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Articles

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Gregory T. Papanikos, President
Athens Institute for Education and Research

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- **Dr. Stamos Metzidakis**, Head, Literature Research Unit, ATINER & Emeritus Professor of French and Comparative Literature, Washington University in Saint Louis, USA.

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Augustine and the Old Testament Eschatological Tradition: Personal History, Divine Retribution, and Sacrifice

*By Dmitri Starostin**

This study addresses the question of the correlation in the works of Saint Augustine and other scholars of his age of the sacred history, with its origin in the Old and New Testaments, and the personal, "individual time" of life path that was realized in their understanding of the concept of "today," even as biblical concepts of the end of times and of Apocalypse formed a fundamental background to these representations. These specialized concepts of time, with their clearly marked delineations between beginning and end, were a fundamental characteristic of Christianity, including ideas about the Incarnation, Resurrection, and of the Second Coming. As founding thinkers of the early Christian church, Jerome and Augustine helped set the foundation for all further representations of sacred history in Western Christianity until the end of the middle Ages. Recent studies suggest that Augustine left a self-contradictory heritage with respect to matters of explaining how the overarching biblical history could be applied as a model to the actual history of Rome. Moreover, Rome itself also boasted a long tradition of power and had its own scheme of defining the length of historical periods characterized by its own beginnings and ends for the multiple stages of development in the history of the Western Mediterranean. In this study I seek to explore a new reading of Augustine's take on Apocalypse. In my view, Augustine's experience of addressing the matters of the beginning and the end of times was rooted, as we see in the "Confessions", in his own experiences of the the father-son paradigm and was closely related in turn to one of the key elements of Christology, the idea of the sacrifice of the first-born son.

Introduction: Augustine, Sacred History and Personal History

One of the important issues of identification of a community in matters of religion and the sacred in general is the concept of historical time. The Christian calendar included several integrated systems of measuring time that had originated in the traditions of Egypt and Mesopotamia. The key element of Christian time, it was argued, was its "linearity". Christians differed from pagans in their belief that history had a clearly demarcated beginning and end of time.[1] But a deeper investigation of how the Christin calendar was set raises the question of uncertainty in the matters of calendar and in particular to one of the unsolved problems that had been left from the debates about the

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1. Arnaldo Momigliano, "Pagan and Christian historiography in the fourth century A.D.," in *Essays in Ancient and Modern Historiography*, ed. Arnaldo Momigliano (Middletown, Conn.: Wesleyan University Press, 1977), 120–26.

meaning and structuring of the Christian time of history in the times of Jerome and Augustine. Specifically, matters of setting the Christian era and how to adjust the linear calendar of the Old Testament to the actual history of the Roman Empire in the late fourth and early fifth centuries were pressing concerns for the "doctor of the church" from Hippo.[2] In fact, how Augustine reconciled his own quite successful life to the context of his own times and the upcoming "End of Times" was more difficult that it may at first appear. If the scheme of the time from the Creation was applied in his days, it predicted the end "now" and did not allow for any postponement. But this scheme significantly shifted the emphases in the representation of Apocalypse because it separated the "numerical" representations of the End of Times from the realities one could find in contemporary history.[3] The tone in putting up the conceptual framework for the discussion of the time of history as part of the everyday ecclesiastical self-identification within the sacred calendar's scheme of time was set by Augustine, who argued that only biblical history allowed for an *expositio* and interpretation. He argued so because he believed that only in "secular" history, that of the Christian *saeculum*, God revealed himself to the humanity.[4] The key element of Augustine's contribution was to seek to deter people from thinking in terms of the pre-set periods of time like the 3952 or 5199 as in the Hebrew Bible. Augustine was believed to have noticed John the Baptist's coming as failing all calendar predictions and most importantly, failing to bring the change that had been expected of him. Thus the bishop of Hippo argued for Apocalypse as a concept, but against using any kind of mathematical calculations to set the date of this very Apocalypse.[5]

Augustine emerged as part of the cohort of bishops who went the similar life path at the beginning of the fifth century and who moved in their exegesis from highly complex theological questions to matters related to setting the church life in the province where they had been assigned by the church hierarchy and the imperial court. Several cases highlight well the context in which Augustine existed, the pending tasks of creating a theology for "today" and the challenges of being an educated Christian in the context of political

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2. Johannes Van Oort, "The End Is Now: Augustine on History and Eschatology." *HTS Teologiese Studies/Theological Studies* 68, no. 1(2012): Art. #1188.

3 Richard Landes, "The silenced millenium and the fall of Rome: Augustine and the year 6000 Am I," in *Augustine and Apocalyptic and the Fall of Rome: Augustine and the Year 6000*, ed. John Doody, Kari Kloos, and Kim Paffenroth (Lanham: Lexington Books, 2014), 169–71.

4. Robert Austin Markus, *Saeculum: history and society in the theology of St Augustine* (Cambridge: Cambridge University Press, 1970), 1–21; Mayke De Jong, "The empire as ecclesia: Hrabanus Maurus and biblical historia for rulers," *The Uses of the Past in the Early Middle Ages*, ed. Yitzhak Hen and Matthew Innes (Cambridge: Cambridge University Press, 2000), 198.

5. Landes, "The Silenced Millenium," 168–70.

engagements expected by the imperial courts from the bishops. Christian authors like Tertullian, Clement of Alexandria, Origen, Jerome, Rufinus of Aquilea and John Cassian never rose above presbyter status. It happened because a bishop of a large city like Antioch would be charged with many practical tasks.[6] Paulinus of Nola, having originated from a very aristocratic family, on the other hand, became advanced in the career of the bishop, leaving in his letters just hints of the educated concepts of time.[7] Synesios of Cyrene, whose life as a native of Africa was very close to that of Augustine, followed a similar life path and the challenges an educated churchman faced while trying to combine theological musings at the court sojourn and the reality of a province facing the dismemberment of power.[8] Augustine was thus only one of many bishops, but probably the only one from Africa, who managed to gain acceptance at the imperial court, who excelled in theoretical issues, and who later successfully faced the task of creating a life for himself in the present. But how to descend from the "eternal history" to the issues of life in the present? Synesius, for example, faced a number of tragedies, such as the death of his sons and his own declining health. Even Augustine found himself at times, ill-equipped to face the challenges of the real life in Late Antiquity.

Ever since the concept of the four empires and their earthly decay emerged, doctors of the church have asked questions about whether and how to draw the border in Augustine's writings between the usual time of human history, the *saeculum,* and God's eternal time.[9] The apocalyptic exegesis and the adjustment the universal history schemes of the past to maintaining legitimacy of the contemporary elites originated in this context of personal challenges of the changing environment of the fifth century, which could be counted as that just few decades away from the coming of the millenial kingdom. The adaptation of the Old Testament history, and especially of the prophecies and the eschatology their authors professed, to the needs of Late Antique Roman society, took a number of forms. The use of the "four empires" narrative that may be found in the Book of Daniel placed the current history of the Roman Empire within the larger context and made rife the expectations of its possible end with the coming of the overbearing barbarian military groups.

6. **C**laudia Rapp, *Holy Bishops in Late Antiquity: The Nature of Christian Leadership in an Age of Transition*, Transformation of the Classical Heritage 37 (Berkeley: University of California Press, 2013), 181.

7. Ibid., 190.

8. Bernhard Bischoff and Michael M. Gorman, *Manuscripts and Libraries in the Age of Charlemagne* (Cambridge; New York: Cambridge University Press, 1994), 189, Rapp, *Holy Bishops in Late Antiquity*, 157-165.

9. Markus, *Saeculum*, 6.

This Old Testament text was from the beginning of the spread of Christianity key to elevating the eschatological expectations of the end of the world.[10]

The commentaries on the Book of Daniel by Jerome were not a creation of an "apocalyptist hiding in a cave in a desert", but rather a work of an educated individual, well-integrated into the upscale networks of Near Eastern society, that promised a future rather than denied it.[11] It has been argued that the chapters two and seven of the book of Daniel were used to question or uphold the existing social order.[12] The commentaries of Jerome, written at the time when Rome most suffered from the barbarian pressures in the first and second decades of the fifth century, made discussing Rome's future and its much needed response to the demands of time a pressing need.[13] The comment Jerome gave to the verse 22 of chapter 2 is instructive about his attitude to the vagaries of the Roman empire's history and its predicament in the present. The verse: "And it is He who changes times and seasons, who transfers kingdoms and establishes kingdoms" he interpreted in the way that reminded of the eventual disintegration and fall of every known empire. He wrote: *Let us not marvel, therefore, whenever we see kings and empires succeed one another, for it is by the will of God that they are governed, altered, and terminated. And the cases of individuals are well known to Him who founded all things. He often permits wicked kings to arise in order that they may in their wickedness punish the wicked. At the same time by indirect suggestion and general discussion he prepares the reader for the fact that the dream Nebuchadnezzar saw was concerned with the change and succession of empires*.[14]

Augustine's views on the larger time scales of the Old Testament seem to have been categorized as the system of the two different parts: the belief in the six ages of the world and thus in the year 6000 from the Creation and the hints at the ways this scheme could be reconciled with the actual Roman calendar where no end of the world and the coming of Antichrist could be found in the everyday matters of describing the affairs of the church in the weakening Empire. At the crossroads between the time of the *longue durée* and the time of the fourth and fifth century Augustine positioned *saeculum*, the fluid and ever-changing concept that in his system joined the earthly city and the divine

10. Lester L. Grabbe, "A Daniel for All Seasons," in *The Book of Daniel: Composition and Reception*, ed. John J. Collins, Peter W. Flint, and Cameron VanEpps (Leiden: Brill, 2002), 244.

11. Ibid., 243, 246.

12. McGinn, Visions of the End, 66–73.

13. Norman Perrin and Dennis C. Duling, *The New Testament: An Introduction, Proclamation and Parenesis, Myth and History* (San Diego: Harcourt Brace Jovanovich, 1974), 65–72, 76–79, 84; McGinn, *Visions of the End*, 22, 51–55, 66–73, 82–87.

14. Gleason L. Archer, *Jerome's Commentary on Daniel*, ed.& transl. Gleason L. Archer (Eugene, Oregon: Wipf; Stock, 2009), 500.

city.[15] In his view both the sacred history and the secular history arose from the primal sin and produced the *series calamitatis* for humanity. Temporality itself was being created within the learned discourse of a historian or a theologian, but it fell short of history. Let us, however, disassemble and deconstruct the attempts to provide a synthetic view of the *saeculum* concept by pointing out at a number of problems of approaching this theme. Historicity, in turn, was the sign of the world in which there was *nihil solidum, nihil stabile* because the overarching scheme of the Christian history made theologians face the problems of reconciling the mathematical predictions with the actual scales of historical time of the Roman Republic and Empire. Thus even by looking at the higher and longer scales of time man still usually created historicity for himself within the uncertain parameters given to him by the people who had aspired to create a solemn representation of the past.[16] Thus in various works Augustine proposed different versions of his reading of the problem of adapting the sacred time scale to the actual time scale. At the same time, I would argue, since we take different works, which might have had a different logic underlying them each time, we might find him confusing his readers with a sudden shift of the narrative, which reduced the possibilities for discerning the God's age from the human age. The citizen of the heavenly city was just as well part of the *saeculum* as was the citizen of the earthly city.[17] In Augustine view *saeculum* was the sphere of temporal realities in which the two cities shared an interest.[18] Thus it was a complex concept in which Augustine sought to promote unity rather than division of the two concepts of time. Thus the initial division between the God's time and the human time, even if this human had created a sacred history concept, remained critical because Augustine seemed to have found no solution to the problem of God and his 'time' existing anywhere near the disarray and disorder of the human course of history.

This approach to seeing Augustine as giving no uniform definition of *saeculum* and instead promoting this concept as an illustration of complexity of the issue rather than a definite response to the question has been recently updated in a series of studies. This study seek to address this question by seeking to find a possibility to connect the eschatological thinking to the life of Augustine himself and to find in his life the moment that we could designate as correlating to his eschatological thinking.

15. Van Oort, "The end is now."
16. Markus, *Saeculum*, 10–11.
17. Ibid., 102.
18. Ibid., 133.

Augustine and the Dilemma of Eternity and the Present

After the loss of the battle of Adrianople in 378 CE and thus in the times when the "End of Times" and the beginning of the "Millenial Kingdom" were ringing heavily in the heads of the educated Christian theologians, Augustine, as it was shown, became an anchor that tied the tradition of long-term predictions and the tradition of knowing the calendar day by day. The importance of rediscovering the future in light of the eschatological considerations that beset Jerome and Tyconius by Augustine has recently been shown to exceed earlier assessments.[19] In discussing Augustine's contribution one thus needs to take into account the significant differences in the purpose of each text that addressed either a particular occasion or a particular question in the Christology and/or in the theology of time. The stance he took in the "Confessions" was that of a scholar who sought to construct a description of life within the context of the Biblical narrative. But on other occasions and in the works of the lesser genre his task was not to assemble the "history of life", but to disassemble it. In these smaller treatises, much as in the *De duabus civitatibus* he undertook a different task, to find structural elements in history and their conjunctions and overlaps. This was predicated on the need to tackle the history of Rome in a way that would let him fit it into the framework proposed by the Old Testament narrative.[20]

The representations of time one can find in the "Confessions" are to be kept aside, especially for the time of the discussion and before the ultimate synthesis of this inquiry, from the other thoughts and statements of him regarding the problem of the upcoming millenial kingdom.[21] This is particularly warranted because of the considerable differences in rhetorics even within one treatise, the *Confessiones*, let alone the differences between this work, *De duabus civitatibus* and the large number of lesser treatises like *De nocte* and the sermons he published.[22] Thus it has become a well-established fact that he lived within the eschatological world and yet argued for the importance of "today" as the concept that must be at the core of every Christian's thinking.[23] But one needs to be aware that Augustine, both through

19. Richard Corradini, "Augustine's eschaton: Back to the Future," in *Abendländische Apokalyptik. Kompendium zur Genealogie der Endzeit*, ed. Veronika Wieser et al., Kulturgeschichte der Apokalyptik 1 (Berlin: Akademie Verlag Berlin, 2013), 693–713.

20. Landes, "The Silenced Millenium," 151–55.

21. Van Oort, "The End Is Now."

22. Augustine, "Confessiones," ed. J. J. O'Donnell (Oxford: Clarendon Press, 1992); Augustine, "Tractatus de nocte sancta," in *Sermons pour la Pâque*, by Augustine, ed. S. Poque, Sources chrétiennes 116 (Paris: CERF, 2011), 210–21; Augustine, "Sermo 121, Tractatus sancti Augustini de sanctissiame Paschae die prima," in *Sermons pour la Pâque*, by Augustine, ed. S. Poque, Sources chrétiennes 116 (Paris: CERF, 2011), 222–33.

23. Van Oort, "The End Is Now."

the knowledge of the Old Testament and the culture of Egypt that might have been preserved in the oral *traditio*, inscriptions or written record, had this concept of "today" and of the short time of the Lunar calendar in his veins. This statement, at this moment a hypothesis, will later be shown to be based on the solid foundation of his own unusual imagery of the Apocalypse that scholars had ignored and only recently discussed as meaningful part of his approach of the difficult problem of how to explain the flourishing and expansion of the Christian and Judeo-Christian community at the time of the presumed end and of the coming of the "Millenial Kingdom."[24] Let us look in his works for the ideas that relate to his solution of interpreting the construction of the Christian community and the church at the time when, at about 400 CE, there might have been only about a century left to the end of 6000 thousand years from the Creation and the coming of the end of times.[25] The Egyptian calendar was not only that of the precise time reckoning based on the flooding of the Nile, it also knew the precise everyday cycle of a Lunar month as a sequence of day-by-day marks.[26]

Augustine's representations of the eschatological ideas that had found their form in the Old Testament were not one-dimensional. Using these ideas he was "moulding the present", as it has been suggested.[27] In fact, his approach to them was different than that of Jerome who had designated Rome as the fourth Empire that in the terms of the Book of Daniel was also to fall with the first three ones. In fact, addressing the idea of the end of times Augustine was able to define the path for the development of the Christian community within the Roman Empire at his time and at same time to separate and distance from the history of the church the past of those civilizations that Christian thinkers deemed as dead ends in history.[28]

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24. Landes, "The Silenced Millenium," 169–72.

25. Art. Era, In *The Schaff-Herzog Encyclopedia of Religious Knowledge*, edited by Rev. Philip Schaff, vol 4 (New York, 1908-1913), 163. Elias J. Bickerma, *Chronology of the Ancient World,* 2nd edition (Ithaca, NY: Cornell University Press, 1980), 73.

26. Richard Anthony Parker, *The Calendars of Ancient Egypt*, Studies in Ancient Oriental Civilization 26 (Chicago: University of Chicago Press, 1950), 11-12.

27. Karla Pollmann, "Moulding the present: apocalyptic as hermeneutics in City of God 21-22," in *Augustine and Apocalyptic and the Fall of Rome: Augustine and the Year 6000*, ed. John Doody, Kari Kloos, and Kim Paffenroth (Lanham: Lexington Books, 2014) (Reprint of Karla Pollmann, "Moulding the present: apocalyptic as hermeneutics in City of God 21-22," *Augustinian Studies* 30:2 (1999): 165-181.

28. Richard Corradini, "Die Ankunft der Zukunft. Babylon, Jerusalem und Rom als Modelle von Aneignung und Entfremdung bei Augustinus" ["The arrival of the future. Babylon, Jerusalem, and Rome as Models of Appropriation and Alienation by Augustine"], in *Strategies of Identification: Ethnicity and Religion in Early Medieval Europe*, ed. Walter Pohl and Gerda Heydemann, Cultural Encounters in Late Antiquity and the Middle Ages 13 (Turnhout, 2013), 65–142.

The problem of investigating the Apocalypse is rooted in the plurality of this concept that in one way or another existed in all civilizations. It received a particularly widespread representation in the texts one finds in Egypt and the near East, but the idea was not limited to only one text like the Bible or only one historical period of Near Eastern history. Thus when investigating the development of thought on this topic by Jerome, Tyconius and Augustine one may need to be aware that they not only dealt with a difficult topic with many adjunct themes, but also with a tradition of communication on this theme between the educated representatives of different human collectives. Thus they were dealing, even in the case of the Bible, less with a singular text, whose authors shared the same worldview, but more with a quite opposite phenomenon. To grasp the difficulty of the material they were addressing one thus needs to take into account the process whereby the knowledge on this touchy theme was extracted from the texts, understood and construed as a narrative for people unrelated to the project of keeping sacred history on track. This requires of the modern scholar to resolve several problems: first, to understand how the concept of the beginning and the end of history was first incorporated into one text, second, to investigate the practice of communicating between the general, "localized" and "the other" traditions of viewing this phenomenon, and third to study the ways in which the knowledge of the Apocalyptic tradition in its most educated and arcane format was read into a single coherent and explanatory narrative outside of the sphere of the sacred knowledge, say, in a parable.

But how one can separate and distinguish the contributions of such different authors as Jerome and Augustine who could both claim an unprecedented and critical role in constructing the Christian concept of universal history? In fact, Jerome can be claimed to have the singular importance as the scholar who made the mainstream Christian community aware of the ways to make the Old Testament prophetic texts part of the New Testament reader's learned apparatus. He laid the foundation for this process as he pointed out to the main text that constructed an eschatological worldview, the Book of Daniel, and managed to capture one critical idea of eschatology, that of the possibility to employ the framework in regards to several cultures of the same type and to transfer the predications of the old text to the situation the Mediterranean experienced in the fourth and fifth centuries CE.[29] In this treatise Jerome sought and largely managed to resolve

29. Hieronymus, "S. Eusebii Hieronymi Stridonensis presbyteri Commentariorum in Danielem Prophetam ad Pammachium et Marcellam Liber" ["Notes on Daniel S. Hieronymi Stridoniensis Priest Prophet Pammachius and Marcella book"] in *PL*, 25(n.d.), col. 491–584; Lawrence T. Martin, "Art. Daniel," in *A Dictionary of Biblical Tradition in English Literature*, ed. David Lyle Jeffrey (Grand Rapids, MI: Wm. B. Eerdmans, 1992), 177–80.

the issue of the relevance the eschatological scheme of history of the chosen people to the Late Roman world he was implying.[30] His approach was more descriptive and less analytical than one may imagine because he did not venture into disassembling the narrative and imagery into their constituent pieces. Even more so, he did not seek to comprehend any mathematics that had possibly been incorporated into the Old Testament texts on both the literal and figurative level. Thus Jerome's treatise and take on the Book of Daniel were a very significant attempt at grasping, in the Roman context and from the perspective of a person interested and knowledgeable in Roman history, the complex world of the near eastern narratives of the foundation of the community of the chosen people. Augustine's critical treatise was on the cities which addressed exactly this question. But did he propose in this particular context any idea that could help the readers transform text into a tool of leaning and understanding? How did Augustine compare to Jerome and was there anything significant in the terms of the practical questions of examining the apocalyptic representation of history? In other words, how did Augustine connect the sacred history to his own day other than propose that all empires, including the Roman empire, will eventually give way to the universal community of those who believed in the prediction given in the Old and New Testaments?

The difficulty of understanding and developing one's own concept of the Old Testament's historical time lay in the fact that it had been formed by the people who were well-versed in the complex forms of representing reality and the historical past in the myth-creating texts, such ones that sought to establish in the past a common foundation for the community in the present. In other words, the authors of the books of the Old Testament had been brought up on the whole array of various texts and scribal exercises. One may thus take into account the fact that those methods scholars sometimes called as "literary approaches" were not only well-known to them, but in fact were incorporated into their process of education from very early on in their careers. Thus any piece of text in the Old Testament was written in light of the three factors. These were the general historical framework, in this case that of the chosen people, the available myths and legends in the form of a written document or oral tradition, but also, much underappreciated practices of combinatorics in letter and number usage. After all, the scribes who were writing the Old Testament lived in the world where due to the strong Egyptian influences the calendar had reached a significant development.[31] These were, as it was shown, known to Hypparchus, astronomer and mathematician of the second

30. Archer, Jerome's Commentary on Daniel; Jay Braverman, Jerome's Commentary on Daniel: A Study of Comparative Jewish and Christian Interpretations of the Hebrew Bible, Catholic Biblical Quarterly Monograph Series 7 (Washington, 1978).

31. Parker, The Calendars of Ancient Egypt, 11–12.

century BCE.[32] One needs to appreciate that the educated people in the near East were growing up with learning aids such as alphabets, practice exercises in mathematics and other skills of literacy and, what is more important, board-games that taught spatial orientation, combinatorics and the ability to construct a game, that is, a narrative.[33] The royal game of Ur was a phenomenon that was located at the juncture of the history of kings, their stories, and perhaps, the astronomical phenomena.[34] They had complex rules that required knowledge of the signs on the board and of the steps to be made.[35] The notion of a boardgame is important here because it allows one to consider how the timeframes were constructed out of blocks, segments and bits and thus lets us reconsider this critical contribution that Augustine made to the Christian calendar by constructing a "bridge" between the long-term epochs of the Creation and the actual time of living in the Roman Empire of the early 400s. The texts that Augustine read, the Old Testament as well as many others, could have possessed this level of complexity in representing time and so one may need to consider his as more of a specialist in combinatorics than a pure "person of the narrative". Thus at least on the level of possibility one needs to evaluate the importance of these traditional tidbits of time reckoning for the construction of the skills of literacy necessary for writing sacred texts and, among them, the texts of the books of the Old Testament.

"Social time", Divine Retribution and Sacrifice

One needs to take these singular events in Augustine's life through the prism of his whole life and the longer cycles that governed traditional society. But these are the events that many if not most of the people go through in their lives. The Old Testament calendar was constructed, however, in much longer cycles as the coming of Christ was believed to fall on either the year ca. 5500, or the year ca. 5199 or 3952 from the Creation.[36] The critical question was how to connect one

32. Fabio Acerbi, "On the shoulders of Hypparchus: A reappraisal of ancient Greek combinatorics," *Archive for the History of Exact Sciences* 57(2003): 465–502.

33. Leonard C. Woolley, *The Development of Sumerian Art* (New York: Scribner's, 1935), Pl. 35.

34. Andrea Becker, "The Royal Game of Ur," in *Ancient Board Games in Perspective: Papers from the 1990 British Museum Colloquium, with Additional Contributions*, ed. Irving Finkel (London, England: British Museum Press, 2007), 11–15.

35. Irving L. Finkel, "On the rules for the royal game of Ur," in *Ancient Board Games in Perspective: Papers from the 1990 British Museum Colloquium, with Additional Contributions*, ed. Irving Finkel (London, England: British Museum Press, 2007), 16–32.

36. Art. Era, In *The Schaff-Herzog Encyclopedia of Religious Knowledge*, vol. 4 (New York, 1908-1913), 163. Bickerman, *Chronology of the Ancient World*, 73.

life's experiences to this longer cycles of at least a hundred or several hundred years. In addition to the basic cycle of life: birth, death and the coming of the new generation, there is a much darker cycle of transgressing the boundary and the divine retribution for the offense, which in historical narrative usually takes the for of warfare and/or revenge. The simplest example, which had found widespread acceptance as the meaningful concept of history, is the story of Gyges and Candaules that Herodotus placed in the opening chapters of his book. The divine retribution for the murder of Candaules came on the fifth generation from Gyges who lost his kingdom to the Persian empire, which paradoxically became in this case a tool of divine judgment.[37] The didactic message of Herodotus in this case needs not be questioned since he was the scholar who constructed his history to set boundaries and highlight the positive behavior while distancing the cases not worth to be included in the nominal social practices.[38]

Key to understanding eschatological concepts lies in the fact that they are based on a very specific premise, the exemplification of which we often find in the stories of violent acquisition of power and in the forceful replacement of dynasties, especially of the father-son succession. The beginning and the end of times were a natural concept for every community, but one needs to be aware that communities had their own symbolic means and narratives to convey this idea. Moreover, these narratives were arranged around long-term cycles that determined these communities' existence over centuries and the specific format of a social marker, a story with its own narrative canon. The stories of Cyrus and many other rulers suggested that in the common narrative the end of time and the beginning of time was associated with abnormalities in succession, and such which left the family at the brink of extinction. One may notice that in the "Confessions", which were deeply autobiographical, Augustine did show several times the episodes that served as the connection between the larger frame of his life and the particular episodes in it that served as turning points. Thus one of the critical episodes in my opinion was his attitude to the problem of father-son relationship that figures in his work in a very profound way. In Book II he seems to break a relationship with his father noticing the latter's joy at seeing his adolescence at 16 years of age. His ironic tone shows that he did not accept his parent's hopes of seeing his son as the continuator of his line. Augustine distanced his father, claiming him to have only become a catechumen recently (*nam ille adhuc catechumenus et hoc recens erat*), and rejoiced at his mother in charge in family as a true Christian (*sed matris in pectore iam inchoaveras templum tuum et exordium sanctae habitationis tuae*).[39] This stringent assessment came in contrast to

37. Herodotus, *History*, ed. Alfred D. Godley, Loeb Classical Library 117 (London, 1990), I, 7-54, 86-91.

38. Lisa Irene Hau, *Moral History from Herodotus to Diodorus Siculus* (Edinburgh: Edinburgh University Press, 2016), 172–93.

39. Augustine, *S. Aurelii Augustini Confessiones* (Oxonii [Oxford]: J. Parker, 1872), II, 3, 6.

the benefits his father lavished on him while providing for the education in a distant land.[40] This episode may be considered more important than it seems because his father disappears from the book after this notice and is never mentioned again. The explanation Augustine provided cited belonging to the church as the key element of any education his father had misunderstood.[41] Augustine saw only one model for father-son relationship in the deeds of Old Testament patriarchs, who by their "vision" both in the physical and heavenly sense guided their sons through the bottlenecks of the history of the chosen people.[42] His father became subject to a ritual removal of his father from his life (or even, in the sense of Oedipus Rex of Aeschylus, the ritual imaginary killing) when he himself became adolescent. Thus, at least at face value, the male line of succession was to end at Augustine's accession, perhaps subliminal and unconscious at first, to the church of his mother. This is all the more strange since in traditional society of Rome and of the Old Testament the patrilineal descent was critical and the format of father-son relationship was considered as one of the first means identification within community.

The importance of the father-son problem in Augustine's "Confessions" is evident. Augustine cited as the beginning of his independent life and of the path to Christianity the cutting off of the ties to his father. He became the "child of God's provenance", but his earthly father disappeared from his life and biography altogether despite all good deeds he made for his son. The coming to Christianity coincided for him with the loss of his own son from the first concubine to a disease, Adeodatus. Thus in his own life he himself "sacrificed", at least in his mind and world, his father to become an independent adult in his own train of life. By his life even before he had become Christian Augustine lived through the events that in the world of the Old Testament narrative would have been considered Apocalyptic. And in turn, he went through a sacrifice himself when his son passed away.

One may notice that the theme of the son sacrifice was a critical one for the story of the chosen people and of Jacob who was thus elected to pass through this morally problematic, but common to the Old Testament "bottleneck". Rulers of the Ancient World possessed various functions that were aimed at protecting communities from the vagaries of the environment and the "bottlenecks" of society's cycles of development. "The Golden Bough" of J. Fraser, first published in the 1890 in two volumes, suggested that rulers possessed a double role, both that of a winner in control and also a sacrifice to Gods in case a collective faced challenges it could not resolve. His work was significant in emphasizing that to every successful rule there was always deemed to be an end that was to obliterate this ruler's achievement. The idea of human sacrifice as a payment to avoid

40. Ibid., II, 3, 5.
41. Ibid., II, 3, 5.
42. Ibid., X, 34, 52.

expected retribution from divine forces or from other human collectives for the unjustified acts of violence in the past was noticed by scholars, but is usually passed over as both a basic tenet of historical research and the theme too horrid to be discussed. The killing of the Khazar kings was noticed by J. Fraser.[43] The ritual of killing a pseudo-king, at the beginning if the New Year in Mesopotamia, was noticed by scholars.[44] This was founded on the ultimate belief in traditional societies that "lying kings" who betray their people exist and are common.[45] Thus sacrifice, or the attempted sacrifice of the ruler was not only a biblical theme since the death of Hektor at the hands of Achilles, or the early death of Alexander the Great, or even in some sense the theme of Julius Caesar were also in the same line of stories.

The problem of the son of a man with status and his sacrifice or botched succession has direct relevance to the theme of ruler sacrifice, even though the first brings in an expectation of family succession, natural for every human collective. In fact, they are typologically similar. In fact, the ritual "sacrifice" of one's father for advance in life is key to understanding Augustine. It remained ritual, which is natural for many rituals of "coming of age." A young heir to his father's power, lineage or fortune "sacrificed" by one's will, by the will of God, or by the conjunction of factors at an inopportune moment to the divine forces was also a symbol of restoring the balance of justice with the divine and the humans, the neighbors. Can one call these events a "personal Apocalypse" for community, and in the case of Augustine, one for his father and for himself? The killing of the old ruler was the end of the cycle of violence and the beginning of the new era of reconciliation. It is attested in the case of Mesopotamia since this ritual was associated with the coming of the new year and hence, of the short "new era." If not so, they could be at least measured against the "grand" Apocalypse that was predicted by the Old Testament and New Testament narratives. Augustine leaving his father without much communication to him ended one cycle that might have earlier brought his parent to the top of his social ladder and made him a person of such stature that his son could easily study in the best schools of Africa. Augustine's losing his own son from a concubine meant the end not only for his own dissolute life, or at least the life which he sought to represent in this way, but it meant the end of his "struggles with God" in the field of rational theology.

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43. James George Frazer, "The Killing of the Khazar Kings," *Folk-Lore* xxviii (1917): 382–407.

44. Heinrich Zimmern, *Zum babylonischen Neujahrsfest* (Leipzig, 1918).

45. Beate Pongratz-Leisten, "'Lying King' and 'False Prophet': The intercultural transfer of a rhetorical device within ancient eastern ideologies," in *Ideologies as Intercultural Phenomena: Proceedings of the Third Annual Symposium of the Assyrian and Babylonian Intellectual Heritage Project, Chicago USA, Oct. 27–31, 2000*, ed. Antonio Panaino and Giovanni Pettinato (Milan: Univestita di Bologna & islao, 2002), 215–43.

Critical for the theme of ending and beginning the cycle was the father-son passing of legitimacy, status and authority. Giving a son the possibility to continue in the footsteps of his father was that point of comparison and reference that allowed any person, and not just an educated one, to measure the cycle of life and to check his life against any pending offsets due to the divine retribution or a positive interference of divine grace. Thus history found its representation in the minds of the people from traditional society in the form of a generation change and the ways to assess it. The themes of the first-born son and of the sacrifice of a son were the means to suggest where the people constructing the story were located in terms of the history of a society or culture. One may notice, therefore, that the theme of the father-son relationship was widespread and modern scholars should seek to find it not only in the Bible, but also other texts of different provenance and cultural practice of unexpected nature. But one needs to look first at those cases that people of traditional society believed to be the beginning and the turning point and particularly, the end of the cycle. Only stories in which the passing of authority from the father to son broke down and failed to become realized may be considered as those that define the new beginning both within one's individual life and in the life of a collective. Thus critical for determining the beginning and end of a cycle was the theme of a sacrifice that could end the cycle of retribution.

One may notice that in terms of the length of time the seven generations that had to be avenged lasted about one hundred and fifty years if one takes as a measure of generation a period of about twenty years. After the seventh generation started, the divine judgment was right on the heels of the dynasty and was affecting the last king from the line of Gyges directly. Herodotus was the first among historians of the Mediterranean who invoked the theme of the divine retribution and among his followers were such important historians as Gregory of Tours, who no doubt employed the idea as it was transformed in the context of forming the Christian concept of history. Thus the innate biological calendar was working within communities and the only difference in our understanding of them was in the fact that their idea of the generations waiting for the retribution was more pronounced in some than in others. Thus humans living in traditional societies need not be left out of knowing the long-term processes of history. The cycles of history were visible within several generations on the basic level of human self-identification. For example, Romans did not lose a chance to cite, as did Marcus Aurelius, their grandfathers to emphasize their kin was blessed by the divine. Thus the idea of the cycles, both beneficent and malevolent, in lives of families was inherent for all human collectives and existed outside the discourse of history as such. Augustine, describing the linear development of his live, which no doubt was circular if we look at him from a lengthier perspective of scholars knowing similar cases, was an example of how in Mediterranean society the "course of life" was a basic tenet that appealed to all people regardless of the form in which belief in divinity was shaped. But this cycle of individual life was

interspersed with cycles that needed to be given closure, whether they were good or bad.

Conclusion

Augustine's writings provide ample evidence that many sacred themes from the Ancient world were reshaped in the Christian context without losing their chief characteristics. The calendars of the sacred texts that were constructed around the periods of *longue durée* required periodical re-setting, which was achieved by means of certain narratives, like those of the sacrifice of a ruler or a son. But unlike in the narrative of the Book of Job, Augustine's "Confessions" ended up without a "voice from the sky" that restored all to its pristine status. The end of a historical period of a sacred narrative, if not marked by reconciliation and submission, was accompanied by a break in a patrilineal succession in Augustine's life, or at least was perceived in this way. Thus one needs to pay closer attention to the break in cycles not only in the Bible, but also in the texts produced by nearby cultures where this connection of a sacrifice of a son serves as a payment to settle the scores of divine retribution. The personal "Incarnation" as an adult was followed in the life of Augustine by the "Apocalypse" of personal loss and of the destruction of many structures in which Augustine believed. One need not think that life in the late fourth- and the early fifth-century Mediterranean did not allow for people to see the signs of the "End of Times" in their lives. People who were turning to Christianity lived in a world where the expectation of the divine judgement within the family carried both positive and negative connotations for family traditions that had originated several generations back and that determined the present for their members. Thus, the break in the father-son relationship was for Augustine, much as the Old Testament patriarchs, the moment for re-setting the time. The Apocalypse, about which Augustine was writing, was right next to everyone's life. It is no wonder that writing two centuries later, Gregory of Tours, while developing the ideas of Augustine, emphasized the immanent presence of the destructive events of the divine retribution even in the best of days as calculated according to the biblical calendar.[46] We can attribute this idea of the bishop of Tours to the bishop of Hippo's extensive and forceful writings. Augustine was thus the person who set for the Middle Ages the idea of the immanent co-existence within one historical time, within one's life and the personal events in it, and within one historical narrative, of both the long-term grace and the short-term apocalypse.

46. Gregorius Turonensis, "Libri Historiarum X," in *Gregorii episcopi Tvronensis Libri Historiarum X*, ed. Bruno Krusch and Wilhelm Levison, 2nd ed., vol. 1.1, MGH Scriptores Rerum Merovingicarum (Hannover: Hahn, 1951), Lib. II, Praef.

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Imports from the Eastern Mediterranean Region in the Roman Military Camp of León (Spain)

By Ángel Morillo[*]*, Rui Morais*[†] *& Rosalía Durán Cabello*[‡]

Archaeological interventions in the last few decades in the city of León, where the Legio VI Victrix and the Legio VII Gemina were located during the Early Roman Empire, have uncovered a considerable amount of Roman pottery. Among these findings, particularly noteworthy are some Eastern Mediterranean amphorae and an important set of glazed pottery from Asia Minor workshops. Analyses of the set reveal the basic products that were habitually consumed in the fortress, in particular, Eastern Mediterranean wines, and prestigious products such as glazed pottery, particularly two skyphoi that present a curious iconographic motif related to the trial of Orestes.

Introduction

Archaeological interventions carried out over the last few decades in several Roman legionary camps located in the north of the Iberian Peninsula (Astorga, León, Herrera de Pisuerga) have recovered an enormous amount of archaeological materials. They have served to gradually reconstruct the chronostratigraphy of these centres during Roman times, as well as their patterns of circulation and pottery supply (Figure 1).

Figure 1. *Location of León*
Source: Google Earth.

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One of the biggest novelties in Spanish Roman military archaeology in recent years has been the progress in the knowledge about the military settlements in the city of León.[1] León is settled in the smooth hillock located in the watershed between the Bernesga and the Torío rivers. It is a shelf, the last terrace formed by fluvial activity, which slightly dominate the river banks. In fact, the site where the modern town is situated, a genuine crossroad between the table-land plateau and the León central mountain range, offered topographic and spatial conditions with a high strategic value which was not unnoticed by the Romans.

However, the archaeological interventions carried out by V. García Marcos between 1997 and 1999 of a vast plot against the inner face of the north of the Late Roman wall, very close to the *porta decumana* of the camp of the *legio VII* has provided conclusive evidence about the features of the beginnings of the Roman presence in the city of León. Beneath the fortress of *legio VII gemina* the remains of two earlier legionary camps has been recognized. The first legion that occupied the camp was the *Legio VI Victrix*, of which we know two successive camps: León I, founded around the turn of the Millennium, and León II, built at the beginning of the reign of Tiberius (15/16 AD).[2]

Although little is known of León I's layout, its defensive system was of the *agger* type, in earth and timber. Its *fossa* (outer ditch) had a V-type profile, whose *vallum* was of the *box rampart* type, consisting of two wooden facades reinforced with vertical stakes. The second camp, León II, 20 Ha and rectangular in shape with rounded corners, practically identical to that later legionary fortress of *Legio VII Gemina*, presents an *agger* formed by two converging walls about 4 m wide at their base, made with *caespites*.[3]

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1. Victorino García Marcos, "Novedades acerca de los campamentos romanos de León" (News about the Roman camps of León), in *Arqueología Militar Romana en Hispania* (*Roman Military Archeology in Hispania*), Annexes of Gladius 5, coord. Ángel Morillo (Madrid: Polifemo y CSIC, 2002).

2. García Marcos, "Novedades acerca de los campamentos romanos," 172–177; Ángel Morillo, "Investigación científica y arqueología urbana en la ciudad de León" (Scientific research and urban archeology in the city of León), in *Hispaniae urbes. Investigaciones arqueológicas en ciudades históricas* (*Hispaniae urbes. Archaeological research in historic cities*), ed. José Beltrán and Oliva Rodríguez (Sevilla: Univ. Sevilla, 2012), 227–228; Morillo, "Cerámica romana en el campamento de León durante el Alto Imperio: importación vs. Producción local" (Roman pottery in the Leon camp during the High Empire: import vs. local production), in *Cerámicas de época romana en el Norte de Hispania y en Aquitania. Producción, comercio y consumo entre el Duero y el Garona* (*Roman era ceramics in northern Hispania and in Aquitaine. Production, trade and consumption between the Duero and the Garonne*), ed. Ana Martínez Salcedo, Milagros Esteban, and Enrique Alcorta (Madrid: La Ergástula, 2015).

3. Morillo and García Marcos, "*Legio* (León). Introducción histórica y arqueológica" [Legio (Leon). Historical and archaeological introduction], in *Los campamentos romanos en Hispania (27 a. C.-192 d. C.). El abastecimiento de moneda* [*The Roman camps in Hispania (27 BC-192 AD). Currency supply*], Annexes of Gladius 9, coord. Mª Paz García-Bellido

Around 74/75 AD, a new unit was installed in the old *Legio VI Victrix* settlement in León. The *Legio VII Gemina*, officially founded on 10th June 68 AD in *Clunia* (province of *Tarraconensis*) and refounded after the civil wars of 68–69 AD as *VII Gemina*, built a new camp (León III) with structures in stone, dismantling partially the previous constructions. From this moment, León became the permanent base of operations of this unit throughout the Empire. The excavations carried out over the last twenty years in the urban centre have revealed many aspects of the camp, which follows the canonical rectangular layout with rounden corners and four large gates on each side.

The wall of the Flavian legionary fortress, 1.80 m and 2 m in width, and boosting an exterior facade in *opus vitatum*, was composed of sandstone blocks and inner filler compounds of excellent quality, reaching in one of its sections approximately 4.25 m in height.[4] The back wall, flanking the Flavian camp, was built by dismantling the outer half of the *vallum* of the previous camp. The ditches of the Julio–Claudian camp on the outside of the walled perimeter were kept, following the usual model of Roman encampments. The defensive system was completed with inner towers and four double gates, also flanked by towers. The *porta principalis sinistra* and part of the still preserved *porta praetoria* have been excavated.[5]

Gradually, the excavations reveal details about the sanitary infrastructures, the water supply, the internal arrangement and the inner buildings of the camp, as well as the constructions corresponding to the two military *vici*.[6]

At the end of the 3rd century or beginning of the 4th, during the Tetrarch period, a new wall was built adjacent to the external façade of the Early Imperial defences. The new construction was reinforced with semicircular towers 8.25 m in diameter placed every 15 m. In the new construction, an abundant

(Madrid: CSIC and Polifemo, 2006), 231–232; Morillo, "Investigación científica y arqueología urbana," 227–228.

4. Morillo, 235–236.

5. García Marcos, "Novedades acerca de los campamentos romanos," 189–195; Morillo and García Marcos, "The defensive system of the legionary fortress of *VII gemina* at León (Spain): The *porta principalis sinistra*," in *Limes XIX. Proceedings of the XIXth International Congress of Roman Frontier Studies*, ed. Zsolt Visy (Pécs: University of Pécs, 2005), 237; Morillo and Rosalía Durán Cabello, "La puerta meridional del recinto amurallado de la ciudad de León (siglos I-XIII). Análisis estratigráfico e interpretativo de una nueva evidencia constructiva" [The southern gate of the walled enclosure of the city of León (1st-13th centuries). Stratigraphic and interpretive analysis of new constructive evidence], *Arqueología de la Arquitectura* 14 (2017): 1–26.

6. Morillo, "Investigación científica y arqueología urbana"; Morillo, Rui Morais, and Durán Cabello, "Cerámica vidriada romana en los contextos altoimperiales del campamento de León (España)" [Roman glazed ceramics in the high imperial contexts of the León camp (Spain)], *Saguntum* [in press].

amount of materials was reused, among which the epigraphs stand out. The wall is about 7 m in width, including the width of the old Flavian wall (Figure 2).[7]

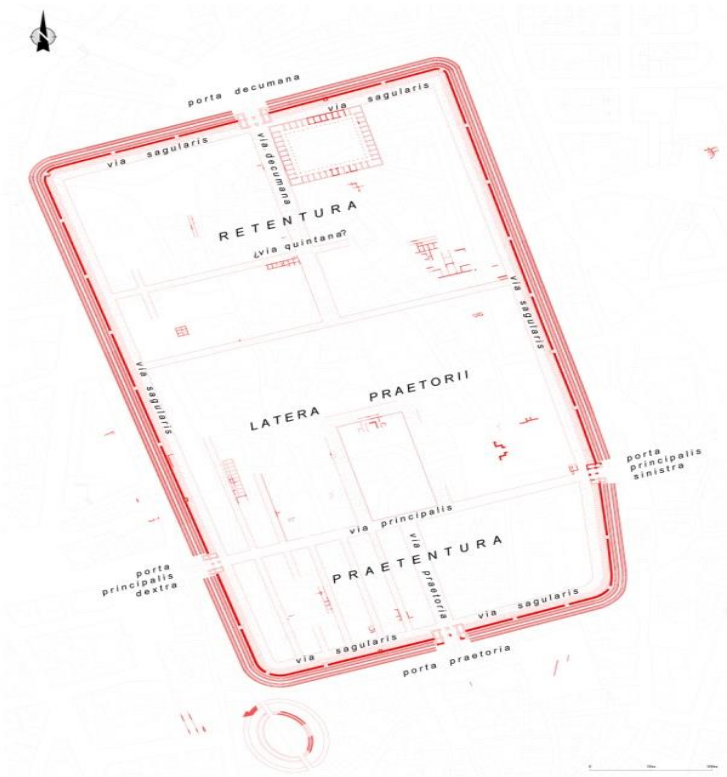

Figure 2. *The Flavian Legionary Fortress of* Legio VII Gemina *at León*
Note: Below lies the remains of the previous two camps of Late Augustan and Julio–Claudian times, belonging to *Legio VI Victrix*.

The stratigraphic studies carried out in the León camps establish several very well-defined chronological limits. We can observe, through the analysis of the material culture, a complete sequence of occupation. The presence of imported earthenware, in particular fine tableware, such as *terra sigillata*, oil lamps, thin-walled pottery and glazed pottery, as well as containers or vessels for the transportation of products, are fundamental for the dating of the different phases of occupation.[8] In addition to the Italic and Gallic products and those from other

7. García Marcos, Durán Cabello, and Morillo, "La muralla tetrárquica de *Legio*: aproximación al conocimiento de su sistema constructivo" (The Tetrarchic wall of Legio: approach to the knowledge of its construction system), in *Murallas de Ciudades Romanas en el Occidente del Imperio* (*Walls of Roman Cities in the Western Empire*), ed. Antonio Rodríguez Colmenero and Isabel Rodá (Lugo: Diputación Provincial de Lugo, 2007).

8. Morillo and García Marcos, "*Legio* (León): cronologías estratigráficas" [*Legio* (León): stratigraphic chronologies], in *Los campamentos romanos en Hispania (27 a. C.-192 d. C.). El abastecimiento de moneda* [*The Roman camps in Hispania (27 BC-192 AD). Currency supply*], Annexes of Gladius 9, coord. Mª Paz García-Bellido (Madrid: CSIC and Polifemo, 2006),

regions of Hispania, such as Baetica and the Catalonian coast, there is a significant number of products from the Eastern Mediterranean.[9] This fact is particularly remarkable, especially if we take into account that the camps were located in inland areas, more than 200 km away from maritime-river routes. Also, these Eastern products, represented by high-quality, expensive wines, were delivered upon order from a military elite, who appreciated them more than quality productions of Italic origin. The purpose of this article is to examine these imports of Eastern origin.

Almost all specimens come from landfill levels made up of earth and materials deposited in primary detrital trenches, later transported intentionally to level and accommodate the natural topography of certain sectors, particularly on the slopes situated at O and E of the hill where the camp is located. They are thus secondary deposits for the amortisation of materials, with the degree of distortion that can be introduced in the dating of the materials, since they are *post quem* dates.[10]

The Amphorae

The more than three hundred fragments (313) of amphorae found in León, corresponding to around 231 fewest possible number of amphorae (index Minimum Number of Individuals=NMI) of 30 distinct forms, serve to analyse the

292–298; Morillo, "Cerámica romana en el campamento de León"; Morais and Morillo, "La *terra sigillata* hispánica altoimperial en los contextos de consumo del noroeste peninsular: *Bracara Augusta* y *Legio*" (The high-imperial Hispanic sigillata terra in the consumption contexts of the peninsular northwest: Bracara Augusta and Legio), in *Terra sigillata Hispánica. 50 años de investigaciones* (*Terra sigillata Hispanic. 50 years of research*), ed. Maria Isabel Fernández García, Pablo Ruiz Montes, and Mª Victoria Peinado (Roma: Quasar, 2015); Morillo, Morais, and Rosario García Giménez, "Análisis mineralógico, físico y químico de ánforas tipo Dressel 28 y jarras en cerámica común del campamento romano de León" (Mineralogical, physical and chemical analysis of Dressel 28 amphorae and common ceramic jugs from the Roman camp of León), in *Archaeoanalytics. Chromatography and DNA analysis in Archaeology*, ed. Morais, Cesar Oliveira, and Morillo (Esponsende: Esposende City Council, 2015); Morillo, Morais, and Durán Cabello, "Cerámica vidriada romana."

9. Morillo and Garcia Marcos, "Importaciones itálicas en los campamentos romanos del norte de Hispania durante el periodo augusteo y julioclaudio" (Italic imports in the Roman camps of northern Hispania during the August and July claudio periods), in *Rei Cretariae Romanae Fautores. Acta 38* (Abingdon: RCRF, 2003); Morillo, "Abastecimiento y producción local en los campamentos romanos de la región septentrional de la península ibérica" (Local supply and production in the Roman camps of the northern region of the Iberian Peninsula), in *Arqueología Militar Romana en Hispania: Producción y abastecimiento en el ámbito militar* (*Roman Military Archeology in Hispania: Production and supply in the military field*), ed. Morillo (León: Universidad de León, 2006).

10. Morais and Morillo, "La *terra sigillata* hispánica altoimperial," 231–232.

products that were habitually consumed in the camps established in this region, in particular the wines and their derivatives, as well as olive oil and fish preparations. The analysis of the manufacture, allied to typological characterisation, has identified specimens of very different origins (Table 1 and Figure 3).

Amphorae	**NF**	**MNI**	**%**
Dressel 1 (Campanian/Lacio)	2	2	0,87
Dressel 2-4 (Campanian/Lacio)	18	12	5,19
Forlimpópoli/Agora K 114 (Italic)	2	1	0,43
Italic (ind.)	3	3	1,30
Late-rodian/Camulodunum 184 (Eastern)	19	13	5,63
Dressel 5 (Eastern, Cos)	5	4	1,73
Pseudo-Koan (Eastern)	6	5	2,16
Eastern (Ind.)	1	1	0,43
Dressel 2-4 (Galic)	4	4	1,73
Gauloise 2 (Galic)	2	2	0,87
Gauloise 3 (Galic)	1	1	0,43
Gauloise 4 (Galic)	1	1	0,43
Dressel 28 (Galic)	1	1	0,43
Galic (ind.)	2	2	0,87
Pascual 1 (Tarraconensis)	3	3	1,30
Dressel 2-4 (Guadalquivir)	25	14	6,06
Haltern 70 (Guadalquivir)	13	11	4,76
Indeterminada Cadiz	27	22	9,52
Dressel 2-4 (Cadiz)	3	3	1,30
Oberaden 83 (Guadalquivir)	11	9	3,90
Dressel 20 (Guadalquivir)	12	9	3,90
León I/Dressel 28 *similis*	59	36	15,58
Dressel 16 (Galic)	4	3	1,30
Fréjus/Lenzbourg (Galic)	2	2	0,87
Dressel 7-11 (Cadiz)	18	11	4,76
Dressel 7-11 (Cadiz)	1	1	0,43
Mañá C2b/Ramón T-7.4.3.3 (Guadalquivir)	1	1	0,43
Dressel 12 (Guadalquivir)	6	5	2,16
Dressel 7-11 (Guadalquivir)	7	7	3,03
Indeterminada Guadalquivir	37	27	11,69
Lusitanian ovoid type amphorae y Dressel 14	9	8	3,46
Richborough 527 (Italic)	1	1	0,43
Lomba do Canho 67/Sala 1 (Guadalquivir)	3	3	1,30
Rías Bajas	4	3	1,30
Total	**313**	**231**	**100,00**

Table 1. *Quantity (Total and Minimum Number of Individuals) and Percentages Calculates Respect NMI of Amphorae of Legionary Fortress of León (Summary)*

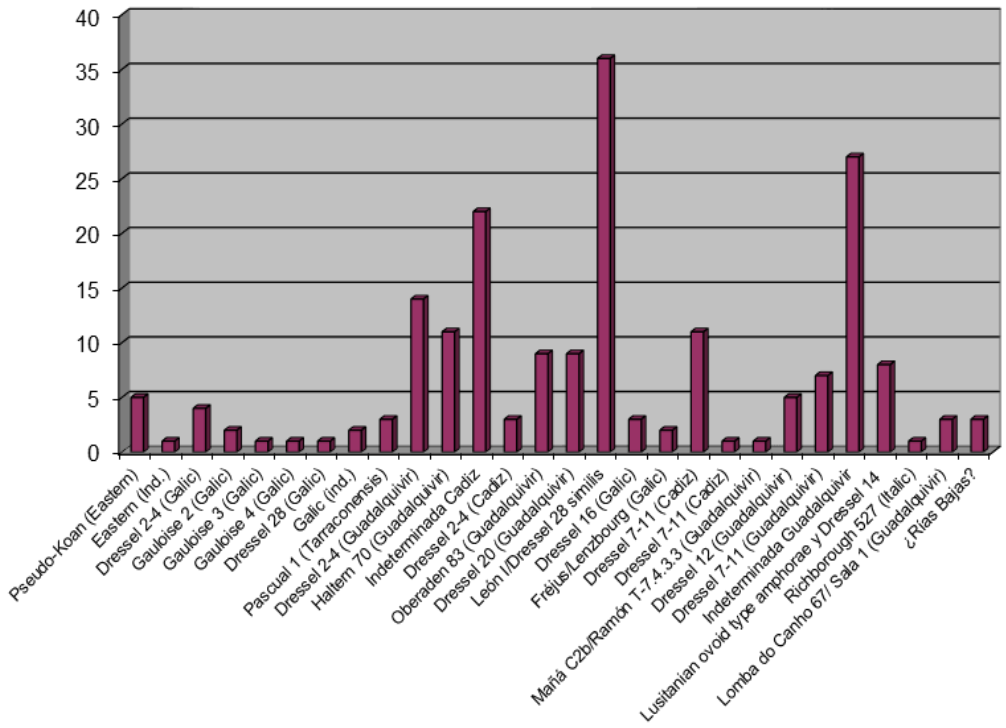

Figure 3. *Quantity (Total and Minimum Number of Individuals) and Percentages Calculates Respect NMI of Amphorae of Legionary Fortress of León (Diagram)*

As can be seen in Table 2 and Figure 4, Hispanic imports of Baetic origin predominate in León (more than 50%), with around 37.2% from the Guadalquivir valley and 16% from the coast of Cadiz. Next in importance we have productions coming from the Eastern Mediterranean, accounting for 10%, and of Italic origin with 8.2%. Gaulish amphorae are less numerous, accounting for 6.9%, despite great formal variability and their rarity or even absence in Iberian contexts, and the Lusitanian and Tarragona productions, with only 3.5% and 1.3%, respectively. But one of the most interesting aspects of the León amphorae set is the presence of local and regional productions, summing about 16.98%, namely 15.58% flat-bottomed amphorae, and indeterminate forms, only represented by 1.30%, whose production can possibly be attributed to the coastal area of the Rias Baixas, in Galician coast.[11]

11. Morillo and Morais, *Ánforas de los campamentos romanos de León. Un modelo de abastecimiento militar entre el periodo augusteo y los inicios del siglo II d. C*. (*Amphoras of the Roman camps of León. A military supply model between the August period and the beginning of the second century AD. C*), Annexes Spanish Archive of Archeology (Madrid: CSIC, in press).

Production areas	**MNI**	**%**
Eastern	23	10,0
Italic	19	8,2
Gaulish	16	6,9
Baetica (Cadiz)	37	16,0
Baetica (Guadalquivir)	86	37,2
Tarraconensis	3	1,3
Lusitanian	8	3,5
Local/Regional	39	16,9
Total	**231**	**100**

Table 2. *Quantity (NMI) and Ratio of Amphorae Production Areas (Summary)*

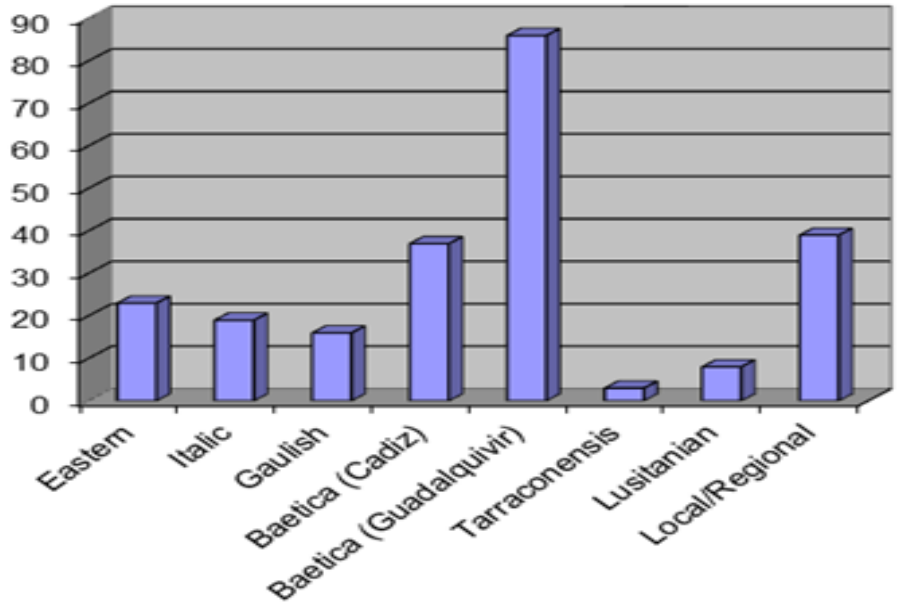

Figure 4. *Quantity (NMI) and Ratio of Amphorae Production Areas (Diagram)*

With regard to the products transported, as we have already mentioned and as we can see on Table 3 and Figure 5, wine and its derivatives predominate, with 32.90%. They are followed by olive oil, with 23.38%, and fish sauces, with 18.61%. However, this number may distort the image of imports. In fact, imported olive oil from Baetica only reaches 7.96%, whereas the rest corresponds to local flat-bottom amphorae for the internal distribution of olive oil (15.58%), a supply mechanism we have already addressed.[12]

12. Morillo, Morais, and García Giménez, "Análisis mineralógico"; Morillo and Morais, *Ánforas de los campamentos romanos de León.*

Only one specimen was reported which possibly carried *alum*, a Richborough 527 type amphora. These multi-purpose vessels, which could be used as containers for a wide variety of products, amount to 2.60%. Finally, we must mention the indeterminate products, represented by 22.08% of the total.

Quantity and products transported	**NF**	**MNI**	**%**
Wine and its derivatives	106	76	32,90
Olive oil	82	54	23,38
Fish sauces	51	43	18,61
Alumbre	1	1	0,43
Multi-purpose vessels	7	6	2,60
Indeterminate products	66	51	22,08
Total	**313**	**231**	**100,00**

Table 3. *Quantity and Products Transported (Summary)*

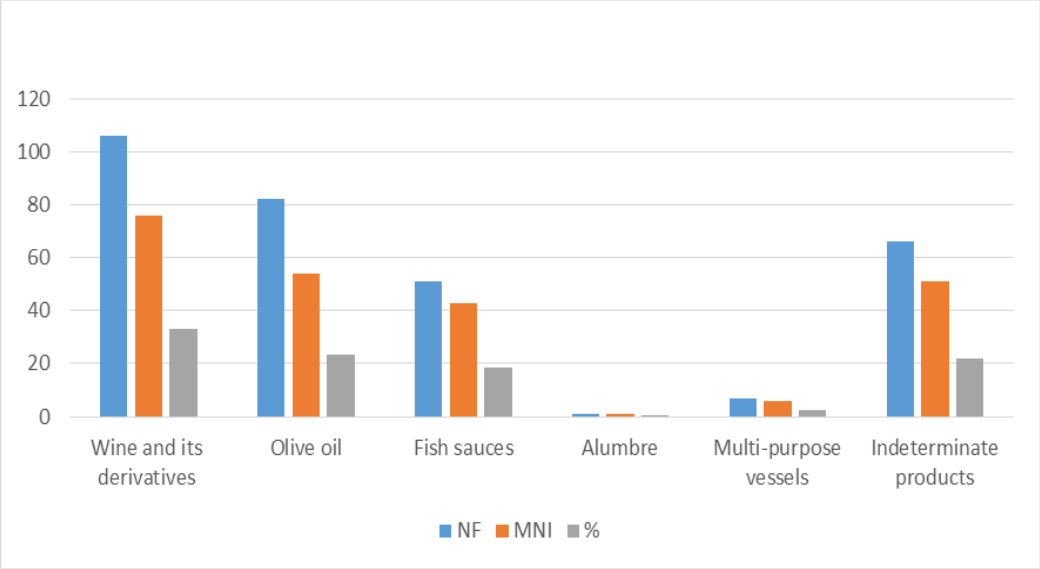

Figure 5. *Quantity and Products Transported (Diagram)*

In this study, the focus will fall particularly on products from the Eastern Mediterranean. These products correspond, as we have already mentioned, to the famous wines transported in the late Rhodian/Camulodunum 184 (Figure 6, nº 1-3), Dressel 5 (Figure 6, nº 4) and Pseudo-Koan (Figure 6, nº 5) amphorae, well documented in other archaeological sites in the north-east of the Iberian Peninsula since the Augustan era, particularly in Astorga[13] and Lugo.[14] In León,

13. César Carreras Monfort and Piero Berni Millet, "Anforas" (Amphorae), in *Astorga IV. Lucernas y ánforas* (*Astorga IV. Lucernas and amphorae*), ed. Mª Teresa Amaré (León: Universidad de León, 2003), 646, 648–649.

these amphorae are represented by a lot of thirteen amphorae of the late Rhodian/ Camulodunum 184 type, followed by the Pseudo-Koan type, with four specimens, and Dressel 5, also with four specimens (Figure 6).

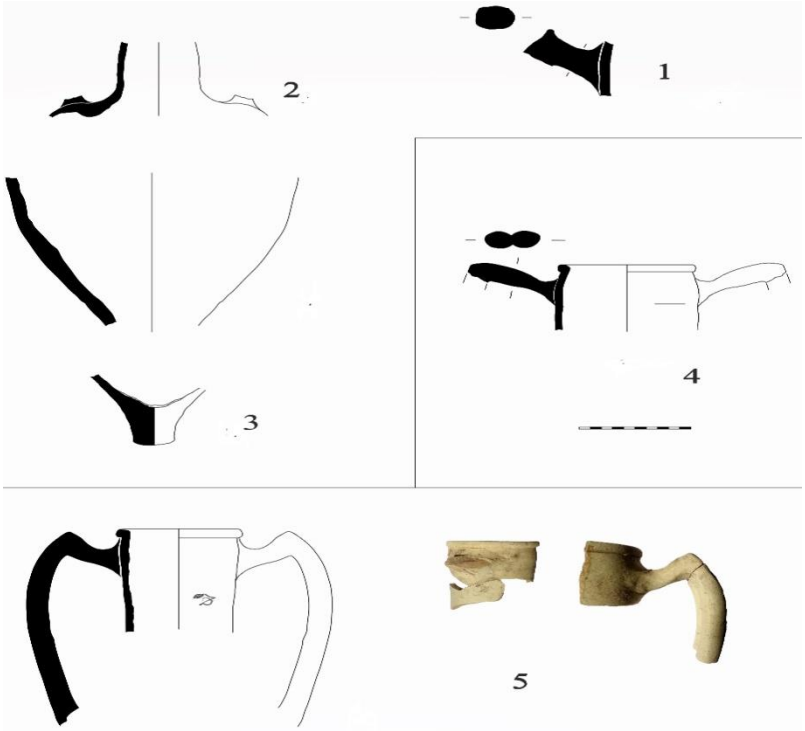

Figure 6. *Eastern Roman wine amphorae (Late Rodian/Camulodunum 184, nº 1-3; Dressel 4, nº 4; Pseudo-Koan, nº 5)*

Figure 7 shows comparative graphs of the amphorae supply in the Roman camp of Léon taking into consideration the producing regions and chronological periods. We must highlight the very strong presence of Eastern amphorae during the Late Augustan period, which coincides with the foundation of the León camp. In this period, Eastern wine (transported in Late-Rodian, Pseudo-Koan and Dressel 5 amphorae) represents 20% of all amphorae supply, even doubling Italian imports. This predominance of luxury imports of Eastern wine over Italic one, both intended for the military elite, will continue throughout the following periods even though their amounts will reduce significantly during Tiberian (6.7%), Early Claudian-Neronian (7.14%) and Late Neronian-Flavian period (5.66%).

14. Carreras Monfort and Morais, "Las ánforas de Lucus Augusti (Lugo)" [The amphorae of Lucus Augusti (Lugo)], in *Ánforas romanas de Lugo* (*Roman amphorae of Lugo*), ed. Carreras Monfort, Morais, and Enrique González Fernández (Lugo: Concello de Lugo, 2011), 56–59.

Percentage by supply area	Late Augustan	Tiberian	Claudian - Early Nero	Late Nero - Flavian
Italic	11,7	6,7	4,28	3,77
Eastern	20	6,7	7,14	5,66
Gaulish	5	6,7	4,28	15,09
Tarraconensis	3,3	0,0	0	0
Baetica	50	66,7	62,88	39,62
Lusitanian	5	6,7	1,42	5,66
Gallaecian?	0	0,0	0	3,77
Local / Regional	5	6,7	20	26,43
Total	100	100	100	100

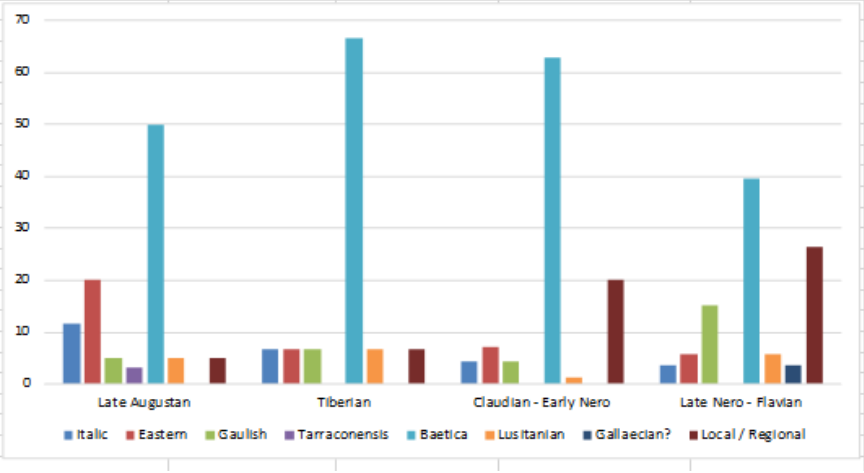

Figure 7. *Comparative Diagrams of the Amphoric Supply to the Camp of León by Producing Regions and Chronological Periods*

The late Rhodian/Camulodunum 184 amphorae date mostly from Late Augustan contexts associated with the first *Legio VI Victrix* camp (Casa Pallarés, UE 122, 131, 132, Edificio Botines, UE 150, UE 4070 of Santa Marina). Some also date from the Tiberian period (Casa Pallares, EU 149) and from the mid-first century AD (UE 9 and 11 of San Pedro, UE 4045 of Santa Marina), coinciding with the second camp of *Legio VI*. Vestiges suggest their presence until the end of the first century AD, since only three late Rhodian amphorae were found in the Late Neronian period (UE 225 of Casa Pallares, UE 128 of Edificio Botines, UE 4019 of Santa Marina), which came to be clearly associated with the *Legio VII Gemina* camp.

Among the specimens of the Pseudo-Koan type, particularly noteworthy is a fragment that still retains a *titulus* in which the Greek letter Φ can be read, which, according to the Cypriot *modius*, is equivalent to 9.8 litres. Similar to the previous form, most of the specimens were collected in stratigraphic units from the Late Augustan period (Era of transition-15 AD) (UE 122 Casa Pallarés, UE 158 and 168 Calle de la Rua 27–31). Some items were found in later strata dating from the mid-first century AD (UE 9 San Pedro, UE 138 Calle de la Rua 27–31).

Imports of this kind were interrupted during the Neronian period, and did not reach the Flavian contexts.

Dressel 5 specimens also come from different excavation sectors (Casa Pallarés, Edificio Botines and Calle de la Rua 27–31). However, the period of use

in León is much more restricted. Except for a fragment from the last intervention found in an area interfered with during the medieval period (UE HY-136), the remaining specimens come from the Late Augustan UE (Era of transition–15/16 AD), associated with the first León camp (500C–D of Casa Pallares, UE 131 Edificio Botines, UE 166 and 306 Calle de la Rua, 27–31). After Tiberius' rise to power, they disappear in the stratigraphies of the León camp.[15]

Glazed Pottery

Ceramic vessels with a vitreous coating were not particularly abundant in Roman times, since their production required highly developed technology. Manufacturing with this technique began shortly before the mid-first century BC in the workshops of Asia Minor, such as Mytilene, Perge, Tarsus, around Smyrna and somewhere in south-western Anatolia.[16] Although these productions were discovered in the mid-twentieth century,[17] they were only categorised a few years later by Gabelmann[18] and Hochuli–Gysel,[19] whose work had a much greater impact. The majority of the roman glazed pottery belong to tableware forms, specifically vessels for drinking and serving liquids. These forms mimic the most common types of metal tableware, such as the *skyphos* and *kantharos*, as well as goblets. Other forms, such as jars, are less common.

Hochuli–Gysel carefully studied the inspiration of this morphological repertoire in silver and bronze tableware shapes, a form of imitation that was accentuated by the brilliant glaze of their surfaces with shades close to the metallic originals. A comparison with the great treasures of silver tableware, such as the Hildesheim and Boscoreale, shows their great formal similarity, which can also be found in some decorations. This researcher further points out the custom (as we have seen in the silver treasures) of households having two identical pieces, made from the same mould, as in the case of glazed pottery, which poses interesting questions regarding the customs related to the festivities of the middle

15. Morillo and Morais, *Ánforas de los campamentos romanos de León*.

16. Anne Hochuli–Gysel, *Kleinasiatische glasierte Reliefkeramik (50 v. Chr. Bis 50 n. Chr.) und ihre oberitalischen Nachamungen* [*Asia Minor glazed relief ceramics (50 BC to 50 AD) and their Upper Italian aftermath*], Acta Berniensia 7 (Bern: Verlag Stämpeli and CIE AG, 1977), 107–122, 309–311.

17. Hetty Goldman, *Excavations at Gözlü Kule, Tarsus, I, The Hellenistic and Roman Period* (Princeton: Princeton Press, 1950), 146; Frances Folin Jones, *Excavations at Gözlü Kule, Tarsus I. The Hellenistic and Roman Period* (Princeton: Princeton Press, 1950), 193.

18. Heinrich Gabelmann, "Zur hellenistisch-römischen Bleiglasurkeramik in Kleinasien" (On the Hellenistic-Roman lead glaze ceramic in Asia Minor), *Journal of Deustchen archäoliguschen Instituts* 89 (1974): 260-307.

19. Hochuli–Gysel, *Kleinasiatische glasierte Reliefkeramik*.

and upper strata of Roman society.[20] It is significant that silver and bronze metal vessels reached their highest quality and refinement precisely in the time of Pompey.[21]

A few years ago, F. F. Jones suggested these vessels were related with the *rhosica vasas* Cicero mentioned in his epistole *Ad Atticum*,[22] written to his friend Atticus when the orator was governor of Cilicia in 51–50 BC[23] Cicero alludes to the glazed aspect of the productions made in the port of Rhossus, near Tarsus. The coincidence of this allusion with the moment when these productions appear in areas of Asia Minor is an argument in favour of this interesting hypothesis.[24]

Different analyses have confirmed the features of the clays and glazes from these Asia Minor specimens.[25] Glazed vessels spread throughout the Mediterranean from the manufacturing centers on the coast of Asia Minor, reaching Italy and the western provinces from the mid-first century BC. They

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20. Hochuli–Gysel, "La cerámique à glaçure plombifère dʾAsie Mineure e du basin Mediterranéan oriental (du Ier s. av. J.-C. au Ier s. ap. J.-C.)" [The lead-glazed ceramics of Asia Minor and Eastern Mediterranean Basin (1st century BC to 1st century AD)], in *Céramiques hellénistiques et romaines: Productions et diffusion en Méditerranée orientale (Chypre, Égypte et côte syro-palestinienne)* [*Hellenistic and Roman ceramics: Productions and diffusion in the Eastern Mediterranean (Cyprus, Egypt and the Syrian-Palestinian coast)*], ed. Francine Blondé, Pascal Ballet, and Jean-François Salles (Lyon: Travaux de la Maison de lʾOrient 35, 2002), 307–309.

21. Lucia Pircio Biroli Stefanelli (Ed.), *Lʾargento dei romani. Vasellame da tavola e dʾapparato* (*The silver of the Romans. Tableware and equipment*) (Roma: LʾErma dʾBretshcneider, 1991), 63; Pircio Biroli Stefanelli (Ed.), *I Bronzo dei romani. Arredo e suppellettile. Il Metallo: Mito e fortuna nel mondo antico* (*Bronze of the Romans. Furnishings and furnishings. The Metal: Myth and luck in the ancient world*) (Roma: LʾErma dʾBretshcneider, 2008); Morillo, "La cerámica vidriada romana en Hispania" (Roman glazed pottery in Hispania), in *Manual de Cerámica romana III. Cerámicas romanas de época altoimperial en Hispania. Cerámica común de mesa, cocina y almacenaje. Imitaciones hispanas de producciones romanas universales* (*Roman Ceramics Manual III. Roman ceramics from the high imperial era in Hispania. Common ceramic table, kitchen and storage. Hispanic imitations of universal Roman productions*), ed. Carmen Fernández Ochoa, Morillo, and Mar Zarzalejos (Alcalá de Henares: MNAR, 2017), 394.

22. VI.1.13

23. Frances Follin Jones, "Rhosica Vasa," *American Journal of Archaeology* 49, no. 1 (1945): 45–51.

24. Claudia Maccabruni, "Cerámica con invetriatura al piombo" (Cerámica with lead glaze), in *Céramiques hellénistiques et romaines II* (*Hellenistic and Roman ceramics II*), ed. P. Léveque and Jean-Paul Morel (Paris: CNRS, 1987), 170.

25. Helen Hatcher, Alexander Kaczmarczyk, Agnès Scherer, and Robin Symonds, "Chemical classification and provenance of some glazed ceramics," *American Journal of Archaeology* 98, no. 3 (1994): 431-456; Billur Tekkök, Ali Akyol, Yusuf Kadioglu, and Sahinde Demirci, "The importance of archaometric analysis on ceramics from archaeological excavations: the example of Early Roman glazed ware from Tarsus and Troia," in *Seres 09. International Ceramic, Glass, Porcelain Enamel, Glaze and Pigment Congress* (Eskisehir: Anadolu University, 2009).

achieved, though, their greatest diffusion during the first half of the first century AD, ceasing production by the middle of this century. Their presence in Western markets led to the establishment of workshops that imitated these vessels and gradually adapted them to new regional fashions, reducing the repertoire of forms and introducing new ones, such as *rython*, *askos* and *amphoriskoi*, along with a less refined and utilitarian repertoire, such as dishes, bowls, plates, jugs, pots, etc.

Although yet to be studied, the abundance of containers of this type and the characteristics of their clays, with abundant volcanic minerals, point to certain manufacturing centres in Campania or Lazio from the end of the first century BC. However, in the following centuries,[26] the centres are mostly located in the north of Italy,[27] in Transalpine Gaul,[28] in the center of Gaul[29] and in Lazio.[30]

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26. Gianluca Soricelli, "Osservazioni intorno ad un crátere in cerámica invetriata da Pompei" (Observations around a crátere in cerámica glazed from Pompeii), *Rivista Studi Pompeiani* 2 (1988): 248-254; Hatcher et al., "Chemical classification and provenance of some glazed ceramics," 446; Emanuela di Gioia, *La ceramica invetriata in area vesubiana* (*Glazed ceramic in the Vesubian area*) (Roma: L'Erma di Bretschneider, 2006), 139–140.

27. Hochuli–Gysel, *Kleinasiatische glasierte Reliefkeramik*, 137–142.

28. André Desbat, "Céramiques romaines à glaçure plombifère de Lyon et de Vienne" (Roman ceramics with lead glaze of Lyon and Vienne), *SFECAG. Congress Proceedings of Toulouse* (Marseille: SFECAG, 1986); Desbat, "Céramiques romaines à glaçure plombifère des fouilles de Lyon (Hauts-de-Saint-Just, Rue des Farges, La Solitude)" [Roman ceramics with lead glaze of the excavations of Lyon (Hauts-de-Saint-Just, Rue des Farges, La Solitude)], *Figlina* 7 (1986): 105–124; Desbat, "Les productions précoces de Céramiques à glaçure plombifère de la Vallée du Rhône" (The early productions of ceramics with lead glaze of the Rhône Valley), *Rei Cretariae Romanae Fautorum, RCRF, Acta* 34 (Székesfehérvar: RCRF, 1995), 39–48; Pauline Gohier, Claudio Capelli, and Roberto Cabella, "Les cerámiques à glaçure plombifère en Gaule Méridionale: nouvelles données archéologiques et archéometriques" (The ceramics with lead glaze in southern Gaul: new archaeological and archaeological data), *SFECAG. Proceedings of the Autumn Congress* (Marseille: SFECAG, 2016); Gohier, *Les cerámiques à glaçure plombifère antiques en Gaule méridionale et dans la vallée du Rhône (Ier siècle av. J. C. – IIIe siècle apr. J.–C.)* [*The ceramics with ancient lead glaze in southern Gaul and in the Rhone Valley (1st century BC - 3rd century AD)*], Archeology Roman History, 40 (Drémil Lafage: M. Mergoil Editions, 2018), 65–73.

29. Hugues Vertet, "Recherches sur les glaçures plombifères fabriquées dans le centre de la Gaule" (Research on lead glazes made in the center of Gaul), *SFECAG. Congress Proceedings of Toulouse* (Marseille, SFECAG, 1986).

30. Archer Martin, "La ceramica invetriata romana: la testimonianza dell'area NE delle terme del Nuotatore ad Ostia" (The Roman glazed ceramic: the testimony of the NE area of the Nuotatore spa in Ostia), in *La ceramica invetriata tardoantica e altomedievale in Italia* (*Late antique and early medieval glazed pottery in Italy*), ed. Lidia Paroli (Firenze: All'Insegna del Giglio, 1992); Martin, "Central Italian lead-glazed ware," *Rei Cretariae Romanae Fautorum, RCRF, Acta* 34 (Székesfehérvar: RCRF, 1997), 302–312; Silvia Lusuardi Siena, and Marco Sannazaro, "Ceramica invetriata" (Glazed ceramics), in *Scavi MM3. Ricerche di archeologia urbana a Milano durante la costruzione della linea 3 della Metropolitana*

Analyses of the clays and glazes from items of Asia Minor production[31] have revealed that these vessels spread throughout the Mediterranean, reaching the Italic Peninsula and the western provinces of the Empire from the middle of the first century BC, with a peak in the first half of the first century AD, ceasing around the middle of this century. These pieces are made from moulds, using highly refined pale, ochre, yellowish and whitish clays, with a few rounded vacuoles. The glazes are light green or emerald on the outside and yellowish on the inner surface, usually shiny and thick. The archaeometric analyses carried out on these specimens confirm that the pieces were subjected to double firing, as is usual in this type of manufacture.

While Roman glazed pottery does not appear to have been very abundant in the Hispanic provinces, research over the past twenty years has shown that these vessels are distributed in small quantities throughout the Peninsula.[32] For the most part, these materials were found very fragmented or had lost their glaze, which in some cases led them to be confused with medieval vessels. Until a few decades ago, the presence of Roman glazed pottery was considered to be residual in the northern territories of the Iberian Peninsula, since only a few specimens were known, such as those found in Herrera de Pisuerga or *Pompaelo*. This situation has gradually changed with the most recent findings at Campa Torres, Gijón, Chao Samartín, Numancia, Rosinos de Vidriales and *Asturica Augusta*, together with oil lamps found in this Asturian capital and in *Bracara Augusta*.[33]

(*MM3 excavation. Urban archeology research in Milan during the construction of the Metro line 3*) (Milano: ET, 1991); Marco Biagini, "Ceramica invetriata campano-laziale in Liguria" (Glazed Campania-Lazio ceramics in Liguria), *Rivista Studi Liguri* LVIII (1992): 131–146; Marco Sannazaro, "Ceramica invetriata" (Glazed ceramics), in *La ceramica e i materiali di età romana. Classi, produzioni, commerci e consume* (*Roman ceramics and materials. Classes, productions, trade and consumption*), Interdisciplinary School of Archaeological Methodologies 2, ed. Daniela Gandolfi (Bordighera: Instituto Internazionale di Studi Luguri, 2003); Bárbara Porcari, Alessia Contino, Federica Luccerini, Valentina Mastrodonato, and Simona Sclocchi, "Scarti di produzione di cerámica invetriata dallo scavo del Nuevo Mercato Testaccio a Roma" (Glazed ceramics from the excavation of the Nuevo Mercato Testaccio in Rome), *Rei Cretariae Romanae Fautorum, RCRF, Acta* 41 (Bonn: RCRF, 2010); Morillo, "La cerámica vidriada romana en Hispania," 406–407.

31. Hatcher, et al., "Chemical classification and provenance of some glazed ceramics"; Tekkök et al., "The importance of archaometric analysis on ceramics."

32. Alberto López Mullor, "Cerámica vidriada romana" (Roman glazed pottery), in *Butlletí Informatiu de l'Institut de Prehistòria I Arqueologia de la Diputació Provincial de Barcelona* (*Informative bulletin of the Institute of Prehistory and Archeology of the Diputación Provincial de Barcelona*) (1978): 27–28; Juan Ángel Paz Peralta, "La producción de cerámica vidriada" (The production of glazed ceramics), in *Cerámicas hispanorromanas. Un estado de la cuestión* (*Spanish-Roman ceramics. A state of affairs*), ed. Dario Bernal and Albert Ribera (Cádiz: Universidad de Cádiz, 2008); Morillo, "La cerámica vidriada romana en Hispania."

33. Morillo, 414–415; Morillo, et al., "Cerámica vidriada romana."

Like the amphorae, the glazed pottery found in the Roman camps of León come from different Early Imperial contexts, from the Augustan period up to the end of the first century AD. The chrono-typological study has identified various forms (*skyphoi*, *kantharoi*, chalices, pots and jars), attributable to different manufacturing centres, namely in Asia Minor, Campania, Lazio and, possibly, Hispania.[34]

As might be expected, most of the specimens came from the occupation of the Late Augustan and Julio-Claudian camps of the *Legio VI Victrix*, which diminish substantially as from the establishment of the *Legio VII Gemina* in 74 AD.

The recent archaeometric analyses have confirmed the attribution of six specimens to Eastern Mediterranean, specifically from Asia Minor.[35]

The León vessels, *skyphoi* and chalices, correspond to the types mostly produced in the Asia Minor region, accounting for about 60% of the findings.[36] There are several *skyphoi* of the Hochuli–Gysel type (*Ringhenkelskyphos* II), which López Mullor attributes to variant II,[37] characterised by their annular base, fronted annular handles separated by volutes, a low, wide body and rectilinear rim marked by a frame. These forms are inspired by silver and bronze specimens.[38] Chalices with a flat, rectilinear or slightly sloping rim are also documented, which show a very marked carina and below the characteristic curvature of the high-stemmed chalices of hemispherical body, with or without handles. As in the previous form, these chalices are contemplated in the Hochuli–Gysel typology, specifically in their type 6 (=López Mullor`s Form V).[39]

All of them present yellow and white clays with green glazing on the outside and yellowish to the inside. Only the no. 4 presents yellow glazed in both sides.

As is usual in these productions, the León specimens are carefully decorated. One of these (no. 1) presents a wall decorated with a wreath of vine leaves and bunches of grapes, a well-known motif in these productions.[40] No. 2 also presents a plant motif, consisting of a wreath of ivy leaves and flowers, very frequent in

34. Morillo et al., "Cerámica vidriada romana."

35. Morillo et al.

36. Hochuli–Gysel, *Kleinasiatische glasierte Reliefkeramik*; Hochuli-Gysel, "La cerámique à glaçure plombifère d`Asie Mineure."

37. López Mullor, "Cerámica vidriada romana"; López Mullor, "De nuevo sobre la cerámica vidriada de Mataró" (Again on the glazed pottery of Mataró), in *Quaderns de Prehistoria I Arqueologia de Mataró i el Maresme* (*Notebooks of Prehistory and Archeology of Mataró and the Maresme*) (1980): 11-12; López Mullor, "Notas para una clasificación de los tipos más frecuentes de cerámica vidriada romana en Cataluña" (Notes for a classification of the most frequent types of Roman glazed ceramics in Catalonia), *Ampurias* 43 (1981): 201–216.

38. Morillo et al., "Cerámica vidriada romana," 1–4.

39. Morillo et al., 5–6.

40. Hochuli–Gysel, *Kleinasiatische glasierte Reliefkeramik*, 87–89: plate 33, plate 46, T, 37; plate 51, T. 123, 134 and 160, plate 54, T. 188.

the decorative motifs typified.[41] Extremely interesting are no. 3 and no. 4 which feature figurative motifs (Figure 8).

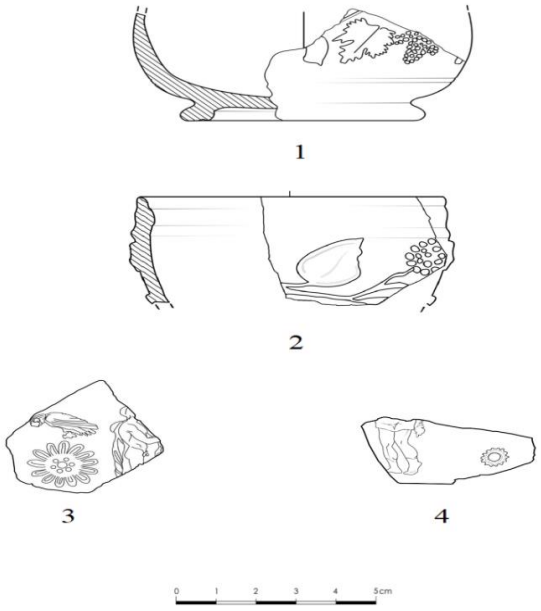

Figure 8. *Eastern Roman Glazed Ware from Late Augustan and Julio-Claudian Camps of the* Legio VI Victrix *in León (nº 1-4)*

Although they are different items, they present the same iconographic cycle: Orestes' trial (*Iudicium Orestis*). In this theme, the hero appears in the company of Athena and an Erinys (or Fury) alluding to the moment in which the tutelary deity inclines the scale in favour of Orestes during the trial celebrated in the Areopagus, thus forgiving the matricide.[42] It is possible that this motif is inspired by metal specimens, such as the silver *kantharus* known as *Coppa Corsini*, from *Antium* (Anzio), and presently preserved in the Corsini Palace in Rome (Figure 9).[43]

No. 3 bears a naked figure with a chlamys over the shoulders, probably representing Orestes himself, accompanied by a landed eagle (whose wings are closed) and a rosette (Figure 10).

41. Hochuli–Gysel, 83 and 86, plates 32 and 64.
42. Hochuli–Gysel, 66-67: plate 41, motifs 84, 42, 91 and 86, plate 54, T. 176 and T. 48.
43. LIMC, Aletes 3=Athena/Minerva 389=Erigone II 5=Erinys 75=Elektra I 76.

Figure 9. *Silver* Kantharus *known as* Coppa Corsini, *from* Antium *(Anzio)*
Source: https://bit.ly/2JkRRUs.

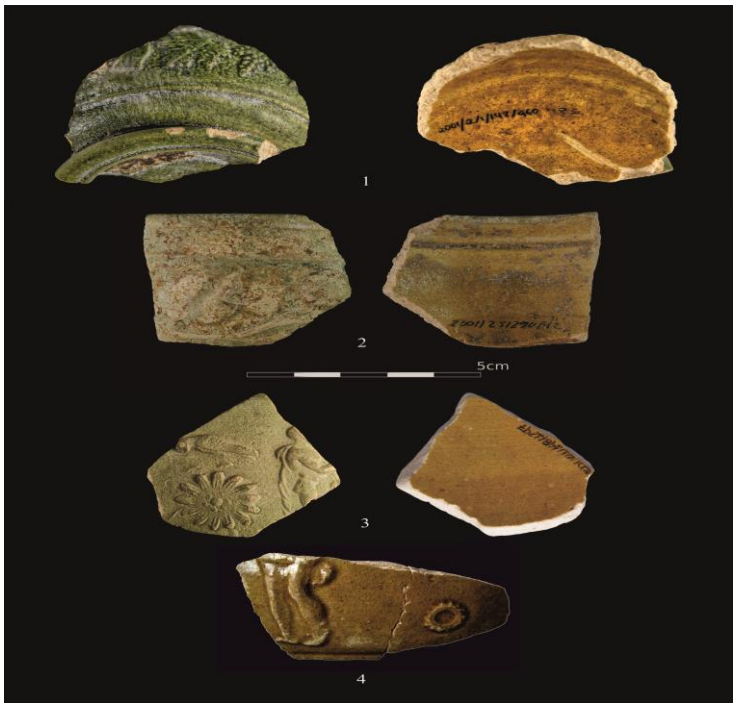

Figure 10. *Roman Glazed Pottery from Asia Minor found in León*
Source: Morillo, "La cerámica vidriada romana en Hispania."

No. 4 illustrates another part of the scene, in this case an Erinys or Fury that carries an inverted torch, next to a small rosette. Both decorations are characteristic of the Tarsus workshops, the only ones which according to Hochuli–Gysel documents this motif (Figure 10).

No. 5 and 6 correspond to chalices, of which only no. 5 preserves its plant decoration[44] (Figure 11).

44. Morillo et al., "Cerámica vidriada romana."

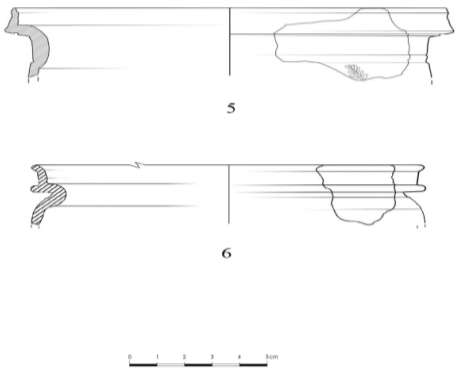

Figure 11. *Eastern Roman Glazed Ware from Julio-Claudian Camps of the* Legio VI Victrix *(nº 5-6)*

The analysis of several pieces confirmed their Asia Minor provenance and their relation with the productions of Izmir or Klazomenai.[45]

Conclusion

The presence of a high quantity of imported Roman pottery, especially Italic *terra sigillata*, thin walls and oil lamps, from the first occupation of the first camp of the *Legio VI Victrix*, established at the turn of the millennium, and which was replaced around 15 AD by a new, more stable fortification that remained until about 74 AD, testify to the constant supply of products from distant parts of the Empire.

In this context, the presence of Eastern Mediterranean amphorae containing high-quality wines during the Late Augustan-Tiberian and Julio–Claudian occupation, bear witness to well-defined chronological limits at León due to sequenced records of the materials (Figure 12).[46]

45. Morillo et al., no. 1 and no. 5.

46. Morillo and García Marcos, "*Legio* (León): cronologías estratigráficas"; Morillo, "Cerámica romana en el campamento de León."

