such consistency checks for every “deciphering” hypothesis as would not be feasible for a similarly limited corpus of texts of another kind. Certain reservations do remain however, and one of the purposes of this study is to define these more clearly.

Among those who have followed the publications — and it is to them that I here mainly address myself — the impression may prevail that the Mesopotamian theory of music is now satisfactorily understood. In fact, however, there is no

true consensus, similar to that which comes about when a certain decipherment hypothesis for a recently discovered script is perceived in current use (ongoing refinements notwithstanding). The situation at present is somewhat unusual, and this has happened not only because no more Mesopotamian texts were added to the corpus after 1968, but also because at that time there occurred what I can only term a “cursed blessing.”

1968/9 was an *annus mirabilis* for our subject, with events treading on each other’s heels: the publication of the fourth Mesopotamian theory text (Gurney 1968; Wulstan 1968); the full publication of the notations from Ugarit, not yet recognized as such (Laroche 1968); and Hans G. Güterbock’s recognition of the transmogrified Mesopotamian terms and of these documents as notations (first noticed by Kümmel 1970: 262–263, followed by Güterbock 1970). Some of the Ugarit notations had indeed already been published by Laroche in 1955, but at that time, and until 1965, a correct identification was simply not possible. The scholars who had been working on the Mesopotamian texts now rushed to the decipherment of these new and truly sensational finds. A new wave of publications soon arose, with about eight different musical transcriptions, published or communicated in scholarly meetings, vying for approval. Each of the proponents brought to the task his own current theory-of-Mesopotamian-music, now combined his own theory-of-the-Ugarit-notation. Some of the scholars published more than one attempt, with changed premises. In my opinion, at least, the problem has not yet been solved. In Part Two, I shall discuss the Ugarit notation, but only in order to suggest another approach, which may lead to a more probable solution. Whatever the outcome may be, one conclusion is patent from the literature: the lure of Ugarit became so overwhelming after 1970, that no one thought it necessary to go back and check whether all was indeed truly well in Mesopotamia. Crocker did take up Procedure Text U.7/80 again, together with the adjacent fragmentary listings of terms, but his study was published at the end of 1978 and only offered certain modification of the basic consensus.

In what follows, I shall try to carry out a renewed examination of the Mesopotamian texts, and then explore some related matters, including the Ugarit notations. Since a reexamination should consider the sources and not the commentaries, I shall not take issue at every point with what others have said about it. Moreover, a running discussion is only necessary, and possible at all, if one accepts the basic hypothesis but wishes to improve the deductive superstructure; this is not the case here. A few points will have to be discussed along the way, but these are relegated (with one exception) to Appendix A, as excursions. Our struggle is not with each other, but with the material and with a challenge that has no precedent in the history of musicology. I know that I stand indebted to all

those who have worked on the subject, even where I may disagree with some of their conclusions.

In 1977 I had several conversations with Anne Kilmer, during her stay in Jerusalem, and I am grateful to her for giving me of her time and knowledge. I am also obliged to Aaron Shaffer who, as Professor of Assyriology at the Hebrew University of Jerusalem, helped his musicologist neighbor to carry out her “Burden of Babylon.” Over and above the tendering of advice on certain points, these meetings also helped me to see more clearly what difficulties must be surmounted when a new bidisciplinary field comes into existence. A minor but not unimportant fact is that the latecomer who has kept back from the first stages of the fray has the unfair benefit of hindsight.

Here I shall mention only one of the problems of our bidisciplinary situation, which has already caused some trouble. This is the two-edged sword of traditional philology. The Assyriologist must present the source document with a philological apparatus — the richer the better. But this will very likely generate misdirections for both partners in the enterprise. Verbal connotations and etymologies may not be taken as guides, nor serve as proof, when searching for the functional meaning of a term. And this applies most strongly when the term, or set of terms, is a “professional” one. After the terms have been explained securely through procedures that are not dependent on the lexical element (cf. “Symphony”!), that element can be taken up as well, but “internal analysis comes before external comparisons” (Barber 1974: 323). Our own task is not fully analogous to the decipherment of unknown scripts, but it is sufficiently similar in principle — especially to the decipherment of scripts of the nonalphabetic kind. What happened there proves that the rule of “analysis before comparison” cannot be circumvented. In musicology, some sharp words on this subject have already been said by Husmann (1961: 69). At certain stages in my own research I actually substituted symbols for the Akkadian terms, so as to keep the verbal element from intruding into the structural investigation: $S_1 \dots S_n$ for the strings, and $M_A \dots M_N$ for the modes. These symbols will not be used here often, except in a few places where they can help to make the reasoning more clear.

