

Exploring past visual experiences: a comparative analysis of three approaches to things and light in Roman interiors

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CAMPANARO, D. M. 2023. *Illumination Matters: Revisiting the Roman House in a New Light*. Acta Archaeologica Lundensia Series Altera in 8° 75. Lund: Lund University. Pp. 272, 21 b/w, 54 col. figs, 11 tables b/w. pISBN 978-91-89415-71-3, eISBN 978-91-89415-72-0.

BIELFELDT, R., J. EBER, S. BOSCHE, A. LUTZ, and F. KNAUß, eds. in collaboration with V. RÄUCHLE, U. HOFSTÄTTER, A. GIUMLIA-MAIR, S. PFISTERER-HAAS, and C. GRAML. 2022. *Neues Licht aus Pompeji*. Oppenheim: Nünnerich-Asmus Verlag & Media. Pp. 511, 733 col. figs. ISBN 978-3-96176-207-1.

HIELSCHER, A. 2022. *'Instrumenta domestica' aus Pompeji und ihr Design: Eine Untersuchung zur decorativen Gestaltung der Kleinfunde aus Insula I 10*. Decorative Principles in Late Republican and Early Imperial Italy (Decor) 4. Berlin and Boston: De Gruyter. Pp. 385, 133 b/w, 222 col. figs. pISBN 978-3-11-078538-8, eISBN 978-3-11-078816-7.

Research in Roman interior design and wall painting has undergone two major shifts in the past century. The first, in the 1980s, steered away from the tradition of purely art historical studies that had elucidated the basic principles of artistic developments, iconographies, and pictorial programs. Instead, researchers focused on the Roman house as a social space, with private and public zones inhabited by individuals of different social standing.¹ The second shift, occurring in the new millennium, saw researchers returning to the decoration of the house; however, they were now more intrigued by the cognition and reception of the paintings and how they were conceived to create atmospheres, mnemonic paths, and impressions on their viewers.² Simultaneously, important insights into the often-multifunctional use of space were provided by finds analysis.³

In this contribution, three recently published books will be reviewed. Collectively, they provide an increasingly dense depiction of Roman domestic space as a multi-sensorial environment, inhabited by real human beings who “lived und laughed ant loved end left,” to borrow James Joyce’s words from *Finnegans Wake* that invoke the continuous flow of life within the stream of passing civilizations.

Danilo Campanaro’s cumulative dissertation, *Illumination Matters*, illustrates the influence of natural and artificial light on the reception of domestic space and its decoration. Ruth Bielfeldt and her team conducted a research project and have produced an exhibition

¹ See, for example, Carandini 1985; Wallace-Hadrill 1988; Grahame 2000.

² Zanker 1995; Lorenz 2008; Hölscher 2018; Haug 2020.

³ Allison 1992; Sigges 2002; Allison 2004; Allison 2006.

and accompanying catalogue centered on Roman bronze lamps, exploring how these objects and the artificial light they produced appealed to the senses. Adrian Hielscher's dissertation concentrates on Roman object design and investigates the impact of domestic objects on the Roman viewer, in conjunction with wall paintings. It is noteworthy that all three studies are focused on or touch upon cognition or the influence of light perception. Besides these studies, there have been other recent publications on lighting in Roman houses that took a different path and are not discussed here in detail but deserve to be mentioned. In 2016, David G. Griffiths submitted his dissertation on *The Social and Economic Impact of Artificial Light at Pompeii*, in which he analyzed the distribution and numbers of lamps in Pompeian households and with these figures calculated the relative importance that fueling and maintaining illumination had for a town's economy.⁴ In a contribution to the *Oxford Handbook of Light in Archaeology* in 2022, the same author noted that lamp finds in Pompeian houses tend to cluster in the peristyle area and that this might therefore have been the preferred place for staying up late.⁵ The handbook in question, it should be said, takes a global approach, encompassing all times, regions, and areas of human activity and thought, and is therefore less relevant to the specialized Roman archaeologist. In 2021, Lucia Michielin published her dissertation, *Fores et Fenestrae*, which examines the effect of windows and doors on lighting interior spaces.⁶ Based on an extensive dataset of measurements from houses across Italy, with concentrations in Rome, Ostia, and Herculaneum, she discerns general patterns in the shape and distribution of windows and doors within Roman dwellings. The study complements the books presented here, extending its focus beyond Pompeii both spatially and temporally. Notably, it also employs an alternative, low-tech approach to analyzing room illumination. Utilizing 3D-models of a sample of houses, primarily from Ostia, Michielin generates renders of scenes. Subsequently, histograms derived from these renders are compared, yielding insightful observations regarding different types of rooms and houses.⁷

Light, being inherently ephemeral, leaves no direct archaeological traces. Consequently, all three studies discussed herein had to rely, to some extent, on imagination, re-enactment, or digital reconstruction. These techniques and methodologies are relatively novel avenues in archaeological research. In the sections below, each of the three studies will be examined individually, followed by a short exploration of the methodologies.

Review of Campanaro

Danilo Campanaro's cumulative dissertation was presented at Lund University in 2023. Since 28 April 2023, the study has been available via Open Access through Lund university's repository, and it is also offered as print on demand. The content is partly copyrighted, partly available under different Creative Commons licenses. The book comprises a summary introduction and five papers, one of which has not yet been published elsewhere. Two of the papers are co-authored by Giacomo Landeschi. The five consecutive papers delve into the entire research process, from the creation of a scientific 3D-model to illumination analysis. Specifically, they explore the impact of light on the

⁴ Griffiths 2016.

⁵ Griffiths 2022.

⁶ Michielin 2021. On windows, see also Hillmann 2011; Guidobaldi et al. 2015.

⁷ Michielin 2021, 122–31.

perception of space and decoration, as well as tracking the movement and eye-movement of test participants within the virtually reconstructed space. The consistent test case throughout these studies is the House of the Greek Epigrams (V 1, 18) in Pompeii, excavated in 1875 and 1876 and meticulously studied since 2000 by the Swedish Pompeii Project.

The summary introduction gives first a short outline of the history of research on Roman domestic interiors as social spaces. This four-page account is necessarily very much condensed and limited to the discussion of selected authors writing between 1985 and 2010. An outline of the study and its aims follows, addressing the role of light in shaping the social space that is the Roman house. In a second chapter (25–37), five theoretical perspectives are introduced: Inference to the best explanation (IBE); anthropology of light; ritualization; affordance; and proxemics. While the first two perspectives receive more extensive treatment in subsequent individual papers, the latter three have comparatively limited relevance here. The methodology employed in the five individual papers is then explained (38–47). Here again, IBE makes an appearance, followed by very short introductions to 3D-modelling as an analytical tool, lighting simulation, virtual reality, eye-tracking, and the mapping of data in a 3D-GIS. Chapter 4 (48–58) provides a complete and annotated chrono-bibliography of the House of the Greek Epigrams. Chapter 5 (59–87) gives an account of the evidence used during the construction of the 3D-model using the software Autodesk 3D Studio. A list of lighting devices found in the house is included on p. 64. Additionally, a method for calculating reliability figures for individual components of the model is introduced. The proposition (85 and fig. 26) involves the use of a color ramp within the 3D-GIS and aims to map varying levels of reliability across the model. However, the method was not implemented, and I imagine that it would have proved problematical due to the inherent complexity of overlapping architectural elements; for instance, a barrel vault and specific surface textures or decorative patterns may coexist in the model yet exhibit distinct levels of certainty. Chapters 4 and 5 form the core of the summary introduction and provide novel material not included in the subsequent papers. The remaining sections offer concise summaries and conclusions for each of the papers, as well as a general overview in Swedish. In sum, the introduction reveals that cumulative dissertations in general present unique structural challenges. Authors must strike a balance between standalone research papers and the overarching narrative of the introduction, which occasionally leads to unavoidable redundancy.

