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# TECHNOLOGY & MYTHOLOGY: POPULAR BELIEFS ABOUT ARTISANS IN THE SECOND TEMPLE PERIOD

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One of the ironies of history concerns the creative people who mold and shape objects with their own hands, and whom we call artisans or craftspeople, and give specific names to their respective varieties of arts and crafts. The pen, the ink, the clay, the papyrus, the vellum and all other medium of writing which we use to interpret history were fashioned by them. Every shred of pottery or every bit of coin, every bit of utensils or furniture, every corner stone of an ancient building over which the archeologist hovers is their legacy. The monumental steles, the grandiose temples and palaces with ornate columns, the beautiful jewelry, the ostentatious sculptures, and the intricate mosaics which fascinate art historians were created by them. Not only were every tool and utensil people always used at home and every weapon with which they fought their brutal wars abroad "manufactured," made by the hand of the artisan, but undoubtedly every step in human technological advance until the age of the electronic revolution was made by them. It is indeed no exaggeration to say that history would be blank without the products of artisans or craftspeople who more than any other single professional group in antiquity left the clearest and most tangible symbols of human ability and achievement. Yet it is truly ironic that above and beyond the mythologies about them and the eternal products of their handiwork, these "giants" left us so little factual information about themselves as individuals and groups (compared to kings and princes, priests and politicians, soldiers and philosophers...).

A study of the status of craftspeople during the Second Temple Period, in other words, the time of the author of the Book of Enoch, is

still to be written. But an examination of the story of the Fallen Angles in this work gives us some insight into contemporary popular beliefs concerning them and the origin of arts and crafts, if not into the social, political, and economic life of the people of arts and crafts.

According to Enoch 9:6b, one of the chief follies committed by the Fallen Angels was to reveal to mortal humans "eternal secrets which are performed in heaven" (D1U). From this passage as well as from 7:1 and 8:3 the nature of the secrets which the Fallen Angels introduced into the world seems to fall into the category of what we might describe as magical. According to 7:1 the Fallen Angels taught the women whom they seduced "magical medicine, incantations, the cutting of roots and ... plants"; and according to 8:3 individual angels taught people (women not specified in this case) "incantation and the cutting of roots; ... the undoing of spells; ...astrology; ...and [the interpretation of] signs; ...the observation of stars; ...the course of the moon; and the deception of man." However, we learn from 8:1 (D2aU) that certain types of occupations dealing with arts and crafts are among the class of secrets which the Fallen Angels revealed to human beings either directly or indirectly through their own descendants—elsewhere described as giants, cf. 7:2ff.; 9:9; 15:8-16:1; Jub 5:1; 7:22; Sir 16:7; Bar 3:26 etc.—(D2bU). Those occupations, particularly specified in 8:1 in association with the Fallen Angels and their (giant) descendants, are smithery and metallurgy, cosmetics, and jewelry, and alchemy (D2cU).

In general, the belief that craftspeople have some kind of angelic or demonic origin is an aspect of a very ancient mythology. Some historians of religion have even gone as far as to hypothesize, with little justification, nonetheless, the existence in all cultures of a "universal divine smith" (D3U). Likewise, we have very little direct evidence anywhere which categorically classifies artisans as magicians, even though some such individuals were believed to have existed in antiquity (for example, Talos of Crete.) But gods certainly were believed to have played a role in early technology. It is in fact not unlikely that the first makers of complicated tools and handlers of fire are retained in human memory as "giants," offspring of divine-human union. There were gods of carpenters and smiths in ancient Babylonia, and Kulla was created by Anu to restore the temple (D4U). The various Greek myths about the lame Hephaestus, patron of metallurgy (an example of a craftsman-god), the goddess of arts and crafts Athena, the Titan Prometheus, and the fugitive Daedalus all tell us about the role gods play in introducing humanity to the secrets

of arts and crafts (D5U). The most telling myth, one not unrelated to what we learn in our Enoch 8:1, is of course that concerning Prometheus who stole fire and gave it to people for which he was punished by Zeus as the Fallen Angels also were by God. Pliny succinctly summarizes the myth of the heavenly origin of arts and crafts where he gives an account of the mythologies of inventors, saying, "one brief word will tell the whole story: all arts that mortals possess come from Prometheus" (Natural History. VIII, 191-98.)

The practice of painting or shadowing the eye (the eyebrow or the eyelash) mentioned in Enoch 8:1 and the religio-magical function of the preparers of these mixtures are rather well-known from our ancient sources. The use of cosmetics as a form of protection against blistering heat seems to have originated in pre-historic period. But already about the same time cosmetics also came to serve the purpose to which it is put to this day, that of adorning and beautifying (D6U). In both cases, however, archeological and philological evidence point to the religio-magical function of cosmetics, including the use of colors, paints, and ointments, from the earliest time in human history. In ancient Egypt, for instance, cosmeticians, who painted Horus's eye which Seth tore out with special eyepaints 'mdmt' (D7U) or Pharoah's eyelids, were believed to possess magical powers. Tombs of the dead were adorned, and corpses were treated for eternal preservation with a special preparation of natron 'hsmn', a naturally occurring form of sodium carbonate; the embalmers themselves who performed the religio-magical operation of mummification underwent a ritual separation from the community by living in booths for seventy days at a time. Incense 'sntr' was burnt to please the gods with perfume and pleasant fragrance and to ask them for a favor such as a healing from an illness. Alum, a double sulfate such as potash alum, was used not only in dyeing and leatherwork, but also in magical incantations in the medical texts. The pictographic sign for the alabaster basin used in purification rites appears as an ideogrammic derivative 'hb' in words designating festivals (including new moon and new year festivals), mourning, and the ritual book (D8U). (According to Wisdom of Solomon, the faces of other heathen gods were also painted red with vermillion 'minium' on their feast-days; 13:14.)

Early metal work was also associated with religio-magical activities, in agreement with the mythology of metal crafts found in Enoch 8:1. Some think that the legends of gods and demons in Crete seem to find their origin in iron metallurgy, even though the references may be to

Mount Ida in Phyrgia. Most students of metallurgy suggest that, more than any other craft, smithery required occupational specialization from the very beginning. Before the rise of the specialized arts and crafts, people stayed close to home and personally manufactured their own clothing, furniture and utensils. With the discovery of metals and their uses, the search for them in mysterious distant caves and mountains as well as the "miraculous" processes of their extraction and purification, the smiths might be the first among the artisans whose knowledge came to be admired and feared -- "the awe of their power and operation" as Wisdom puts it (13:4a). Because of the same reasons, metal workers might have come to be segregated socially; and they might, therefore, be among the first workers to form distinct, possibly secret, groups like guilds. The complex socio-economic conditions of early metallurgy may in fact be at the roots of the mythology we are now considering.

It is perhaps not coincidental that Goliath, who came to be remembered as a giant and whose name some scholars connect to Akkadian "Guzali," a destructive spirit (D9U) was a member of the metal-working Philistines (cf. I Sa 13:19-22). Magical values were attached to certain metals by some Rabbis, and drinking out of a copper or golden cup as a cure for rabies was prescribed (Yoma 84a) in the same fashion as the brazen serpent which the Israelites put up as a protection against snake bite (Nu 21:9.) Metal amulets were widely used among Jews in later times (D10U). In another twist concerning the mythology of metal works, some Rabbis thought that the first tongs used for smithery were among ten things that God created at the conclusion of his work on the eve of the Sabbath (Aboth 5:9).

The association of alchemy with the Fallen Angels in Enoch 8:1 is nothing out of the extraordinary and requires no extensive explanation here, since the mytho-magical aspect of the phenomenon of alchemy is all too obvious. An early objective of alchemy, related to ancient Egyptian science, was converting the base metals into gold. In later times, the discovery of the elixir of eternal life became an important component of the mythological science (D11U). In both respects, as well as in its involvement with "scientific" chemical and metallurgical experiments, alchemy was deeply rooted in magico-mystical thought. The search for gold through the transmutation of such metals as copper, iron, or lead by means of *lapis philosophorum* was no less mystical than the search for a human metamorphosis through the pill of eternal life. Both deal with the secret relationships of objects and divine things.

