

The book begins with a compelling introduction (entitled "The geometry of sound") in which the author guides the reader gently into the realm of Greek harmonic science. Alongside the overview on the subject he presents his aims and the structure of the book in great detail.

In the first chapter ("Hearing numbers, seeing sounds: the role of instruments and diagrams in Greek harmonic science") the author attempts to clarify the role of the monochord in Greek scientific discourse and method by comparing it with other mathematical and scientific tools used by ancient Greek scientists with which it shares some affinities, e.g., the abacus, the armillary sphere, the parallax instrument, and also diagrams and tables. The most significant aim of this chapter is to show how the monochord sits between the disciplines of arithmetic and geometry. The basic concept is that the monochord can be considered an audible diagram with which it is possible to demonstrate geometrically (i.e. by adjusting the length of a string) the relationships between numbers and sounds.

Chapters 2–6 proceed in a more or less chronological order from the first appearance of the monochord to Ptolemy's *Harmonics* (second century AD). In Chapter 2 ("Mathematical harmonics before the monochord"), the author establishes a *terminus ante quem* for the first appearance of the monochord and explores the achievements of 'pre-canonic' mathematical science. In Chapter 3 ("The monochord in context"), he wishes to point out how the introduction of the monochord (especially its use in the treatise known as the *Sectio Canonis*) was prepared by advances in harmonics, acoustics and mathematical argumentation in the fourth century. Chapter 4 ("Eratosthenes") is devoted solely to Eratosthenes (third century BC), who is credited (by Nicomachus [Nicom. *Harm.* 260, 12–17]) with producing a "canonic division" (*kanonos katatomē*), but the question examined here is whether Eratosthenes needed the monochord in his experiments at all when he created his tetrachordal divisions. Chapter 5 ("Canonic theory") deals with the period between Eratosthenes and Ptolemy. It concentrates on the appearance of the new science known as "canonics" (*kanonikē*) and explores what it involved. Chapter 6 ("Ptolemy's canonics") focuses on the role of the monochord and related instruments in Ptolemy's approach to harmonic science.

In summary, this book is the most thorough study on the monochord so far and thus it is obviously an important contribution to the field of ancient Greek harmonic science. Moreover, this work will also benefit the study of Greek mathematical science in general, because it also offers a diverse range of information on scientific instruments and their use in sciences other than harmonics. All in all, David Creese certainly has the talent to write with ease on complex topics and thus this book can also be recommended for those who are not already familiar with Greek harmonic science. Lastly, a tip for those who desire to explore mathematical harmonics also in practice, but do not have an opportunity to construct the monochord by themselves: nowadays it is possible to buy one, e.g., via Amazon.com, and to begin to follow the footprints of ancient Greek canonicists.

*Kimmo Kovanen*

IOANNA PATERA: *Offrir en Grèce ancienne. Gestes et contextes*. Potsdamer Altertumswissenschaftliche Beiträge 41. Franz Steiner Verlag, Stuttgart 2012. ISBN 978-3-515-10188-2. 292 pp. EUR 59.

Unlike the title *Offrir en Grèce ancienne* might suggest, Ioanna Patera's work is not an overview of offering practices in ancient Greece, but instead examines offering from selected points of view

based on meticulous case studies. Patera pays special attention to offerings consisting of small objects considering them a sign of "everyday" reverence and religion, although more expensive offerings are also discussed. In addition, vegetal and animal sacrifice is also taken into consideration. Patera's study leans heavily on archaeological evidence: the objects themselves, altars, *bothroi* and the topography of sanctuaries. Some ancient texts and epigraphical sources have also been utilized. There is – quite rightly – an emphasis on distinguishing between the different natures of different cults, and on the effect of these differences on offering practices.

The first chapter concentrates on the vocabulary and terms of offering. According to Patera, vocabulary is an important tool in tracing the difference between sacrificial and votive offerings. The difference being, she argues, that a votive offering is meant to be permanent, is always connected to a vow, and is done after a vow has been fulfilled. Sacrificial objects, on the other hand, are brought to the sanctuary on certain occasions, and have little relevance from the point of view of the cult. This claim, I feel, is contradicted in the following chapters where metal objects, money, and statues as offerings are discussed. The first chapter collects and discusses the most commonly used terms to indicate an offering. This chapter thus describes the meaning and use of such words as *anathēma*, *dōron*, *dekatē*, *akrothinion*, *agalma*, *aparchē*, *hiera*, *euchē* and *mnēma*, although the word (*eu*)*charistērion* is for some reason ignored. The author divides these expressions roughly into three groups: words describing the offered object (e.g. *akrothinion*), words indicating a tax (e.g. *dekatē*), and words describing the occasion of the offering (e.g. *euchē*). Most words are only briefly discussed. More attention is given to *aparchē* and *hiera* with examples of their use starting from Homer. The first chapter gives a good idea of the difficulties and complexities surrounding the use and understanding of the words used to describe an offering.

The second chapter concentrates on reciprocity and obligation in offering, changes in the practice of offering over time, and the maintenance and disposal of offered objects. It re-examines the permanent nature of offerings and dedications, and questions the idea of reciprocity. The chapter also summarizes and comments upon modern research and different theories on offering. Patera enters into a long discussion on the idea of "*do-ut-des*" and of the assumed obligation to sacrifice. There are also some observations on the terms *charis* and *timē* in the light of offering and reciprocity. Patera argues that the term *timē* refers to the obligation to offer, whereas *charis* implies a voluntary or a votive offering. She finds most theories regarding the reciprocity and the contractual nature of offering problematic: a contract between a human and a god differs from a contract between humans, because gods and humans are not on an equal footing. There is always an inherent hierarchy between gods and humans. Patera considers the notion that humans and gods could make contracts "a modern moral judgement". On the other hand, Patera claims that reciprocity is evident in offering, but gods have the power to decide whether they want to respect this reciprocity. The chapter ends with the handling and usage of offered metal objects and examples of offerings being re-possessed or desacralized back to the use of humans. However, this section does not really seem to offer any new or surprising information. At the end of the second chapter, Patera brings up the practice of *potlatch*, an agonistic ritual gift-giving practised among Native American tribes. The reference to *potlatch* is unnecessary since, as Patera herself says, this concept cannot be applied to the Greek world.

The focus of the study takes a shift at this point, from theories on offering and gift-giving to archaeological case studies, and from non-perishable objects to animal and vegetal offerings. This change comes as a surprise to the reader, as philological and epigraphical evidence could also

have been utilised in the chapters that follow. Chapters 3–5 focus on archaeological evidence and case studies designed to describe different offering practices and their changeable nature. The case studies are presented meticulously. The third chapter deals with the offerings in their archaeological context and their placement in the cult sites. This chapter focuses especially on structures identified as offering tables, their use and location, while also discussing banquets and banquet rooms in sanctuaries, the deposition of offerings in the cult of Demeter in Acrocorinth, and rites of foundation. The chapter is elaborated with images and floor plans of the discussed structures.

The fourth chapter discusses altars and different ways of using them. Patera compares animal sacrifice and deposition of offered objects/foodstuff, sacrificing with and without fire, and traditional altars and chthonic *escharai*. She re-examines the notion of *eschara* as a definitive chthonic element, and the difference between the formation of sacrificial deposits and deposits of offerings. This chapter ends with a paragraph on the use of a sacrificial pyre in Eleusis. The fifth chapter continues by differentiating deposits of offerings from sacrificial deposits. The discussion mainly consists of case studies concerning *bothroi*, pits and other sacrificial deposits. Patera questions the notion that *bothroi* and pits were only used in chthonic cults, as well as the division of cults into chthonic and Olympian. The chapter ends with a discussion of the changeable nature of the term *megaron* which can, according to Patera, imply various kinds of structures.

Patera's work does not seem to offer a lot of new or groundbreaking information, but this was presumably not the author's aim, nor is it an overview on offering in ancient Greek religion. The shift in the focus after the second chapter comes, as mentioned above, as a surprise to the reader; the author should in my view either have pointed out that the study consists of two parts, or the two parts should have more dialogue with each other. The strength of Patera's work, on the other hand, lies in the meticulous case studies dealing with the multitude of local offering practices, and the differences in those practices over time. Patera's work also rightly questions some traditional notions of offering as too simplistic, and encourages us to look at offering on a case by case basis. It also recognizes the ambiguity and complexity both in Greek vocabulary and in the modern terms used of offering. The emphasis on small non-perishable objects as sacrificial offerings is an interesting perspective and worth further study.

Laura Aho

GARY FORSYTHE: *Time in Roman Religion. One Thousand Years of Religious History*. Routledge studies in ancient history, 4. Routledge, New York – London 2012. ISBN 978-0-415-52217-5. XIII, 207 pp. GBP 90, USD 145.

Gary Forsythe, the author of e.g. *A Critical History of Early Rome: From Prehistory to the First Punic War* (2006), offers in this book, his most recent, a collection of six short studies on various subjects loosely connected by their association with the Roman calendar. Chapter 1, entitled "Preliminary Examination of the Roman Calendar", consists of an introduction to the Pre-Julian Roman calendar and its early Hellenization starting from the regal period. Chapter 2, "The After Days and Other Curiosities", discusses the 'after days', *dies postriduan*i, in connection with the dates of some famous military defeats. Chapter 3 deals with the "Rites of the *Argei*" and chapter 4