The first paper, “Inference to the Best Explanation (IBE) and Archaeology: Old Tool, New Model,”⁸ introduces the formal heuristic method of abductive reasoning, or Inference to the Best Explanation (IBE). Campanaro outlines how New Archaeology became interested in the structure of reasoning in archaeology and developed competing approaches, which finally led to a shrugging acceptance of pluralism. This method, though, has long since quietly underpinned archaeological practice, in which several competing hypotheses are usually presented and the one that best fits the evidence selected. However, the lack of explicit articulation of the underlying reasoning principles has occasionally plagued visual reconstructions, rendering them less scientifically rigorous. And this is why Campanaro’s focus is on constructing a scientific 3D-model of the House of the Greek Epigrams. To achieve his aims, the model has to be accompanied by transparent

⁸ Published in 2021 in the *EJA* (Campanaro 2021).

explanations rooted in a robust method of reasoning. The article briefly exemplifies this approach by addressing whether the atrium in question was unroofed or covered. The proposed scheme advocates for the inclusion of paradata alongside 3D-models. Paradata allows for ongoing evaluation of reliability and facilitates adjustments based on new evidence. Campanaro's approach bears a resemblance to parametric reconstruction or Archaeological Building Information Modeling (ABIM),⁹ and it would have been fruitful to relate it to these approaches.

The second article, "A Roof for the Atrium of the House of the Greek Epigrams in Pompeii? A Three-Dimensional Critical Study,"¹⁰ revisits the question of whether the atrium in the House of the Greek Epigrams at Pompeii was unroofed, as recently proposed for other Pompeian atria, or whether it adhered to the design of an *atrium tuscanicum*, as would be conventionally assumed. The latter configuration, described by Vitruvius, features a compluvium that is unsupported by columns but instead rests on transverse beams within the atrium. Compared to its predecessor, this article delves less into theoretical frameworks and instead focuses on empirical investigation. The study meticulously examines evidence from in situ remains, archaeological finds, and comparable houses. From this rich dataset, a series of hypotheses emerges, each scrutinized in relation to the competing accounts of the roofing system.

Interestingly, the weight of evidence aligns more closely with the *atrium tuscanicum* model. Consequently, the three-dimensional model constructed for the House of the Greek Epigrams reflects this preference. Notably, unlike the book's summary introduction, the article refrains from quantifying the respective probabilities of the competing hypotheses.

The third article, "Coming to Light: Illuminating the House of the Greek Epigrams in Pompeii,"¹¹ stands as the longest and most substantial of the five articles, serving as the centerpiece of the dissertation. The article's primary objective is to demonstrate how light can offer a fresh perspective on the social functions and meanings of Roman domestic interior spaces. The initial seven pages provide introductory remarks on the nature and significance of light, drawing from literary sources and previous, related studies. As a German-speaking reviewer, I was somewhat perplexed to encounter references to the ideas of Edmund Husserl, Martin Heidegger, and Emmanuel Levinas solely through secondary literature. In addition, there were no references to recent or ongoing research projects concerning light in ancient architecture.¹² In general, the bibliography appears to be biased to favor English titles, with only 16 in Italian (out of 116), three in German and none in French. However, it is essential to recognize that research on Pompeii has always been and continues to be multilingual – a fact that peer reviewers should be aware of. That said, it is also evident that the author aims to treat light in architecture as holistically as

⁹ On parametric modeling, for example: Sbrogiò 2022. On ABIM, for example: Garagnani et al. 2016. On the use of 3D-models, see also Michielin 2021, 22–23 nn. 70 and 71.

¹⁰ Published in the *Theoretical Roman Archaeology Journal* in 2022 (Campanaro 2022).

¹¹ Published in the *AJA* in 2023 (Campanaro 2023).

¹² For example, the contributions collected in Schneider and Wulf-Rheidt 2011, or the projects "ΦΩΣ 4D – Werkzeug zur Affordanz-basierten Tageslichtanalyse in antiken Häusern mittels Simulation," F. Lang, TU Darmstadt 2021–24; "Neues Licht aus Pompeji: Ein Forschungsprojekt zur Lichtwirkung frühkaiserzeitlicher Beleuchtungsgeräte aus Bronze," R. Bielfeldt, LMU München 2021–25 (see below).

possible. The article continues with the technicalities of simulating daylight, artificial light, materials, and reflectivity. These figures were essential for importing and utilizing the 3D-model of the House of the Greek Epigrams in the open-source ray-tracing software *Radiance*. This software calculated HDR-images, numerical values, and contour maps with the help of high-performance computational resources at Lund. The cloud of numerical values was subsequently transferred to a 3D-GIS for visualization and analysis. It is crucial to highlight that the study was designed to discuss the perception of not only space but also the wall paintings under different lighting conditions throughout the day and the year. Calculations were performed for all hours of the longest and shortest days of the year. Additionally, special attention was given to the question of how much of the paintings' colors would have been perceived under the respective lighting conditions, considering that humans do not perceive color well under low light (photopic vs. scotopic vision). The results are presented in two sections, dealing with daylight and daylight plus artificial lighting conditions. In each section, luminance (percentage of photopic vs. scotopic vision) and illuminance (sufficiency of light for certain activities) are discussed separately. Interestingly, the atrium and peristyle areas of the house exhibit distinct behaviors. The atrium benefits generally from soft lighting conditions. During the middle of the day, from the fifth to the ninth or tenth hour (approximately 10 am to 3 pm), these conditions allowed for cognitive visual tasks such as weaving or reading. In contrast, the cubicles around the atrium remained relatively dark, making them ideal only for activities like storage and sleeping. Around the peristyle, a garden exedra and neighboring triclinia were best lit in the early evening when the sun was low. This lighting arrangement made them perfectly suited for welcoming dinner guests. Notably, a large reception space (17 fig. 1, room m), situated farther away from direct light, profited most from artificial illumination. It may have been particularly attractive for hosting the *cena* or post-dinner gatherings. On the other hand, the small room containing the learned Greek epigrams and painted riddles (room y) could be optimally enjoyed, especially for reading, at any time only with the assistance of artificial light. Of course, there are limitations. The study could not account for screens, curtains, shut doors, or cloud cover. Unfortunately, the peristyle porticoes and servants' quarter were also not included in the analysis.

In sum, this article is a very important contribution to the study of Roman houses, as it makes quantifiable, for one of the first times, the role of light in the shaping of the house as social space and therefore enables its scientific description.

The fourth article, "Re-viewing Pompeian domestic space through combined virtual reality-based eye tracking and 3D GIS," co-authored with Giacomo Landeschi,¹³ provides a concise description of an innovative experiment that elevates previous research on lighting conditions within House of the Greek Epigrams to a new level. In this study, the 3D-model of the house was imported into the game engine *Unity* and subjected to extreme lighting scenarios: noon on the summer solstice and dawn on the winter solstice. To investigate human perception, five test participants wearing headsets with integrated eye-tracking technology virtually explored the house and fulfilled three tasks. Eye-movement data were recorded and imported into a 3D-GIS for analysis.

In the fifth paper, by the same co-authors and previously unpublished, the results of this experiment with test participants and assigned tasks are presented. The initial task

¹³ Published in *Antiquity* in 2022 (Campanaro and Landeschi 2022).

was to describe the wall paintings within the atrium, and the second to approach the garden painting at the end of the house's main visual axis and describe how many details could be made out. The third task was to describe the paintings in the room with the epigrams from different static and mobile viewpoints. In the atrium, the test participants moved mostly along the uninterrupted south wall, where there was more to be seen than on the opposite side, which features openings leading to cubicula and ala. Under sub-optimal lighting conditions, they had to draw closer to the paintings, and their descriptions took more time. When viewers navigated along the house's visual axis, they tended to pause at the thresholds where lighting and vision conditions shifted. Details of the paintings became discernible only from close by, particularly during the sun-drenched summer hours, when the stark contrast between the darker interior spaces and the sunlit garden conditioned perception. Finally, the dimly lit room housing the epigrams posed a unique challenge. Participants had to move along the walls to examine paintings and inscriptions from a close distance, thereby comparing and memorizing the riddle-like scenes depicted.

Summarizing, it has first to be acknowledged that from data collection and model construction to illumination computation, test environment setup, and data analysis, the author navigated a complex path to yield intriguing and meaningful results. This study stands as a truly pioneering effort.

As for the 3D-model, criticism can be made that decisions taken during its creation still remain largely unexplained. For instance, nowhere is it explicitly stated that the reconstruction of the coffered ceiling in the atrium drew inspiration from the House of the Bicentenary at Herculaneum (75). Furthermore, the entire model, including its data (and paradata), remains unpublished.