The association of particular arts with Fallen Angels and their giant offspring in Enoch 8:1 is consistent with ancient mythological narratives referenced in Jewish Haggadah, suggesting it was a widely held belief among Jews at the time the author wrote. An example is found in Bereshit Rabbah (36:3), which claims Noah first cultivated a garden in partnership with the demon Shamdon, apparently a Fallen Angel. While Bereshit Rabbah (23:3) also states that Naamah married Noah, a later, likely very old Jewish tradition (Nahmanides on Genesis 4:22) identifies this same Naamah, sister of the artisan Tubal-Cain, as the mother of Asmodeus, fathered by Shamdon. Asmodeus, became the grand architect and builder of Solomon's Temple, and this fits very well with the idea that the son of a Fallen Angel became a master craftsman. In the Testament of Solomon, Asmodeus confesses that he is born "of angle's seed by a daughter of man" (21). Asmodeus worked clay with his feet, revealed the secrets of marble cutting to Solomon, while having other demons assisting him in other aspects of the Temple construction. Ironically, according to this tradition, the stones for constructing the Temple were made without iron tools because demons were afraid of iron tools. Asmodeus also taught Solomon the secrets of magico-medicine. As late as the Middle Ages, the famed Jewish traveler, Benjamin of Tudela, reported stories from Baalbek that the temples there were built by Asmodeus by Solomon's order. The legends about Asmodeus suffice to show that according to a certain genre of Jewish Haggadah, some giants were believed to be ancestors of artisans, and that not all of them perished in the Flood. Technology, as a necessary prerequisite for cultural evolution, has great social and religious implication; and these legends, like Enoch 8:1, underline that.

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From the innumerable references in Biblical and Rabbinic literature to buildings, furniture, clothing, utensils, jewelry, swords, spears, knives, and many other items, as well as from archeological finds of these, our knowledge of the products of the ancient craftspeople of the Land of Israel is rather substantial. It is, therefore, somewhat astounding that we know so little about the social, economic, and political life of these people whose footprint on history is so deep, never mind the mythologies about them. In general, from whatever little we know about artisans in the Bible, there seems to be an overall favorable attitude towards them

(D12U), in clear contrast to that found in Classical Greek writings. Cain's descendants became cattle herders, players of lyre and pipe, and manufacturers of bronze and iron (Gn 4:17-24); but even in this myth there hardly is any hint that the Cain's stigma affected the reputation of his descendants' occupation. In the allusion to the Fallen Angels and their giant descendants (Gn 6:1-4) no association is made between them and the craftspeople as in the Book of Enoch. There are favorable references to the wealth in gold and silver of the Patriarchs (Gn 13:2;24:22) or of David and Solomon (I K.10:18); but only silence about those who wrought them. In the case of the manufacturers of the Golden Calf, condemnation was placed on its worshippers without any specific blame being put on its artificers (Ex 32:1ff., D13U).

Although Jews were a predominantly agricultural people, in Biblical times, artisans were quite well-known and at times very large in number (D14U). Artisan guilds may have existed in early Second Temple period (cf. Nh 3:8); however, there exists no evidence in Jewish culture supporting a class distinction among workers as in some societies. On the contrary, the craftsmen of the Tabernacle, Bezalel, Aholiab, and their co-workers are praised as wise people filled with the spirit of God, in wisdom, in understanding, and knowledge, and in all manner of workmanship (Ex 31:2; 35:30; 36:1ff.). The paid carpenters, stonecutters, masons, and builders of King Yehoash's time as well as the craftsperson of King Josiah's time are singled out for honesty (IIK 12:11ff; IIChr 24:12ff; IIChr 34:11).

On an even more positive level, manual work and skilled labor are viewed with great respect in mainstream Judaeo-Biblical tradition. God himself is depicted as a worker, planting trees in the garden of Eden (Gn 2:8; D15U), writing the Tablets of the Law with His own fingers (Ex. 32:16; 34:1); and fashioning all things with His own hands like a potter (Is. 40:28). He neither indulges in eternal Nirvana like some of the Hindu-Buddhist gods nor in daily revelry like the Olympian ones. According to a certain Haggadah it was He who first taught Abraham the various types of work (Gn Rab 24:7; cf. Jub 3:35). The great Wisdom which God gives is described as the universal artificer, *he pantwn technitis*, in the Wisdom of Solomon (7:21; cf. also 8:6).