Within musicology itself, the newly discovered evidence seems indeed to be “à l’aube de la théorie musicale” (thus the apt title of Duchesne-Guillemin’s 1966 paper), and the implications began to be explored almost from the first. But everything depends on a correct understanding of the texts. The four texts are obviously concerned with certain parts of what we would nowadays classify as practical or elementary theory. Their aim is “the proper division of musical space” (Henderson 1957: 340–341, where the phrase is used in the sense of Greek theory at its most mature stage). The question is how this aim was conceived of here and how we can come to understand it.

For us, to understand what these texts say means to translate them correctly into our own musical language, more precisely: to map their system of musical concepts onto our own standard one. We may not map our own system or any other, such as the Greek, onto theirs. The first way is that “understanding” that we are trying to achieve; the reverse way generates fallacies. This also means that we must recognize which points or areas on our own map have no corresponding elements in the other system. Barber, in his book on archaeological decipherment, states the same principles in different terms (Barber 1974: 15–16). He also emphasizes, as he must, the checking of the decipherment hypothesis, which is equally relevant here. To quote:

It is then necessary to test for the empirical validity of each hypothesis by its consistency throughout the data. If the hypothesis is a structural one, formed on theoretical grounds, this will be a matter of testing all the relevant data for agreement with the hypothesis. (Barber 1974: 195; see also 33)

For us this statement is more provocative than the simple methodological precept that its author meant it to be. Our subject is itself “a structural one, formed on theoretical grounds,” and this means that we have to recognize and evade a logical trap that would not exist in the decipherment of a script or the elucidation of a language. If it is true that the Mesopotamian theory is anchored to the heptamodal-diatonic group (for a definition, see §1.23), then several alternative deductions are equally consistent with the relationships obtaining within this group, and, thus, each of them will test out as consistent with the data on the first round of checks! It is therefore necessary to devise such further checks as will eliminate this choice of possibilities, and leave only that probable one that represents what the creators of this particular “incarnation” of the system intended. My reexamination of the Mesopotamian texts, which forms the main part of this study, is based on this approach.

Part One: The Mesopotamian System

And their appearance and their work was as it were a wheel within a wheel (The first vision of Ezekiel in the land of the Chaldeans by the river Chebar; Ezek. 1:16)

The inventory of the texts and their subsequent presentation are based on the latest published information, as extracted mainly from Kilmer's survey of 1971. Since that survey was meant to describe the history of the discoveries and studies, and also contains many revisions and addenda to its original 1968 presentation, later readings and translations appear there both in the discourse and in the footnotes. Here I shall use the net result, without recapitulations.

Even though there are still so few texts, it seems to me that calling them by their Assyriological *sigla* is already somewhat inconvenient. It will become more inconvenient as the texts increase, and extremely so when copies are found. One presumed copy has already been cited for no. 3 in the inventory. If a scheme for working *sigla* can be agreed upon now, we shall save ourselves trouble later on. I have made up such a scheme, and shall use these *sigla* in the discussion. I shall also use standardized names for the texts, such as "Song Catalogue" alternately with its *siglum* C-Md. If the text has been identified as part of a standard "book" ("series" in Assyriological parlance), the name will generally be taken over here as well. An explanation of the scheme for making up the working *sigla* is given in Appendix B.

In all that follows, I shall try to preserve a clear distinction between text and document. The term "text" will denote the content, while "document," or "tablet," or simply the Assyriological *siglum* (such as CBS 10996) will denote the particular specimen.