Of particular interest are the results stemming from the illumination analysis. These findings align with the somewhat conservative perspective that small rooms adjacent to the atrium (cubicula) primarily served storage or sleeping purposes. Conversely, well-lit or centrally positioned rooms within the house – such as rooms m, o, or p (17 fig. 1) – were inherently multifunctional.

In a broader context, Campanaro effectively demonstrates that the analysis of lighting conditions and cognitive factors serves as an essential tool for evaluating Roman houses as social spaces. It proves akin to other tools, such as finds analysis, space syntax, and graffiti studies, that have become invaluable to our understanding of ancient architectural contexts.

Review of Bielfeldt

Since 2021, the Deutsche Forschungsgemeinschaft has been funding an ongoing research project on Roman Bronze Lamps and Lighting. This project, directed by Ruth Bielfeldt, is based at the Ludwig-Maximilians-Universität in Munich. Its central focus lies in the examination of approximately 170 bronze lamps from the Vesuvian cities, housed at both the Museo Archeologico Nazionale di Napoli and the Parco Archeologico di Pompei. The project encompasses the documentation and restoration of the objects, as well as 3D-scans, scientific analysis, and a recasting experiment. The catalogue under review served as companion to an exhibition held in Munich from 9 November 2022 to 9 April 2023. Subsequently, the exhibition traveled to the Capitoline

Museums in Rome, where it was on display from 5 July to 8 October 2023. The exhibition constituted an important component of the project. Visitors fortunate enough to attend in person were treated not only to an impressive enfilade of bronze lamps, lampstands, and candelabra but also to a sensory experience. They could explore the colors, feel the textures, and gauge the weight of a recast “bat” lamp from Stabiae and had the opportunity to enter a virtual Roman dining hall and illuminate the lamps within. Experiencing how Roman bronze lamps could create a living sensation, reflecting light, casting animated shadows on the walls, making sounds (the bells) and smells, was certainly one of the most lasting impressions. Among the most impressive artifacts were the three bronze Epebes (cat. nos. 1, 5, and 8), originally used as tray-bearers, as well as two lamps adorned with dancing figurines (cat. nos. 52, 53) and the wind chimes featuring Priapus-like figure lamps (cat. nos. 93–97). The publication is a weighty tome, lavishly illustrated with over 700 figures. It consists of 48 short chapters that provide an entertaining as well as selective reading and references to the catalogue of all 188 objects on display. In the following, I will briefly comment on each of the chapters. Differently from the volume itself, I will group them thematically: (I) dealing with the cultural significance of artificial lighting; (II) presenting various types of domestic objects and lighting implements; and (III) detailing issues of scientific analysis and restoration. For ease of reference, I have highlighted the original essay numbers in bold.

I. Cultural significance

The volume opens with an introductory essay by Ruth Bielfeldt (chapter 1), who in her usual precise and playful language communicates “the many lives of ancient lamps.” Throughout this essay and several other contributions within the volume, Bielfeldt continues to develop an approach she has explored since 2014. She provides a philosophical foundation for discussing things in archaeology, and lamps have become her preferred medium through which to demonstrate “the many lives,” the agency, biography, and materiality of things.¹⁴ Within this context, Bielfeldt recounts ancient perceptions of lamps and examines, for example, Praxagora’s address to her lamp in the opening of Aristophanes’s *Ekklesiazousai*. In accounts such as this, lamps emerge as light-emitting eyes and silent witnesses to human activities. These lamps not only facilitated practical tasks; they also shaped atmospheres.

But how can we authentically reconstruct or re-enact the original experience of natural and artificial light within the Roman house? In chapter 2, Danilo Campanaro gives his answer to this question in a summary of his research on the House of the Greek Epigrams.¹⁵ In addition, six further chapters (13–18) are devoted to the virtual reality reconstruction of the triclinium EE in the House of C. Iulius Polybius (IX 13, 1–3). Johannes Eber, Domenico Esposito, and Elsa Nuzzo introduce the triclinium – a room where a set of furniture and lamps was excavated in 1978. Among the finds were three couches, various bronze vessels, and lampstands equipped with trays for seven lamps. Curiously, only one lamp was recovered; a few more could have been arranged on the tray that a bronze statue carried. This famous archaistic tray-bearer, prominently featured in the exhibition (cat. no. 1), is described by Elsa Nuzzo, who also places it within the

¹⁴ Bielfeldt 2014a; Bielfeldt 2014b; Bielfeldt 2016; Bielfeldt 2018.

¹⁵ See above, Campanaro 2023.

tradition of lamp-bearers – bronze statues depicting beautiful young slaves brightening the ambiance during banquets.

It is crucial to note, however, that triclinium EE only underwent basic restoration following significant damage during the earthquake of 62 CE or later. Wall surfaces, from which the decorations had fallen, were only provisionally filled with a primer. If indeed the couches found here were used for dining, banquets unfolded in a makeshift setting. The numerous bronze objects discovered in the front part of the room appear to have been either stored there or moved for safety to this room during the eruption. Consequently, reconstructing the precise number or positioning of lighting implements based on their findspots remains elusive.¹⁶

Lars Oliver Grobe and Andreas Noback (chapter 16) describe the meticulous digital reconstruction of the triclinium. Unlike Campanaro's model, their approach incorporates lamps and furniture (though excluding daylight). They directly measure the physical properties of an oil lamp's flame and all materials – reflectance, specularity, and roughness – rather than relying on existing data. As anticipated, the illumination provided by four flames allowed only for scotopic night vision. Those desiring to appreciate the paintings in color and more detail had to draw closer, lamp in hand. The 3D-modeling of lamps is explained by Manuel Hunziker (chapter 17). Susanne Bosche and colleagues explain in chapter 18 the creation of a coherent, though by necessity not entirely realistic, virtual environment. Felix Lehner and Olaf Herzog describe the processes and decisions involved in re-casting the “bat lamp” (chapter 13).

Other contributions discuss central events in Roman daily life where artificial light or lamps played a crucial role. In chapter 37, Johannes Eber provides a comprehensive summary of what is known about artificial light within religious settings. The golden lamp – weighing nearly 1 kg – from the Venus temple, possibly donated by Nero in 63 CE, holds a place of honor. Additionally, terracotta lamps and two distinctive floor lamps have been documented from the temple of Isis. From the ca. 570 Pompeian household shrines, only three bronze lamps have been found. These lamps do not significantly differ from those used in other contexts. Overall, while the use of lamps and lighting in ritual acts is evident, its relative importance in that context remains modest when compared to other settings like the *cena*.

The *cena* or *convivium*, a central social event in Roman society, commenced late in the afternoon and extended well into the night (see chapter 19). Ruth Bielfeldt underscores the critical role of artificial light during these gatherings, particularly within the triclinia. She starts her discussion by exploring the special relationship that Petronius's Trimalchio had with candelabra and lamps while he was still a slave boy, a *puer delicatus*. Bielfeldt then continues with a thorough presentation of the bronze statues (*aurea simulacra*¹⁷) of slave “superboys”¹⁸ that adorned the triclinium. These statues, equipped with tablets, could present food, lamps, or other items. Their findspots at Pompeii are indicated on the inside of the foldout front cover. Additionally, Bielfeldt discusses the iconography of

¹⁶ P. M. Allison: “On-line Companion to Pompeian households,” 2004: <https://web.archive.org/web/20070103183152/http://www.stoa.org/projects/ph/rooms?houseid=15>; accessed 28 September 2024.

¹⁷ Lucr. 2.24.

¹⁸ Obermayer 1998, 58.

two remarkable *trilychneis* adorned with small figurines of ecstatic dancers wearing pointed hats (cat. nos. 52–53). Her persuasive interpretation suggests that these dancers were, in fact, slave performers during the Saturnalia. In chapter 28, the same author discusses the shadows cast by such figure lamps. This attempt at a cultural history of shadow and shadow theaters is one of the most original papers in the volume. The journey begins with Plato's allegory of the cave and Pliny's account of the invention of molding (not painting, as stated) by the Corinthian potter Butades. The author then traces the evolution of shadow theater in European cultural history, leading up to the advent of cinema. Against this backdrop, the focus then narrows to the moving shadows created by a *bilychnis* adorned with a dancing Silen and a *trilychnis* featuring a dancing slave (as discussed earlier). For the experiments, a 19th-c. copy and one of the new casts from 2022, as well as digital reconstructions, were used. While the final interpretation of a scene in Petronius's *cena Trimalchionis* – where Bielfeldt explains Enkolp's double vision of a lamp as alluding to a shadow theater rather than being caused by alcohol intoxication – may not universally convince readers, the notion that shadow theaters, cast by lamps, were deliberately created entertainment at *convivia* remains compelling.

And what happened after the *cena*? Amelie Lutz und Anne Merten (chapter 33) provide a detailed insight into Roman texts that extol the benefits of lighting and underscore the significance of vision in pleasurable sexual encounters. Across a multitude of texts, lamps emerge as the silent confidants of lovers. Furthermore, the authors venture to interpret the scarcity of natural light in certain cubacula adorned with erotic paintings – often labeled “love chambers” – as a deliberate preference for artificial illumination.

Following intimate moments, sleep takes center stage. In chapter 30, Amelie Lutz provides an impressive and engaging overview of how sleep was valued and perceived in Roman antiquity. Within her exploration, we encounter the Roman conception of night, the moral commendation of sufficient sleep, interpretations of the phenomenon of dreaming, and the significance attributed to concentrated writing during evening hours (*lucubratio*). Finally, notorious Roman night owls also find their place in this multifaceted discussion.

David Richter (chapter 36) casts a sideview onto Apuleius's tale of Amor and Psyche, where hot oil spilling on sleeping Eros tragically disrupts young love. Meanwhile, Florian Knauss (chapter 45) directs our attention to the Pompeiianum in Aschaffenburg, a full-scale model of a Roman house initiated and built by Ludwig I, King of Bavaria, in the 1840s. Within this architectural replica, a complete set of *instrumenta domestica* allows for appreciation under natural light. In the exhibition, a copy of the Pompeiianum's winter triclinium, complete with original 19th-c. replicas of candelabra and coal basins, could be encountered. Finally, Susanne Bosche (chapter 46) informs about the course of cataclysmic events during the eruption of Vesuvius in 79 CE.

II. Lighting (and other) implements

Norbert Franken (chapter 3) lays the groundwork for a discussion of lamps and other *instrumenta domestica* with a well-informed summary of the history of research on Roman bronze lamps. This scholarly pursuit dates back to the early 17th c., marked by the presentation of several collections, such as that of G. P. Bellori, which is partially preserved in the Antikensammlung in Berlin. But research on Roman bronze lamps never gained significant momentum. Still today, its hallmarks are the catalogues of bronze

lamps in the Museo Archeologico Nazionale di Napoli (compiled by Nazarena Valenza Mele in 1983) and the British Museum (as documented by Donald M. Bailey in 1996).¹⁹ Franken missed mentioning the fundamental typological study by Siegfried Loeschcke in 1919.²⁰ Loeschcke's typology significantly informs the classification of lamps throughout this publication and receives particular attention in Susanne Pfisterer-Haas's concise essay on lamp typology found on the inside of the foldout back cover.

In chapter 4, Susanne Pfisterer-Haas and Magdalini Valsamidou give an overview of the development of artificial lighting, spanning from the Late Palaeolithic period to the imperial age (albeit not beyond). Just a small quibble: the creation of the *Firmalampe* must be regarded as having evolved organically within the corpus of clay lamps by innovative potters from Mutina/Modena rather than as an imitative process starting from bronze lamps as stated on p. 55.²¹

Johannes Eber, with contributions by Catharina Blänsdorf and Cristina Mazzola (chapter 6), summarizes what is known about wicks and the oil used in lamps. This team also presents new analyses and evidence from the Vesuvian cities. Conditioned by modern candles, one may find the thickness of the wicks – approximately 1 cm – astonishing, notably thicker than those used in the project's various non-digital lighting experiments (e.g., figs. 13.8 and 28.8–14). Additionally, the sheer variety of simply all available materials and substances is astounding. For wicks, rush, flax, mullein, papyrus, and broom were used; for fuel, besides the most common olive oil, there was also oil from poppy seed, hazelnut, walnut, beechnut, linseed, sesame, radish, and tallow.

The series of essays dedicated to specific lamp types starts with Norbert Franken's presentation of two remarkable Hellenistic lamps discovered in Pompeii and Herculaneum (chapter 5). These lamps of the Mahdia type, painstakingly reassembled by the project, also served as the basis for reconstructions (although, regrettably, these are not visually illustrated). Ruth Bielfeldt and Silvia Amadori present candelabra (chapter 7). Among the intriguing finds is a 5th-c. BCE candle holder from Herculaneum (cat. no. 18) that must have been a remarkably old heirloom. The standard Roman candelabrum, standing 1.2–1.5 m tall, typically bore bronze lamps. In the Munich exhibition, a total of 14 fixed candelabra (cat. nos. 18–31) could be seen. Four of these underwent recent restoration, including a remarkable, previously unpublished Hellenistic example with polychrome inlays (cat. no. 27). Not only do the authors inform us well about typologies; they also venture to raise questions that go beyond. Why did kraters figure prominently at the top of candelabra (perhaps alluding to the glow of wine?), and why did candelabrum shafts famously imitate reeds (was reed used for torches?)²²

In chapter 8, Ute Klatt, specialist in adjustable Roman stands, offers a thorough and up-to-date introduction to adjustable candelabra. Seven such candelabra are known from the Vesuvian cities, and all are catalogued here (cat. nos. 32–38). One of these could be

¹⁹ Valenza Mele 1983; Bailey 1996.

²⁰ Loeschcke 1919.

²¹ Labate 2016, 24.

²² A side note: I was puzzled by the alleged find spot “Casa del Menandro” of a reed candelabrum (cat. no. 30), which does not figure in the record of finds from the house as given by Penelope Allison (2006, 449; see Hielscher 2022, cat. nos. 55 and 56) and was first published in 1806, whereas the house was only excavated in 1927–32.

newly identified as a modern pasticcio (cat. no. 38). Judging by their findspots, adjustable candelabra were often preferred for cubicula (or perhaps simply stored there?). Notably, candelabra from Pompeii characteristically end in herms, displaying combined images such as Amor and Psyche, Africa and Asia, or even Hermes and Perseus – lacking thematic commonalities, but both adorned with the same winged hat and easily modeled from the same mold. The iconography of Africa and Asia on one of the candelabra is further analyzed by Ulrich Hofstätter (chapter 9). Silvia Amadori (chapter 10) briefly discusses lamp hangers in the shape of trees, which could be placed on the floor or on tables, often combined with figurines. Ruth Bielfeldt (chapter 20) presents new research on the tray-bearer “Barbatelli” (cat. no. 8), found in a bronze workshop in front of the city gates of Pompeii, where the object underwent restoration before Mount Vesuvius erupted.

A comprehensive set of essays discuss depictions of humans and animals on bronze lamps, as well as on other implements used at the *convivium*. In chapter 21, Rolf Michael Schneider introduces head lamps and explains their iconography as slave boys, perhaps alluding also to fire-breathing performances during the *cena*. Vanessa Heiduck discusses the prevalence of theater masks (chapter 22), which appear not only in interior decoration but also on lamps, and which she links to the display of patrons’ Greek learning. Johannes Eber (chapter 23) tackles the intriguing case of a small group of lamps that carry statuettes of monkeys performing as gladiators. He argues that these depictions might relate to real animal dressage acts by street performers, challenging the prevailing view of them as mere satirical exaggerations. Norbert Franken compiles further evidence regarding figurines on lamps (chapter 29). The same author illustrates in chapter 38 a select group of bronze lamps featuring busts of deities, primarily Jupiter. Only a dozen such examples exist in bronze (with many more in terracotta). The inclusion of silver inlays on the lamps’ shields, depicting stars or lightning bolts, must have added a pleasing sparkle when the lamps were lit. Hannah Rathschlag (chapter 39) presents a relatively large group of Roman bronze lamps shaped like sandalled feet. The reason for this specific form remains an enigma yet to be unraveled. Silvia Vornweg (chapter 24) interprets panther-shaped handles as allusions to wild nature tamed by Bacchus and dolphin-shaped handles as friendly companions into the night. Lara Zinn elaborates (chapter 31) on the symbolism of bats and roosters depicted on lamps. These creatures mark the beginning and end of the night. Berglind Hatje focuses on dogs and geese, which stand guard on lamps (chapter 32).