As for the Sabbath, it is never regarded in the Judaeo-Biblical tradition as a negation of any type of work but, on the contrary, indeed as its sanctification. According to one tradition, work, study, and prayer are a tri-dimensional unit of the daily life the saintly congregation (Eccl

Rab 9:9). In one of the most beautiful passages ever dedicated to the idea of the love of work, the well-known Talmudic tractate—Aboth de-Rabbi Nathan (ARN)—declares that Work and Torah are given as complementary covenants. According to some of the ARN teachers, a person who does nothing on the six workdays, should be chained and forced to work on the Sabbath since such a person is not entitled to the great joy and rest the day brings! According to some others, Adam was allowed to eat until he performed the initial duty of doing work; and neither did the Shekinah come to rest upon Israel until they proved themselves by doing actual work building the Tabernacle (D16U). In the book of Proverbs, a theme praising the virtue of diligence is emphasized; on the other hand, the idle person is admonished to learn the meaning of persistent, hard work and plan from the smallest of God's creatures, the ants (Pr. 6:6ff.). Indeed, God blesses the work of their hands of all those who please Him (Dt. 28:12; cf. Ps. 128:2). One tradition regarding this view of the centrality of work in Judaeo-Biblical thought holds that in the sight of God the merit of good deeds accruing to the one who simply does work is worthier than that of the sloth who is devoted to piety.

A totally different point of view towards work and workers emerges in Classical Greece. Although there appears to be no kind of prejudice against manual work in the earlier era, specifically in the time of Homer and Hesiod, a wholly negative attitude towards the so-called banausic occupations developed in Classical Greece, and it was nothing less than downright contemptuous towards anyone who did not lead a life of leisure. Conservatives like Aristophanes, for instance, had nothing but disdain for manual workers, excepting the farmer—perhaps, the prosperous large land-owners rather than a day laborer (D17U). According to Plato, the artisan's skill is on the lowest level of human values. Some scholars have theorized that this attitude was the result of the conquest of Greece by the Dorians who themselves became a leisurely professional military class, living by exploiting the local population who they reduced to serfdom and slavery. This historical development is believed to have led to the loss of respect for manual worker (D18U). Craftspeople had their own cultural identity and social life; the feast of *Chalkeia*, for instance, was exclusively for craftspeople. The fact that the status of the artisan in Classical Greek society was always second class is attested throughout the pages of Greek dramatic, philosophical, and historical writings. The poignant words of Plutarch

reflect upon the irony of the status of the people of arts and crafts in Classical antiquity when he makes the point that no youth of a proper character longs to be a Phidias or Polyclitus, or that to admire a good work does not necessarily mean to hold its maker worthy of our esteem (Life of Pericles, 2:1-2).

In conclusion, in Hebraic-Jewish tradition, manual work is regarded fundamentally with a kind of dignity found in few ancient cultures. The great Tannaitic Rabbis earned their livelihood, working as woodchoppers (Hillel), blacksmiths (R. Joshua), tanners (R. Jose, father of R. Ishmael), tailors (Abba b. Zemina), carpenters (R. Abin), and the like. Goldsmiths may be rebuked for fashioning idols (Is 40:19; 46:6; cf. Jr. 10:9; 14; 51:17); but there is no indication anywhere whatsoever of any intrinsic prejudice attached to any legitimate form of craft. In the Oral literature, we do find occasional opinions expressed that certain types of occupation are preferable to others. But such views have little to do with the idea that certain types of work are beyond the dignity a person nor because of any magical or demonic association of craftspeople. Rather, in any patriarchal society, occupations that lead to frequent social intercourse with women (goldsmith, weaver, fuller, millstone maker, hair-dresser, tanner etc.) may tend to draw certain ignorant prejudice (cf. Kid 4:14); but among the wise such attitude would not be accorded much validity (cf. Pes 113b). Additionally, it is humanly (and rhinologically!) understandable, if not right, why one might prefer perfume manufacturing to tanning; but even those like Rabbi Judah Ha-Nasi who express such a view still explicitly assert the fundamental importance of work (Kid 4:4). In the final analysis, it is the meritoriousness of a person, not the type of his/her work, that matters (Kid 4:14). "Let no one say I am the scion of noble family" and "look down upon any kind of labor" (BB 110a). To the extent that it can be said that there was some form of prejudice against artisans, if any, including the mythological biases, in the Second Temple period, the majority of the Rabbis who became the founders of normative Judaism themselves must also be included among those elements of the society at whom the prejudices were directed.

