Brooke Holmes, Klaus-Dietrich Fischer (Eds.)
The Frontiers of Ancient Science

Beiträge zur Altertumskunde

Herausgegeben von Michael Erler, Dorothee Gall,
Ludwig Koenen und Clemens Zintzen

Band 338

The Frontiers of Ancient Science

Essays in Honor of Heinrich von Staden

Edited by
Brooke Holmes
and
Klaus-Dietrich Fischer

with the assistance of
Emilio Capettini

DE GRUYTER

ISBN 978-3-11-033392-3
e-ISBN (PDF) 978-3-11-033633-7
e-ISBN (EPUB) 978-3-11-038930-2
ISSN 1616-0452

Library of Congress Cataloging-in-Publication Data
A CIP catalog record for this book has been applied for at the Library of Congress.

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.dnb.de abrufbar.

Druck und Bindung: Hubert & Co. GmbH & Co. KG, Göttingen
∞ Gedruckt auf säurefreiem Papier
Printed in Germany

www.degruyter.com

Preface

It would indeed mean sending owls to Athens, or coals to Newcastle, were one to explain the importance of Heinrich von Staden for the study of ancient science and medicine to his colleagues in the field, to say nothing of his impact on the history of philosophy, classics, and literary theory. In a career spanning over four decades, Heinrich has transformed the study of ancient Graeco-Roman medicine by pioneering a scholarly approach that is equally attentive to the specificities of language, culture, history, and individual authors and large-scale philosophical and methodological questions.[1] Theoretical sophistication and philological precision, vast erudition and conceptual flair—these are the hallmarks of the inimitable von Staden style. Heinrich's ability to move effortlessly between different scholarly traditions and cultures has enabled him to bring contemporary problems in the history and philosophy of science to bear on classical antiquity while at the same time challenging outmoded paradigms of "premodern" science and medicine and integrating ancient texts into transhistorical conversations. Born and raised in South Africa, Heinrich also has a remarkable talent for moving between cultures and languages. With a publication record in multiple languages, he embodies the twenty-first-century ideals of globalism and multiculturalism as much as the traditionally polyglot cosmopolitanism of classics as a discipline. Heinrich's insatiable curiosity about the world is rivaled only by his generosity towards his far-flung friends, young and old. Even in the midst of a whirlwind of international engagements, he will always manage to find time for one-on-one conversation (almost certainly in the mother tongue of his interlocutor).

Heinrich's support of scholars working in premodern science and medicine has nowhere been more evident than in his creation of a robust, international research community in the history of science during his twelve-year tenure as Professor of Classics and History of Science in the School of Historical Studies at the Institute for Advanced Study in Princeton (1998–2010), a post he took up after teaching at Yale University for thirty years (and as William Lampson Professor of Classics and Comparative Literature from 1996–1998). It was at the Institute that the idea for a volume honoring Heinrich was first generated, when Arsenio Ferraces Rodríguez and Cloudy Fischer were working there during the summer of 2009; Brooke Holmes joined the editorial team the following year. Sadly, Arsenio found himself unable to continue with his collaboration soon

1 See the bibliography on pp. 707–12.

after the first call for papers had gone out in 2011, and the project had to proceed without him, on both sides of the Atlantic.

The present volume gathers contributions from twenty-nine historians of ancient and early modern medicine, science, religion, and philosophy who were fortunate to be Visitors or Members of the Institute during Heinrich's time there. Ranging from mechanics and mathematics to medicine and magic, from Bronze Age archaeology to modern receptions of Hippocratic texts, from peacocks to badgers, they speak to the richness and breadth of Heinrich's own expertise. As is fitting for a tribute to a true citizen of the world, the volume includes contributions in four languages (all languages in which Heinrich is fluent) and represents a range of national traditions and styles: as Heinrich himself might say, "E pluribus unum" and "Vive la différence!". The editors hope that this volume will not only be seen as a tribute to Heinrich's exquisite scholarship long overdue, his generous support of scholars young and old, and his kindness and charm, but that it will also invite those who open it to explore again Heinrich's own rich corpus of scholarship.

The editors would like to thank David Kaufman and especially Emilio Capettini for their assistance with the preparation of this volume; special thanks is due to Emilio for the preparation of the general index. We are also grateful to Terrie Bramley for her help with various aspects of the publication; and to Katharina Legutke, Florian Ruppenstein, and Mirko Vonderstein at de Gruyter for their support of the project. BH is also grateful to Caroline Bynum for sage guidance during the editing and publication process. Finally, acknowledgment is due to the David Magie Research Fund in the Department of Classics at Princeton University for very generous support of the volume's preparation and publication.

Table of Contents

Abbreviations

ABL	Harper, R. F. *Assyrian and Babylonian Letters* (Chicago: The University of Chicago Press, 1892–1914)
AE	*L'année épigraphique: revue des publications épigraphiques relatives à l'Antiquité romaine* (Paris: Presses Universitaires de France, 1889–)
Ael.	Aelianus
nat. anim.	*de natura animalium*
Aesop.	Aesopus
Aesch.	Aeschylus
sept.	*septem contra Thebas*
Aët.	Aëtius philosophus
Aëtius Amid.	Aëtius Amidenus
lib. med.	*libri medicinales*
Afric.	Iulius Africanus
Alex. Aphr.	Alexander Aphrodisiensis
de an.	*de anima*
in de sens.	*in librum de sensu commentarium*
mantissa	*mantissa*
quaest.	*quaestiones*
Alex. Trall.	Alexander Trallianus
Ps.-Alex. Trall.	Pseudo-Alexander Trallianus
puls. ur.	*de pulsibus et urinis*
Anax.	Anaxagoras
Anon. Lond.	Anonymus Londinensis
Anon. Paris.	Anonymus Parisinus
de morb. acut. et chron.	*de morbis acutis et chroniis*
Antyll.	Antyllus
AO	Cuneiform tablets in the collections of the Musée du Louvre, Paris
Apollon. Perg.	Apollonius Pergaeus
con.	*conica*
Apul.	Apuleius
apol.	*apologia*
Archig.	Archigenes
Archim.	Archimedes
con. sph.	*conoidea et sphaeroidea*
aequil.	*de planorum aequilibriis*

sph. cyl.	*de sphaera et cylindro*
Archyt.	Archytas Tarentinus
Aret.	Aretaeus
Aristoph.	Aristophanes
Acharn.	*Acharnenses*
ran.	*ranae*
Arist.	Aristoteles
de an.	*de anima*
an. post.	*analytica posteriora*
cael.	*de caelo*
cat.	*categoriae*
div. somn.	*de divinatione per somnum*
eth. Nic.	*ethica Nicomachea*
gen. anim.	*de generatione animalium*
hist. anim.	*historia animalium*
incess. anim.	*de incessu animalium*
insomn.	*de insomniis*
iuv.	*de iuventute*
long. vit.	*de longitudine vitae*
mem.	*de memoria*
metaph.	*metaphysica*
meteorol.	*meteorologica*
part. anim.	*de partibus animalium*
phys.	*physica*
poet.	*poetica*
pol.	*politica*
pr.	*problemata*
sens.	*de sensu*
somn. vig.	*de somno et vigilia*
top.	*topica*
Ps.-Arist.	Pseudo-Aristoteles
col.	*de coloribus*
mech.	*mechanica*
Artem.	Artemidorus Daldianus
Aug.	Augustus
Beda	Beda
temp. rat.	*de temporum ratione*
BM	British Museum, London, museum siglum

BRM 4	Clay, A. T. *Babylonian Records in the Library of J. Pierpont Morgan*, vol. 4 (New Haven: Yale University Press, 1923)
CAD	Biggs, R. D., et al., eds. *The Assyrian Dictionary of the Oriental Institute of the University of Chicago* (Chicago: The Oriental Institute, 1956–)
Cael. Aur.	Caelius Aurelianus
acut. pass.	*celeres vel acutae passiones*
diaet. pass.	*de speciali significatione diaeticarum passionum fragmentum*
tard. pass.	*tardae passiones*
CAG	*Commentaria in Aristotelem Graeca*
Cass. Fel.	Cassius Felix
Cels.	Celsus
Chalc.	Chalcidius
in Tim.	*in Platonis Timaeum*
Cic.	Cicero
acad.	*academica*
fin.	*de finibus*
Phil.	*Philippicae*
Tusc.	*Tusculanae disputationes*
CIL	Mommsen, Theodor, et al., eds. *Corpus Inscriptionum Latinarum* (Berlin: G. Reimer/De Gruyter, 1863–)
Colum.	Columella
CT	British Museum, Department of Egyptian and Assyrian Antiquities. *Cuneiform Texts from Babylonian Tablets in the British Museum* (London: The Trustees of the British Museum, 1896–1990)
Democr.	Democritus
Ps.-Democr.	Pseudo-Democritus
med.	*liber medicinalis*
Diocl.	Diocles Carystius
Diodor. Sic.	Diodorus Siculus
Diog. Laërt.	Diogenes Laërtius
Diosc.	Dioscorides
mat. med.	*de materia medica*
simpl.	*de simplicibus*
Ps.-Diosc.	Pseudo-Dioscorides
alex.	*alexipharmaca*

Elias	Elias
in cat.	*in Aristotelis categorias commentaria*
Emped.	Empedocles
Epicur.	Epicurus
ep. Hdt.	*epistula ad Herodotum*
Erasistr.	Erasistratus
Erm	Hermitage (Ermitage, Eremitage) Museum, St. Petersburg, museum siglum
Erot.	Erotianus
Euc.	Euclides
elem.	*elementa*
Eur.	Euripides
Herc. fur.	*Hercules furens*
Eutoc.	Eutocius
in de sph. cyl.	*commentarii in libros de sphaera et cylindro*
in con.	*commentaria in conica*
Fest.	Festus
Gal.	Galenus
de alim. facult.	*de alimentorum facultatibus*
de antidot.	*de antidotis libri II*
ars med.	*ars medica*
de atra bile	*de atra bile*
de bon. mal. suc.	*de bonis malisque sucis*
de caus. puls.	*de causis pulsuum*
de com. sec. Hipp.	*de comate secundum Hippocratem*
de comp. med. per gen.	*de compositione medicamentorum per genera*
de comp. med. sec. loc.	*de compositione medicamentorum secundum locos*
de const. art. med.	*de constitutione artis medicae ad Patrophilum*
de cris.	*de crisibus*
de diebus decr.	*de diebus decretoriis*
de diff. resp.	*de difficultate respirationis*
de exp. med.	*de experientia medica*
ad Glauc. meth. med.	*ad Glauconem de methodo medendi*
gloss.	*linguarum seu dictionum exoletarum Hippocratis explicatio*
in Hp. aph. comm.	*in Hippocratis aphorismos commentaria*
in Hp. art. comm.	*in Hippocratis de articulis commentaria*
in Hp. epid. I comm.	*in Hippocratis epidemiarum librum primum commentaria III*

in Hp. epid. II comm.	*in Hippocratis epidemiarum librum secundum commentaria V*
in Hp. epid. III comm.	*in Hippocratis epidemiarum librum tertium commentaria III*
in Hp. epid. VI comm.	*in Hippocratis epidemiarum librum sextum commentaria I–VIII*
in Hp. fract. comm.	*in Hippocratis de fracturis librum commentaria III*
in Hp. nat. hom. comm.	*in Hippocratis de natura hominis librum commentaria II*
in Hp. off. comm.	*in Hippocratis de officina medici librum commentaria III*
in Hp. prog. comm.	*in Hippocratis prognosticum commentaria III*
in Hp. prorrh. I comm.	*in Hippocratis prorrheticum I commentaria III*
in Hp. acut. comm.	*in Hippocratis de victu acutorum librum commentaria IV*
indol.	*de indolentia*
de libr. propr.	*de libris propriis*
de loc. aff.	*de locis affectis*
de meth. med.	*de methodo medendi*
de nomin. med.	*de nominibus medicis*
de opt. med. cogn.	*de optimo medico cognoscendo*
de ord. libr. suor.	*de ordine librorum suorum ad Eugenianum*
de plac. Hipp. et Plat.	*de placitis Hippocratis et Platonis*
de praecogn.	*de praecognitione ad Epigenem*
de an. aff. dign. et cur.	*de propriorum animi cuiuslibet affectuum dignotione et curatione*
protrept.	*adhortatio ad artes addiscendas*
quod opt. med.	*quod optimus medicus sit quoque philosophus*
qualit. incorp.	*quod qualitates incorporeae sint*
de san. tuenda	*de sanitate tuenda*
de sectis	*de sectis ad eos qui introducuntur*
de simpl. med. temp. ac fac.	*de simplicium medicamentorum temperamentis et/ac facultatibus*
subf. emp.	*subfiguratio empirica*
de sympt. caus.	*de symptomatum causis*
de sympt. diff.	*de symptomatum differentiis*
de temper.	*de temperamentis*
de ther. ad Pis.	*de theriaca ad Pisonem*
de usu part.	*de usu partium*
de venae sect. adv. Erasistrateos	*de venae sectione adversus Erasistrateos Romae degentes*

Ps.-Gal.	Pseudo-Galenus
def. med.	*definitiones medicae*
de hist. philos.	*de historia philosopha*
introd. s. medic.	*introductio sive medicus*
remed. parab.	*de remediis parabilibus*
succed.	*de succedaneis*
Gell.	Aulus Gellius
noct. Att.	*noctes Atticae*
Hdt.	Herodotus
Hero Alex.	Hero Alexandrinus
bel.	*belopoeica*
dioptra	*commentatio dioptrica*
mech.	*mechanica*
pneum.	*pneumatica*
Herodianus	Herodianus
soloec.	*de soloecismo et barbarismo*
Herophil.	Herophilus
Hipp.	Hippocrates
acut.	*de victu acutorum*
acut. (sp.)	*de victu acutorum (spuria)*
aff.	*de affectionibus*
aph.	*aphorismi*
art.	*de arte*
Coac.	*Coacae praenotiones*
decent.	*de decenti habitu*
epid. I–VII	*epidemiarum* I–VII
fist.	*de fistulis*
flat.	*de flatibus*
foet. exsect.	*de foetus exsectione*
int.	*de internis affectionibus*
iusi.	*iusiurandum*
loc. hom.	*de locis in homine*
medic.	*de medico*
morb. I–IV	*de morbis* I–IV
morb. sacr.	*de morbo sacro*
mul. I–II	*de morbis mulierum* I–II
nat. hom.	*de natura hominis*
prog.	*prognosticum*
prorrh. I	*prorrheticus* I

superf.	*de superfetatione*
ulc.	*de ulceribus*
vet. med.	*de vetere medicina*
vict.	*de victu*
virg.	*de virginum morbis*
vuln. cap.	*de vulneribus in capite*
Ps.-Hipp.	Pseudo-Hippocrates
epist. ad Maecen.	*epistula ad Maecenatem*
epist. ad Antig.	*epistula ad Antigonum (Antiochum)*
hipp. Berol.	*hippiatrica Berolinensia*
hipp. Cant.	*hippiatrica Cantabrigiensia*
hipp. Lond.	*hippiatrica Londinensia*
hipp. Lugd.	*hippiatrica Lugdunensia*
hipp. Par.	*hippiatrica Parisina*
Hist. Aug.	*Historia Augusta* (see SHA)
Hom.	Homerus
Od.	*Odyssea*
Hor.	Horatius
carm.	*carmina*
ep.	*epistulae*
Hsch.	Hesychius
ILS	Dessau, Hermann. *Inscriptiones Latinae Selectae* (Berlin: Weidmann, 1892–1916)
Inscr. It.	*Inscriptiones Italiae* (Rome: Libreria dello Stato, 1931–) [Vol. XIII 2 = Degrassi, Attilio. *Fasti et elogia: Fasti anni Numani et Iuliani* (Rome: Istituto poligrafico dello Stato, 1963)]
Ios.	Iosephus
ant. Iud.	*antiquitates Iudaicae*
IRT	Reynolds, J. M., and J. B. Ward-Perkins. *The Inscriptions of Roman Tripolitania* (Rome: British School at Rome, 1952)
Isid.	Isidorus Hispalensis
orig.	*origines*
Ku.	Kuyunjik, British Museum cuneiform catalogue siglum
K.	Kühn, C. G. *Claudii Galeni opera omnia*, 20 vols. (Leipzig: C. Cnobloch, 1821–1833) [repr. Hildesheim: Olms, 1964–1965]

LAS	Parpola, Simo. *Letters from Assyrian Scholars to the Kings Esarhaddon and Assurbanipal*, vol. 1, Alter Orient und Altes Testament 5.1 (Kevelaer: Butzon & Bercker, 1970)
L.	Littré, É. *Œuvres complètes d'Hippocrate*, 10 vols. (Paris: J. B. Baillière, 1839–1861)
Leo medic.	Leo medicus
de nat. hom. syn.	*de natura hominum synopsis*
Lib.	Libanius
or.	*orationes*
Lucr.	Lucretius
Marcell.	Marcellus
med.	*de medicamentis*
Marcellin.	Marcellinus
puls.	*de pulsibus*
Men.	Menander
Nemesius Emesenus	Nemesius Emesenus
nat. hom.	*de natura hominis*
Olymp.	Olympiodorus
in cat.	*in categorias commentarium*
Opp.	Oppianus Apamensis
cyn.	*cynegetica*
Orib.	Oribasius
coll. med.	*collectionum medicarum reliquiae*
ecl. med.	*eclogae medicamentorum*
eupor.	*libri ad Eunapium*
syn.	*synopsis ad Eustathium filium*
Ov.	Ovidius
met.	*metamorphoses*
trist.	*tristia*
Paneg.	*Panegyrici Latini*
Papp.	Pappus Alexandrinus
Parm.	Parmenides
Paul. Aeg.	Paulus Aegineta
Pelagon.	Pelagonius
Philo Alex.	Philo Alexandrinus
ebr.	*de ebrietate*
Philod.	Philodemus
sign.	*de signis*

Philop.	Philoponus
in de an.	*in Aristotelis de anima libros commentaria*
in de gen. et corr.	*in Aristotelis libros de generatione et corruptione commentaria*
Philumen.	Philumenus
ven.	*de venenatis animalibus*
Pl.	Plato
Gorg.	*Gorgias*
leg.	*leges*
Phd.	*Phaedo*
Phdr.	*Phaedrus*
Phlb.	*Philebus*
pol.	*politicus*
resp.	*respublica*
soph.	*sophista*
Tim.	*Timaeus*
Ps.-Pl.	Pseudo-Plato
Ax.	*Axiochus*
Plin.	Plinius
nat.	*naturalis historia*
Plut.	Plutarchus
adv. Colot.	*adversus Colotem*
comm. not.	*de communibus notitiis adversus Stoicos*
prim. frig.	*de primo frigido*
de prof. virt.	*de profectu in virtute*
Stoic. repug.	*de Stoicorum repugnantiis*
Polyb.	Polybius
Posidon. Phil.	Posidonius
Procl.	Proclus
in Euc.	*in primum Euclidis elementorum librum commentarii*
Q. Ser.	Quintus Serenus
Ruf.	Rufus Ephesius
onom.	*de corporis humani appellationibus*
quaest. med.	*quaestiones medicinales*
satyr. gon.	*de satyriasi et gonorrhoea*
Ps.-Ruf.	Pseudo-Rufus
anat.	*de anatomia partium corporis humani*

SAA 10	Parpola, Simo. *Letters from Assyrian and Babylonian Scholars*, State Archives of Assyria 10 (Helsinki: Helsinki University Press, 1993)
Scrib. Larg.	Scribonius Largus
comp.	*compositiones*
Sen.	Seneca
ep.	*epistulae*
nat. quaest.	*naturales quaestiones*
Sever.	Severus
clyst.	*de clysteribus*
Sext. Emp.	Sextus Empiricus
adv. math.	*adversus mathematicos*
Pyrrh. subfig.	*Pyrrhoneae hypotyposes*
SHA	Scriptores Historiae Augustae
Hadr.	*Hadrianus*
Simp.	Simplicius
in de cael.	*in Aristotelis de caelo commentaria*
in cat.	*in Aristotelis categorias commentarium*
in phys.	*in Aristotelis physica commentaria*
Sor.	Soranus
gyn.	*gynaecia*
Ps.-Sor.	Pseudo-Soranus
isag.	*isagoge*
Speus.	Speusippus
SpTU	Hunger, Hermann. *Spätbabylonische Texte aus Uruk*, vol. 1, Ausgrabungen der Deutschen Forschungsgemeinschaft in Uruk-Warka 9 (Berlin: G. Mann, 1976)
Stob.	Stobaeus
Strat.	Strato Lampsacenus
STT	Gurney, O., and J. J. Finkelstein. *The Sultantepe Tablets*, 2 vols. (London: British Institute of Archaeology at Ankara, 1957–1964)
Suet.	Suetonius
Aug.	*de vita Caesarum lib. II: divus Augustus*
Theodorus Priscianus	Theodorus Priscianus
eupor.	*euporiston libri III*
Theodosius	Theodosius
sph.	*sphaerica*

Theophr.	Theophrastus
hist. plant.	*historia plantarum*
odor.	*de odoribus*
sens.	*de sensibus*
Thuc.	Thucydides
Var.	Varro
ling. Lat.	*de lingua Latina*
Veg.	Vegetius
mulom.	*digesta artis mulomedicinalis*
Verg.	Vergilius
georg.	*georgica*
Vitr.	Vitruvius
arch.	*de architectura*
Xen.	Xenophon
an.	*anabasis*
hist. Graec.	*historia Graeca (Hellenica)*
YBC	Yale Babylonian Collection

Isabella Andorlini

Egypt and the Medicinal Use of Papyrus According to Soranus and Other Physicians

Abstract: In his account of the manufacture of papyrus in *nat*. 13.72, Pliny the Elder makes no mention of its medicinal application among the miscellaneous uses popular in the Egyptian *chōra*. He does, however, refer in a number of other places to the reputation among physicians of the ash that is obtained from burning papyrus. Ancient doctors, too, recognized the therapeutic value of both the plant and the paper made from it. The present contribution focuses on the therapeutic uses attested in the medical writers; it considers, too, the additional information supplied by the *Gynecology* of Soranus, the distinguished Roman physician, who studied in Alexandria in the first and second centuries A.D. Soranus' original comparison of the layers of the uterus with the arrangement of fibers in layers of papyrus will be illustrated together with similar analogies employed by the Byzantine writers Meletius and Leo. It will be shown how physicians visiting Alexandria and Egypt were likely to have gained firsthand experience both in the medical schools and in the headquarters of the papyrus industry, where they became acquainted with the usefulness of papyrus in treatment and healing.

> πάπυρος γνώριμος πᾶσιν, ἀφ' ἧς ὁ χάρτης κατασκευάζεται,
> εὔχρηστος δὲ εἰς τὴν ἰατρικὴν χρῆσιν
>
> Papyrus, from which papyrus roll is made, is familiar to all and highly useful in medical practice.
> Dioscorides, *De materia medica* 1.86.1 (trans. Beck)

Those who look closely at the literary and documentary sources will find in them much evidence for the ancient awareness that papyrus could serve medicinal purposes. This evidence mainly concerns the specific cases of the application of the plant or the paper made from it. A comprehensive survey of the data on

This paper grew out of my presentation at the 25th International Congress of Papyrology (Ann Arbor, July 29–August 4, 2007). Unless otherwise stated, all translations are my own. I am most grateful to David Leith and John Lundon for revising my English text and offering invaluable advice.

the use of papyrus in a therapeutic context can contribute to the history of this practice, which was very popular throughout Egypt and beyond.[1]

The aim of the following investigation is to address three related questions.

(i) Our information on the medicinal employment of the plant spans the period from the Egyptian Ebers papyrus, written in the second millennium B.C., through a single Hippocratic citation, to the medical writers of Roman date, such as Celsus, Dioscorides, and Pliny the Elder in the first century A.D., to Galen in the second century A.D. More specifically, papyrus ash served as an ingredient of medical recipes while the paper product functioned as a bandage or a blistering plaster. Moreover, Byzantine medical writers merely repeated the uses of papyrus already known, so that there is no further evidence beyond what can be gained from their predecessors.

(ii) Aside from the knowledge displayed by the medical writers, evidence for the use of papyrus in a therapeutic context is scant. Non-medical sources, however, demonstrate that *Cyperus papyrus* served in everyday life in Egypt as a foodstuff and as a fragrance and substitute for incense.[2]

(iii) Although the medical tradition extending from Hippocrates to Paul of Aegina is conservative and the therapeutic applications recorded by Dioscorides outlived classical antiquity, surviving into the Coptic and Arabic periods, the evidence found in Soranus' *Gynecology* is original and deserves attention. The comparison of the layers of the uterus with the arrangement of fibers in papyrus layers is not referred to elsewhere,[3] and perhaps reveals a close familiarity with the papyrus products with which the distinguished physician became acquainted in the Alexandrian *milieu*.

When we turn to the medicinal employment of the papyrus plant and sheets of writing material, we have to reckon with the terms *papyros* or *byblos*, which can refer to the plant or the artificial product made from it. The words *chartēs*, *chartion*, or *chartarion*, in turn, commonly denoted papyrus rolls or pieces of

1 The sources concerned with the use of papyrus as a drug are conveniently assembled by Naphtali Lewis, *Papyrus in Classical Antiquity* (Oxford: Clarendon Press, 1974), 31, 97, who draws on Egyptian, Greek, and Arabic evidence. For the Latin references, see *Thesaurus linguae Latinae*, vol. X, 1. *papyrus*. I. *de herba*, B.3, and II. *de charta*, B: 259–60 [Paśkiewicz].

2 See Theophr. *odor*. 28: τὸ δὲ χρίσμα τὸ Ἐρετρικὸν ἐκ τοῦ κυπείρου (87 Eigler-Wöhrle-Herzhoff) ("the Eretrian unguent is made from the root of *kypeiron*"); Diosc. *mat. med*. 1.4.1: ῥίζαι … εὐώδεις ("the roots … have a pleasant smell"). The stalks of Cyperacae are said to burn with a pleasant smell: see Bernard P. Grenfell, Arthur S. Hunt, and David G. Hogarth, *Fayûm Towns and Their Papyri* (London: Egypt Exploration Fund, 1900), 17.

3 This passage of Sor. *gyn*. 1.13.1 (10.1–2 Ilberg) is copied by Orib. *coll. med*. 24.31.21–22 (44.3–7 Raeder), as part of a long section taken over from Soranus.

them.[4] Despite the pervasiveness of these words in our Greek and Latin sources, confirmed by the roughly two thousand citations identified through computer-assisted searches in the corpora of both literary and documentary texts, the evidence for the medicinal use of papyrus is strictly confined to technical literature. As far as we know, no non-technical source ever refers to *byblos*, *papyros*, or *chartēs* being employed medicinally.

The results of an extensive study of the evidence can be grouped into the following four categories: (a) no relevant reference to the medicinal use of papyrus in non-medical Greek or Latin literature; (b) around 180 relevant citations of *chartēs* and around 40 of *papyros* in the corpus of Greek medical sources (Hippocrates, Dioscorides, Galen, Severus Iatrosophista, Oribasius, Aëtius of Amida, Alexander of Tralles, and Paul of Aegina);[5] (c) around 40 relevant citations in the

4 Unlike *chartēs*, the foreign origins of both *papyros* and *byblos* have been the subjects of scholarly debate and still remain an open question. While *byblos*/*biblos* might have a Semitic origin and derive from the Phoenician port Byblos, the word *papyros* is said to come from the Egyptian *pa-p-ouro*, denoting "the material of the Pharaoh"; cf. Paul Chantraine, *Dictionnaire étymologique de la langue grecque*, 4 vols. (Paris: Klincksieck, 1968–1980), 856; Lewis, *Papyrus*, 4, with n. 2; Françoise Skoda, "De quelques phytonymes empruntés," *LAMA* 4 (1979): 306–308; Johannes Kramer, *Von der Papyrologie zur Romanistik*, Archiv für Papyrusforschung, Beih. 30 (Berlin: De Gruyter, 2011), §6 ("*Papyrus* in den antiken und modernen Sprachen"), 91.

5 I refer to the relevant instances selectively in what follows. (i) χάρτης κεκαυμένος *vel* πάπυρος (ashes): Diosc. *simpl*. 1.75.2; 78.2; 79; 176; 190.1; 2.54.1; Gal. *de simpl. med. temp. ac fac*. 12.94.13 K.: ἡ τέφρα τοῦ κεκαυμένου χάρτου ("ashes of burnt papyrus sheet"); *de comp. med. sec. loc*. 13.295.17 K.; 13.296.7, 14–15 K.; 13.297.1, 4–5, 9, 13 K.; 13.298.3, 10 K.; 13.299.9, 13 K.; 13.300.5, 16 K.; 13.304.9 K.; 13.305.12 K.; 13.315.18 K.; *de comp. med. per gen*. 13.841.7, 10, 14 K.; 13.852.7, 9, 11, 15 K.; 13.853.2, 8, 12 K.; 13.854.1, 4, 7, 10–11, 13 K.; ps.-Gal. *remed. parab*. 14.324.10 K.; 14.381.3–4 K.; *succed*. 19.728.7 K.; 19.729.5 K.: ἀντὶ ἐλλεβόρου μέλανος ... ῥίζα παπύρου ("instead of black hellebore ... use the root of a papyrus plant"); 19.739.18 K.; Orib. *syn*. 1.19.18; 3.97, 113; *eupor*. 2.5.3; 3.13.4; 4.74.1; *coll. med*. 7.1.5; 8.25.15–16, 19; 10.24.7; 14.23.3; 15.16.3; 50.52.4; *ecl. med*. 54.6–10; *hipp. Berol*. 55.5; *hipp. Par*. 290; *hipp. Lond*. 19; *hipp. Cant*. 100.7; Aëtius Amid. *lib. med*. 6.50; 7.61, 80, 85; 8.25; 9.42; 15.11; Alex. Trall. 2.427.17; Paul. Aeg. 7.3.16 s.v. πάπυρος, 12.1, 24–27, 38; 13.1, 14; 17.36; Paul. Nic. 65.18. (ii) τὸ διὰ χάρτου *vel sim*. (a remedy containing papyrus sheet): Sor. *gyn*. 3.41.8; Gal. *de meth. med*. 10.382.5–6 K.; *ad Glauc. meth. med*. 11.125.8 K.; *de comp. med. sec. loc*. 12.465.16; 466.1, 5, 8; 611.8; 880.1; 13.500.18; 554.3; 853.4 K.; Sever. *clyst*. 39.6–7 Dietz: καὶ τὸ διὰ τῶν χαρτῶν δὲ ἄριστόν ἐστι βοήθημα ("the remedy made from burnt papyrus sheets is the best"); Orib. *syn*. 3.113; 9.34.1; *eupor*. 4.12.11; 101.1; 129; *coll. med*. 8.24.55; 44.12.2; *ecl. med*. 63.7; 83.3–4; 147.14; Aëtius Amid. *lib. med*. 6.68; 9.42; 11.29; 16.62, 119; Paul. Aeg. 3.3.4, 42.4, 45.7, 59.1, 66.3, 75.1; 4.44.5, 48.2; 7.3.16 s.v. πάπυρος, 12.24–25, 13.14, 17.36. (iii) χαρτίον *vel sim*., or παπύριον, as a bandage (or wrapping material, or instrument): Diosc. *mat. med*. 1.8.1: προυποκειμένου χαρτίου ("putting first a small sheet of papyrus underneath"), and Orib. *coll. med*. 12 v 2; Diosc. *mat. med*. 2.76.16: καινῷ ἀποδήσας χάρτῃ ἀποτίθεσο ("then wrap [the fat] in a fresh sheet of papyrus and store it"); *simpl*. 1.183.1: ἐπὶ τῶν περὶ τὸν δακτύλιον συρίγγων σὺν παπυρίῳ ἐντιθεμένη ("it is also useful for perianal fistulas introduced with a small piece of papyrus [i.e., as a

corpus of Latin literary texts (Celsus, Pliny, Columella, Scribonius Largus, Chiron, Q. Serenus, Vegetius, Caelius Aurelianus, Marcellus Empiricus, Pelagonius, Cassius Felix);[6] (d) no evidence of any medicinal use among the approximately 300 occurrences in Greek documentary papyri.

Even the Roman encyclopedist Pliny the Elder, in his account of the usefulness of the papyrus plant in the *Natural History* (13.72),[7] offers no indication of

tampon]"); 1.197.3; Gal. *de meth. med*. 10.1000.12–13 K.: ἵνα χάρτου μαλακὴν καὶ εὔτονον ἐν κύκλῳ περιελίττων ("wrapping a soft and elastic strip of papyrus sheet around"), copied by Orib. *coll. med*. 50.1.1; Gal. *de meth. med*. 10.1001.7–8, 10–11 K.: τὸ χαρτίον ἐν κύκλῳ περιελιττόμενον ..., τοῦ χάρτου σύμμετρον ἐλίττων ἐνθεῖναι ("if not much is missing, it is sufficient, as was said before, to place a small strip of papyrus sheet around"); *de comp. med. sec. loc*. 12.881.2 K.: ἔνδησον εἰς χάρτην ("wrap them in a sheet of papyrus"); 13.339.13–14 K.: καὶ ἄνωθεν ἐπίρριπτε χάρτην καὶ ἔα μέχρις ἀφ' ἑαυτοῦ ἀποστῇ ("put a sheet of papyrus on top and leave it there until it falls off by itself"); ps.-Gal. *remed. parab*. 14.358.1 K.; 14.419.8 K.; 14.444.11 K.; 14.479.16 K.; 14.525.6 K.; Orib. *syn*. 1.15.4; *eupor*. 3.13.4; *coll. med*. 7.21.9: ἔπειτα χαρτίον ὄξει βεβρεγμένον ἐπιθετέον καὶ ἐπιδετέον ("then one should apply and fasten on top a small sheet of papyrus soaked in vinegar"); 10.23.8; 12 σ 48; 44.21.7: ὅταν βρέξας τις ἔτι αὐτῷ πάπυρον ἢ σπόγγον ("if you steep a piece of papyrus or a dried sponge in it [i.e., the caustic]"); 46.30.3: χαρτίῳ σκεπάζων αὐτὸ καὶ οὐκ ὀθονίῳ, ἵνα μὴ διὰ τῶν ἀραιωμάτων ἐκρεύσῃ τὸ φάρμακον ("cover the part with a small sheet of papyrus and not with linen, so that the remedy cannot escape through the holes"); 50.1.1, 4; 5.7–8; *ecl. med*. 74.5; 141.1; *hipp. Berol*. 52.18; 130.129; *hipp. Lugd*. 30; 180; Aëtius Amid. *lib. med*. 3.22; 12.1; 15.11, 15 (ἡ διὰ ψυλλίου, "a plaster bandage with *plantago*"); 16.20, 62, 124; Paul. Aeg. 3.77.4; 6.55.2. (iv) κόλλα, cellulose gum, juice, glue: Aëtius Amid. *lib. med*. 12.53: κόλλης τῶν χαρτῶν τοῦτ' ἔστι γύρεως ἠψημένης ("the glue of papyrus rolls, i.e., fine flour, boiled"). (v) σφαιρίον, a pill: Sever. *clyst*. 41.11–13 Dietz: λαμβάνοντες οὖν τὴν πάπυρον καὶ οἱονεὶ τῇ συναγωγῇ μικρὸν σφαιρίον ποιήσαντες ("we take just the papyrus plant and roll it into a kind of small ball") (add 41.15, 19, 22 Dietz).

6 The references are cited in n. 22 below.

7 Pliny does, however, refer to the medicinal ash obtained from burning papyrus and to its usefulness as a bandage in a number of other passages. Cf. *nat*. 24.88: *Cogn⟨a⟩ta in Aegypto res est harundini papyrum, praecipuae utilitatis, cum inaruit, ad laxandas siccandasque fistulas et intumescendo ad introitum medicamentorum aperiendas. charta, quae fit ex eo, cremata inter caustica est. cinis eius ex vino potus somnum facit. ipsa ex aqua inposita callum sanat* ("of a kindred nature with the reed is the papyrus of Egypt; a plant that is remarkably useful, in a dried state, for dilating and drying up fistulas, and, by its expansive powers, opening an entrance for the necessary medicaments; the ashes of paper prepared from the papyrus are reckoned among the caustics: those of the plant, taken in wine, have a narcotic effect; the plant, applied topically in water, removes callosities of the skin"); 28.61: *extremitates corporis velleribus perstringi contra horrores sanguinemve narium inmodicum, [- – -] lino vel papyro principia genitalium* ("for excessive nose-bleeds, the extremities of the body should be well rubbed, [- – -] the extremities of the generative organs should be tied with a thread of linen or papyrus"); 28.168: *optime e⟨l⟩lychnio papyraceo oleoque sesamino fuligine in novum vas pinnis detersa, efficacissime tamen evolsos ibi pilos coercet* ("the best of all being that made from a wick of papyrus mixed with oil of sesame; the soot removed with feathers into a new vessel; this will prevent the growth of hair

any medicinal application, although he does mention the multiple uses popular in the Egyptian *chōra*. These ranged from the manufacture of such articles as sandals, ropes, crowns, and baskets to the construction of river craft.[8] In the relevant passage of his *Enquiry into Plants*, repeated in part by Pliny, Theophrastus observes succinctly that papyrus served "very many uses" (αὐτὸς δὲ ὁ πάπυρος πρὸς πλεῖστα χρήσιμος, *hist. plant.* 4.8.4). Nevertheless, in the following paragraph he stresses its principal utility as a foodstuff, enumerating the ways in which people could be nourished by its various parts.

> μάλιστα δὲ καὶ πλείστη βοήθεια πρὸς τὴν τροφὴν ἀπ' αὐτοῦ γίνεται. Μασῶνται γὰρ ἅπαντες οἱ ἐν τῇ χώρᾳ τὸν πάπυρον καὶ ὠμὸν καὶ ἑφθὸν καὶ ὀπτόν· καὶ τὸν μὲν χυλὸν καταπίνουσι, τὸ δὲ μάσημα ἐκβάλλουσιν. (Theophr. *hist. plant.* 4.8.4)
>
> But above all the plant also is of very great use in the way of food. For all the natives chew the papyrus both raw, boiled, and roasted; they swallow the juice and spit out the quid. (trans. Hort)

From the absence of any specific evidence in non-technical sources, on the one hand, and the presence of roasted papyrus as an ingredient in the Ebers papyrus, on the other, one might reasonably conclude that any awareness of the plant's therapeutic utility required a significant amount of technical knowledge and professional competence. Thus, although native to Egyptian culture and widely consumed in the countryside, *Cyperus papyrus* never became one of the healing tools of folk medicine but was closely affiliated with practices of professional distinction.

The modern visitors to Egypt who have borne witness to the uses of the plant acknowledged by the Egyptian doctors of the time, such as the famous botanist Prosper Alpinus, who travelled to Egypt in 1580, were intellectual tourists, too.[9]

---

that was removed there"); 28.214: *vitia vero, quae in eadem parte serpunt, iocur eorum combustum … cum charta et arrhenico sanat* ("and for serpiginous affections of those parts, the liver of those animals is used burnt … and mixed with papyrus and arsenic"); 29.106: *Alopecias … inlinunt cum cinere chartae* ("where the hair has been lost through alopecia … apply the ashes of papyrus sheets"); 34.170: *cinis autem usti ad serpentia ulcera aut sordida, eademque quae chartis ratio profectus* ("the ashes of calcined lead are used for serpiginous or sordid ulcers, these producing the same advantageous effects as the ashes of burnt papyrus sheets").

8 For the articles made from *Cyperus papyrus*, see Bridget Leach and John Tait, "Papyrus," in Paul T. Nicholson and Ian Shaw (eds.), *Ancient Egyptian Materials and Technology* (Cambridge: Cambridge University Press, 2000), 227–53.

9 Prosper Alpinus is the first person to provide us with a drawing of the papyrus, which the Egyptians call *berdi:* cf. *Plantes d'Egypte par Prosper Alpin (1581–1584)*. Traduit du latin, présenté et annoté par R. de Fenoyl (Cairo: IFAO, 1980), 110–11. The famous botanist and physician mentions a number of medicinal uses made of *Cyperus papyrus* in his own time: "Les chi-

Referring to the medicinal ash obtained by burning papyrus paper and effective for wounds and eye disorders, Alpinus apparently draws upon sophisticated ancient sources such as Dioscorides and Galen, as will be seen below.

One important clue to the plant's health-promoting potential, however, was the fact that people in Egypt enjoyed eating papyrus prepared in many ways. Another was that some ancient authorities recognized its nutritional value, especially that of its stalk, juices, and roots, whether roasted or not. Herodotus remarks that the lower extremity of the plant was a delicacy when baked on the fire, while Pliny, drawing on Theophrastus, emphasizes the quality of the juice contained in its stalk.[10] Highly instructive, too, is a joke from *The Frogs* by Aristophanes, where the comic poet plays on the terms for papyrus and book by alluding to Euripides as "giving her [i.e., the art of tragedy] the juice of chatterings, pressing it from the books" (χυλὸν διδοὺς στωμυλμάτων, ἀπὸ βιβλίων ἀπηθῶν, 943). Although this custom was regarded as typically Egyptian by Herodotus, Theophrastus, Diodorus of Sicily, and Pliny, the Greek settlers themselves progressively introduced papyrus into their diet.[11]

---

rurgiens égyptiens utilisent la *moelle* pour élargir les lèvres des ulcères. La *cendre* faite avec le *rouleau* leur sert à guérir les ulcères récents et aussi à empêcher les ulcères pernicieux de s'étendre (si on les en saupoudre fréquemment). Avec les *rouleaux frais*, on fait un distillat très efficace contre la cataracte, l'obscurcissement et l'affaiblissement de la vue" (110). The enduring appreciation of the medicinal value of papyrus is confirmed by a thirteenth-century Arabic author, the botanist Abû-l-'Abbâs an-Nabâtî, who remarks that "man verwendet ihn [i.e., den Papyrus] bei der ärztlichen Behandlung" (trans. Adolf Grohmann, *Allgemeine Einführung in die arabischen Papyri* [Vienna: F. Zöllner, 1924], 36).

10 The most important passages are Hdt. 2.92.5: τὴν δὲ βύβλον τὴν ἐπέτειον γινομένην ἐπεὰν ἀνασπάσωσι ἐκ τῶν ἑλέων, τὰ μὲν ἄνω αὐτῆς ἀποτάμνοντες ἐς ἄλλο τι τρέπουσι, τὸ δὲ κάτω λελειμμένον ὅσον τε ἐπὶ πῆχυν τρώγουσι καὶ πωλέουσι. οἳ δὲ ἂν καὶ κάρτα βούλωνται χρηστῇ τῇ βύβλῳ χρᾶσθαι, ἐν κλιβάνῳ διαφανέι πνίξαντες οὕτω τρώγουσι ("they also use the papyrus which grows annually: it is gathered from the marshes, the top of it cut off and put to other uses, and the lower part, about twenty inches long, eaten or sold; those who wish to use the papyrus at its very best, roast it before eating in a red-hot oven"); Theophr. *hist. plant.* 4.8.2–4 (cited above); Diodor. Sic. 1.80.5–6: καὶ τῶν ἐκ τῆς βύβλου πυθμένων τοὺς δυναμένους εἰς τὸ πῦρ ἐγκρύβεσθαι, καὶ τῶν ῥιζῶν καὶ τῶν καυλῶν τῶν ἐλείων τὰ μὲν ὠμά, τὰ δ' ἕψοντες, τὰ δ' ὀπτῶντες, διδόασιν ("they give their children such stalks of the papyrus plant as can be roasted in the coals, and the roots and stems of marsh plants, either raw or boiled or baked"); Plin. *nat.* 13.72: *mandunt quoque crudum decoctumque, sucum tantum devorantes* ("they chew it also, both raw and boiled, though they swallow the juice only").

11 See, for example, Ulrich Wilcken, *Urkunden der Ptolemäerzeit (ältere Funde)*, vol. 1 (Berlin: De Gruyter, 1927), 409 n. 8, and his comments on documents 91–93, 96, where "Papyrusstengel" are recommended for food. The ancient evidence dealing with the importance of papyrus as a foodstuff has been collected by Georg Wöhrle, "Papyrophagie," in Raimar Eberhard et al. (eds.), *"... vor dem Papyrus sind alle gleich!" Papyrologische Beiträge zu Ehren von Bärbel Kramer (P.*

As for specifically medicinal applications of both the papyrus plant and the paper made from it, our evidence goes back to the Egyptian pharmacopoeia of the Ebers papyrus, written about 1500 B.C.

"Roasted papyrus" figures prominently in a few prescriptions dealing with external remedies. "Papyrus ash" was applied effectively with other drugs in a bandage for stiff limbs (*P. Ebers* 669) and in an eye compress (*P. Ebers* 340). "Cooked unwritten papyrus," furthermore, mixed together with "wax, oil, and *wah*-legume" appears to be active in the fourth day of a cure to relieve the pain of a burn (*P. Ebers* 482):

> The beginning of remedy against burn (i.e., *combustio*). ...What is done the fourth day: wax, grease of ox, papyrus are burnt with manna, mixed together, and (it) is bandaged therewith. (trans. Ebbell)[12]

In particular, the last of these Egyptian recipes can serve as a link to other pieces of evidence for a Greek tradition in the therapeutic use of papyrus sheets.

The value assigned by the Egyptians to the ash obtained by burning papyrus is subsequently confirmed in a Greek context by a single citation surviving in Hippocrates' *Diseases of Women*. Here we come across a plant remedy native to Egypt in a gynecological text probably going back to the fifth century B.C.[13] Together with squill, ashes, white lead, and myrrh, the "third part of the ash resulting from a burnt papyrus sheet" is recommended in a poultice good for diseases of the eye.[14]

Kramer), Archiv für Papyrusforschung, Beih. 27 (Berlin: De Gruyter, 2009), 243–47. Lewis, *Papyrus*, 22–23 remains a useful analysis.

12 A German translation is given by Wolfhart Westendorf, *Handbuch der altägyptischen Medizin*, 2 vols., Handbuch der Orientalistik I 36.1–2 (Leiden: Brill, 1999), 2:632. The Copts also appreciated the powder of the burnt plant and of the burnt sheets, which figures in the recipes of the Chassinat papyrus (*Ch.* 121, 165, 177, 178): cf. Walter C. Till, *Die Arzneikunde der Kopten* (Berlin: Akademie Verlag, 1951), 83, 122 ("Ein Papyruspulver gegen Geschwüre"), and 125 ("Asche von hieratischem Papyrus"; "verbrannter neuer Papyrus"; "Ein Papyruspulver für die Zähne"); Lisa Manniche, *An Ancient Egyptian Herbal* (Austin, Tx.: University of Texas Press & British Museum Publications, 1989), 99–100 (*Cyperus papyrus* L.).

13 Ingredients native to Egypt appear in a number of Hippocratic gynecological prescriptions. See Laurence M. V. Totelin, *Hippocratic Recipes: Oral and Written Transmission of Pharmacological Knowledge in Fifth- and Fourth-Century Greece*, Studies in Ancient Medicine 34 (Leiden: Brill, 2009), 179–84, on the relation of the Hippocratic recipes to Egyptian medicine.

14 On this dry poultice, see Dietlinde Goltz, *Studien zur altorientalischen und griechischen Heilkunde. Therapie – Arzneibereitung – Rezeptstruktur*, Sudhoffs Archiv, Beih. 16 (Wiesbaden: Steiner Verlag, 1974), 221.

> Παράπαστον· μόλιβος κεκαυμένος καὶ σποδὸς ἴσα, σμύρνης δέκατον μέρος, ὀποῦ μήκωνος σμικρόν, οἶνος παλαιός· ξηρὰ τρίψας χρῶ. Σκίλλα, καὶ σποδοῦ τρίτον μέρος, καὶ ψιμυθίου, τρίτον μέρος χάρτου κεκαυμένου, μέρος δέκατον σμύρνης. (Hipp. *mul.* I 105, 8.228.20–23 L.)
>
> A dry poultice. The same amount of burnt lead and of lead oxide, the tenth part of myrrh, a bit of poppy juice, old wine; grind together the dry ingredients and use. Squill, the third part of lead oxide and of white lead, the third part of a burnt papyrus sheet, the tenth part of myrrh.

Among the Greek medical writers of the Roman period, Dioscorides is the first to report accurately that the Egyptians ate the papyrus root and swallowed the juice. Dioscorides' entry on *papyros* in his *De materia medica* is concise but exhaustive, apparently providing the basic information for descriptions compiled later or expanded in turn by Galen, Oribasius, Aëtius of Amida, Alexander of Tralles, and Paul of Aegina.[15]

> πάπυρος γνώριμος πᾶσιν, ἀφ' ἧς ὁ χάρτης κατασκευάζεται, εὔχρηστος δὲ εἰς τὴν ἰατρικὴν χρῆσιν, πρὸς ἀναστόμωσιν συρίγγων σκευασθεῖσα διάβροχος περιειλουμένου λίνου ἄχρι ξηρασίας· στεγνουμένη γὰρ καὶ καθιεμένη ἐμπίπλαται ὑγρασίας καὶ ἐξοιδοῦσα διανοίγει τὰς σύριγγας. ἔχει δέ τι ἡ ῥίζα αὐτῆς καὶ τρόφιμον· διαμασώμενοι γοῦν αὐτὴν οἱ ἐν Αἰγύπτῳ ἀποχυλίζουσιν ἐκπτύοντες τὸ διαμάσημα, χρῶνται δὲ καὶ ἀντὶ ξύλων αὐταῖς. ἡ δὲ κεκαυμένη πάπυρος ἄχρι τεφρώσεως δύναται νομὰς ἐπέχειν τὰς ἐν στόματι καὶ παντὶ μέρει· βέλτιον δὲ ὁ χάρτης καεὶς δρᾷ τὸ τοιοῦτον. (Diosc. *mat. med.* 1.86 = 1:81.18–82.5 Wellmann)
>
> Papyrus, from which papyrus roll is made, is familiar to all and highly useful in medical practice for opening fistulas: it is prepared, after it has been soaked, by wrapping it with a linen thread, until it dries. For as it is inserted compressed, it becomes filled with moisture and, as it swells, it opens the fistulas. Its root, moreover, has something that is even nutritive: the people in Egypt, after chewing it, extract its juice and spit out the chewed matter; they also use these reeds for timber. Papyrus that is burned to ashes keeps in check sores in the mouth and everywhere else; but papyrus roll that was set on fire does this kind of thing better. (trans. Beck)

While remarking on the general reputation of papyrus as a writing material, Dioscorides focuses on the following therapeutic purposes. (a) The substances of the papyrus plant exhibit cicatrizing properties. If applied moistened as a lotion, papyrus helps to cure ulcers; when prepared as a dry compress for open wounds, it helps to keep them dry. (b) Ulcers of the mouth or in other areas benefit from the local use of papyrus ash. (c) Finally, Dioscorides points out that the ash obtained from direct combustion of papyrus sheets was regarded as having a more

15 See above n. 5.

potent therapeutic effect.[16] This variation in the cicatrizing properties ascribed to different products of the plant, perceptively observed by the ancient pharmacologist, is probably due to the mineral elements present in the plant, which increase their drying effects in the paper-making process.[17]

As it bends without breaking and is extremely light, papyrus paper competed with linen as a means of bandaging the affected part of the body in combination with various poultices. Strips of papyrus served on occasion as bandages, but far more frequent was the use of papyrus sheets of different sizes as a sort of band-aid to hold the poultice in place on the affected part of the body.[18]

Not surprisingly, evidence for papyrus in local therapeutic practices is provided by the mention of these specific applications in medical papyri of the early Roman period excavated in the temple context of Tebtunis in Egypt (*PSI* X 1180 and *P. Tebt.* II 273).[19]

Indeed, papyrus was a favorite healing aid within such a context. In the recipes surviving in the Greek receptarium, ashes of burnt papyrus soaked in water are the component of a lotion used specifically to treat leprosy, while a small

16 This statement is adopted by Galen, who stresses the weakness of the ash produced from the burning of the plant (ἐπειδὰν δὲ καυθῇ, φάρμακον ἤδη γίνεται ξηραντικόν, ