



Taylor & Francis
Taylor & Francis Group

Degrees of Freedom: Slavery in Mid-First Millennium BC Babylonia

Author(s): H. D. Baker

Source: *World Archaeology*, Vol. 33, No. 1, The Archaeology of Slavery (Jun., 2001), pp. 18-26

Published by: Taylor & Francis, Ltd.

Stable URL: <https://www.jstor.org/stable/827886>

Accessed: 12-03-2019 21:08 UTC

REFERENCES

Linked references are available on JSTOR for this article:

https://www.jstor.org/stable/827886?seq=1&cid=pdf-reference#references_tab_contents

You may need to log in to JSTOR to access the linked references.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

Taylor & Francis, Ltd. is collaborating with JSTOR to digitize, preserve and extend access to *World Archaeology*

Degrees of freedom: slavery in mid-first millennium BC Babylonia

H. D. Baker

Abstract

This study examines the position of slaves in private ownership in Babylonia during the sixth and early fifth centuries BC, one of the best documented episodes in the history of ancient Mesopotamia. Drawing primarily on the records kept by a single family living in Babylon, it aims to provide a coherent picture which can then be compared with the evidence from other times and places. Slaves were usually born into the household, and transition, both into and out of servitude, was relatively rare. While the wealthiest families living in Babylon at this time owned considerable numbers of slaves, some of them skilled in craft production, they were not involved in factory-style production, and their manufacturing output did not contribute significantly to household income.

Keywords

Slavery; Babylonia; Mesopotamia; history; cuneiform tablets.

Introduction

The sources for slaves and slave ownership in first millennium BC Babylonia consist of clay tablets written in the Akkadian language, in particular, records of transactions between private individuals, and administrative documents kept in the great temple institutions. Archaeological evidence for slavery in Babylonia has not been recovered. Cuneiform documents referring to slaves are particularly common in the sixth and early fifth centuries BC, that is, during much of the period of the Neo-Babylonian dynasty, and the rule of the early Achaemenid kings following the conquest of Babylonia by Cyrus in 539 BC. A number of substantial family and temple archives are available for this period, deriving especially from the major cities of Babylon, Borsippa, Sippar and Uruk. Slave transactions continued to be recorded during the following centuries, into the period of Seleucid rule in Babylonia. However, around 275 BC, slave sales ceased to be recorded on cuneiform tablets, apparently owing to some change in the administration of these transactions which henceforth required that they be recorded in the language of the Greek administration (Doty 1977: 323, 330, 333; also Stolper 1989); such records, written on



World Archaeology Vol. 33(1): 18–26 *The Archaeology of Slavery*
© 2001 Taylor & Francis Ltd ISSN 0043-8243 print/1470-1375 online
DOI: 10.1080/00438240120047609

perishable material, have not survived to the present day. Dandamaev (1984) provides a useful and exhaustive treatment, running to over 800 pages, of slavery in Babylonia from 626 to 331 BC. A number of slave-related documents have been translated by San Nicolò and Ungnad (1935: 98–134; from various Neo-Babylonian archives) and Joannès (1989: 139–44; from Borsippa). Wunsch (1993A: 62–6, with references to her text editions) discusses slaves owned by the Nūr-Sîn family, which was related to the Egibi family by marriage.

The sources

This study focuses mainly on the cuneiform legal documents relating to slaves in the ownership of private individuals and dating from the sixth and early fifth centuries BC. It draws primarily on tablets from the archive of the Egibi family from Babylon. This archive numbers perhaps three thousand tablets or more, of which many remain unpublished and uncatalogued. It documents a business which spanned five generations, from 606 to 482 BC, and was passed from one oldest son to the next. Now scattered, the archive has to be reconstructed on paper by examination of the tablets' contents and by tracing the history of their dispersal through the various collections. Pedersén (1998: 187–8) gives a useful, brief guide to what is known about the circumstances of the archive's discovery and an overview of its contents. Wunsch (1999: 392–3) provides a genealogical tree of the most frequently attested members of the family, and a chronological outline.

The primary function of cuneiform documents was either to provide proof of ownership, or to record the existence of an outstanding debt or the fulfilment of an obligation (Van de Mieroop 1997). These considerations are important because they have influenced, not only what was written down on cuneiform tablets, but which tablets were kept, and by whom. Another point to bear in mind is that the tablets discussed here were the product of property-owning members of the urban élite. With the Egibi family we are dealing with the very wealthiest stratum of society, and our findings cannot therefore be taken as typical for Babylonian society.

Neo-Babylonian contracts consisted of an operative section setting out the details of the transaction, followed by the names of the witnesses who were present, and that of the scribe who drafted the document. They were also supplied with the name of the city or settlement where they were written, and the day, month and year of the king's reign. Each contract more or less adhered to a set formula for that particular transaction type, with some variation in terms of the presence or absence of certain clauses, according to the requirements of the particular case. A substantial amount of work has been done in elucidating the formulae of these contracts by students of legal history, such as Petschow (1939, 1956). Building on this work, in recent years interest has focused more on analysing the tablets' contents with a view to reconstructing the social and economic conditions under which the Babylonians lived.

The types of contracts of interest to us here are extremely varied, because they include tablets recording not only the sale of slaves, but also their transfer for a variety of other reasons. Slaves could be given as a gift or as part of a dowry, or inherited; they were frequently handed over to a creditor to provide labour in lieu of interest on a debt, and

were occasionally apprenticed to a craftsman (who might also be a slave) in order to learn a specific skill. The person acquiring a slave took not only the current document of transfer, as proof of title, but often a whole series of tablets relating to previous transactions. As a result of this practice, it is possible in certain cases to trace the ownership history of an individual slave over several years, even decades. Conversely, the sale of slaves by a member of the archive-holding family is likely to be invisible to us, because it was the purchaser who retained the necessary documentation.

The status of slaves

The status of slaves and their role in society must be inferred from close examination of the sources and the terminology used, since no contemporary description is available. None of the preserved provisions of the Neo-Babylonian Laws, thought to date to c. 700 BC, mention slaves (Roth 1997: 143–9), nor do we have any reflective writings on slavery, such as might betray contemporary attitudes. The very few references to slavery as an abstract noun (*ardūtu* in Akkadian) are found in contracts and judicial texts such as those discussed below under ‘Enslavement.’ In addition to free citizens and chattel slaves in private ownership, there also existed in Babylonia various dependent classes, such as the temple oblates, that is, individuals dedicated to a temple for the service of a deity. Within the class of free citizens there was enormous variation in economic circumstances, from the land-owning entrepreneurial families such as the Egibis, to the tenant farmers and hired labourers; see Oelsner (1976) for a discussion of Babylonian social structure at this period.

The contracts use a variety of terms to designate slaves, such as *ardu* (masc.), *amtu* (fem.), *qallu* (masc.), *qallatu* (fem.), *lamūtānu* etc. (Dandamaev 1984: 81–102). There is a substantial overlap in meaning, with different terms sometimes being attached to one and the same slave in different documents. In other genres of Akkadian text, for example in letters and royal inscriptions, *ardu* denotes a subordinate relationship, such as that between a subject and the king, or between the king and a deity.

The origins of slaves

The majority of slaves were born into the household; this is clear from the numerous transactions which mention, not only individual slaves, but whole slave families, including babies and infants. For example, in the 14th year of Darius I (i.e. in 508 BC) the three sons of Itti-Marduk-balātu of the Egibi family from Babylon divided part of the estate of their father some fourteen years after his death (Strassmaier 1897 no. 379). The property in question consisted of sixteen houses and around one hundred slaves (the tablet is damaged in a few places, so that it is necessary to estimate how many names are lost). Among these slaves are at least eighteen family groups, usually consisting of parents and their children, but in some cases of (presumably widowed) mothers with one or more children. Another document records the sale of a male slave together with his mother and three sisters (Strassmaier 1889 no. 257, written in Babylon in the 7th year of Nabonidus,

i.e. 549 BC). Other slaves were brought into Babylonia by overland trade, and one document records the purchase of an Egyptian woman and her three-month old daughter, acquired as booty during the course of a military campaign (Strassmaier 1890b no. 334, written in Babylon in the 6th year of Cambyses, i.e. in 524 BC). Sale documents from this period usually include a clause requiring the seller to guarantee that the slave is not a member of certain classes of society, for example, that he or she is not a royal slave or a free citizen.