Mice pilfering lamp oil by extracting it from the lamp with their tails and then licking it off are a frequent sight on lamps in bronze. In chapter 25, Ulrich Hofstätter and Ruth Bielfeldt present Pompeian lamps depicting this cute nuisance. But they are also able to produce some lesser-known motifs, such as lamps in the shape of almonds, poppy capsules, plucked chickens, or snails. These lamps often come in miniature format, and the authors imagine them gracing the trays on which new courses arrived during the *cena*. This could finally provide an explanation, also, for the relatively frequent occurrence of miniature lamps in terracotta.

Other implements were used during the *cena*, too. Susanne Pfisterer-Haas (chapter 26) introduces the *authepsa*, a bronze kettle from which hot water could be tapped for mixing with wine. Yes, hot water! Philippa Maske illustrates coal basins (chapter 27). Victoria Räuchle (chapter 34) writes on bronze statuettes of torchbearers. Interestingly, these figures usually depict much younger boys, or cupids, than the tray-bearers. They therefore may

have evoked a somewhat different allusion, not being themselves objects of sexual desire but hinting at love in its abstract form and originating in a different artistic tradition.

Two contributions deal with inscriptions: Amelie Lutz unravels the very interesting cases of small bronze plaques embedded in lamp hangers (chapter 40). While typically these *tabulae*, of which a considerable number are preserved, document the donor of lamps as votive offerings, Lutz is able to demonstrate that at Pompeii they were also used in shops or *thermopolia* to identify the owner.

Inspecting bronze lamps at Naples, the project team discovered a new punched owner's inscription, which is briefly discussed by Markus Scholz (chapter 41) and testifies to the presence of the military L. Tussius or rather Tussidius at Pompeii.

Finally, Susanne Pfisterer-Haas (chapter 42) discusses so-called *tintinnabula*, large wind chimes that include bells, lamps, and, in addition, only in the Vesuvian cities, a bronze penis as a good luck charm, often taking the shape of a penis bird or the oversized member of a complete figure. In some cases, the penises themselves could be used as lamps. They received a comic twist when a figure (Vulcanus?) uses his penis as an anvil, or when a gladiator fights the tip of his penis transformed into a panther's head.

III. Scientific analysis and restoration

As stated, scientific analysis was an important component of the research project, and indeed the 580 individual probes taken of the objects may represent an unprecedented sample size. In one of the volume's longer essays (chapter 11), Alessandra Giumlia-Mair gives insights into the world of alloy composition. Employing X-ray fluorescence (XRF), she discerns the deliberate use of diverse alloys to obtain a certain workability, color hue, or reflectance. Microscopic observations further revealed the special polish given to the lamp shields. Some of these were even tinned to augment their reflective qualities, as in the cases of the bat lamp (cat. no. 62) or the lamps with the dancers (cat. nos. 52, 53). The author also explains in detail the historical practices of combining, completing, and patinating bronzes during the 18th and 19th c. In a second contribution – chapter 12 – Giumlia-Mair revisits her prior research on *Corinthium aes* – a prized, dark-hued copper alloy with low percentages of gold and silver. Similar alloys were used for several high-quality lamps and lampstands from Pompeii, among them a candelabrum (cat. no. 27) and a remarkable foot-shaped lamp found in the Lararium of the Casa della Fortuna (IX 7, 20, cat. no. 163).

An exceptional bronze statuette, a lamp-bearer (cat. no. 14) measuring 78 cm, was found in 1818 at Pompeii, but after its initial publication in 1831, fell into oblivion. Alessandra Giumlia-Mair, Ruth Bielfeldt, and Johannes Eber (chapter 35) managed to rediscover and identify the statue of a youth with Phrygian cap in the magazines of the Naples Museum. The results of scientific analysis, identifying an early restoration and some subsequent alterations, are reported in detail.

In another important paper (chapter 43), Giumlia-Mair presents an analysis of three pasticcio lampstands from the 18th and early 19th c. Meanwhile, Ruth Bielfeldt reflects on their aesthetics in the contemporary context. All three pasticcios are assembled from Pompeian finds that do not naturally belong together, as well as incorporating modern parts. The individual components have been stabilized through overlap casting and joined together using brass screws. These lampstands serve as excellent examples of early

restoration practices in the royal workshops at Portici and Naples, initially led by Camillo Paderni and later by the Biondi and Ceci families. The newly created objects were whimsical capriccios that appealed to contemporary taste. They were prominently presented in exclusive exhibition spaces at Portici and Naples, significantly influencing the perception of Pompeian household items for centuries. Additionally, for the components of a fourth capriccio not discussed in detail (cat. no. 174, see pp. 105 and 329), I would like to point out close parallels in the Metropolitan Museum of Art, as well as from Arabia.²³

Giumlia-Mair also discusses the few items from Pompeii that are made of brass (chapter 44). In Roman times, brass was used for producing coins and militaria and may have been a state monopoly. The presence of zinc in the alloy of “civilian” bronzes immediately raises suspicions of modern imitations. Regarding the two Pompeian lamps, their status as either antique or modern remains unclear, even with the assistance of scientific analysis.

The volume’s last two contributions (chapters 47 and 48), authored by the restorers Ingrid Reindell and Hagen Schaaff, are dedicated to the various traumata and interventions to which the bronzes of the Vesuvius cities were subjected during the eruption and after their recovery. They carefully explain different restoration guidelines spanning the past 200 years and how these can be clearly perceived today; for example, through the distinct colorations of the bronze surfaces.

In summary, the volume provides an excellent overview of the entire array of objects used to illuminate Roman houses. The focus is unmistakably centered on bronze lamps, but many conclusions are relevant far beyond that. Historically, such objects have primarily been examined typologically. This exhibition’s great merit lies in offering a comprehensive appreciation of this object type, not only as lighting devices but also as powerful agents and entertainment machines that sparkle, cast shadows, and convey meaning. The virtual reconstructions, along with top-class objects like the dancers lamps, the bat lamp, and the tray or lamp-bearers, make the full cultural significance of these items palpable. Both the exhibition and the accompanying publication represent academic projects with substantial student participation, resulting in an impressive outcome in every respect.

Review of Hielscher

The third book under review here is Adrian Hielscher’s revised and shortened dissertation, delivered at the Christian-Albrechts-Universität, Kiel in 2020. The dissertation project was financed by and conceived as part of Annette Haug’s ERC Consolidator Grant DECOR: Decorative Principles in Late Republican and Early Imperial Italy. The book is the fourth volume in the project’s publication series, *Decor*, and it can be read in close association with the other studies and dissertations in the series. The book is available in print, as well as via Open Access under a Creative Commons license (CC BY-NC-ND 4.0). It is well edited and lavishly illustrated in color.

The author’s main research question is straightforward: How were Roman household items designed, and how did their design shape the atmosphere and experience of living within Roman houses in concordance with interior decoration? Dealing with Roman object design, the study addresses an important research gap. Given the importance of object

²³ New York, Metropolitan Museum of Art inv. 07.261; Negev 1997, 201 no. 7; Grawehr 2010, 191–96.

design in our modern world, it is puzzling that this field has not previously been explored for antiquity. To answer his research questions, the author has selected one set of objects, the *instrumentum domesticum* of the Insula of the Menander at Pompeii. After preliminaries and a methodological introduction (parts I and II), the core of the book is an in-depth discussion of the individual objects and object categories (part III). In part IV, different aspects of object design are tackled. Finally, for the last part, in order to describe the interconnection between object and interior design, the author has decided to resort to a kind of scenario writing, a “thick description” of a bather’s experience in the house’s small private baths. Additionally, a catalogue of selected finds from the Insula is provided.

After discussing the individual chapters, I will briefly address one particular issue – how the author dealt with find contexts and what conclusions could have been drawn from them – before giving a thoroughly positive evaluation of the book’s merits.