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In many parts of the world today artisans live segregated as a clan or family unit, in what anthropologists sometimes describe as "occupational castes" or "sub casts." In Ethiopia, for instance, as among many peoples

in Asia and Africa, artisans live in separate villages and communities and marry only within their own group, in a relationship described as "endogamous kin unit..." by anthropologists (D19U). Likewise, in many of these societies in Africa and Asia, the skill of the artisan is hereditary, much like the French wine mixers or the Swiss watchmakers. Their *de facto* segregation is not necessarily self-imposed, as, perhaps, for the purpose the protection of the secrets of their respective trades; while perhaps in certain cases this may be so, in most other instances, however, it is the result of social stigma ensuing from certain myths (that they communicate with demons; that they possess the evil eye; that they know magic; etc. as is the case in Ethiopia) like those of the Enochic Fallen Angels or giants. Even though cases of downright personal discrimination against people who work with their hands and popular prejudice against their occupation may exist, it is primarily the spirits artisans are believed to associate with that people shun. In fact, in some respects, the social attitude exhibited towards the people of skill can best be described as ambivalent rather than downright discriminatory: whereas, on the one hand, they are feared or held in disdain, on the other, they are admired and cherished for their work and products. The same can probably be said about the ancient giants also: in popular mind they were probably thought of as both admirable and fearful. Such an ambivalent attitude towards artisans can best be illustrated by the way the modern Amharic word *t'abib* (cf. Ethiopic, ጠቢብ) is used: on the one hand, the word means "wise, clever, ingenious, resourceful"; on the other it means "cunning, canny, slick" or "a person with an evil eye" or even outright "diabolic."

In the Second Temple period, craftspeople must have played a central role as forgers of not only the weapons of death but also the tools of bread. What was the nature of their social intercourse? Our knowledge is unfortunately scanty, but there is some evidence supporting the existence then of artisans' guilds such as those of the potters and weavers (I Chr 4:23) of earlier periods or the goldsmiths and perfumers alluded to in Ezra's time (Nh 3:8). Later Jewish tradition also seems to indicate that there were hereditary guilds such as the bakers of the shewbread and the preparers of the holy incense (Yoma 3:11). In the synagogue in Alexandria, different artisan groups (goldsmith, silversmith, ironsmith, coppersmith, weavers, embossers, and other craftspeople) sat in their respective seats (Suk. 51b). Thus, there was probably some kind of social

segregation of artisans in the period we are considering, like that which we find even among many contemporary peoples.

Did the community in which the author of the story of the Fallen Angels live have myths concerning craftspeople, that their skill and art is of divine or demonic origin? And, did such beliefs lead the people of that society to consider the artisans' occupations socially degrading? As we have already seen above, attitudes concerning the so-called banausic occupations and general prejudices against artisan folk, predominant in the Greek world, have little or no bearing on mainstream Hebraic-Jewish culture. Nonetheless, the idea that craftspeople have demonic or angelic association, is a different matter, and Jewish society is no exception in absorbing certain elements of such mythologies as is evident from Enoch 8:1. Hence, on the basis of the textual evidence as well as our knowledge of the religio-magical attitude of the ancient world towards manual work it is not difficult to answer our primary question positively; and if so, that is, that superstitious beliefs about artisans must have existed in the community in which the author of the Book of Enoch lived, to conjecture that certain types of work were shunned by the ordinary people of that community. In other words, the idea that the skill of the artisan is of divine or demonic origin is most likely in the value system of the society of the Second Temple period, rooted in the mythological ideas of the ancient world about the class of workers we call artisans and the type of work we describe as arts and crafts, including cosmetics, metallurgy, and alchemy which are explicitly mentioned in Enoch 8:1.