Enslavement

Despite the remarks made by Dandamayev (1997: 145), the enslavement of free citizens for non-payment of debts was not characteristic of Neo-Babylonian society (compared, for example, with the Old Babylonian period, when debt bondage was restricted to three years according to the provisions of the Laws of Hammurabi; see Roth 1997: 103 §117). However, enslavement did exist as a potential punishment for transgression. In one record of a legal settlement a woman is threatened with being enslaved if she is ever seen with the man to whom she had been married in a conspiracy, against the wishes of the groom's father (Joannès 2000: 207 no. 149; the tablet was written in Babylon in the 8th year of Cyrus, i.e. in 531 BC). The same penalty is imposed on a woman, in similar circumstances, in Strassmaier (1890a) no. 307, written in Sippar in the same year; in both cases the tablets stipulate that, if the woman transgresses, 'she will receive the mark(s) of slavery' (see below on the identification of slaves).

Manumission

The freeing of a slave involved the drawing up of a tablet of manumission (in Akkadian, a *tuppi mār banūtu*, 'tablet of *mār banī*-status') by the owner, which the former slave would keep in order to prove his or her status if challenged. In normal circumstances, therefore, the manumission document would be unlikely to come to light, since the archives known to us are not those of former slaves. In one legal case, an individual claims to be a free citizen (*mār banī*), but admits that he does not have the relevant document to prove his status (Strassmaier 1889 no. 1113, written in the Estate of the King of Babylon during the reign of Nabonidus (year lost)). Manumission could be conditional, as in the case of the elderly Iqīša son of Kudurru, of the Nūr-Sîn family, who freed a slave of his on condition that the slave provide him with food rations and clothing; however, the slave absconded, the manumission was revoked and the slave given to Iqīša's daughter-in-law, who undertook to look after the old man (Wunsch 1993A: 175–7 no. 211, written in Babylon in the 13th year of Nabonidus, i.e. 543 BC). Another case recently studied by Wunsch (1997/8: 62–7) centres around the question of whether the five children of a freed slave woman were born after her manumission, or before. The judges decided that four of the children were born before she was manumitted, and could therefore be sold as slaves, while the fifth child was born afterwards and was to be considered free.

The identification of slaves

Unlike free citizens, who are usually identified in the documents both by their father's name and by a family name, the **parentage of slaves is rarely mentioned**, unless they are transferred as part of a family group. They are most often called just by their personal name, followed by 'slave (woman) of so-and-so'. Children seem to have been named around the age of 2 to 4 years, and the mention of an unnamed child with one or both of its parents implies that it is a baby or small infant.

To some extent slaves were identified by their personal names. Babylonian names typically comprise Akkadian statements, often based on the name of a deity, for example, Nabû-ayyālu '[the god] Nabû is [my] help'. Certain types of name were restricted to slaves and seem not to have been borne by free persons living in Babylon, such as names meaning 'I have grasped the feet of DN [name of deity]', attested with both male and female slaves. It is also surely significant that, of all the slaves known to me from the Egibi archive and other contemporary archives from Babylon, only one bears a name containing the divine name Marduk, that is, the principal deity of the city of Babylon at that time. It seems that personal names formed with the element Marduk were reserved in some way.

Slaves of foreign extraction were usually given **Babylonian names by** their masters, and they are therefore difficult to identify unless their ethnicon is mentioned in the document; for example, in the division tablet Strassmaier (1897) no. 379 discussed above, one of the slaves listed is a woman named Nanaya-silim (a good Babylonian name meaning '[the goddess] Nanaya is well-disposed'), who is said to be from Gandara. The Egyptian slave woman mentioned above as a spoil of war bore the Babylonian name Nanaya-ittiya ('[the goddess] Nanaya is with me').