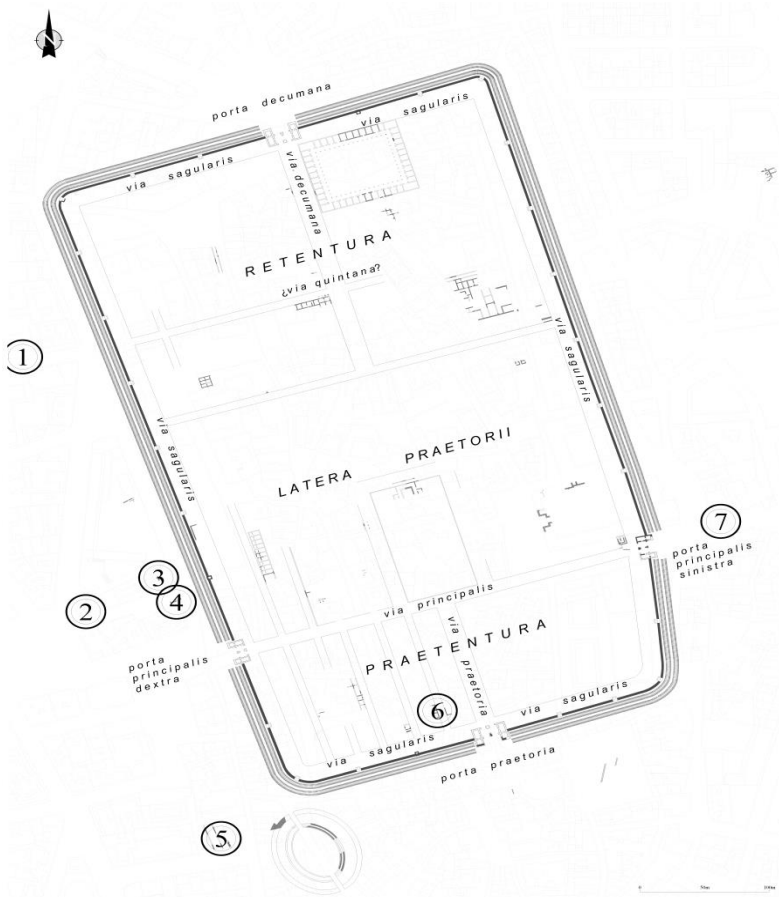

Figure 12. *Main archaeological Sectors of the Camps of León with Finds of Eastern Mediterranean Amphorae and Roman Glazed Pottery Related to the Legionary Camp of Legio VII Gemina: 1. Calle La Torre nº 9; 2. Calle Pilotos Regueral nº 9 (Banco Herrero); 3. Casa Pallarés; 4. Edificio Botines; 5. Calle General Lafuente c/v calle La Rúa; 6. Iglesia de Palat del Rey; 7. San Pedro; 8. Calle San Francisco nº 13, c/ calle Hospicio; 9. Puente Castro (2,2 km southwest).*[47]

The presence of these products in western markets provoked the emergence of manufacturing centres that were gradually imitating and replacing them. In spite of the low representativeness of these products to the west, their presence in León is not surprising, possibly associated to consumption restricted to the officers, stronghold of the Roman elite at the beginning of the Empire. The maintenance of social customs and culinary habits with expensive imported products was part of non-verbal communication, as a way of showing the superiority of the ruling classes, and as a way of maintaining their identity, status, and different lifestyle. Imported products reinforce this distinction and group ties.[48]

47. Morillo et al., "Cerámica vidriada romana."

48. Morillo and Morais, *Ánforas de los campamentos romanos de León*.

These vessels were accompanied during their trip to the West by the glazed pottery from Asia Minor, a prestigious element linked precisely to the consumption of wine, which seems destined to a lower social stratum, to that of the non-commissioned officers, who tried to imitate the customs of the elite, but who could not afford metal tableware.

This consumption profile can be found in other military camps of the Augustan and Julio-Claudian period, such as in Fréjus,[49] where the same trend of maintaining a reduced but continuous supply of eastern amphorae and glazed pottery is documented.

Noteworthy in this León set are the glazed specimens with the theme of Orestes' trial, a motif found on contemporaneous silver tableware, to which Pliny made reference.[50] A number of conflicts on the divine and human planes can be seen in this scene. This final episode in Orestes' tragic story illustrates the two opposing forces in the new Rome of Augustus: according to the Roman tradition, Augustus deposited Orestes' ashes in the Roman Forum, near the temple of Concordia, on occasion of the restoration of the Temple of Saturn.[51] Virgil indicates that the ashes of the hero are one of the seven talismans that guarantee the permanence of Rome.[52] The intention was clear: to associate the figure of Orestes with the ascension of the young emperor to the principality. In Koch Piettre's study,[53] the allegorical association with the figure of Orestes intended to transmit the filial love of the *princeps* to his adoptive father, Julius Caesar, and justify the excesses committed during the civil war and the conquest of *pax Augusta* (in this case using the metaphorical transformation of the Furies into pacified Erinyes). As in the case of Orestes, the vindictive excesses of the young *princeps* would be justified by the authority of Apollo, the great god of Delphi, and his sister Artemis; the pacifying action would be the responsibility of the goddess Athena transforming a moment of crisis into a Golden Age. Rome thus assumed the role of Athens, which, as a sign of civilisation, appeased the gods.

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49. Sylvie Saulnier, "Céramiques à glaçure plombifère" (Ceramics with lead glaze), in *Le Camp de la Flotte d'Agrippa a Fréjus. Les fouilles du quartier de Villeneuve* (*The Agrippa Fleet Camp at Frejus. The excavations of the Villeneuve district*), ed. Chistian Goudineau and Daniel Brentchaloff (Paris: éd. Errance, 2009), 405–407.

50. *Nat. Hist.* XXXIII, 156.

51. Renee Koch Piettre, "Oreste, un héros grec dans la religion romaine" (Oreste, a Greek hero in the Roman religion), in *Manières de penser dans l'Antiquité méditerranéenne et orientale. Mélanges offerts à Francis Schmidt par ses élèves, ses collègues et ses amis* (*Ways of thinking in Mediterranean and Eastern Antiquity. Mixes offered to Francis Schmidt by his students, colleagues and friends*), ed. Chisrophe Batsch and Madalina Vârtejanu–Joubert (Leiden-Boston: Brill, 2009), 241–242.

52. *Aeneid* VII, 188.

53. Koch Piettre, "Oreste, un héros grec dans la religion romaine," 256–259.

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Let that Be Your Last Battlefield: Tutankhamun and Disability

*By Alexandra F. Morris**

Tutankhamun is the most iconic and recognized figure from ancient Egypt but remains embroidered and hyperbolized. There has been little to no recognition or consensus within scholarly communities of his disability or how his disability may have factored into his personal, political, religious, and social roles within Egyptian society. Instead, he remains the perfect face of a pharaoh. There has been little consideration or research into whether his tomb was adapted to fit his needs as a disabled man. This article explores how Tutankhamun's tomb was perhaps modified to fit his needs as a disabled man, through an examination of the tomb layout, certain artifacts, botanical materials, artwork, and other grave goods. It also posits that disability need not be hyperbolized into an all or nothing proposition, and his injuries and death may have been caused by a confluence of events.

Introduction

Howard Carter's discovery of the tomb of Tutankhamun is one of the most renowned archaeological finds in history. Tutankhamun himself remains a strongly debated historical figure. Rather than ending the debate and ameliorating attitudes over Tutankhamun, current technology has only served to polarize and enflame reactions on all sides of the debate.[1] However, this debate has taken on a life of its own, overshadowing even Tutankhamun himself. This has distorted his historical self to unimportant background information. To some, evidence now points to his having had several potentially disabling conditions. These disabilities are thought to include clubbed foot and Köhler disease, in addition to cleft palate, as found in medical scans completed by Dr. Albert Zink's team in late 2014.[2] There is also evidence of his disabilities in the tomb itself, first noticed independently before the scans were published.[3] By bringing a new perspective to the tomb layout, certain artifacts, botanical materials, artwork, and other grave goods, it is possible by viewing this

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1. Jo Marchant, The Shadow King: The Bizarre Afterlife of King Tut's Mummy (New York: Da Capo Press, 2013), 178-85.

2. Rossella Lorenzi, "King Tut Re-Creation Presents a Shocking Image," *Discovery News* (2014).

3. Alexandra F. Morris, "Let the Artifacts Speak: A Look at the Physically Disabled of Ancient Egypt" (MA diss., University of Pennsylvania, June 2014), 3-26, 60-77.

evidence holistically, to now consider the possibility that Tutankhamunʾs tomb may have been modified to fit his needs as a disabled person.

Evidence of Disability and Accommodations

Tutankhamunʾs tomb contained many chairs and stools. While we do not have another tomb as well preserved with which to make a comparison, the number of chairs and stools found in the tomb should not be ignored if Tutankhamunʾs disabilities are considered. Some of the chairs could have been used as either litters or palanquins, whose use was well established by this time period.[4] Tutankhamunʾs golden throne, nearly as recognizable as his funerary mask, shows signs of ancient repairs to the arms, something that might have been necessary had he been repeatedly gripping the arms to support himself as he stood.[5] Additionally, several of his chairs and thrones, including the golden throne, originally were found with linen straps attached to their backs.[6] No one is quite sure about their intended purpose.[7] Current theories surrounding their use include them acting as a placeholder indicating that others not sit on the throne when the king was not present, or that they were used instead as a type of apparatus for transporting the empty throne.[8] However, artistic depictions of Egyptians carrying thrones for transport, present in numerous tomb paintings, do not show the use of any straps. Instead the art depicts workers holding completely different sections of the thrones than where the straps were located.[9] Additionally, it seems unlikely that a placeholder would have been necessary given the kingʾs status. It seems plausible, given what we now know about Tutankhamunʾs disabilities that the straps may have acted as a means to secure him to his chairs and thrones, almost like a type of seatbelt or harness, especially if he had been carried around in them. Unfortunately, since these mysterious straps have only survived in photos, they cannot be examined for use and we may never know.

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4. Norman De Garis Davies, *The Rock Tombs of el-Amarna, Parts III and IV* (London: Egypt Exploration Society, 1903), 1-25; Cyril Aldred, *Akhenaten: King of Egypt* (London: Thames and Hudson, 1988), 279.

5. Marianne Eaton-Krauss, *The Unknown Tutankhamun* (New York: Bloomsbury, 2016), 23-25.

6. Eaton-Krauss, The Thrones, Chairs, Stools, and Footstools from the Tomb of Tutankhamun (Oxford: Griffith Institute, 2008), 26, 57.

7. Eaton-Krauss, The Thrones, Chairs, Stools, and Footstools, 26, 57.

8. Christian Loeben, "La Fonction Funeraire des Meubles Egyptiens" (The Funeral Function of Egyptian Furniture), *Egypte, Afrique & Orient* 3 (1996): 25; Eaton-Krauss, *The Thrones, Chairs, Stools, and Footstools*, 26.

9. Loeben, "La Fonction Funeraire des Meubles Egyptiens," 25; Eaton-Krauss, 26.

In total there were twelve stools, at least seven chairs, and eight additional footrests that were not associated with any chairs or stools.[10] We know Tutankhamun's tomb is the best-preserved tomb discovered so far, and it is possible this number was not unusual. However, it is something that potentially opens further lines of inquiry. Similarly, all 145 pairs of Tutankhamun's underclothes were counted and cataloged.[11] That number is exceptionally high, however, as clothes were usually worn in sets and he only had 10 robes. This underwear could be suggestive of the king suffering from incontinence of some kind, and that would possibly point to the ancient Egyptians accounting for and providing for such a condition in the afterlife.

Another possible piece of evidence of his disability is that Tutankhamun was buried with over a hundred and thirty walking sticks, some of which appeared to have been used during his lifetime. One walking stick is even referenced, in a hieroglyph inscription, as having been his favorite.[12] There have been other examples of disabled individuals being buried with tools they needed for mobility. In the early 1900s, the University of Pennsylvania Museum of Archaeology and Anthropology acquired an example of an older man from the 5th dynasty, originally found in Deshasheh, buried with a cane. He is now believed to have had polio, which resulted in one leg being shorter than the other.[13] Polio seems to have been a fairly common disease in ancient Egypt, as seen in other individuals such as Roma the Doorkeeper from the New Kingdom, although some Egyptologists speculate that cerebral palsy could have been common as well.[14] Disabled ancient Egyptians were probably not uncommon, as we have numerous artistic depictions of them in Egyptian art.[15]

Howard Carter cataloged all one hundred and thirty of these walking sticks. Carter himself mentioned, "The young Tutankhamun must have been an amateur collector of walking sticks and staves, for here, as in the Antechamber, and the burial chamber, we found a great number. They were

10. Eaton-Krauss, 7-8.

11. Gillian Vogelsang-Eastwood, *Tutankhamun's Wardrobe: Garments from the Tomb of Tutankhamun* (Rotterdam: Barjestch van Waalwijk van Doorn and Co's, 1999), 19, 48-50; Brenda Fowler, "Forgotten Riches of King Tut: His Wardrobe," *The New York Times*, July 25, 1995.

12. Nicholas Reeves, *The Complete Tutankhamun* (London: Thames and Hudson, 1990), 178.

13. "Mummy Skeleton Man," UPenn Museum, last modified 2017, https://bit.ly/2L26Qug.

14. Joyce Filer, *Disease* (Austin: University of Texas Press, 1995), 74; Aidan Dodson, ARCE Conference Feedback to Alexandra Morris, *American Research Center in Egypt Conference*, Kansas City, Missouri, April 21, 2017.

15. Morris, "Let the Artifacts Speak," 4-60; Heba Mahran and Samar Mostafa Kamal, "Physical Disability in Old Kingdom Tomb Scenes," *Athens Journal of History* 2, no. 3 (2016): 169-91.

of no doubt, in part of ritual significance, but many of them have evidently seen daily use."[16] The evidence of daily use was not considered of primary importance. Some modern Egyptologists have hypothesized that walking sticks were seen as status symbols.[17] However despite being the only pharaoh to have an intact tomb, it seems strange that no other pharaoh has been discovered with the large number of sticks that Tutankhamun had. Plus, as mentioned earlier and seen below, there have been commoners discovered with sticks that were clearly used as mobility aids.[18] Yet it is interesting to note that William Flinders Petrie, teacher of Howard Carter, had discovered and published the Deshasheh mummy in 1898, over 20 years before Tutankhamun's discovery, and mentioned that the mummy's, "left thigh…was completely united in one mass, but two inches too short. A stick had therefore been carried to walk with, and this lay by the body."[19] Carter had also documented another disabled person (the Queen of Punt) when he copied reliefs from Hatchepsut's mortuary temple several years prior.[20] The anatomist, Douglas Derry, most likely would have recognized the malady during his initial examination of the King. A remedy for clubbed foot had been known and in use in Europe for over 70 years at the time of Tutankhamun's discovery.[21]

Another piece of evidence published by Egyptologist Andre Velmeijer in 2011, while completing a study on the footwear of ancient Egyptians, found that Tutankhamun's sandals had an extra horizontal strap located just above the toes that appeared on no other ancient Egyptian shoes.[22] There were over eighty pairs of footwear found in Tutankhamun's tomb in addition to the hundred and thirty walking sticks. Velmeijer's theory is that these extra straps functioned as a kind of orthopedic shoe, which helped stabilize the foot and may have helped Tutankhamun to walk.[23] He also notes that most of Tutankhamun's sandals have a distinct wear pattern on the left foot, which is believed to be the clubbed foot.[24] It is also interesting to note that footwear worn by Egyptian pharaohs typically

16. Howard Carter, *The Tomb of Tut.ankh.amen Volume 3: The Annexe and Treasury*. (London: Cassell & Company Ltd., 1923), 94.

17. Toby A. H. Wilkinson, *Early Dynastic Egypt* (New York: Routledge, 1999), 158; Gay Robins, *The Art of Ancient Egypt* (Cambridge: Harvard University Press, 2008), 52; Thomas H. Maugh II, "CT Scan convince Egyptian researchers that King Tutankhamun wasn't murdered," *Los Angeles Times*, March 9, 2005.

18. W. M. Flinders Petrie, *Deshasheh, 1897* (London: Egypt Exploration Fund, 1898), 18.

19. Petrie, *Deshasheh, 1897*, 18.

20. Paul Collins, *Discovering Tutankhamun* (Oxford: Ashmolean Museum, 2014), 20-1.

21. Matthew B. Dobbs et al., "Treatment of Idiopathic Clubfoot: A Historical Review," *The Iowa Orthopedic Journal* 20 (2000): 59-64.

22. Andre J. Velmeijer, *Tutankhamun's Footwear: Studies of Ancient Egyptian Footwear* (Leiden: Sidestone Press, 2011), 130-8.

23. Velmeijer, *Tutankhamun's Footwear*, 138-43.

24. Velmeijer, 208-21.

featured iconography that allowed Egypt's enemies to be trampled underfoot.[25] In Tutankhamun's case however, these enemies appeared on his canes and walking sticks instead allowing them to be crushed by hand instead of trodden underfoot.

Also found in the tomb were a rather large number of plants and herbs. While burial with food and other herbs was typical for an ancient Egyptian, the sheer number of these items in Tutankhamun's tomb is unusual. There are also botanical items found in Tutankhamun's tomb and his embalmer's tomb that have never been found anywhere else, out of all the currently excavated tombs of Egypt.[26] (See appendix for a more detailed look of the botanical remains.) However, by acknowledging Tutankhamun's disability, the presence of all these plants might begin to make sense. Out of at least 84 plants found within the tomb, 75 are known to have had medicinal uses in ancient Egypt.[27] Out of these botanical remains, the majority are known to have been used as analgesics, as antiseptics and as antipyretics.[28] These plants would have been a necessity for Tutankhamun in the afterlife considering the pain that a clubbed foot would have caused him. He was also suffering from a broken leg, now thought to have possibly contributed to his death, which would have caused even more excruciating pain. In addition to this, Tutankhamun is now thought to possibly have had malaria and Köhler disease, a bone disorder resulting in possible necrosis of the foot. All of these are known to cause discomfort and pain.[29] The broken leg in addition to his other disabilities most likely made all these drugs/ medicinal plants medical necessities.

The placement of these items within the tomb is also significant as they are primarily clustered in three locations: by the life size guardian statues near the tomb entrance; by the stack of beds, chairs and stools; and in, next to, or on Tutankhamun's sarcophagi or actual mummy.[30] This suggests that items in Tutankhamun's tomb were strategically placed to better accommodate him and manage his medical/physical needs. If as hypothesized, Tutankhamun had mobility issues, the placement of items cannot be ignored; placement is no longer random, but deliberate. In other words, everything he needed in the after life, was readily accessible to him with little movement required on his part. Careful thought seems to have been given to Tutankhamun's mobility and comfort in the afterlife. This also suggests that despite all his physical

25. Wilkinson, *Early Dynastic Egypt*, 162.

26. Morris, "Let the Artifacts Speak," 60-77.

27. Morris, 60-77.

28. Morris, 60-77; Zahi Hawass et al., "Ancestry and Pathology in King Tutankhamun's Family," *Journal of the American Medical Association* 303, no. 7 (2010): 644-6.

29. Hawass et al., "Ancestry and Pathology in King Tutankhamun's Family," 644-6; Lorenzi, "King Tut Re-Creation Presents a Shocking Image."

30. Reeves, The Complete Tutankhamun, 211.

complications, the Egyptians had both the knowledge and motivation to keep him, as well as other disabled individuals, alive and comfortable. How do we know? There are numerous artistic depictions of other adult disabled individuals such as Roma the Doorkeeper, dwarves, and pyramid workers, as well as the mummified remains of these individuals, that come from a variety of social classes and time periods in ancient Egyptian history.[31] This makes it possible to surmise that such compassion and careful planning was not limited to the royal family during the New Kingdom.[32]

The lotus flower, itself invites another line of inquiry. Lotuses had appeared before in Egyptian tombs, usually as hair ornamentations, or in garden scenes as seen in the tomb of Nebamun, also from the 18th dynasty.[33] The lotus was also the symbol of upper Egypt.[34] They were a popular motif in the later Ramesside Period (19th dynasty-20th dynasty), but were never found in the large quantities seen in Tutankhamunʾs tomb.[35] When compared to the tomb of his immediate successors and advisors, the lotus motifs are conspicuously absent from Ayeʾs, Horemhebʾs, and Mayaʾs tombs, despite the same artistic style.[36] In Tutankhamunʾs tomb the lotus can be found almost everywhere.[37] In addition to actual botanical materials, the lotus was depicted numerous times artistically. It is on jewelry, furniture, in wall paintings, on other images of the king found within the tomb, and even on his shoes and clothing.[38] There were so many lotuses found in the tomb both artistically and in actual botanical remains that according to Dr. Stephen Phillips, as well as F. Nigel Hepper, Tutankhamunʾs tomb had the most lotus flowers found in it of any tomb in all of ancient Egyptian history.[39] The key point to keep in mind, is that research done by Rosso and Benson Harer, Jr. reveals the lotus flower was used medicinally in ancient Egypt as a *pain reliever* and sleep aid. It seems reasonable to conclude that

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31. Morris, "Let the Artifacts Speak," 4-60; Mahran and Kamal, "Physical Disability in Old Kingdom Tomb Scenes," 169-91.

32. Morris, 4-60.

33. Jaromir Malek, *Egypt: 4000 Years of Art* (New York: Phaidon Press, 2003), 229.

34. David P. Silverman, *Masterpieces of Tutankhamun* (New York: Abbeville Press, 1978), 61, 79.

35. Dodson, Amarna Sunset: Nefertiti, Tutankhamun, Ay, Horemheb and the Egyptian Counter-Reformation (New York: American University in Cairo Press, 2009), 66-7.

36. Dodson, *Amarna Sunset*, 66-7; Geoffrey T. Martin, *The Tomb of Maya and Meryt: The Reliefs, Inscriptions, and Commentary* (London: Egypt Exploration Society, 2012), 64-9, plates 25, 29, 35, 52, 53.

37. Dodson, 66-7; Martin, *The Tomb of Maya and Meryt,* 64-9, plates 25, 29, 35, 52, 53.

38. Morris, "Let the Artifacts Speak," 4-32.

39. Stephen Phillips, "Pharaohʾs Flowers: Botanical Treasures from the Fabled Tomb of Tutankhamun," *Public Lecture, Event from the Pennsylvania Museum of Archaeology and Anthropology*, Philadelphia, May 19, 2013; F. Nigel Hepper, *Pharaohʾs Flowers: The Botanical Treasures of Tutankhamun* (London: HMSO, 1990), 10-12, 16.

the ancient Egyptians deliberately placed all these lotuses and lotus imagery within Tutankhamun's tomb to ensure that he was comfortable and well provided for in the afterlife.[40]

One of the current theories about Tutankhamun's death is that he fell out of or was hit in the chest by a moving chariot, breaking his leg.[41] Coupled with a weakened immune system (possibly from malaria) the injury killed him.[42] It should be noted that some of the artwork depicting Tutankhamun in a chariot portrays him as able-bodied, but this might be a continuation of traditional artistic motifs depicting the pharaoh that were typically used for propaganda purposes.[43] Injuries found on Tutankhamun's mummy may, in fact, be the result of repeatedly falling down or into things in his efforts to be independently mobile. Given Tutankhamun's disabilities it is highly unlikely that he could have ridden in a chariot. A far more likely explanation is that Tutankhamun simply fell and broke his leg, perhaps while on procession to various temples or at his rest house, sometimes referred to as a hunting lodge.[44] Tutankhamun could easily have suffered the broken leg falling in the bath, falling out of bed, or falling from one of his chairs, thrones, or palanquins when he attempted to get up. If he fell from his palanquin, especially if it was currently in use, this would have meant a fall of at least two feet up to about four feet, since artistic depictions show the Egyptians carrying them at least at waist height.[45] When one takes into account an earlier theory by Dr. Ashrafian, who states that Tutankhamun might have had temporal lobe epilepsy, the reason for these injuries and an explanation for the fall that ultimately resulted in his death becomes less certain than had previously been assumed.[46] It should be noted that malaria can also cause seizures as well as brain damage in children.[47] Tutankhamun could have had a

40. Ana Maria Rosso, "Poppy and Opium in Ancient Times: Remedy or Narcotic?" *Biomedicine International* 1 (2010): 83-4; W. Benson Harer Jr., "Pharmacological and Biological Properties of the Egyptian Lotus," *Journal of the American Research Center in Egypt* 22 (1985): 49-54.