## Notes on the References

**D1UCf. also 10:7:** Unless otherwise indicated all quotations from the *Book of Enoch* are from my translation in the Duke-Doubleday *Pseudepigrapha*, Vol. I (1983), edited by James Charlesworth. In this translation I follow closely the text of Kebran (Lake Tana) 9 of early fourteenth century, the oldest known Ethiopic Enoch manuscript. For a critical discussion of this and other recently microfilmed Enochic manuscripts see my article, (1983) "New Light upon the Book of Enoch from Newly-Found Ethiopic Mss", *Journal of the American Oriental Society*, 103 (2):399-411.

**D2aU and Azazel** taught the people [the art of] making swords and knives, and shields and breastplates; and he showed *za-'emdhrähomu* bracelets, decorations, [the shadowing of the eyes with] antimony,

ornamentation, the beautifying of the eyelids, all kinds of precious stones, all coloring tinctures, and *tawlät'a* (Charles's ms g, *tawalat'a*) *'alam*."

**D2bU:** Following earlier known Ethiopic Enochic manuscripts, scholars have considered the text of Enoch 8:1 to be corrupt in two places (indicated in my translation in 2a above by underlining).

Both Fleming and Charles took *zä-ʾɨmdhrähomu* in a neuter sense "what is after them" and therefore suggested that the Ethiopic comes from a misreading rendition of the Greek *ta metala* 'the metals', attested in G-S (Syncellus fragment; G-a, the Akhmim fragment, reads *ta megala* 'the great things') as *met 'auta*. Interestingly, fifty years earlier Diliman had made an almost identical proposal but for *tawlat'a 'alam*. Rightly criticizing Lawrence's translation of the Ethiopic as 'the world was changed' (actually the unique reading of the MS g given above could be translated as 'the world was transformed'), Diliman argued that the Semitic languages do not have a word for metal(s) but that since the Ethiopic *'alam* can mean both 'the world' and 'the earth *tawlat'a 'alam* should be taken as the transliteration for 'die Metalle der Erde' (Das Buch Henoch, Leipzig, 1851, p.96). Dillmann is right in suggesting that *'alam* in Ethiopic can be rendered as 'the world' or 'the earth'; however, he overlooked the fact that unlike German 'die Erde' or English 'the earth', Ethiopic *'alam* does not mean 'the earth' in the sense of the ground.'

Charles thought that *tawlat'a 'alam* is a dittography for the corrupt *zä-ʾɨmdhrähomu* (The Book of Enoch, Oxford, 1912, p.18). In his recent work, Milik adopts this view of Charles and elaborates upon it; but he proposes *ta met' alla* 'those after other (things)' as a misreading of *ta metalla*, a word which he thinks the Ethiopic translator did not know. He also argues unconvincingly that *tawlat'a 'alam* was added by a later copyist in the margin as a transcription of *ta metalla* and subsequently inserted at the end of 8:1 as a corruption (The Books of Enoch: Aramaic Fragments of Qumran Cave 4, with the Collaboration of Matthew Black, Oxford, 1976, p. 169).

In the first place, we must point out that earlier scholars have wrongly taken *zä-ʾɨmdhrähomu* in the neuter sense. The Ethiopic should be correctly rendered 'those after them'; Ethiopic Enochic commentators commonly interpret the expression as 'their successors' or 'their children'. Interestingly in Kebra~n 9 (fol. 72v), we do not have the ambiguous *zä-ʾɨmdhrähomu*; instead we read *zä-*

*ʾimdhrähomu* 'their chosen ones'. (K-9 also omits the additionally confusing and senseless readings found in all other manuscripts: *wa-megbaromu* 'and the making of them' or *wa-* (omitted by ms.n) *megbarihomu* 'and their actions'.