In private transactions from Babylonia slaves are often said to have their **hand marked** with the name(s) of their owner(s). One, unusually, is described as being marked on his **ears** (Strassmaier 1890b no. 290, written in the city of Šaḫrīnu [near Babylon], in the Town of [the god] Nabû, in the 5th year of Cambyses, i.e. 525 BC). Similarly, slaves belonging to a temple could be marked with the symbol of the deity to whom they belonged, for example, a star in the case of slaves belonging to the Eanna temple, that is, the temple of the goddess Ištar in Uruk. Like the tablets relating to their ownership history, these markings could be examined in court, should any dispute arise. A tablet from the archive of the Eanna temple records that a parchment scribe was called upon to examine the hands of a slave woman who was marked with the star of Ištar. He discerned that an old inscription 'for [the goddess] Nanaya' was underlain by an even earlier one which read 'for [the goddess] Ištar of Uruk', and the authorities concluded that the present owner had no right of ownership to the slave or her son (Joannès 2000: 224–5 no. 166).

Slaves at work

We have no direct evidence for the age at which slaves in private ownership began their working life. However, in a study of farmers of the Ebabbar temple of Sippar, Jursa (1995: 8–9) suggests that from the age of 5 years children were considered a part of the regular

workforce; below that age, the administrative document which he cites lists children according to their age in years. Other administrative records from the Ebabbar temple archive list full-grown men, old men and male children up to the age of 5 (Bongenaar 1997: 40–1). It seems reasonable to suppose, therefore, that slaves also began work at around the age of 5 or 6 years.

The tablets rarely give us information as to what duties the slaves performed. Many of them were occupied in the day-to-day maintenance of the households to which they belonged. Occasionally a slave is identified in a contract by his or her profession; such skills include baking, brewing, the washing of clothes, and hat-making. The few extant apprentice contracts provide some information as to how slaves acquired specialist skills. According to one such document, a slave of Itti-Marduk-balātu of the Egibi family was apprenticed to another slave for just over seven months in order to become a baker (Strassmaier 1890a no. 248, written in Babylon in the seventh year of Cyrus, i.e. in 532 BC). Another slave of the well-connected Egibi family was apprenticed for four years to a seal-cutter of the crown prince Cambyses (Strassmaier 1890a no. 325, written in Babylon in the following year). These contracts often envisage a penalty if the master craftsman fails to impart his skills to the standard required. Slaves who performed such crafts had to supply their owner with a quota of the output, called *mandattu*. There is no evidence that privately owned slaves played a significant part in cultivation; rather, the large amount of date orchards owned by the Egibi family were worked by tenants who supplied rent in kind. A pair of interesting tablets reveal that Itti-Marduk-balātu of the Egibi family invested in the establishment of a tavern in the nearby city of Kiš, to be run by a slave woman of his who bore the fitting name Išhunnatu, meaning ‘Grape cluster’ (Joannès 1992). She was supplied with furniture and brewing equipment, along with fifty vessels of ready brewed beer to get her started.

A small number of male slaves of the Egibi family worked in a managerial capacity, and could have documents drawn up in their own name on behalf of the family business, or send letters to their masters. The fact that a slave is mentioned in a document in the rôle of recipient or creditor does not mean that he was conducting business on his own account, but simply that he was the family representative ‘on the spot’, in the same way that many other contracts were drawn up, not by actual members of the family, but by colleagues or associates. There is no evidence that any of these slaves were trained to read and write; none of them is ever named as the scribe of a document. They were typically involved in the receipt of quantities of produce from tenants cultivating date orchards owned by the family in the vicinity of Babylon. One tablet records a settling of accounts between Itti-Marduk-balātu of the Egibi family and his slave Nabû-utirri (Strassmaier 1889 no. 838). Although there are no examples of the practice in tablets of the Egibi archive, slaves could be leased by their owners to the temple, as records from the Ebabbar temple show (Bongenaar 1997: 296–7).

The living conditions of slaves

Little is known about where slaves lived, because their accommodation is rarely the subject of transactions. A contract from the archive of the Nappāhu (‘Smith’) family of

Babylon records the lease of a house to a slave for two years, but, apart from the name of the street on which it is located, no details of the property are preserved (San Nicolò and Ungnad 1935: 170–1, written in Babylon in the eighteenth year of Darius, i.e. 504 BC; a study of the Nappāḫu archive is being prepared by the author). The same property was leased on other occasions to free citizens. Another contract concerns the lease of a ‘slave room’ in an outbuilding(?) to a man (not identified as a slave) and a woman, said to be the slave of a third person (Strassmaier 1897 no. 163, written in Babylon in the fifth year of Darius I, i.e. 517 BC; it is not clear to which archive this tablet belongs).