41. Mary Beth Griggs, "New Theory: King Tut Died in a Chariot Crash," *Smithsonian*, November 4, 2013, https://bit.ly/2kqS6nB.

42. Griggs, "New Theory."

43. Malek, Egypt: 4000 Years of Art, 204; Silverman, Masterpieces of Tutankha-mun, 50.

44. Hawass, *The Golden King: The World of Tutankhamun* (Washington DC: National Geographic, 2006), 55.

45. De Garis Davies, The Rock Tombs of el-Amarna, 1-25; Aldred, Akhenaten: King of Egypt, 279.

46. Hutan Ashrafian, "Familial epilepsy in the pharaohs of ancient Egypt's eighteenth dynasty," *Epilepsy & Behavior* 25 (2012): 29.

47. Richard Idro et al., "Cerebral Malaria: Mechanisms of Brain Injury and Strategies for Improved Neuro-Cognitive Outcome," *Pediatric Research* 68, no. 4 (2010): 267-74.

seizure that resulted in a fall, perhaps while he was being carried in one of his canopied chairs, and acquired the broken leg that way. We simply do not know. To settle upon one explanation at the exclusion of others seems serendipitous. It is not only one possible answer, to the exclusion of others, but possibly a fatal confluence of events.

Another bit of evidence that hints at Tutankhamun's disability is the art depicted within his tomb on both the walls and other artifacts. In all the artistic depictions within Tutankhamun's tomb, he is shown either holding canes or walking sticks, sitting down, or literally being supported or held up by either the gods or his wife.[48] Furthermore, all depictions seem to take great care in hiding or concealing his left foot, which we now know from scans to be his problem foot.[49] This suggests that ancient Egyptian artisans were not only aware of his disability, but had acquired great skill, tact and protocols for rendering it so that the disability is acknowledged, but not to the point of distraction, detraction, or derision. Within the tomb there are also several depictions of lions—a well-established symbol of the pharaoh long before this point in Egyptian history.[50] In order to help them stand upright, Tutankhamun's lions are leaning on supports, which also double as the Egyptian symbol for protection. When the depictions of Tutankhamun are compared to that of Pharaoh Akhenaten, his immediate predecessor, or that of either of Tutankhamun's successors, his general Horemheb, or advisor Aye, only Tutankhamun is depicted as physically supported by those around him or utilizing a stick of some type.[51] This is important because according to current knowledge neither Akhenaten nor Horemheb, nor Aye, had any conditions that would have disabled them physically and limited their mobility.[52] Tutankhamun is also shown being held up by others on monuments outside of his tomb as well.[53] It further strengthens the idea that Egyptian society was accustomed to disabled people, as the artists appear to have already had an established protocol for depicting and tacitly acknowledging a disability without stigmatizing it. In the depiction of Seneb the dwarf from the Old Kingdom, his disability is depicted tactfully and in a humanizing way.[54] In addition, we know that Seneb had custom designed furniture, including low stools, and a

48. Morris, "Let the Artifacts Speak," 4-32.

49. Hawass et al., "Ancestry and Pathology in King Tutankhamun's Family," 644-6; Reeves, *The Complete Tutankhamun*, 180; Katherine Stoddert Gilbert, Joan K. Holt, and Sara Hudson, ed., *Treasures of Tutankhamun* (New York: Bantam, 1976), 170-1.

50. Reeves, 180; Gilbert, Holt, and Hudson, *Treasures of Tutankhamun*, 170-1.

51. Morris, "Let the Artifacts Speak," 4-32.

52. Aldred, *Akhenaten: King of Egypt*, 51, 77, 236, 260; Hawass et al., "Ancestry and Pathology in King Tutankhamun's Family," 644-6.

53. Eaton-Krauss, *The Unknown Tutankhamun*, 56-8.

54. Veronique Dasen, *Dwarfs in Ancient Egypt and Greece* (Oxford: Oxford University Press, 1993), 130.

litter with a lower back designed to meet his adaptive needs.[55] This same tact and humanization can be extended to a female helmsman with dwarfism found on a model boat in Tutankhamunʾs tomb.[56] These, as well as numerous other artistic depictions of disabled Egyptians mentioned earlier, may show that ancient Egyptian society was accepting of those with other physical disabilities.[57]

Tutankhamunʾs tomb layout is suggestive of perhaps a hurried burial, but overall it shows careful forethought in planning for all of the kingʾs needs in the afterlife. In the antechamber/first chamber of the tomb were most of Tutankhamunʾs stools, couches, and beds. In the doorway to the burial chamber, which is the next chamber over, were two life-sized statues both holding sticks. They were the same height as Tutankhamun and have been identified as "guardian figures." Most of the walking sticks were also located in this chamber.[58] Since we already know that Tutankhamun had a clubbed foot and most likely required mobility assistance, perhaps these figures were also there to assist the king in his efforts to be mobile. Perhaps the king tried to be independently mobile, further evidenced when one goes past the burial chamber to the treasury, where there were more walking sticks.[59] Another point to consider is that Tutankhamunʾs walking sticks were scattered throughout the tomb. Other items in large numbers, such as shoes and underwear, were found in collections in a single location.

The overall layout suggests that despite a seemingly haphazard appearance, the tomb was laid out so that the king would have assistance getting around no matter where he was within the tomb in his afterlife, and would have access to things that met all his needs as a disabled man. Considering the evidence, this explanation is at least plausible as traditional assumptions. For while the preparations may have been hurried, the Egyptians in fact did believe they were burying a god and his children. They were cognizant of the need for extra care.

The presence of the mummies of Tutankhamunʾs stillborn daughters, one of whom is believed to have had spina bifida, could also be seen as evidence of ancient Egyptʾs disability acceptance and of Tutankhamunʾs disabilities as well.[60] Spina bifida has been shown to be related to clubbed foot and can be passed down genetically, which suggests the stillborn girl showing evidence of the

55. Dasen, Dwarfs in Ancient Egypt and Greece, 130.
56. Filer, *Disease*, 55-7.
57. Morris, "Let the Artifacts Speak," 4-60.
58. Reeves, The Complete Tutankhamun, 178-9.
59. Reeves, 178-9.
60. Reeves, *Egyptian Medicine* (Buckinghamshire: Shire Publications, 2001), 48.

condition inherited it from her parents, and provides yet another piece of evidence for Tutankhamunʾs own disabilities.[61]

Stillborn babies and very young children were seldom mummified in ancient Egypt until the Ptolemaic Period.[62] Yet these two babies were mummified, and were given their own sarcophagi, revealing a unique level of acceptance and compassion. It also proves that at the very least, these fetuses were recognized as human beings by their parents, by the priests who performed the mummification, and the artisans who crafted the tiny sarcophagi. One girl even had a small mask made for her; the other may have as well, but it was discovered in the embalmerʾs cache, which is somewhat strange.[63] The inclusion of the girls in the tomb along with their disabled father, along with the dwarf figure, walking sticks and other accouterments, is evidence that, at the very least among the royal family, disability was accepted in ancient Egypt during this period. However, the numerous other depictions of disabled individuals throughout Egyptian history suggest that this acceptance may have extended to other levels of society and into other periods.

Conclusion

As Dr. Malek explained, Tutankhamunʾs discovery "doesnʾt belong to Egyptologists only. It doesnʾt even belong to Egypt only. The discovery belongs to everybody," including the disabled.[64] It is interesting to note that even in current-day exhibitions and publications on Tutankhamun, his disabilities are still mostly ignored, and there is still debate as to whether he was disabled at all.[65] Does making him able-bodied say more about our society today, than it does about the man himself? As Dr. Haj wrote in his book *Disability in Antiquity*, "Over the centuries millions of handicapped people have lived and died. They have been a substantial but voiceless minority."[66] We need to look at the ethos of the tomb in totality rather than as individual parts. By doing so, we can see a clearer picture of Tutankhamun as a disabled man and provide another way for all people see themselves validated in history. This will surely give Tutankhamun the respect he deserves both as a pharaoh and a disabled human being.

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61. Mayo Foundation for Medical Education and Research, "Diseases and Conditions: Clubfoot," *Mayo Clinic*, last modified 2014, https://mayocl.in/2lD6E3B.

62. Reeves, *Egyptian Medicine*, 20.

63. Herbert Eustis Winlock, *Tutankhamunʾs Funeral* (New York: Metropolitan Museum of Art, 2010), 39-43; Joyce Tyldesley and Dorthea Arnold, *Tutankhamen: The Search for an Egyptian King* (New York: Basic Books, 2012), 52-3.

64. Marchant, *The Shadow King*, 80.

65. Traveling Museum Exhibition, *The Discovery of King Tut*, Premier Exhibitions, 5th Avenue, New York; Hawass, *Discovering Tutankhamun: From Howard Carter to DNA* (New York: The American University in Cairo Press, 2013), 158-60.

66. Fareed Haj, *Disability in Antiquity* (New York: Philosophical Library, 1970), 11.

Appendix

The chart below is a list of the fully identifiable plants and other botanical items found in Tutankhamun's tomb. Listed are their common names, scientific names, medicinal uses, and finally the sources in which each plant and medicinal use was verified can be found in corresponding footnotes, although Christian De Vartavan's *Hidden Fields of Tutankhamun: From Identification to Interpretation of Newly Discovered Plant Material From the Pharaoh's Grave* was the main source used. Plants marked with a * have only ever been found in Tutankhamun's tomb. Out of 84 identified botanical items, only 9 were unable to be identified as having some medicinal value, and 8 botanical items have never been found elsewhere in Egypt.

Botanicals Found in Tutankhamun's Tomb

Plant	Scientific Name	Medicinal Uses
Acacia (Nile acacia)[67]	*Acacia leguminosae, tortilis, raddiana, nilotica, albida*	laxative, demulcent
Alisma*[68]	*Aliscmaceae plantago*	diuretic, astringent
Almond Oil, Stones[69]	*Prunus dulcis*	laxative, diuretic
Balanos Oil, Egyptian plum/Heglig[70]	*Balanites aegyptiaca*	unguent
Barley florets and debris[71]	*Hordeum sativum*	to treat intestinal problems, carminative
Balm of Gilead[72]	*Commiphora gileadensis*	unguent
Bedstraw[73]	*Galium tricorne*	diuretic, astringent
Ben Oil[74]	*Moringa peregrina*	anti-inflammatory, antiseptic

67. James P. Allen, *The Art of Medicine in Ancient Egypt* (New York: The Metropolitan Museum of Art, 2005), 102-3, 115; John Nunn, *Ancient Egyptian Medicine* (Norman: University of Oklahoma Press, 1996), 30-2, 72, 91, 152, 215.

68. Christian De Vartavan, *Hidden Fields of Tutankhamun: From Identification to Interpretation of Newly Discovered Plant Material From the Pharaoh's Grave* (London: Triade Exploration, 2002), 58; Walter H. Lewis and Memory P. F. Elvin-Lewis, *Medical Botany: Plants Affecting Man's Health* (New York: J. Wiley and Sons, 1977), 312.

69. Lise Manniche, *An Ancient Egyptian Herbal* (London: British Musem Press, 2006), 138-9; Irene Jacob and Walter Jacob, *The Healing Past: Pharmaceuticals in the Biblical and Rabbanic World* (Leiden: Brill, 1993), 42.

70. Manniche, An Ancient Egyptian Herbal, 81; Nunn, Ancient Egyptian Medicine, 140, 152, 160.

71. Nunn, 152; Jacob and Jacob, *The Healing Past*, 42-3.

72. Jacob and Jacob, 23.

73. Margaret Grieve, *A Modern Herbal* (New York: Dover, 1971), 462.

74. Nunn, Ancient Egyptian Medicine, 14, 152.

Black Cumin[75]	*Nigella sativa*	poultice, laxative, disinfectant, anti-inflammatory
Blue Waterlily[76]	*Nymphaea cerulea*	astringent, antiseptic, aphrodisiac
Castor Oil[77]	*Ricinus communis*	purgative, demulcent
Wild Celery Leaves[78]	*Apium graveoleus*	diuretic, antirheumatic, carminative, spasmolytic
Chick-Peas[79]	*Cicer arientinum*	laxative
Christthorn[80]	*Ziziphus spina-christi*	laxative, febrifuge, purgative, medical dressing for open wounds
Cilician Fir[81]	*Abies cilcica*	antiseptic, diuretic, carminative
Cinquefoil*[82]	*Pontentilla supina*	anti-inflammatory
Cocculus[83]	*Cocculus hirsutus*	diuretic
Common Reed[84]	*Phragmites australis*	antiseptic, poultice, anthelminthic
Common Vetch[85]	*Vica sativa*	
Coriander[86]	*Coriandrum sativum*	carminative, aromatic, narcotic
Blue Cornflower[87]	*Centuarea depressa*	antipyretic, unguent, anti-venom for scorpion stings
Date Palm Leaves and Wine[88]	*Phoenix dactylifera*	astringent, antipyretic, antitussive, poultice
Darnel[89]	*Lolium temulentum*	sedative, anodyne
Dock[90]	*Rumex crispus*	astringent, laxative

75. Manniche, *An Ancient Egyptian Herbal*, 81; Nunn, 152; Jacob and Jacob, *The Healing Past*, 40; Walter Wreszinski, *Medizin der Alten Ägypter: Band III: "Der Papyrus Ebers"* (*Medicine of the Ancient Egyptians: Volume III: "The Papyrus Ebers"*) (Leipzig, 1913), 28, 55, 125.

76. Nunn, 215.

77. Nunn, 33, 90, 140, 144, 152; Manniche, *An Ancient Egyptian Herbal*, 142-3.

78. Nunn, 154, 215.

79. Nunn, 14.

80. Nunn, 152, 216; Jacob and Jacob, *The Healing Past*, 34; Hepper, *Pharaoh's Flowers*, 68.

81. Hepper, 45.

82. Allen, The Art of Medicine in Ancient Egypt, 109, 115; Jacob and Jacob, The Healing Past, 117; De Vartavan, Hidden Fields of Tutankhamun, 58.

83. Hepper, *Pharaoh's Flowers*, 56.

84. Jacob and Jacob, *The Healing Past*, 43; Nunn, *Ancient Egyptian Medicine*, 63, 105.

85. De Vartavan, Hidden Fields of Tutankhamun, 43.

86. Wreszinski, Medizin der Alten Ägypter, 102-24; Nunn, Ancient Egyptian Medicine, 15, 152; Manniche, An Ancient Egyptian Herbal, 94.

87. Manniche, 85.

88. Nunn, *Ancient Egyptian Medicine*, 15, 94, 152, 215; Jacob and Jacob, *The Healing Past*, 41.

89. Jacob and Jacob, 42.

90. Jacob and Jacob, 72, 79.

Dodder[91]	*Cuscuta pedicellata, Cuscuta approximata*	analgesic, anthelminthic, anti-inflammatory
Echinaria*[92]	*Echinara capitata*	antiseptic
Einkorn[93]	*Trititcum monococcum*	
Emmer wheat[94]	*Trititcum dococcum*	anti-inflammatory, anodyne
Flax[95]	*Linum usitatissimum*	purgative, anti-inflammatory, antibacterial, laxative, antitussive, anodyne, demulcent
Frankincense[96]	*Burseraceae boswellia*	anti-inflammatory, diuretic, laxative, purgative, disinfectant
Fenugreek[97]	*Trigonella foenum graecum*	carminative, tonic, laxative, expectorant, appetite stimulant
Forrsk*[98]	*Cornopus squamatus*	anti-diarrheal, demulcent, diuretic
Garlic[99]	*Allium sativum*	poultice, laxative, disinfectant
Grape vine[100]	*Vitis vinifera*	diuretic, laxative, antitussive, anodyne
Grewia[101]	*Grewia tenax*	anti-inflammatory, diuretic, demulcent
Halfa Grass[102]	*Desmotaachya bipinnata*	
Henna[103]	*Lawsonia inermis*	astringent, sedative
Honey[104]		poultice, antiseptic, unguent
Rock Jasmine*[105]	*Androsace maxima*	anti-inflammatory
Common Juniper[106]	*Juniperus communis*	diuretic, laxative

91. Grieve, *A Modern Herbal*, 810.

92. De Vartavan, Hidden Fields of Tutankhamun, 58.

93. De Vartavan, 46.

94. Manniche, An Ancient Egyptian Herbal, 152-153; Jacob and Jacob, The Healing Past, 42; Nunn, Ancient Egyptian Medicine, 152.

95. Nunn, 154, 215.

96. Francis L. Griffith, *The Petrie Papyri: Hieratic Papyri from Kahun and Gurob* (London: Quaritch, 1898), 12; Nunn, 94-5.

97. Nunn, 15, 154.

98. Grieve, A Modern Herbal, 642-3; De Vartavan, Hidden Fields of Tutankhamun, 58.

99. Jacob and Jacob, *The Healing Past*, 10, 36, 78; Nunn, *Ancient Egyptian Medicine*, 14.

100. Manniche, *An Ancient Egyptian Herbal*, 155-6; Jacob and Jacob, *The Healing Past*, 45.

101. Lewis, *Medical Botany*, 233.

102. Hepper, *Pharaoh's Flowers*, 33.

103. Hepper, 21, 25.

104. Nunn, *Ancient Egyptian Medicine*, 28, 32, 35, 63, 72, 90-1, 94-5, 105-6, 140, 143.

105. Grieve, A Modern Herbal, 447-9; De Vartavan, Hidden Fields of Tutankha-mun, 58.

106. Manniche, An Ancient Egyptian Herbal, 110-2; Hepper, Pharaoh's Flowers, 60; Nunn, Ancient Egyptian Medicine, 72, 152.

Red Berried Juniper[107]	*Juniperus virginiana*	diuretic, laxative
Lentils[108]	*Lens culinaris*	laxative
Linseed Oil[109]	*Linum usitatissimum*	purgative, anti- inflammatory, anti-bacterial, laxative, antitussive, anodyne, demulcent
Lotus Flowers[110]	*Nymphaea lotus, Nymphaea caerulea*	aphrodisiac, antiseptic, astringent
Lupin[111]	*Lupinus*	anthelmintic, diuretic, unguent
Madder[112]	*Rubia tinctorum*	diuretic
Madonna Lilies[113]	*Lilium candidum*	demulcent, anti-inflammatory, unguent
Mallow*[114]	*Malva neglecta, Malva rotundifolia, malva parvi flora*	diuretic, poultice
Mandrake Fruits[115]	*Mandragora officinarum*	diuretic, purgative
Mayweed Leaves and Flowers[116]	*Anthemis pseudocotula*	poultice, carminative
Moringa/ Horseradish Tree[117]	*Morring perengrina*	diuretic, antiseptic
Mustard Seed[118]	*Brassica*	poultice, laxative, anti- inflammatory
Myrrh[119]	*Commi phora myrrha*	anti- inflammatory, diuretic, laxative, purgative, disinfectant
Myrtle[120]	*Myrtus communis*	astringent, antiseptic
Olive Leaves, Oil[121]	*Olea Europea*	astringent, antiseptic, unguent
Ox-Tongue Leaves[122]	*Picris radicata*	anthelmintic

107. Hepper, 60; Nunn, 72, 152.

108. Manniche, An Ancient Egyptian Herbal, 115.

109. Nunn, Ancient Egyptian Medicine, 140, 152.

110. Manniche, *An Ancient Egyptian Herbal*, 126-9; Nunn, 14, 152, 157, 215; Harer Jr., "Pharmacological and Biological Properties of the Egyptian Lotus," 49-54; Rosso, "Poppy and Opium in Ancient Times, " 81-7.

111. Grieve, *A Modern Herbal*, 502-3.

112. Manniche, An Ancient Egyptian Herbal, 144.

113. Grieve, *A Modern Herbal*, 482.

114. Grieve, 507-9; De Vartavan, *Hidden Fields of Tutankhamun*, 58.

115. Jacob and Jacob, *The Healing Past*, 41; Nunn, *Ancient Egyptian Medicine*, 152, 154, 215.

116. Grieve, *A Modern Herbal*, 523-4.

117. Nunn, Ancient Egyptian Medicine, 152.

118. Grieve, *A Modern Herbal*, 567-9.

119. Nunn, Ancient Egyptian Medicine, 94-5, 215; Allen, The Art of Medicine in Ancient Egypt, 109, 115.

120. Nunn, 152, 215; Jacob and Jacob, *The Healing Past*, 41.

121. Hepper, *Pharaoh`s Flowers*, 16.

Papyrus Pith, Stems, Sedge[123]	*Cyperus papyrus*	anti-inflammatory
Black Pea/ Black Bitter Vetch[124]	*Lathyrus niger*	
Edible Pea Grass[125]	*Lathyrus sativus*	
Garden Pea[126]	*Pisum sativum, elatius*	
Rough Pea Vine[127]	*Lathyrus hirsutus*	
Panic Grass[128]	*Panicum repens*	
Paradoxical Canary Grass[129]	*Phalaris paradoxa, Phalaris praemorsa*	
Persea Tree Leaves[130]	*Mimusops laurifolia*	astringent, anthelmintic, antipyretic
Pomegranate[131]	*Punica granatum*	anthelminthic, antibacterial, antidiarrheal, astringent
Poppy[132]	*Papaver rhoeas, Papaver somniferum*	narcotic, analgesic
Prickle Grass[133]	*Crypsis*	
Purple Galingale/ Nut Grass[134]	*Cyperus rotundus*	anti-inflammatory, antipyretic, anti-malarial
Safflower Oil, Seeds[135]	*Carthamus tinctorius*	laxative, antipyretic
Sedge[136]	*Carex divisa*	diuretic
Sesame Oil, Seeds[137]	*Sesamum indicum*	unguent, poultice, laxative, diuretic
Slender Meadow Foxtail/Black Twitch/Black Grass*[138]	*Alopecurus myosuroides*	diuretic, demulcent

122. Grieve, *A Modern Herbal*, 605-6.

123. Nunn, *Ancient Egyptian Medicine*, 14, 72, 152; Jacob and Jacob, *The Healing Past*, 44.

124. Nunn, 152.

125. Nunn, 152.

126. Nunn, 152.

127. Nunn, 152.

128. De Vartavan, Hidden Fields of Tutankhamun, 46-7.

129. De Vartavan, 46-7.

130. Nunn, *Ancient Egyptian Medicine*, 152, 154, 215.

131. Nunn, 15, 72,152.

132. Manniche, *An Ancient Egyptian Herbal*, 130; Rosso, "Poppy and Opium in Ancient Times, " 81-7; Nunn, 151-2.

133. De Vartavan, Hidden Fields of Tutankhamun, 46.

134. Sri Ranajani Sivapalan, "Medicinal Uses and Pharmacological Activities of *Cyperus rotundus* Linn-A Review," *International Journal of Scientific and Research Publications* 3 (2013): 1-8.