In part I (5–21), the author provides a short overview of previous studies dealing with household objects from the Vesuvian cities and their design. Interestingly, it was only at the end of the 19th and the beginning of the 20th c., during the period of the *Kunstgewerbebewegung* in Germany, that academics like Johannes Overbeck (1826–95) and Erich Pernice (1864–1945) engaged with the design of Roman objects. Later, a typological approach prevailed again, and archaeology focused on sorting out chronological and functional aspects. Hielscher acknowledges the importance of this approach throughout, but his interest lies elsewhere. More critically, he addresses the approach of Penelope Allison, who attempted to draw conclusions about room (multi-)functions by analyzing the distribution of finds, and I will return to that below. As a second preliminary, Hielscher introduces the Insula of the Menander and its finds. Here, I found the architectural context underrepresented. Even though it is clear that this can be found elsewhere,²⁴ I would have expected an introduction to the insula’s different houses as well as to the different functional parts of the House of the Menander. Instead, only a brief summary of the insula’s excavation and publication history is given. While reading, it was necessary to return several times to the plan of the building (16 fig. 2), and it was often difficult to match the descriptions of the rooms with this plan (see Part V below).

The selection of finds discussed in this volume is explained at the end of part I (19–21). For archaeologists accustomed to complete find catalogues, it is important to note that this catalogue is selective and does not aim for completeness. There are far fewer entries than the 2,000 in Allison’s catalogue of finds from the insula. Objects for which only descriptions survive have been excluded, as well as those that are too fragmentary or insignificant to allow for extended analysis and those that are not relevant for the present study (e.g., skeletal remains) or that duplicate other objects (i.e., lamps with the same design). Additionally, only those objects that could be consulted in the various storerooms have been included. In the end, the catalogue contains 178 items, several of which are collective entries for more than one object (e.g., cat. no. 63 for three glass bottles, cat. no. 85 for three silver bowls).

Part II (23–40) is dedicated to the questions: What constitutes design? Why study ancient object design? As elements of design, form, material, and ornamentation are identified, qualities of design are defined as functional, aesthetically appealing, and

²⁴ Ling 1997.

semantically charged. Through these qualities, objects contribute to the atmosphere of the given space in which they are placed. This last point connects to the ERC's overall interests and enables integration with research conducted in other sub-projects. Hielscher effectively introduces the basic criteria and elements of design, supported by numerous references to research in the fields of art history and design theory, preparing the reader for the following analyses.

Part III (41–219) is by far the longest of the book. In a *tour de force*, an impressive array of all relevant object categories from the Insula of the Menander are thoroughly introduced, individual objects are described, and their designs are analyzed. Object categories include *puteals*, *labra*, lead tanks, sundials, tables, *klinai*, other furniture, *turibula*, coal basins, lamps, candelabra, pyxides, kohl sticks, glass bottles, balsamaria, bronze, silver, and glass jugs, bronze basins, *paterae*, drinking cups and other serving dishes from terracotta, glass, bronze, and silver, a *situla*, small table ware, *spatulae*, mirrors, jewelry, mortars, sieves, scales, and weights. The well-known treasure from the house of the Menander provides plenty of material for including figural decorations. Discussions of single object categories, their typologies, and their functions are generally conducted against the backdrop of a comprehensive and up-to-date bibliography.²⁵ Almost all objects are illustrated in one or more good-quality color photographs or drawings. While the objects from the Insula of the Menander are generally well known from other studies, the focus on their design here offers a new perspective.

Drawing from the thorough description of objects, in part IV (221–51), an analysis of Pompeian object design is given in seven self-contained chapters. The first chapter, “Zum Umgang mit Formen” (221–25), in this fourth section of the book (chapter IV.1) focuses on two aspects: form composition and inter-object design. The individual components of Roman domestic objects (i.e., foot, body, handle) appear to have rarely been joined together by simple additive juxtaposition and, at the other extreme, almost never cast into a fully integral or fluid shape. Usually, their connections are masked by ornaments or attachments. Hielscher sees this as an aesthetically motivated design decision. Additionally, I would suggest it was driven by technical limitations and the need to secure the joints of separately produced parts – a common feature in all cultures with similar technical capacities (roughly Mediterranean Bronze Age to the early modern period). Inter-object design, such as an earring in the shape of a lamp or a saltshaker in the shape of an amphora, or less spectacularly, an *étagère* in the shape of a table, is considered to contain a semantical reference or simply to create fun items. Materials (chapter IV.2) of domestic objects are often emphasized by the object's shape. Hielscher briefly discusses the concept of *Materialikonologie* but does not delve into analyzing his objects by asking what specifically was meant or hinted at if this or that object was produced in clay, glass, bronze, silver, or bone.

The relationship between ornament and image (chapter IV.3) is viewed from three perspectives (230–38). Under the heading “temporality,” Hielscher describes ephemeral effects, such as when a mirror is held or a lamp is lit. For clay lamps, it is observed that their images could only have been thoroughly enjoyed for a brief moment when the lamp was lit. However, I would like to comment that they could have also been looked at under daylight conditions. In addition, many clay lamps feature an image that is

²⁵ For mirrors, add now Berg 2023.



Fig. 1. Roman lamp with Cupid playing with a hare, Mainz, Landesmuseum inv. F 4742, virtually illuminated 3D-model. Note concord between the shadow line and the ground line of the scene. (Photography and photogrammetry (Agisoft Metashape) by Martina Hoff; illumination and render (Blender) by Matthias Grawehr; with kind permission.)

carefully calculated (Fig. 1) in the way that the ground line concords with the shadow line when the lamp is lit; this indicates that it was conceived to be viewed under these conditions. Furthermore, the function of visual frames to accentuate the object, as well as the presence and meaning of images, is discussed. Here, Hielscher emphasizes that many of the figural decorations are polysemic and open to different interpretations depending on the context in which the objects are used, rather than seeing a few “supra-signs,” such as the Dionysian or Aphrodisian, at work.²⁶

²⁶ In the context of this review, it may be of interest to compare the interpretations of lamp and lampstand design with the previously discussed book *Neues Licht in Pompeji*. Hielscher presents three bronze lamps (cat. nos. 52–54), four candelabra (cat. nos. 55–58) and one low lampstand (cat. no. 59). Two objects from the insula appear in the Munich catalog (there, cat. nos. 30, 126). For the lamps of type Loeschcke XX, Hielscher notes: “The aesthetic appearance of the lamp is characterized by soft, curved shapes that harmonize with the vegetal decor” (96). He does not give specific interpretations for the imagery on the handle (dolphins, lions, horses, geese, and roosters), where the authors of the Munich exhibition catalogue are less hesitant.

A practical approach is taken in chapter IV.4 (238–40) on ergonomics and the haptic qualities of objects. Very convincingly, for example, leaf ornaments (sometimes also self-referential elements in the shape of fingers) are related to their function as thumb rests, and fluted handles or candelabrum shafts may be interpreted as useful designs for providing a better grip. This approach is taken further in chapter IV.5 (241–43), where, equally convincingly, the symmetries or orientations of ornaments are interpreted as indicating the way in which those objects were to be handled. Finally, chapter IV.7 (246–51) is devoted to the interference between the objectness and liveliness of things. Hielscher sees here an anthropological constant at work, as humans tend to transform things into familiar natural shapes they are able to intuitively interact with.

The last part of the book, part V (253–78), intends to show object design in action by describing a design and user experience in a specific architectural and decorative setting. The situation selected for this scenario is a visit to the bath, with its implicit sensuality and surroundings. The choice of architectural setting, the private bathing suite in the House of the Menander in 79 CE, has minor shortcomings, as there are important gaps in our knowledge of the paths within the bath and of wall decorations due to the state of preservation. It would certainly have helped to have made these lacunae explicit and to have provided a reconstructed ground plan.²⁷

I pick out two moments: The first is in the *atriolum*, where the visitor enters the bath complex. The low and grotto-like architecture and its decoration, Second-Style paintings or rather imitations thereof (259), with an exceptional frieze depicting Greek gods and myths identified by inscriptions, must have, in its time, seemed old-fashioned, conservative, and moralistic (260).²⁸ The setting fits the old-fashioned wooden sculptures in the house's *lararium* and reminded me very much of Seneca's letter describing Scipio Africanus's house and "small bath, buried in darkness according to the old style."²⁹ Here, slaves poured water from bronze jugs, featuring solemn masks and lions as handle attachments, into bronze paterae for hand washing, almost in mimicry of acts of libation. Next, a bather would move on to the apodyterium and "Spartan" *laconicum*, hot and dry, not unknown in Greek gymnasias. All this captures the atmosphere of this rather austere *atriolum* extremely well.