**D2cU**. Secondly, we must not look for a fancy explanation of the corrupt reading of *tawlat'a 'alam* 'the substitution of the world (or, things worldly)' beyond the Ethiopic text. In this case again Ethiopian commentators enlighten us: whereas some interpret the phrase as meaning 'astrology' or 'drawing of demons', all agree that the expression has something to do with the 'transmutation' of things, animals, or people. Several commentators explicitly state that the phrase means 'the transformation (or, changing) of a horse or a mule into a human being or vice versa.' (The Enochic Ms. EMML 2080 of the fifteenth century has a marginal note: *fara[sen] ba[qlo]* madrag, 'making (changing) a horse into a mule'.) This interpretation of *tawlat'a 'alam* agrees fully with the belief in the transmutation through alchemy of a homunculus, which became popular in medieval times as the transmutation of gold and silver was in ancient Egypt. It also agrees with *Chema*, the famous alchemical writings of Zosimus of Panopolis, in which the view that the Fallen Angels taught the arts to the women they married is propounded, undoubtedly an idea borrowed from *Enoch*. As for the *ta metalla* of G-S, we should point out that the verbal root of this word in Greek is related to *mettalaw* 'search carefully, inquire diligently' or *metallassw*, 'pervert, convert, change, alter.' If we accept the argument given above concerning *tawlat'a 'alam*, then it is possible to argue additionally that G-S gives a corrupt form of a correct expression. The grammatically correct expression in Ethiopic itself *tawlat'a 'alam* is now found in our two oldest known MSS, Kebran 9 and EMML 2080.

Finally, not only is Milik's analysis of the Ethiopic text of 8:1 questionable but also his restoration of the corresponding Aramaic fragments unacceptable. Particularly, his *ma yet[hafar...]* is far from convincing: the only letter visible from his photograph (Plate VI) is a *lamda*; perhaps Milik is unwittingly influenced in his restoration by the *ta mettalla tes ges* of G-S and Charles's arguments. On the other hand, Milik's restoration of 4Qnb 1: ii:27a concerning the fashioning of gold and silver might be accurate and could quite well point to the same art of alchemy.

**D3U.** See, for example M. Eliade's *The Forge and the Crucible*, trans. S. Corrin (London, l962).

**D4U.** See A. Heidel, *The Babylonian Genesis*, 2nd ed. (Chicago, l963), p. 65.

**D5U.** There are many works concerning the mythology of arts and crafts in Greek culture, but see in particular, F. Frontisi-ducroux, De'dale: mythologie de l'artisan en gre`ce ancienne (Paris, 1975); M. Delcourt, Hephaistos ou la le'gende du magicien (Paris, 1957). Also cf. M.I. Finley, 'Metals in the Ancient World,' Journal of the Royal Society of Arts, Sept. 1957.

**D6U.** (Cf.Gr. kosmein, to arrange, adorn; cosmos, order. Some suggest the Egyptian kmyt, gum, resin, aromatic herbs, as the root of the Greek, kommi, gomma).

**D7U.** The nature of the material used for eyepaint and how it was prepared is still a matter of some debate. Some think that antimony, more accurately stibnite or antimony tri-sulphide, was late in the use of eye beautification and adornment. Based on evidence from pre-historic graves, it has been argued that not antimony but galena, black lead sulphide from Punt, and malchite, green copper carbonate were probably the earliest known eye paints, and that these substances were used also used as treatment for eye disease from the fifth millennium BCE through the Middle Ages. However, there is no doubt that stibnite did become a common eye medicine and beautification substance in later times, and the ancient Mesopotamian word guhlu, for eyepaint is now used by Arabs and Ethiopians as the word for antimony.

**D8UB**. Ebbell, 'Die A'gyptische aromatischen Ha'rze', Acta Orientalia, XVII (1939), 89; Pliny, Natural History, 13:2:4ff; 15:7:24ff; in Loeb ed., IV (1945), pp. 100ff; 304ff.); A. Lucas, 'The Use of Natron in Mummification', *Journal of Egyptian Archeology*, XVIII (1932), 125.

**D9UM.** Jastrow, *Religion of Assyria and Babylon*, p.500.

**D10U**. Concerning the use of metals in Jewish magic, see Blau, *Das Altju'dische Zauberwesen*, p. 157 and Sefer Yuħasin, ed. (London,), p. 234.

**D11U.** On alchemy and magic see R. J. Forbes, *Chymia*, IV (1953) 1; or F. S. Taylor, *The Alchemists: The Founders of Modern Chemistry* (New York, 1949).