135. Manniche, An Ancient Egyptian Herbal, 83; Nunn, Ancient Egyptian Medicine, 15.

136. Nunn, 14.

137. Manniche, An Ancient Egyptian Herbal, 147.

Sorghum[139]	*Sorghum arundinaceum, Sorghum bicolor*	diuretic, demulcent
Sycamore[140]	*Ficus sycomorus*	poultice, antiseptic
Syrian Mesquite/ Dwarf Mesquite[141]	*Lagonychium farctum/Prosopis farcta*	diuretic, poultice, unguent
Tamarisk[142]	*Tamarix*	anti-inflammatory, astringent, anthelminthic, unguent
Terebinth[143]	*Pistacia palaestina*	poultice, antiseptic, unguent
Thyme*[144]	*Thymallus vulgaris*	anthelminthic, laxative, carminative
Watercress[145]	*Lepidium sativum*	antipyretic
Watermelon[146]	*Citrullus lanatus*	to treat blood vessel disorders, laxative, carminative, anti-inflammatory, unguent, poultice
White Goosefoot[147]	*Chenopodium album/ iranicum*	anti-inflammatory, anti-diarrheal
Willow[148]	*Salix subserrata*	analgesic, antipyretic, anti-inflammatory, treatment of broken limbs
Wine[149]		vessel for the administration of medicinal substances
Withania Nightshade[150]	*Withania somnifera*	sedative, analgesic

138. Grieve, A Modern Herbal, 370; De Vartavan, Hidden Fields of Tutankhamun, 58.

139. Grieve, 130.

140. Manniche, *An Ancient Egyptian Herbal*, 103-5; Nunn, *Ancient Egyptian Medicine*, 15, 72, 85, 90, 131, 152, 154; Allen, *The Art of Medicine in Ancient Egypt*, 61, 98-9 102-3; Jacob and Jacob, *The Healing Past*, 36.

141. Jacob and Jacob, 48.

142. Manniche, *An Ancient Egyptian Herbal*, 149-50; Nunn, *Ancient Egyptian Medicine*, 152; Jacob and Jacob, 38.

143. Jacob and Jacob, 44, 76.

144. Jacob and Jacob, 44; Nunn, *Ancient Egyptian Medicine*, 15.

145. Grieve, *A Modern Herbal*, 845.

146. Jacob and Jacob, *The Healing Past*, 45; Nunn, *Ancient Egyptian Medicine*, 15, 152.

147. Grieve, *A Modern Herbal*, 857.

148. Jacob and Jacob, The Healing Past, 45; Nunn, Ancient Egyptian Medicine, 152.

149. Nunn, 72, 140; Allen, The Art of Medicine in Ancient Egypt, 68.

150. Nunn, 151; Hepper, *Pharaoh's Flowers*, 18.

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The Appearance of Bricks in Ancient Mesopotamia

By Kadim Hasson Hnaihen[*]

Mesopotamia is a region in the Middle East, situated in a basin between two big rivers-the Tigris and the Euphrates. About 5,500 years ago, much earlier than in Egypt, ancient civilization began, one of the oldest in the world. Continuous development was an important factor of everyday life. A warm climate, fertile soil, mixed with the sediment of flowing rivers and perhaps even the first oak all. A deficit of stone for building shelter was an impediment that the Sumerians faced, but from this shortage they found the perfect solution for their construction-brick. Shelter, homes and other buildings were built from material available in the area, such as clay, cane, soil, mule. Sumerians mastered the art of civic construction perfectly. They raised great buildings, made of bricks (Ziggurats, temples, and palaces) richly decorated with sculptures and mosaics. In this article I will focus on the most interesting time period in my opinion-when brick appeared, I will comment upon the process of production and the types of the brick used in Mesopotamia. It should be noted that the form we know today has been shaped by the cultural and social influences of many peoples who have successively settled these lands, continuing to a large extent the cultural heritage of the former.

Introduction

The ancient population of Iraq (from the Stone Age, 150,000 BC to 8,000 BC) inhabiting Mesopotamia is one of the oldest civilizations to be discovered. They were Old Stone Age (Paleolithic) (150,000 BC to 12,000 BC): About 100,000 years ago, people lived in caves in northern Iraq and used stones for the manufacture of their instruments. The oldest caves are Zerzi cave, Hazar Murd cave in Sulaymaniyah city.[1] The dimensions of one of the well-known caves "Shanider" in Zagros Mountains, is 25 metres wide, the entrance to the cave is 8 metres high. It is 40 metres long and 53 metres wide from the inside.[2] Clay brick masonry is one of the oldest and most durable construction techniques used by mankind. It was a fundamental building material in the Mesopotamian, Egyptian periods. Despite several modifications of the clay brick uses, shape and manufacture along thousands of years of continuous evolution, the simplicity that made it successful

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1. Seaid Alrwishdi, "Caves in the Middle East" [in Arabic], *Sumer* 25 (1969): 261; Najel K. Abd Alrazaq, "The planning and design characteristics of buildings and mud settlements in Iraq" [in Arabic], *Journal Planner and Development* 25 (2012): 94.

2. Entidhar Al-Taie, Nadhir Al-Ansari, and Sven Knutsson, "Progress of building materials and foundation engineering in ancient Iraq," *Advanced Materials Research* 446-449 (2012): 222.

remained the simple manufacturing process based on fired clay, a raw material available in large quantities all over the Earth. Its wide use proved that the clay brick was an effective construction material that could provide both resistance to prevalent climatic conditions and insulation from both cold and heat. It is known that the properties of ancient clay brick masonry rely essentially on the properties of the brick units, which depend on the quality of the raw materials used, together with the manufacturing process technology. The analysis of clay brick production and final properties are therefore fundamental. Generally, it is crucial to obtain information on the main physical, chemical and mechanical properties of clay bricks as well as the characteristics of the raw materials used and their manufacturing process.[3] Clay bricks are products of a dough consisting of clay soil and water, pure clay or a mix with other materials such as straw. Bricks were formed primitively, naturally dried and fired in the kilns in the workshop.[4] As we know clay bricks were widely used in ceilings because they were manageable to prepare, they were lighter than stones, able to be aligned in rows, and they were possibly used with a lightweight mold.[5] Soil is a cheap and abundantly available building material on the Mesopotamian land.[6] The properties of clay had been noticed very fast and began mixing with other available materials to improve brick and get new useful mechanical properties, which are more frequently retrieved in the case of the composite material properties.[7]

3. Francisco M. Fernandes, Paulo B. Lourenço, and Fernando Castro, "Ancient Clay Bricks: Manufacture and Properties," in *Materials, Technologies and Practice in Historic Heritage Structures*, ed. Maria Boştenaru Dan and Richard Přikryl (Dordrecht: Springer, 2010), 2.

4. N. Volkan Gür, Ömer Ş. Deniz, and Savas Ekinci, "Carrier Materials and Components in Masonry Masonry" (presentation, 6th National Roof & Facade Symposium, Faculty of Engineering and Architecture, Uludağ University, Bursa, Turkey, April 12-13, 2012), 5. Retrieved from https://bit.ly/30X9sYG.

5. Aysil Tukel Yavuz, "The Relationship between Materials and Architecture in the Seljuk Period" (presentation, Material and Architecture Symposium in Anatolia from the Past to the Future, UIAXXII World Architecture Congress, 2005), 79.

6. Kebao B. Ren and Douglas A. Kagi, "Upgrading the durability of mud bricks by impregnation," *Build Environment* 30, no. 3 (1995): 433-440; Neslihan Dalkılıç and Adnan Nabikoğlu, "Traditional manufacturing of clay brick used in the historical buildings of Diyarbakir," *Frontiers of Architectural Research* 6, no. 3 (2017): 346-59.

7. Tomas Wijffels and G. Nijland Timo, "Deterioration of historic brick masonry due to combined gypsum, ettringite and thaumasite, a case study" (presentation, 13th International Brick/Block Masonry Conference, Amsterdam, 2004), 89.

History of Bricks

Nemrik, a pre-pottery Neolithic village 55 km northwest of Mosul, now provides the earliest architectural sequence for northern Mesopotamia (Figure 1). In the oldest, ninth-millennium settlement, taut-walls were built of variously sized "blocks," 20 cm thick on average. In the eighth-millennium phase "the walls...consisted of a single thickness of cigar-shaped sun-dried mud bricks, measuring 51x12x6 cm on average, and closely resembling bricks known from much later Mesopotamian sites such as Choga Mami and Oueili."[8] In the seventh millennium, walls were built either entirely of sun-dried mud bricks or of a combination of bricks and pack clay (taut). Hand-shaped sun-dried mud bricks appeared in settlements on the line of the Euphrates, at locations such as Bouqras and Ramad, by at least the second half of the seventh millennium BC. Primitive bricks may be observed over the next thousand years in sites such as Matarrah, Shemshara, Umm Dabaghiyah, and Yarim Tepe I in northern Mesopotamia. Moulded sun-dried mud bricks, regardless of the precise stage of their earliest development, begin to be widely evident in the Hassuna/Halaf/Samarra/ Ubaid I cultural horizons in the second half of the millennium BC, in the north and south.

The mud bricks of Ubaid I and the early levels at Tell el-Oueili in the south are of the cigar- and loaf-shape well known in Khuzistan, where they were already employed at Choga Bonut. "Archaic 1," and at Tell es-Sawwan and Choga Mami.[9] At Oueili there appears to be continuity in their use through to Ubaid 4. This use of loaf-shaped bricks is best taken as an evolutionary stage in the development of mud-brick building rather than as a necessary sign of cultural unity. The basic limitations of architecture of terre pise had a profound long-term effect on the builders of ancient Mesopotamia. The laws of gravity and the quality of the workmanship in foundation setting and in ramming techniques determine the relationship between the height and width in packed earth walls. Terre pise tends to be unstable. Certain fundamental inhibitions survived the introduction of pre-dried and standardized bricks, which made walls lighter and thus capable of being built taller so long as the points and lines of stress were appropriately treated. The real key lay in the proper use of mortar and kiln-fired bricks. In general, as with terre pise, the methods of making sun-dried moulded mud bricks (libn) that evolved in remote antiquity have endured in Iraq substantially

8. Stefan K. Kozlowski and Andrzej Kempisty, "Architecture of the Pre-Pottery Neolithic Settlement in Nemrik, Iraq," *World Archaeology* 21, no. 3 (1990): 353.

9. Joan Oates, "The Choga Mami Transitional," in *La Prehistoire de la Mesopotamie*, ed. Jean-Louis Huot (Paris: Editions du CNRS, 1987): 164; Martin Sauvage, "Les briques de grande taille à empreintes de doigts: le Choga Mami Transitional et la culture de Oueili" (Large bricks with fingerprints: the Choga Mami Transitional and the culture of Oueili), in *Études mésopotamiennes: Recueil de textes offert à Jean-Louis Huot* (*Mesopotamian Studies: A collection of texts offered to Jean-Louis Huot*), ed. Catherine Képinski and Christine Brenniquet (Paris: ERC, 2001), 417.

unchanged, as examination of surviving bricks and the witness of texts relating directly to the manufacture of bricks makes clear. Aurenche[10] has given a detailed review of techniques, whilst Salonen[11] provided a useful series of pictures of brickmaking in modern communities in comparable regions.

Figure 1. *Map of Mesopotamia Archeological Sites*
Source: Oriental Institute, University of Chicago. Retrieved from https://ces.to/Pyq9oG.

Mud bricks were commonly produced in rectangular wooden moulds, open at the top and bottom, usually singly, but sometimes in twos or threes. Almost any soil may be used as the medium, though one with a greater clay content is more satisfactory. Some form of tempering was always necessary to avoid warping and cracking. Chopped straw or dung was most commonly used. It has been calculated[12] that 100 bricks require about 60 kg of straw (i.e., Y. hectare of barley). The resistance of sun-dried mud bricks to fracture decreases with the decay of the straw bonding. Pulverized sherds and other mineral matter were

10. Olivier Aurenche, *La Maison Orientale, L'architecture du proche orient ancien des origines au milieu du quatrieme millenaire* (*The Oriental House, The architecture of the ancient Near East origins in the middle of the fourth millennium*) (Paris: French Institute of Archeology of the Middle East; Beirut, Damascus Amman: Archaeological and Historical Library, 1981), 64.

11. Armas Salonen, *Die Ziegeleien im alten Mesopotamien* (*The brickworks in ancient Mesopotamia*) (Helsinki: Finnish Academy of Sciences, 1972), XXXVIII-LII.

12. David Oates, "Innovations in Mud-Brick, Decorative and Structural Techniques in Ancient Mesopotamia," *World Archaeology* 21, no. 3 (1990): 390.

sometimes employed. The lime content of many clays in Iraq make them particularly suitable for the manufacture of durable mud bricks. There is no evidence that bitumen was incorporated in the clay mix in antiquity, though it has been in recent experiments. When kings were involved in formal ceremonies at the start of a building project, ivory tools and precious wood equipment was employed. The making and laying of bricks for public buildings, especially temples, is known from textual sources to have been accompanied by ceremonies and rituals to propitiate the gods, including a specific brick god, and to create the most favorable circumstances, especially for the crucial process of making the first brick.[13] For each new project unbaked mud bricks had to be freshly made, as they cannot be salvaged from old buildings. Written evidence indicates that such rituals accompanied work on basic dwellings as well.

Bricks are unique among Mesopotamian artifacts "because they are the only surviving artifact for which textual evidence attests that they incorporate norms of length, area, volume, capacity and weight-a rather remarkable combination in the history of pre-modern metrology." However, there already exists extensive literature on the mathematical aspects of quantity assessment and related brick problems based on the surviving documentary evidence.[14] Bricks were used in enormous quantities, especially for the platforms or rafts of mud brick which replaced trench foundations in the Neo-Assyrian period, and always for Ziggurats. Virtually nothing is known archaeologically of brick kilns in ancient Mesopotamia; even in Egypt pictorial evidence is rare.[15] Below the "Stone Cone Temple" at Uruk a concentration of what may be late prehistoric brick kilns was excavated, many apparently used only once, to produce bricks measuring 32XI8X9 cm.[16] Others have been claimed at Khafajah[17] and Nuzi. It is commonly assumed that they differed little from their more primitive modern counterparts evident throughout the Iraqi countryside.[18]

By the Ubaid period they may be observed in use from Gawra level XIII in the north southwards to Eridu.[19] The figures for brick sizes reveal both an increasing standardization and a reduction in size. For the first time bricks no

13. Peter Roger Stuart Moorey, *Ancient Mesopotamian Materials and Industries, The Archaeological Evidence* (Oxford: Clarendon Press, 1994), 311.

14. Marvin A. Powell, "Metrological Notes on the Esagila Tablet and Related Matters, Appendix II, Bricks as Evidence for Metrology," *Zeitschrift fur Assyriologie* 72 (1982): 117.

15. Ursula Verhoeven, "*Eine technologische Rarität. Das Brennen von Ziegeln in der Grabdekoration des Mittleren und Neuen Reiches*" (*A technological rarity. The burning of bricks in the grave decoration of the Middle and New Kingdom*), Communications of the German Archaeological Institute, Department of Cairo, 43 (1987), 261.

16. Moorey, *Ancient Mesopotamian*, 311.

17. Henri Frankfort, *The Art and Architecture of the Ancient Orient* (Chicago: Penguin Books, 1970), 76.

18. Salonen, *Die Ziegeleien im alten Mesopotamien*, 119.

19. Aurenche, *La Maison Orientale*, 67, table 6 (with dimensions), map 6.

more than 50 cm long are more common than larger ones. On ethnographical analogies Aurenche interprets this as indicative of molding. In discussing the bricks used in temples of the Ubaid period at Uruk, it was observed that even if the technique of brick manufacture was still primitive, regular form and size (45-42X24-22X87 cm) indicated organized mass-production. Moorey implied a very similar conclusion in his discussion of brickwork in the shrines of Gawra XIII.[20] The emergence of the widely distributed "tripartite" plan for houses and temples in the Ubaid period reinforces the argument that new levels of social organization now affected the builder's craft across the whole of Mesopotamia.

No baked bricks have yet been reported before the Uruk period, apart from an anomalous instance in Gawra XIII. A find in the Eastern Shrine "consisted of a total of ninety-nine model bricks made of well-baked terracotta... Examples of full bricks, square half bricks, long half bricks, and quarter bricks were represented... Apparently these model bricks were used to determine the most satisfactory method of bonding and building the complicated recessed piers and pilasters found in Stratum XIII structures" (No baked bricks have yet been reported before the Uruk period, save for an anomalous instance in Gawra XIII. A find in the Eastern Shrine "consisted of a total of ninety-nine model bricks made of well-baked terracotta... Examples of full bricks, square half bricks, long half bricks, and quarter bricks were represented... Apparently these model bricks were used to determine the most satisfactory method of bonding and building the complicated recessed piers and pilasters found in Stratum XIII structures."[21] Up to the middle of the fourth millennium BC moulded mud bricks had tended to be large and flat. In the Uruk period smaller proportions emerged so that two bricks could be handled together. Now, also for the first time, bricks were baked in kilns for special purposes and shapes were varied to suit functions in a building. Finkbeiner has provided a full review of the brick-shapes used at Uruk through the later prehistoric levels (VIIIVI-I).[22]

The preferred brick manufacturing month was the "third" (May-June), immediately after the spring rains, when water would be plentiful and the whole summer lay ahead, if necessary, for drying. Chaff or straw was easily available at this time. The July-August period was characterized as a time of building, ness of the ground would have facilitated foundation laying. The association of the fire-god with building may arise from this conjunction of intense heat and construction.[23] Broadly speaking, as with terre pise, the methods of making sun-dried moulded mud bricks (libn) evolved in remote antiquity have endured in

20. Moorey, *Ancient Mesopotamian*, 312.

21. Moorey, 314.

22. Uwe Finkbeiner, "Uruk-Warka, Evidence of the Gamdat Nasr Period," in *Gamdat Nasr: Period or Regional Style?*, ed. Uwe Finkbeiner and Wolfgang Röllig (Wiesbaden: Reichert, 1986), 47 ft., appendix II lists brick sizes.

23. Richard S. Ellis, *Foundation Deposits in Ancient Mesopotamia* (New Haven Londres: Yale University Press, 1968), 20.

Iraq substantially unchanged, as an examination of surviving bricks and the evidence within texts relating directly to the manufacture of bricks makes clear.

Methodology

A general lack of interest in the essential building elements in Mesopotamia; namely - brick, was a reason for me to take an interest in following this topic. Furthermore, from my work I am able to postulate a new theory about the process of brick production, types and calculations of their dimensions in the area of Ancient Iraq where the only one who took the topic of research of bricks, the process of their formation was Sir Al-Temimi, who dealt with the topic of production of the brick in ancient Iraq.[24] According to my research, we are able to calculate the amount of brick by using the dimensions of brick (length, width and height) for each wall, by drawing them and calculating according to the figure to one spatial meter.[25]

Thanks to the wedge inscription, we will find out that the time needed to dry a brick is one or two days depending on the season of the year. The clay fermentation time is one day. At the same time, it is required that the water that is used to make the brick burnt clean than that which used to prepare the dried brick.[26] Moreover, at the same time, we know thanks to the next inscription that the pores of producing brick is from the middle of March where the rainy season is now half way through October when the weather is changing, as well as the months in which the ancient inhabitants of Mesopotamia begin to produce brick are called months of clay location in the templates. Thanks to this information, we already know what the elements are and the time that is needed to make up the brick as well as the period of its production. At the same time, I have learnt the stages and types of bricks that could have come from them throughout history. It can be said that brick is not only of fundamental importance in building cities but also that it was an important economic element, because we know that the price of production of 370 burnt bricks plus their transport from the place of production to the construction site was equal to 1 shekel of silver and 1 shekel silver equals 8.4 grams.[27]

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24. Abas A. Al-Temimi, "Mud Bricks in Ancient Iraq, Production and Patterns" [in Arabic], *Sumer* 38 (1982): 278.

25. Number of bricks to m^3 convert according to dimensions of bricks in space meters with two cm added to the height of each brick which represents the clay connecting bricks in the wall.

26. Fuozi Rashid, "Brick production in Ancient Iraq" [in Arabic], *Oil and Development, Development in Iraq for centuries* 87 (1981): 45.

27. Rashid, "Brick production in Ancient Iraq," 36.

The Productions of Bricks in 4th and 3rd Millennium BC

It is a curiosity that brick is still produced with ancient technology. General production phrases are: Raw material preparation, forming, drying, fringing, packing and dispatch. The next step of the brick's production was using clay where it was made in regular sun-dried sticks, in contrast to the previous clay used in construction which was soft. After using the clay as the basic material from which structures and buildings were made, before finally, dried brick arrived as a new material. There were problems in the south of Mesopotamia where dry bricks did not meet the building requirements, because it was irresistible to moisture, in addition to the high groundwater levels in the area, the lack of stone and the difficulty of carrying it out of northern Mesopotamia. At the same time, people already knew ceramics and its properties that were resistant to moisture, so the builders began to burn bricks before being built, and thereby appeared burnt bricks with new properties such as being resistant to humidity. Moreover, for the first time evidence of the baked brick appeared during the Uruk period, and exactly in the buildings of Eridu city.[28] According to Mr. Hussin, excavations in Ur discovered burnt bricks with inscribed information about the inhabitants of Ur during the Uruk period, and building a palace in dry brick chisel used clay to merge brick and its road was built of fired-brick in 3500 BC.[29]

The ancient inhabitants of Mesopotamia were interested in the production of bricks. They mastered the quality and method of interest in the mud fermentation process, and the method of firing bricks to get a uniform brick fired by using closed furnaces to maintain the correct temperature. It adversities the ability to oppose environmental factors.

The contribution of kings to the construction of temples, Ziggurats and palaces was also influenced by the contribution of kings to the construction of temples, Ziggurats and palaces. For example, we can see King Ur-Nansha (Figure 2) the founder of the first Dynasty of Lagash, where a basket of clay is produced to produce dried or burned bricks.[30] We really have a lot of monuments where the kings' contributions are made in building or making bricks, where they wore them on their heads in clay-filled baskets, just like Ur-Nammu (Figure 3).[31] At the same time, we have a letter in the wedge that tells

28. Al-Temimi, "Mud Bricks in Ancient Iraq," 277.

29. Setar H. Hussain, "Ways to produce bricks and its type" [in Arabic], *Sumer* 43, no. 1 (1984): 258; Mohammed Ali Mustava and Seaid Alrwishdi, *Fired brick production* [in Arabic] (Baghdad: General Directorate of Ancient Monuments, 1992).

30. Seton Lloyd, *The Archaeology of Mesopotamia, From the Old Stone Age to the Persian Conquest*, trans. Al-Ahmed Samy (Baghdad: Notional Hause Production, 1980), 133, figure 68.

31. Jeanny Vorys Canby, "A Monumental Puzzle Reconstructing the Ur-Nammu Stela," *Expedition* 29, no. 1 (1987), 56. Retrieved from https://ces.to/ vCfPbj.

us about the kings' participation in brick production and in building, where it describes for us the steps of producing clay, explaining how Gudea (2144-2124 BC) took the clay from his stirring place, late in the basket, and brought it to the brick template.[32] At the same time this tradition where the king took part in the construction continues to this day, where at every important construction, an important person from office will come to lay the cornerstone of the building.