Inventory of the Texts

Of the four texts, three are seen to be sections or passages about music that occur within a context of wider scope. For the Procedure Text the context is as yet unknown, since the document is a fragment. The music section may in itself contain statements about different classes of musical constructs (strings only/strings-and-modes/modes only/terms for instruments, etc.). The distinct names and working *sigla* must be assigned to what may be termed the "units of concern," in effect, to paragraphs and not to "texts." This is not what we would do in the case of a medieval treatise — but then what we have here are not treatises. It is difficult to adjust to a culture in which scientific concerns are not communicated discursively (at least not in written form) but only in the form of tables, prescrip-

tions, sets of model problems and lists of terms (for discussions of this situation see, e.g., Neugebauer 1934: 202ff.). But the approach must be fitted to the sources, and there seems to be no other way but to regard the information as a collection of “modular packages.” The following inventory is still organized by documentary units, but in the future such a survey will at least need a parallel listing by units of concern.

Content: The list contains those texts that have been found in Mesopotamia proper and which contain statements that may be defined as theory texts. The notations from Ugarit will be surveyed in §2.1.

Language and script: If not specified otherwise, the language is Akkadian and the script is “mainstream” cuneiform.

Provenience: For most of the tablets, only the name of the locality is known, and not always with certainty. To place the theory of music in its social setting, it is necessary to know whether the document was found in a temple, a palace or a private house, and whether in the context of a school, an archive or a private library. It is also important to know with what other kinds of evidence — written and artifact — the tablet was associated. For the greater part of the tablets in the museums such information is not available.

Date: The dates given apply to the particular tablet, and not or not necessarily, to its contents. Again, since the excavation data are not sufficiently precise, the dates depend only on the characteristics of script, arrangement and tablet shape, and hence can be defined only by period. At present, none of the tablets have a colophon (the Ugarit tablets have colophons but no dating statements).

Order: The order in this list is alphabetical, as generated by the working *siglum* assigned to the “main text” of each document.

Working Sigla: Since the texts, i.e., the content units, are at present documentary *unica*, the working *siglum* is given in the short form, without the added numerical specification of the document.

Bibliography: In general, only the first publication of the text itself is listed here. For further information, see the studies mentioned in the Introduction above. Supplementary information can be found through Borger 1967–1975. The ongoing Assyriological bibliography is the “Keilschriftbibliographie” in the periodical *Orientalia*.² The ongoing musicological bibliography is RILM, abstracts of musical literature (Répertoire International de Littérature Musicale).

² Editor's note: Today Bayer's research would have benefitted from tools such as the *Cuneiform Digital Library Initiative* (www.cdli.ucla.edu) and the *Electronic Text Corpus of Sumerian Literature* (www.etcs.lorinst.ox.ac.uk). Her reference to *Orientalia* appears to be to the journal of the same name published by the Pontifical Biblical Institute in Rome.

1) C-Md Song Catalogue

KAR 158. From Assur (Berlin, Staatliche Museen, Vorderasiatische Abtlg.; VAT 10101). Middle Assyrian period, second half of fourteenth to end of tenth century BCE.

The document is an extensive list of songs, apparently both sacred and secular, in eight, not fully intact, columns (4 obverse, 4 reverse), of at least 55 lines each. Cols. i–iv: titles of series of liturgies to various divinities, with totals for each group. Cols. v–vii (as numbered now): titles (= *initia*) of other kinds of songs, similarly grouped and totaled. Col. viii (previously numbered as v): list of totals, apparently extracted from all the preceding groups. The texts to which this catalogue refers have not yet been identified in other sources (Shaffer, oral communication 1978). The groupings and totaling definitions are by diverse criteria, though often by language only (Sumerian/Akkadian). Some of the classifying terms may refer to musico-poetic genres. In two of the groups (two only, out of several dozens!) the classification is by mode terms.