**D12U.** Of metals and mining in the Land of Israel very little is known, but the list of metals found in the Bible and Rabbinic literature -- gold, silver, copper, bronze, tin, lead, antimony, stibium electrum, or

iron; mined in Ophir, Havilah, Uphaz, Ethiopia, Syria, and Asia Minor; and/or used by the Egyptians, Sumerians, Assyrians, Hittites, and other nations -- is as complete as any found in any ancient document (cf. Nm 21:221; I K 9:28; Ezk 27:12; Kelim 13:7; 14:1; Hulin 1:6 etc.). The fascinating poem of Job 28 on mining, though thought to be a reflection upon Egyptian works in the Sinai, has little parallel anywhere else in its details concerning ancient metal mining techniques.

**D13U**. A good example of the involvement of craftspeople with the making of idols is found in Wisdom of Solomon (13:10-14:11.) In this passage as elsewhere in Jewish literature, the judgment is on those who worship idols, not on those who make them.

**D14U**. In the time of David and Solomon, for instance, 'there were an abundance of workers: stonemasons, carpenters, and all kinds of craftspeople, without number, skilled in working in gold, silver, and bronze, and iron' (IChr 22:15-16). There were also skilled Levite musicians (some of whom probably also manufactured their own instruments), scribes (some of whom probably manufactured their own writing materials), and many others who did every kind of work (II Chr 34:11.) Goldsmiths were active in the building of the Second Temple (Nh 3:8, 31, 32; Ezr 3:7; Ml 3:2-3).

To the extent that artisans or craftspeople played a great role in the Biblical and Rabbinic world their specific activities and products were so well-known that their specializations could described with various specific technical terminologies. The term *hores* ('aman, SS 7:2) for artificers of various metals like the coppersmith or ironsmith, and woods like the carpenters comes closest to being a general term for artisans (Cf. IIS 5:11; Jr 10:3; IS 41:7; 44:12-13). Examples of other specialized Biblical and Rabbinic expressions are: sorfi or mesaref, goldsmiths or silversmith; sofer or safar, scribe; hoseb, stonecutters and woodcutters; goderim, wall-builders; *boneh*, builder; *yoser*, or *pahara*, or *qaddar*, potter; *tahey*, plasterer; *godel tanurim*, oven-maker; *bursi*, or *sallaha*, *tanner*; *sakaf* or *sandlar*, *shoemaker*; *sammar* or *gardi*, wool weaver; *ma'azela*, spinner; *oreg* or *qiwwah*, weaver; *tarsi*, embroiderer; *sabbah, dyer; hayyat*, tailor; aspara, launderer; sappar, barber; godelet; hairdresser; and so on. See P. Rieger, Versuch einer Techinologie und Terminologie der Handwerke in der Mishnah, Berlin l894; J. S. Bloch, Der Arbeiterstand bei den Palastinensern,

Griechen, und Romern, Vienna, l882; S. Meyer, Arbeit und Handwerk in Talmud, Berlin, l878).

**D15U**. It is, however, true in antiquity as among many peoples today that agricultural labor is seen as a work of a different genre as compared to craftsmanship. Aristophanes, for instance, looks down upon those who do manual work, but not the farmer (cf. note 17 below).

**D16U**. Aboth de-Rabbi Nathan 11; cf. *The Fathers According to Rabbi Nathan*, trans. J. Goldin (Yale Univ. Press, l955).

**D17U**. Knights, in *The Complete Greek Drama*, ed. by W.J. Oates & E. O'Neill, Jr. (New York, 1938), II, p.483-490.

**D18U**. Cf. Robert Schlaifer, 'Greek Theories of Slavery from Homer to Aristotle,' Harvard Studies in Classical Philology, supp. vol. (l941), 171ff.).

**D19U**. There are numerous anthropological works concerning the status of craftspeople among other peoples. For example, see R.B. Dixon, The Building of Cultures, (New York, 1928); M. Griaule, Masques dogon, (Paris, Institute d'Ethnologie, 1938); M. Herskovits, Economic Anthropology: A Study in Comparative Economics, 2nd. ed. (New York, l940); P. Lloyd, 'Craft Organization in Yoruba Towns,' Africa, XXIII (1953), pp. 30ff; etc.

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