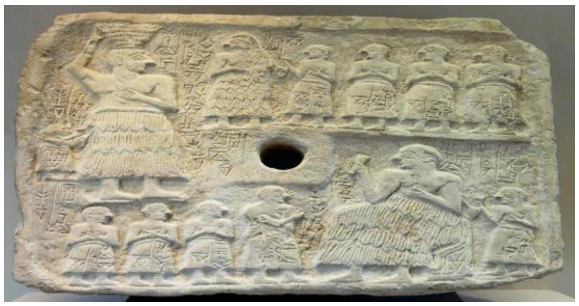

Figure 2. *Ur-Nanshe Brings Clay in a Bascet*
Source: Lloyd, *The Archaeology of Mesopotamia*, 134.

> "XVIII: Gudea put the blessed water in the frame of the brick mould. (....) He set up the appropriate brick stamp so that (the inscribed side) was upwards (?): he brushed on honey, butter and cream (?), he mixed ambergris and essences from all kind of trees into a paste. He raised the impeccable carrying-basket and set it before the mould. Gudea put the clay in the mould, he acted precisely as prescribed, and behold he succeeded in making a most beautiful brick for the house.
> (....) XIX: He struck the brick mould: the brick emerged into the daylight. He looked with complete satisfaction at the stamp (impression) on the clay (...) (Gudea) raised the brick out of the frame of the mould: he caried the brick- a lovely tiara (?) which reached up to heaven- and went among his people."[33]

32. Rashid, "Brick production in Ancient Iraq," 37.

33. Martin Sauvage, *La brique et sa mise en oeuvre en Mésopotamie, des origines à l'époque achéménide* (*Brick and its implementation in Mesopotamia, origins at the time Achaemenid*) (Paris: Research editions on civilizations, 1998), 22.

Figure 3. *Ur-Nammu Brings Clay in a Bascet*
Source: Sauvage, "La construction royale en Mésopotamie," figure 1.

Analytical research showed that the best clay to produce brick, was clay with an equal amount of silt to the amount of sand. But such clay was not available in all parts of Mesopotamia, so they used river mud to produce bricks. But one problem was that the amount of river mulch was more than the amount of sand and therefore hay and animal waste was added to the bricks during processing and one brick could keep with another brick.[34] And changing the amount of mud in the clay from one place to another resulted in a change in the dried and burnt mud depending on the mud.

The basic method used to produce the brick is a manual method. This method is considered to be the oldest brick production method that is contained in cultivated land. Water is added to it, stirred and folded with hands and feet until it becomes identical sticky material that can be manually cut, drying late under the sun. After drying the bricks in the sun, they were moved to the furnace, and burned.[35] It can be said that the availability of raw materials to produce bricks in different places in Mesopotamia was the element which helped in the emergence of such types of production, as well as the susceptibility of the raw material to keep up with the evolution of production processes that do not need a high level of technical skills and competency. Dry brick manufacturing sites were usually at the place they wanted to build- it was called in Sumerian as (E.IM.DU.8/A) means exactly

34. Rashid, "Brick production in Ancient Iraq," 44.
35. Hussain, "Ways to produce bricks and its type," 259.

(house), and we have evidence written on it from a building called Akitu house:

> "*agurti sa libnati ina lab -bit a- biti ilabbinu*"
> Employee produces brick house at the gates Akitu.[36]

As we know, places of bricks production were situated near to construction sites because otherwise it could be more of a possibility to lose those bricks while transporting them. To light the stove for burned brick that was produced at the city walls, the animal waste kiln was used.

The production time of dried bricks and fired bricks was from mid-March until mid-October, because in this period the temperature is higher and there is no rain, so clay does not absorb moisture. In Sumerian language the month from which the brick cut starts is called the month of brick placement in Templates.

From the plaques written by cuneiform we have learnt that the time needed to dry the brick was one day or two days[37] in the period marked for brickwork. And the time of fermentation of clay is one day. Furthermore, we have discovered that water which is used to make the bricks must be cleaner than that used to prepare the dried brick.[38]

There were two types of templates used in the manufacture of dried and fired bricks: the first is a hollow rectangular frame, of identical height and width. Moreover, the second type is an unmodeled template of its size as well as the size of the dried or burnt brick that they want to produce.[39] Bricks that permitted the scribing of letters in cuneiform proved difficult to detach from their templates, as proven by documented evidence found describing the use of water on the templates, before the brick was pressed, so as not to glue it in the templates.[40] Indeed, the described manner of production of bricks referred to above, with scribed symbols is very slow and not economical, so they replaced them by using stamped stamps on the bricks to cover the desired script. The stamp used for the inscription of dried bricks -from the times of the Akkadian king Naramsin (Figure 4). It is translated as:

> "Naramsin builder, the temple of Gad Inana."[41] However, in this way a lot of brick was lost from the pressure of the seal, therefore they started to write by hand on the bricks as long as they were soft (Figure 5). The burned brick contained the following hand-made inscription.

36. Rashid, "Brick production in Ancient Iraq," 36.
37. Rashid, 45.
38. Rashid, 40.
39. Rashid, 45.
40. Rashid, 40.
41. Rashid, 41

Translation:
"For God Ninkesh Zaida, built Gudea, the king of Legash (Temple of God Ningirsu, in Kosu city)."[42]

This technique was applied to some quantities of brick, as a means of describing the history of the building and honoring its builders.

One of the most important aspects of the brick product obtained through these means of production were the properties resulting from the essence of the stage of the production process.

Figure 4. *The Stamp Used for Inscription of Dried Bricks-from the Times of the Akkadian King Naramsin*
Source: Rashid, "Brick production in Ancient Iraq," 41.

Figure 5. *The Burned Brick with Hand-made Inscription*
Source: Rashid, "Brick production in Ancient Iraq," 41.

Masonry is a heterogeneous material, and therefore its compressive strength depends on the strength of the components: brick, mortar and brick-mortar interface. Compressive strength is strongly influenced by the characteristics of the raw material and by the production process. It is known

42. Rashid.

that the raw clay of old brick was often of low quality and the manufacturing process was relatively primitive and inefficient. Existing old bricks can provide an indication of their compressive strength, alongside other characteristics such as their mineral composition, texture, crack pattern and porosity level, thus revealing the conditions of drying and firing.

On the other hand, the evaluation of the mechanical strength of bricks belonging to old buildings is often difficult due to the high variability in production and additional variability caused by deterioration from the weather or chemical agents such as soluble salts, freeze-thawing cycles or load-unload cycles. A wide range of compressive strengths was reported by Fernandes on clay bricks from six monasteries in Portugal that were built between the 12th and 18th centuries. Therefore, environmental actions and deterioration might have influenced the results obtained. The values range from 6.7 to 21.8 MPa and exhibit a very high coefficient of variation (up to 60%).[43] Most studies indicate low values for compressive strength and a large dispersion of the values, with coefficients of variation ranging between 25 and 55%; but unusual strengths, higher than 50 MPa, were reported by Pauri et al.[44]

Modulus of Elasticity, significant differences have even been found between values proceeding from distinct studies of the same monument, which confirm the difficulty in defining this parameter. Moreover, it is not always clear how authors measured the values presented, even if most standards refer to the use of the linear part of the stress-strain curve in a range of 30-50% of the maximum stress value. The values found range from 1 to 18 GPa, which represents a range between 125 and 1,400 f c, where f c is the compressive strength. Most common values are in the range of 200 f c, with an average value of 350 f c.

Tensile Strength, under the conditions of tensile stresses, indicates that clay bricks behave similarly to other quasi-brittle materials such as concrete or stone. Tensile strength depends mostly on the strength of mineral grains and of the matrix that binds them. Additionally, there is some dependence on the chemical composition, inclusions and the amount and dimension of pores. Because the strength depends heavily on the weaker zones, homogeneous raw clay with fewer impurities provide higher tensile strength.

Raw clay can be characterized by means of chemical and mineralogical studies.[45] These are frequent Fernandes et al. The determination of the

43. Fernandes, *Evaluation of two novel NDT techniques. Microdrilling of clay bricks and ground penetrating radar in masonry* (PhD diss., University of Minho, 2006).

44. Marco Pauri, Antonia Stazi, F. Mastrosanti, and Marco D'Orazio, "The Decay of Ancient Building masonry, a case study" (presentation, 10th International Brick/Block Masonry Conference, Calgary, 1994).

45. Antonia Moropoulou, et al., "Weathering phenomena on the Hagia Sophia Basilica, Konstantinople," in *Structural repair and maintenance of historical buildings III*, ed. Carlos. A. Brebbia (Southampton, UK: WIT Press Publications, 1993), 61.

chemical composition of old bricks allow the identification of possible deficiencies that occurred during their production, like the presence of organic matter, lime nodules, harmful soluble salts and other impurities that might adversely affect the durability of the brick.[46]

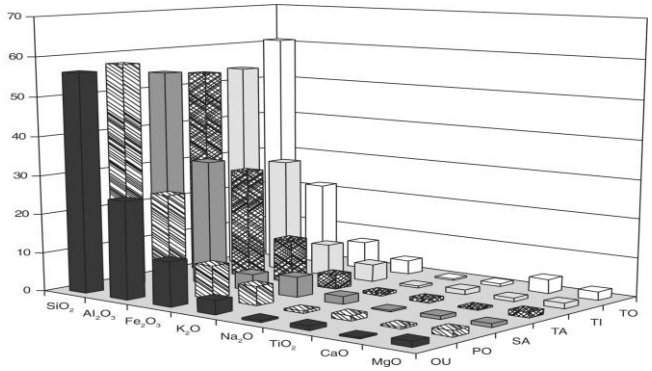

Figure 6. *Average Proportion of the Principal Chemical Components of Old Clay Bricks*

Source: López-Arce et al., "Bricks in historical buildings of Toledo City".

Chemical oxides commonly found in clay bricks (Figure 6) are the following: silica (SiO2), alumina (Al2O3), iron (Fe2O3) or ferrous oxide (Fe3O4), potassium oxide (K2O), titanium dioxide (TiO2) as well as sodium (Na2O), calcium (CaO) and magnesium (MgO) oxides. Silica and alumina constitute the base elements of clay and are usually found in the following proportions: about 50% for SiO2 and 15-20% for Al2O3. Other components might be considered like barium (Ba), zirconium (Zr), strontium (Sr), rubidium (Rb) and manganese (Mn). However, these elements are always present in very small quantities and expressed in parts per million (ppm), while the proportion of the main components is expressed as a percentage of the material volume. Chemical composition can differ substantially in old bricks, with reports of clay bricks from the 12th to 13th centuries showing 38% of silica, 21.5% of alumina and 32.5% of ferrous oxide.[47] Also, Moropoulou reported that the chemical composition of clay bricks from the Basilica of Hagia Sophia, exhibit a much higher proportion of silica (30-70%) and a lower proportion of alumina (8-16%) than normal clay bricks.[48]

46. Gilbert Robinson, "Characterization of bricks and their resistance to deterioration mechanisms" (presentation, 10th International Brick/Block Masonry Conference, Calgary, 1994), 157.

47. Paula López-Arce, et al., "Bricks in historical buildings of Toledo City, characterization and restoration," *Materials Characterization* 50 (2003): 60.

48. Moropoulou, et al., "Weathering phenomena on the Hagia Sophia Basilica," 61.

Types of Bricks

The main types of bricks in Mesopotamia are the first (Riemchen) from which we can define as dried or burnt brick, which has its depth equal to its width, and its length twice the size of its width. Moreover, another kind is Plano-convex (Figure 7) and spun from the previous brick that is flat-convex in advance. It is made by adding more clay than the template size at the time of production and bending the brick from above. Simultaneously, Plano-convex brick was divided into two types, the difference between them was only in the brick's thickness - where the older type was thicker than the newest.[49] The first was called "Cushion type" and the road is called "Biscuit type." The Plano-convex first appearance in building technology dates back to the 3rd millennium BC. This technique was using for nearly 1,000 years before it disappeared. The period in which the use of this kind brick disappeared coincides with the time when the Sumerians declined as a force reigning over the south of Mesopotamia. Therefore, we can say that the Plano-convex brick had a great significance in the Sumerian epoch, where it was used in all the buildings built at the time of their reign. In addition, it can be proved that this is somehow related to the brick traditions employed during the Sumerian Akkadian period, who ruled in the mid-expensive 3rd millennium BC. Even though they did not use Plano-convex brick in any building from their reign, its popularity endured during the 3rd millennium BC.

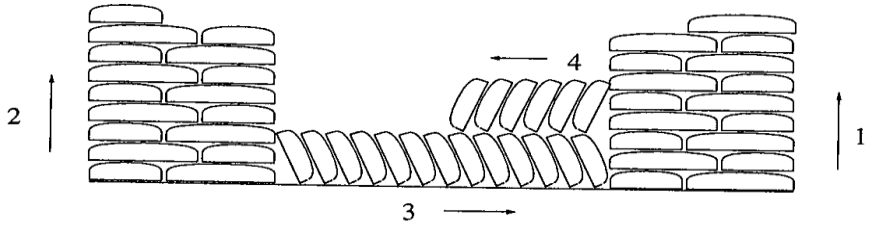

Figure 7. *Brick Plano-Convex*
Source: Delougaz, *Plano Convex Bricks*, 24.

From the plaques written we know various types of clay, dried bricks, and burned (Table 1).

	Ancient Names	Translations
1	IM. NITA	Soil/(clay) Man
2	IM. MUNUS	Soil/(clay) Women
3	IM. SAL. SAL	Soil/(clay) Thin
4	IM. HI. HI	Good Clay Fermentation
5	IM. RA. RA	Good clay

49. Pinhas Delougaz, *Plano Convex Bricks and the Methods of their Employment* (Chicago: The University of Chicago Press, 1933), 2.

6	IM. A. SUD	Clay covered with Water
7	IM. KAL	The best types of burnt brick clay
8	IM. MU. DU. A.	Brick fired with name
9	IM. MU. MU. DU. A	Brick fired with name

Table 1. *Names of Clays that Come from the Ancient Writing*

According to Mr. Rashid[50] if it comes to the name Clay Men and Women it is to mean its hardness and its ease, and clay thin name appeared from its name where it is translate *SAL* as a female and in every place where we can see this stamp, it means female so we can translate it as a female clay or thin clay. Good Clay Fermentation was used to build dried brick, Good Clay for making burnt bricks was clay water spray and it was used in the building of bathroom and toilet facilities as well as in asphalt later.

Chronological Evolution of Brick Shapes and Dimensions

Throughout every time period in Mesopotamia the brick had no single form or identical or similar size, so it is not easy to determine the shape and dimensions of the brick throughout all the epochs in Mesopotamia. Sometimes in one time period there were different shapes and dimensions of the bricks discovered on excavation sites. One such example (Table 2) is bricks from the Eridu city (Figure 8).[51]

Layer	Lenght	Whide	Thickness
10	30	12	8
7	28	23	6
	28	22	6
	27	21	6
6	23	12	6
	23	17	6
	23	20	6
6 Foundation	43	19	7
	42	18	6
	25	21	6

Table 2. *Dimensions of Dried and Burned Bricks (in cm) in Eridu City*

50. Rashid, "Brick production in Ancient Iraq," 45.

51. Fouad Sefar, "Excavations in Eridu" [in Arabic], *Sumer* 5, no. 2 (1949): 163.

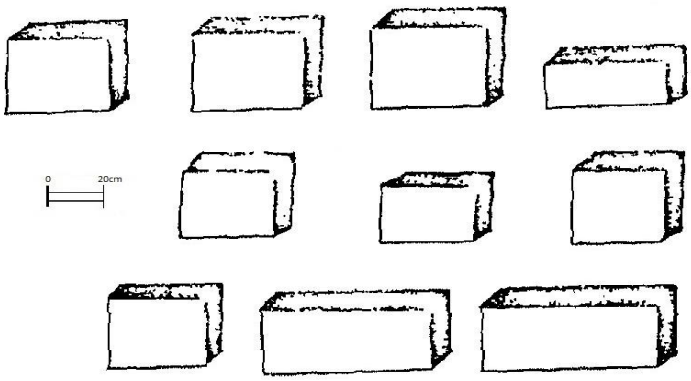

Figure 8. *Dried Brick Shape and Fired*
Source: Al-Temim, "Mud Bricks in Ancient Iraq," 278.

Thanks to the dimensional characteristics from Eridu we see the difference in dimension of the bricks during one particular time period, as well as the difference in layers. The excavations reveal that a rectangular brick was most popular in Eridu. At the same time, according to the researchers flat-convex brick, that each brick had its dimensions and between 23 bricks we found only two bricks of equal size and their dimensions are generally in between (31x22, 8x16 cm).[52]

The shape of the rectangular brick was the same in later periods (Table 3), but the dimensions change as in the Ubaidian period where the brick was measured (44x22x8 cm), and in the city of Eridu during the Uruk period when the brick dimension decreased to (22x11x8 cm). The shape of the brick as a rectangle did not last long, by the appearance of a square brick in the Akkadian period that lasted quite a long time in Mesopotamia.[53]

The most suitable brick shape that can improve the way of joining the structure to make it stronger, as well as the ease of transport from the production site to the construction site, the choice the size of the brick which is used for the speed and hardness of the construction process, from the expensive side of the easy-to-carry brick to high buildings, and the purpose in which the fired bricks were used, the building of the basic structure of the buildings, the floor of the houses and the street pavilions, these elements were important elements that played a main role in determining the dimensions, size, and shape of the brick. At the same time these elements answer a lot of questions related to the nature of construction and production. They also emphasize prominence in many dimensions and sizes. Depending on the need and type of buildings and in accordance with the wealth and power of power in some authorities, led to a regular tendency and smaller brick.

52. Delougaz, *Plano Convex Bricks*, 2.
53. Rashid, "Brick production in Ancient Iraq," 35.

Period	**Date**	**Site**	**Dimensions of Bricks-cm**	**Amount of the Bricks in every m³**
Jarmo		Village jarmo	Not found	
Hassuna	6800-5900	-	Not found	
Halaf	5900-5300	Beginning of appearance of the bricks	-	
Ubaid	5900-4200	Eridu	49x26x8[54] 47x22x7 44x22x8 30x12x8 46x21x5[55] 42x20x8 41x22x8 23x22x6 23x17x6 32x20x6 28x23x6 28x22x6 27x21x6 in foundation 23x19x7 42x18x6 25x21x6	80 99 101 264 126 112,5 112 216 288 162 168 189 210 220 135 240
Uruk	4200-3100	Eridu	21x12x7[56] 22x11x8 26x13x7 26x14x9 29x12x8	352 405 330 252 280
Jemdet Naser	3100-2900	Not found by me		
Early Dynastic period	2900-2340	Lagash-Tello	36x26x6	144
Akkadian period	2340- 2159	Nuffer	38x38x7	68,75
Old Babylonian period	1894-1595	Babylon	35x35x9	81
Middle Babylonian period	1500-1000	Dur-kurigalzu	32x32x10 30x30x8	72 84,5
Neo-Assyrian	1000-610	Ashur	47x47x6	48
Neo-Babylonian	1100/1000-539	Babylon	27x27x7 36x36x7	142,5 99

Table 3. *The Dimensions of the Bricks in an Ancient Period*

54. Al-Taie, Al-Ansari, and Knutsson, "Progress of building materials," 224.

55. Sefar, "Excavators General Directorate of Antiquities in Eridu" [in Arabic], *Sumer* 3, no. 2 (1947): 225.

56. Al-Taie, Al-Ansari, and Knutsson, "Progress of building materials," 223.

Discussion

The sizes of dried or burned bricks vary depending on the time and the place but as a rule of thumb regarding brick size in Mesopotamia, in most cases the width of the dried or burned brick is twice its thickness and its length is twice its width. Moreover, in some cases the width of the brick is the same as its thickness, but its length remains twice its width. Thanks to the differences in brick size we see in the plan, the following facts appear:

- At the beginning of different eras of ancient Mesopotamia, various dimensions of brick prevailed, generally characterized by many sizes. In the middle ages of the kingdom, it had brick dimensions of almost a meter long and a quarter meter wide (49x26x8 cm), in irregular shapes. Some of the bricks were likely to form flatly convex with dimensions (23x22x6 cm) and (28x23x6 cm). At the same time, rectangular bricks appeared in building foundations (42x18x6 cm). The size of brick used differs as techniques evolved to improve the standard of joining and durability of the walls, but the building was not fast enough.
- In the period of Uruk the brick tended to be a rectangular regular brick of smaller dimensions where it was almost half width, exemplified by the city Eridu where the brick measured (21x12x7 cm), (22x11x8 cm) and (26x13x7 cm), construction from this kind of bricks is faster and more regular than during the Ubaid period.
- In the Early-dynastic period, we see that the width of the brick increases and avoiding the rule of brick width is also twice its length example in this position Tello.
- During the Akkadian period the size of the brick measured increased (38x38x7 cm), and also in the Neo Assyrian period where the largest brick in ancient Mesopotamia appeared (47x47x6 cm), the brick increase can result from various reasons, among others, the strength and wealth of the authorities of those periods who used the brick in the casing of official buildings, and also in the city of Assyria, where it was used for centuries not regular stone to build, so the brick was enlarged.
- Since the Akkadian period, quaternary bricks have appeared in various dimensions in which was easier to build and stronger, lasting until the end of the Ottoman Empire in Iraq. The beginning of diminishing bricks in Neo Babylon was 27x27x7 cm, and we can say that this change in brick size has occurred because it was tailored to the speed of construction, facilitating its transport from the production site to the construction site, and reducing the damage and cost of the brick.
- In the entire history of Mesopotamia, there was no cubic shaped brick, which indicates that the ancient inhabitants of Iraq found that the brick which was less than the width of the thickest was the best to build with in Mesopotamia.

Conclusion

The history of the brick is almost as long as the history of human civilization. The brick is an invaluable building material used in centuries old traditions,

going back to the beginning of sedentary lifestyle of ancient people. By observing the creative process and evolution of the brick, the ways of using of it, the choice of finishing methods and the types of grain used in its production, we learn more about these these ancient peoples, their needs, the ways they responded to meet their needs and the environmental conditions of their lives. Besides the population that settled there permanently, we learn of the development of agriculture that appeared, the demand for durable housing: -the kind could protect people from the weather, climate and wild animal attacks. The environmental conditions of Mesopotamia and changing the way of peopleʾs life were main enabler ouch evolutions machine -in the sphere of construction and in this way to improving life. In the sometime with bricks appears also durable writing medium -clay tablets with cuneiform- today invaluable source of knowledge for us. Over time they started to use enamel and decorate the buildings with coloured elements, whilst mosaics also appeared during this epoch. The most precious source of information for us turns out to be the shape and size of bricks. They are characteristic for every period in the history of the civilization of the Sumerian King. And follow this way -as it turns out- using the specific size of bricks, their shape, fiber composition for built -were some kind of habit or tradition in Mesopotamians reality. The parameters scientifically so that they were reflection of the power of the ruling, as well as the fit to construction speed, the manner of transport and destiny of building. Throughout history, methods of brick production have improved, the experience of various civilizations disseminate to gradually, however the firsts-the original methods of production were using still.

Abbreviatios

MPa: Uniaxial compressive strength.
GPa: Modulus of Reference elasticity.
F c: Fracture Compression.

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