Relevant sections: Cols. vii–viii. In col. vii, 1–5 *initia* of 23 songs are totaled in line 6 as 23 *irātu ša eširte*; followed by *initia* of 17 songs (lines 7–23), totaled in line 24 as 17 *irātu ša kitme*; followed by *initia only*, preserved only to line 55. Col. viii (the total–of–totals) provides two totals for *šīṭru* songs, in *embūbu* and *pītu*, respectively, in lines 14–15. After diverse totals by other criteria, the mode terms appear again in lines 45–52, seven totals for *irātu* songs in the order *išartu*, *kitmu*, *embūbu*, etc. to *qablītu*, with a grand total for this group. This section almost certainly refers to the songs listed in col. vii, although there only the first two mode groups are set off explicitly.

Publication: Ebeling 1919: no. 158, pp. 269–276, autograph (= facsimile drawing) only. Description: Ebeling 1922 (not available to me for the present study). Parallel study with selected transcriptions: Langdon 1921. Although the study of the entire text by the state-of-the-art Assyriological and musicological research is long overdue, Langdon's interpretations of the musical or presumed musical terms have mostly been disproved in the meantime, most decisively so as regards the mode terms (which he assigned to instruments or etymologized). First correct recognition of the mode terms: Kilmer 1965.

2) K-MdSt Key-Number Table

CBS 10996. From Nippur (Philadelphia, University Museum). Neo-Babylonian period, first half of first millennium BCE.

The document is a table of key-numbers (also called coefficients) for diverse calculations, mostly economic ones. Obverse: only a small part of one column is preserved. Reverse: parts varying in lengths of cols. i–iii are preserved; tops and bottoms not preserved. First dated to the Kassite period, now revised to Neo-Babylonian, i.e., about a millennium later (Kilmer 1971: 132, confirmed orally 1977). The content of the list is generally standard, with only a few entries that were not known previously from similar texts. The “table of key-numbers for musical modes” is the only section of which the subject itself has not yet been found in similar lists.

Relevant section: Col. i (of the reverse); the 19 lines extant, numbered by estimate as 6' to 24'. Lines 6'–10': number pairs apposed to mode terms. In line 11' a new tabulation begins, in which each entry opens with a string-term pair, followed by the corresponding number pair and the mode term. Lines 21'–24' are increasingly fragmentary.

Publication: Kilmer 1960 (with another list, which has no music section), transcription, translation and brief study, and with a photograph of the tablet appended. Readings of the music-table terms and numbers have been partly revised since then (for survey, see Kilmer 1971).

3) L-St/L-Md or L-St nabnītu/L-Md nabnītu String List/Mode List

U.3011. From Ur (London, British Museum). Neo-Babylonian period, as above.

The text is part of a standard series: the bilingual (Sumerian vs. Akkadian) encyclopedic vocabulary *nabnītu* (“creation,” from its opening line). Its divisions are arranged by the parts of the body, from the head to the feet, with the appropriate activities and objects listed for each part. U.3011 represents the thirty-second chapter-tablet, hence its Assyriological designation *nabnītu* XXXII. The theme is “sinews” (information supplied by Aaron Shaffer). This provides the point of attachment for an entire chapter of terms from the domain of music, opening with the nomenclature of the paradigmatic set of nine strings. Then follows the nomenclature of the modes, fragmentary in U.3011 as is the rest of the chapter (see below Fig. 1). *nabnītu* XXXII is thus the earliest encyclopedia-lexicon of music known now, and probably the very first. The composition of *nabnītu* is assigned to the Middle Babylonian period, i.e., the second half of the second millennium BCE (for an illuminating description of the Mesopotamian literature-of-lists, see Oppenheim 1977: 244–249).

Kilmer (1965: 264, note 25) states that “a duplicate fragment is K.9922, cited in MSL 6, 119.” This is a fragment that links up with the reverse of U.3011 but does not duplicate it precisely, and hence cannot, in any case, help to complete col. i.

Relevant sections: Cols. i + ii, Sumerian (i) vs. Akkadian (ii). Lines 1–10: String List, Akkadian *qudmû* to *uḫrû*, and totaled by “nine strings.” Line 11ff.: Mode List, truncated by the diagonal break-off and no more than a textual fragment (for a discussion of this part, see here §1.7).

Publication: Kilmer 1965: 264ff., transcription, translation and study (contents already utilized in Kilmer 1960). Autograph published in 1974 by Gurney (1974: no. 126, Pl. LX).