Escaped slaves

The absconding of slaves was clearly not an uncommon occurrence. In the property division tablet discussed above, **escaped slaves are not** listed by name, but are treated along with the outstanding assets which are to be divided (as and when they come to light) between the three sons of Itti-Marduk-balāṭu, with the oldest son getting, as usual, a preferential share. I know of no evidence from the Egibi archive to suggest that slaves were subject to physical restraint, nor is there any mention in the texts of recaptured slaves being punished (though our knowledge of record-keeping practices suggests that there was no reason to document such actions in the private contracts). According to one document, Marduk-našir-apli of the Egibi family finds an escaped slave woman of his in the house of the man who helped her to flee; however, he shows mercy towards the man and does not take her back (Strassmaier 1897 no. 207, written in Babylon in the sixth year of Darius I, i.e. 516 BC).

Women as slave owners

Slaves formed a significant proportion of the property owned by women (on the women of the Egibi family see most recently Wunsch (1995–6), and, on the subject of dowries in particular, Roth (1989–90, 1991)). As well as receiving slaves as part of their dowry, in addition to land and silver, women from wealthy families might also be given them as a gift by female relations (including aunts and grandmothers as well as mothers). It was not uncommon at this period for the husband to conduct business with silver from his wife’s dowry; in such a case, he had to provide her with a substitute to the value of the silver, and this substitute often consisted of, or included, slaves. For example, Marduk-našir-apli of the Egibi family gave his wife Amat-Baba a piece of land and ten slaves in lieu of the substantial sum of thirty minas of silver and other assets which he had taken from her dowry (Wunsch 1995–6: 42–3). The ten slaves included a husband and wife with their four sons and two daughters.

Conclusions

Of all the Neo-Babylonian families known to us, the Egibi family is uniquely well documented. Its acquisition of houses, fields and orchards in large number and its involvement

in extensive business activities all contributed to this scenario. However, there is no reason to think that the family was alone in amassing great wealth. There were other families belonging to the same stratum of society, including some of their business associates, who must also have owned considerable numbers of slaves, but whose archives have not been preserved, or which remain undiscovered. Comparison with other archives indicates that the households of families which were less wealthy (though by no means poor) were less likely to include slave families (see, for example, Joannès (1989: 139–44); the same is true of the Nappāḫu family archive); the slave population of a wealthy establishment was therefore better equipped partly to reproduce itself.

In terms of numbers of slaves, we must remember that the hundred or so divided between the three sons of Itti-Marduk-balātu by no means represents the entire slave ownership of the family, since it excludes slaves who were part of their wives' dowries, or whom the brothers had themselves purchased. On the other hand, the corresponding number of establishments which the slaves had to maintain was also large. Many were probably involved in providing food, clothing and essential services to be consumed within the household. The training of slaves in specific skills certainly enhanced their value, and some may have produced a surplus beyond the immediate requirements of the household. However, there is no evidence that slaves made any significant contribution to its economy by manufacturing goods for sale. So far as we can tell, the organization of such production was not industrial but rather *ad hoc* and small-scale.

State Archives of Assyria Project, University of Helsinki

References

- Bongenaar, A. C. V. M. 1997. *The Neo-Babylonian Ebabbar Temple at Sippar: Its Administration and its Prosopography*. Leiden: Nederlands Historisch-Archaeologisch Instituut te Istanbul.
- Dandamaev, M. A. 1984. *Slavery in Babylonia from Nabopolassar to Alexander the Great (626–331 BC)*, revised edn (trans. V. A. Powell, ed. M. A. Powell and D. B. Weisberg). DeKalb, Illinois: Northern Illinois University Press.
- Dandamayev, M. A. 1997. The composition of the citizens in first millennium Babylonia. *Altorientalische Forschungen*, 24: 135–147.
- Doty, L. T. 1977. *Cuneiform Archives from Hellenistic Uruk*. Doctoral dissertation, Yale University.
- Joannès, F. 1989. *Archives de Borsippa. La famille Ea-ilūta-bāni. Etude d'un lot d'archives familiales en Babylonie du VIII^e au V^e siècle av. J.-C.* École Pratique des Hautes Études, IV^e Section, Sciences historiques et philologiques II. Hautes Études Orientales 25. Geneva: Librairie Droz S.A.
- Joannès, F. 1992. Inventaire d'un cabaret. *Nouvelles Assyriologiques Brèves et Utilitaires*. June: 48–50 no. 64.
- Joannès, F. 2000. Les textes judiciaires néo-babyloniens. In *Rendre la justice en Mésopotamie: Archives judiciaires du Proche-Orient ancien (III^e-I^{er} millénaires avant J.-C.)* (ed. F. Joannès). Saint-Denis: Presses Universitaires de Vincennes, pp. 201–39.
- Jursa, M. 1995. *Die Landwirtschaft in Sippar in neubabylonischer Zeit*. AfO Beiheft, 25. Vienna: Institut für Orientalistik der Universität Wien.
- Oelsner, J. 1976. Erwägungen zum Gesellschaftsaufbau Babyloniens von der neubabylonischen bis zur achämenidischen Zeit (7.-4. Jh. v. u. Z.). *Altorientalische Forschungen*, 4: 131–149.