The second moment is somehow different. A bather would be hot and almost naked when he entered the *tepidarium*.³⁰ There he was cleaned with *strigiles*, objects that could be seen in the floor's mosaic emblem. On the wall, an abduction scene of Nessus and Deianeira next to a river god set the tone, as well as images of resting boxers and

In line with Hielscher's argumentation, I would add that many of the animals, jumping or with long necks, could have been selected to fit the dynamic curve of the handle. For the imagery of candelabra (ivy, reeds, or craters), again he does not develop semantic interpretations as the Munich authors do, but refers to them as "abbreviations of the Dionysian circle" (would this not be a supra-sign? See p. 238). In addition, I would suggest that some of these utensils are interconnected by their common decorations; see, for example, the very similar rim profiles of table lampstands and lamps of Loeschcke types XVI or XIX (see Grawehr 2010, 186–87).

²⁷ For a reconstructed ground plan of the bath, see Ling 1997, 62, fig. 2, *cfr.* here Fig. 2.

²⁸ *Cfr.* Ling and Ling 2005, 102–6.

²⁹ *balneolum angustum, tenebricosum ex consuetudine antiqua* (Sen. *Ep.* 86.4, transl. Gummere 1991, 313).

³⁰ The geometric motif on the threshold reminded me of the lead water tanks' decoration (cat. 5, fig. 10 on p. 48).

athletes; in the wall decoration's lowest register, large bronze *askoi* mirrored the containers from which water was now poured over the bodies. All was dimly lit by a lamp in a wall niche. Finally, the last room, the *caldarium*, could be entered, where a warm bath may have been taken in the alcove, or where one may have simply rested. Hielscher missed describing the staging of daylight in this room with light filtering in through a small, round, glazed skylight in the niche at the head of the room. He also leaves out John R. Clarke's mesmerizing second reading of the threshold mosaic of four strigiles laid out symmetrically on the floor with an *aryballos* in the middle, highlighted in red, as a visual allusion to female genitalia, with outer and inner labia and clitoris (rather than phallus), next to a bathing slave carrying hot water in red *askoi* and with the tip of his large penis marked out in red, again.³¹ Within the *caldarium*, Hielscher accurately describes the decorations, with cupids next to *labrum* and *hydria* on the side walls and in the head wall's niche, a marshy landscape populated by ducks, with *Victoriae* and standing women in a second register, topped by panels depicting women bathing, mirroring the *labrum* that probably once stood in the niche. I find it hard not to note that all this clearly addresses and postulates an exclusively female bathing clientele, whereas Hielscher describes a male patron. The objects that he describes in this setting are in tune with this reading: silver shell-shaped bowls, silver jugs with exotic handles (a rare naked *Ashtarte*), and large bronze basins. This then would be the luxury bathing version, described disapprovingly by Seneca in the same letter mentioned above: "walls [...] resplendent with large and costly mirrors; [...] vaulted ceilings [...] buried in glass; [...] pools into which we let down our bodies after they have been drained weak by abundant perspiration; and finally, [...] the water [...] poured from silver spigots."³² It is in this scenario-writing exercise that the analysis is densest and most successful. In particular, the materiality of objects and their figural decorations become deciding factors in the generation of atmosphere. Other aspects make less of an impact. In fact, throughout part IV, methodological concepts are often beautifully introduced but not set in action or developed further. While the study describes object design comprehensively on a macro-level – and this is the author's explicit intention (219) – without interpretation of specific cases, many things remain unsaid. For example, I can see that vegetal decoration dynamizes an object on a general level, but I would also like to know to what end it did so in specific cases.

While I hope it is clear by now that my review of Hielscher's book is positive overall, I cannot refrain from making a last comment on the way that find contexts are sometimes neglected in this study and on what is missing due to that. From the introduction onwards (12–13) the author is skeptical about the importance given to findspots by Allison (and others); the exact place of a find, though relatively well-documented in the case of the *Insula of the Menander*, is rarely of concern. The lead water tank (cat. no. 5) in the atrium, for example, certainly did not come from the floor level and most probably was not filled manually. It was found on the upper floor, where it served, I would assume, as a reservoir equalizing the water pressure in the house's water pipes. Therefore, contrary to statements made (48–51), it did not contribute to the aesthetics of the atrium. Also, the

³¹ Clarke 1998, 133.

³² *parietes magnis et pretiosis orbibus refulserunt, [...] vitro absconditur camera, [...] piscinas [...] in quas multa sudatione corpora exinanita demittimus, [...] aquam argentea epitonia fuderunt* (Sen. Ep. 86.6, transl. Gummere 1991, 313, 315).

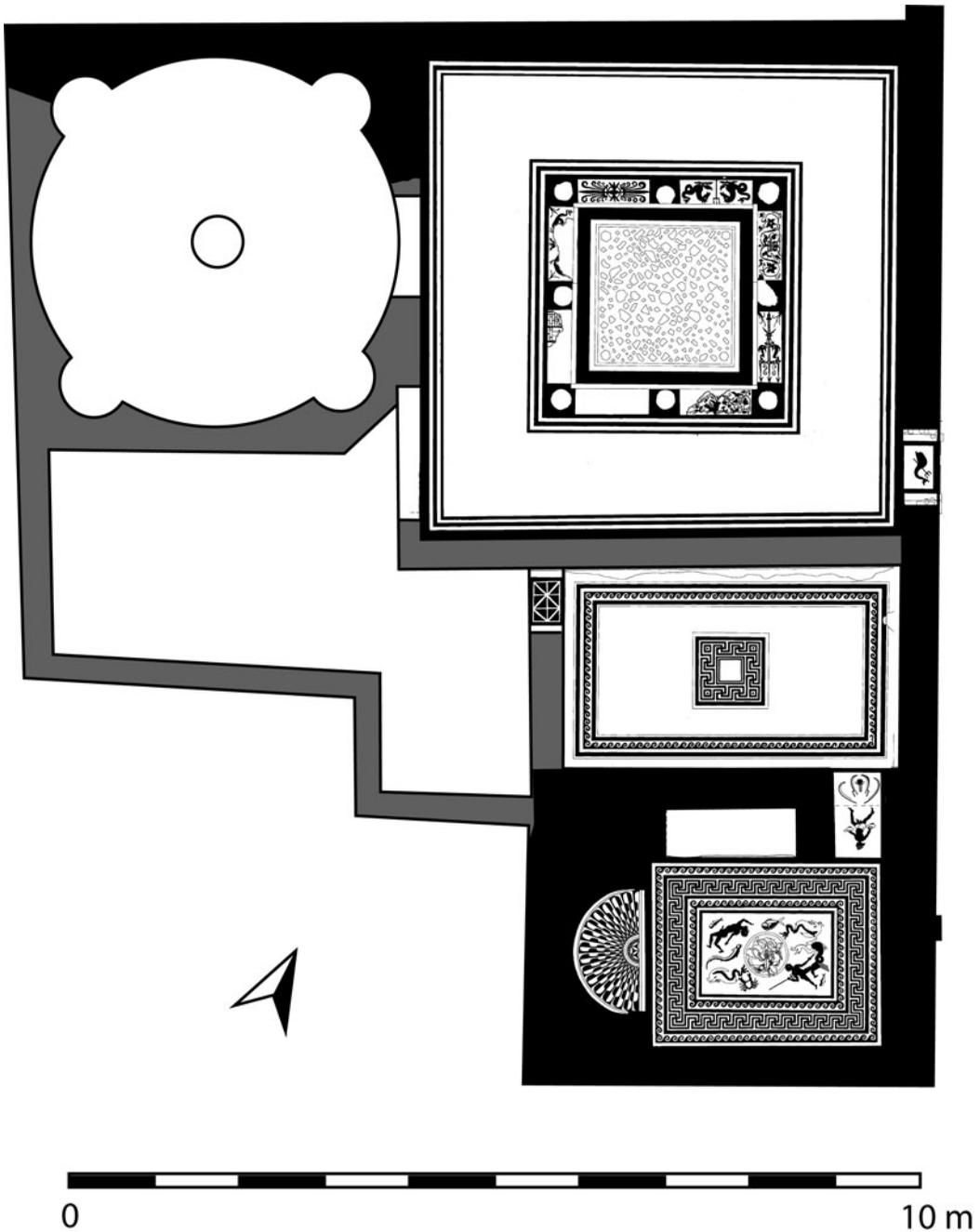


Fig. 2. Private bath in the House of the Menander at Pompeii, ground plan with mosaics. (Illustration by Matthias Grawehr after Ling 1991, 62, fig. 2; 428, fig. 80; 430, fig. 82.)

sundial (53–55, cat. no. 6) was found high above the floor and was probably placed there, not in the garden.

For the clay lamps from the insula, it can be easily demonstrated (Fig. 3) that examples with figural decoration come from the representational area of the house, whereas the lamps without decoration come from servant areas. In addition, the sieve, cat. no. 176,

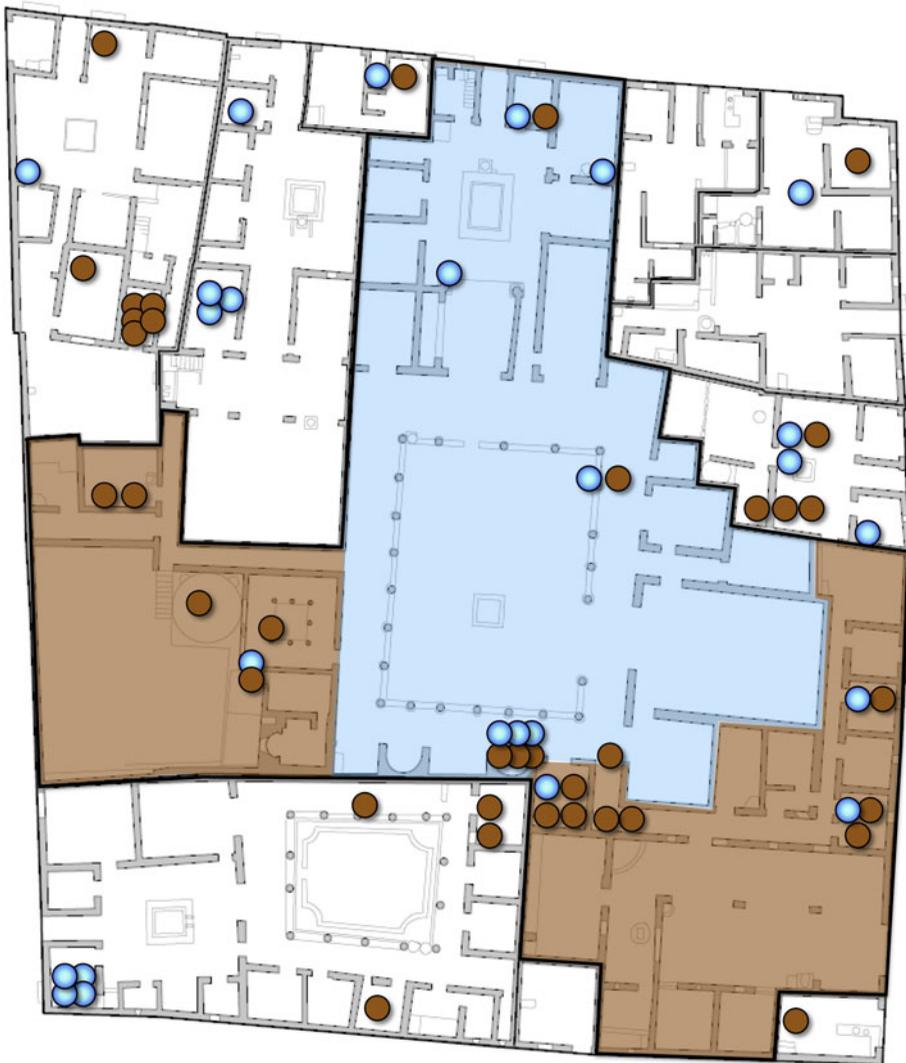


Fig. 3. Distribution of lamp finds on the ground floor of the Insula of the Menander at Pompeii: in the darker color, the service areas of the House of the Menander, in the lighter color, the representational part of the house; darker-color dots mark the approximate find spot of clay lamps without figural decoration, lighter-color dots of lamps with figural decoration. (Illustration by Matthias Grawehr.)

was not used as a luxury item during the patron's *convivium*, as described, but was a slave's personal belonging. This is made clear by its findspot, as well as by the owner's inscription, *verna MHP*. Such conclusions are missed without attention to find places. The distribution of finds also suggests quite different aesthetic atmospheres for the slaves' and the patron's quarters. It can be concluded that images were a luxury, to a certain extent, not only from the distribution of lamps but also from the different frequencies of clay, bronze, and silver items (*contra* 175). Along the same lines, materials also obtain a more differentiated meaning if looked at according to their distribution. Clay and glass *acetabula* (cat. nos. 110, 112) come from the steward's house (rooms 41–44), whereas silver ones are part of the treasure

(cat. no. 113), and the same with spoons (*cochlearia*; 181 nn. 656–59). In fact, materials, aesthetics, and atmospheres differed a lot depending on with whom one was dining. In addition, the overwhelmingly bronze aesthetic in the atrium made me wonder if luxurious rooms may have existed with intentionally different material aesthetics (e.g., with bone couches vs. bronze *klinai*?). Aesthetics and atmospheres may have also differed based on gender, as is alluded to above and can be observed, as well, in ensembles like a set of female items from the upper floor of House I 10, 1 that includes shells, glass beads, terracotta figurines, and a lamp with dancing cupid (cat. no. 45).³³

In conclusion, Hielscher's book succeeds in putting Roman object design on the agenda. It forges new paths for interpreting household items and is a highly useful study that perfectly prepares the ground for more to follow on this topic.

Reconstructing past visual experiences

The three books reviewed in this article advance a cognition- and reception-oriented approach to new levels of argumentation and introduce new object categories. In their attention to the cognition and reception of decorations, they are paradigmatic for an up-to-date approach to Roman interior design. But how can we reconstruct past visual experiences based on the incomplete remains archaeology has brought to light?

Interestingly, the three studies take different approaches to tackling this challenge, besides using Pompeii as probably the best possible starting ground. And it is worthwhile to compare them. This is done, I should note, not to weigh the books against each other but to show the plurality of different successful approaches. Campanaro relies on a virtual reconstruction, scientifically as sound as possible, then sends test participants into his virtual environment and records their eye movement and comments. This offers reliable and quantifiable insights into the perception of a Roman house and its wall decorations under different lighting conditions. On the other hand, as in similar recent studies using player testing,³⁴ an important constraint remains. While it is possible to evaluate what could be seen in color, seen at different distances, or seen at all, this approach falls short of reconstructing past user experiences because the inhabitant or visitor to a Roman house certainly had a different mindset, different prior learning, and different assumptions to any modern viewer. They knew contemporary wall decorations and they had specific intentions about what they wanted to do in this house, which was probably seeing people rather than staring at walls.

Bielfeldt and her team, besides doing important new research on so many bronze objects, reconstruct artificial lighting sources as "image-producing machines." To this end, they analyze the objects' visual properties as concisely as possible, then re-enact user experience by way of virtual reconstructions, as well as through experiments with reproductions. The main focus in this process lies in one specific setting, the Roman *convivium*. The scope is therefore more limited than in Campanaro's approach, but the results are more tangible.

³³ For the set, see Allison 2006, 45–47 and 291–92 pl. 3; for toiletry sets in Pompeiian houses: Berg 2016; Berg 2017; Berg 2020.

³⁴ Clinton and MacLaughlin 2020; Fredrick and Vennarucci 2020, cfr. University of Arkansas, Tesseract Center for Immersive Environments & Game Design, Virtual Pompeii Project, <https://tesseract.uark.edu/virtual-pompeii>.

Hielscher, finally, is not primarily dealing with lighting conditions or lamps but is interested in object design. Nevertheless, he attempts a reconstruction of how *instrumenta domestica*, their designs and decorations, could have contributed to the atmosphere and cognition of a specific space and situation. The method he uses is scenario writing,³⁵ employing imagination and the human mind rather than computational resources. In my view, this tool is a powerful choice if the foundations of the narrative and its elements are made transparent by detailed prior analysis, as is done in this specific case.

Whatever method is used, the cognitive approach to Roman interior design is a thrilling experience, a new path that leads away from describing wall decorations and domestic objects towards reconstructing how the humans of the past perceived and interacted with them.

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³⁵ As examples of scenario writing in ancient studies, see the various contributions by E. Eidinow, for example, in Eidinow 2007.

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