4) P-MdSt/X-MdSt Procedure Text/Mode-String fragment

U.7/80. From Ur (London, British Museum). Old Babylonian period, second half of eighteenth to end of sixteenth century BCE.

The document is a fragment, with parts of two columns of text, both pertaining to music. It is unclear whether this is an obverse or reverse and what the full extent of the tablet was. Nineteen lines partially preserved, numbered provisionally as 1–19. In the right-hand column (Procedure Text) at least lines 0 and 20 can be restored by textual extrapolation.

Right column: two sets of “procedures” in which relationships between modes are defined by changes to be effected on one or two strings. After the first three (preserved) examples, there is a subscript (line 12), followed by two further examples that present a more complicated case. The text is formulaic, in the “if-then” form. Since there is a cyclic relationship between the elements, it is theoretically possible to extrapolate the first group upward and the second group downward until the cycle (of seven modes) has run its complete course in each group. However, there are reasons for assuming that the full cycle was not gone through (see discussion in §1.43).

Left column: lines 2–13. All truncated at their beginnings. Mode terms, and at least two string terms are legible. The sequence of terms is presumably systematic, given the nature of what is done in the right-hand column, but the contents do not seem to be an actual part of the Procedure Text. The latter is a fragmentary text, while this is a textual fragment. For its discussion, see §1.6.

Publication: Gurney 1968, autograph, transcription, translation and study, with supplement by Wulstan (1968). Gurney proposes two emendations in the Procedure Text, which have been accepted tacitly in all subsequent studies. Here the text will be taken as it appears in the tablet. For discussion, see §1.4. Crocker (1978) explores the textual fragment of the left-hand column.

The fragment K. 9922 has already been mentioned above in connection with item no. 3. An autograph was published by Meek (1920: 165; correct “obverse” there to “reverse”) and reference was made to it in MSL 6, 119. It is part of a lexical

list, again Sumerian vs. Akkadian, apparently related to *nabnītu* but not identical with it (information supplied by Aaron Shaffer). No analytical publication seems to have been undertaken as yet.

A further text (BM 65217) is being prepared for publication by Kilmer. As I have been informed by her, it raises considerable difficulties.

1.2 Some Methodological Considerations

1.21 Are the texts co-systemic?

Hitherto it has been assumed that the texts are co-systemic, i.e., predicated upon identical theoretical concepts. Some changes could be expected to occur in time and in different locations, but it was not assumed that these could amount to a full paradigmatic shift. Such a shift, or even switch, has been suspected — but not fully reconstructed — in the transfer of ancient Greek theory to medieval Europe. The Mesopotamian texts are spread over a considerable range in time and space, and one must at least pose the question whether a paradigmatic shift, or even shifts, could not have occurred along the way.

The Assyriological answers, at least, are largely reassuring. The four texts on which we depend at present are in the same script and in the same language — the most obvious sign of a cultural comity. For this period and area, at least, everything that we know about the Mesopotamian intellectual tradition — the “scribal-religious complex” — makes it reasonably certain that the paradigm has not shifted and that the formulations that we have belong to one “coherent and continuous stream.” (This expression is taken from Oppenheim 1977: 16; for the background, see there, especially p. 14ff. and Chapter 1). Within that mainstream, one can perhaps already glimpse some signs of development and change in time: the mainstream is also fed by a few tributaries on its way. In principle, though, the texts are sufficiently compatible to allow the kind of inquiry that has been carried out on them until now, and will also be carried out here.

There is, however, one exception, and that, I hold, is the notation found at Ugarit. To continue with the metaphor used just now, this is not a further station along the mainstream, after the entry of some new ethnic tributary. On the contrary, a new channel is here drawn from the mainstream, to wend its way elsewhere. The fact that there is a difference in language and ethnicity (Hurrians!) cannot be disregarded, in spite of the overt “Mesopotamization.” But this subject will be discussed in Part Two. For the material from Mesopotamia proper, the evidence from Ugarit will therefore be used only for what it can yield on the general chronological problem.