- Pedersén, O. 1998. *Archives and Libraries in the Ancient Near East, 1500–300 B.C.* Bethesda, MD: CDL Press.
- Petschow, H. P. H. 1939. *Die Neubabylonischen Kaufformulare*. Leipziger rechtswissenschaftliche Studien herausgegeben der Leipziger Juristen-Fakultät, Heft 118. Leipzig: Verlag von Theodor Weicher.
- Petschow, H. P. H. 1956. *Neubabylonische Pfandrecht*. Abhandlungen der Sächsischen Akademie der Wissenschaften zu Leipzig, Philologisch-historische Klasse Band 48, Heft 1. Berlin: Akademie-Verlag.
- Roth, M. T. 1989–90. The material composition of the Neo-Babylonian dowry. *Archiv für Orientforschung*, 36–7: 1–55.
- Roth, M. T. 1991. The dowries of the women of the Itti-Marduk-balātu family. *Journal of the American Oriental Society*, 111(1): 19–37.
- Roth, M. T. 1997. *Law Collections from Mesopotamia and Asia Minor*. 2nd edn, Atlanta, GA: Scholars Press.
- San Nicolò, M. and Ungnad, A. 1935. *Neubabylonische Rechts- und Verwaltungsurkunden. Band I: Rechts- und Wirtschaftsurkunden der Berliner Museen aus vorhellenistischer Zeit*. Leipzig: J. C. Hinrichs'sche Buchhandlung.
- Stolper, M. W. 1989. Registration and taxation of slave sales in Achaemenid Babylonia. *Zeitschrift für Assyriologie und vorderasiatische Archäologie*, 79: 80–101.
- Strassmaier, J. N. 1889. *Inschriften von Nabonidus, König von Babylon (555–538 v. Chr.)*. Leipzig.
- Strassmaier, J. N. 1890a. *Inschriften von Cyrus, König von Babylon (538–529 v. Chr.)*. Leipzig.
- Strassmaier, J. N. 1890b. *Inschriften von Cambyses, König von Babylon (529–521 v. Chr.)*. Leipzig.
- Strassmaier, J. N. 1897. *Inschriften von Darius, König von Babylon (521–485 v. Chr.)*. Leipzig.
- Van de Mieroop, M. 1997. Why did they write on clay? *Klio*, 79: 7–18.
- Wunsch, C. 1993. *Die Urkunden des babylonisch Geschäftsmannes Iddin-Marduk. Zum Handel mit Naturalien im 6. Jahrhundert v.Chr.* Cuneiform Monographs III A-B. Groningen: STYX Publications.
- Wunsch, C. 1995–6. Die Frauen der Familie Egibi. *Archiv für Orientforschung*, 42–3: 33–63.
- Wunsch, C. 1997/98. Und die Richter berieten . . . Streitfälle in Babylon aus der Zeit Neriglissars und Nabonids. *Archiv für Orientforschung*, 44–45: 59–100.
- Wunsch, C. 1999. The Egibi family's real estate in Babylon (6th century BC). In *Urbanization and Land Ownership in the Ancient Near East* (eds Michael Hudson and Baruch A. Levine). Peabody Museum Bulletin 7. Cambridge, MA: Peabody Museum of Archaeology and Ethnography, Harvard University.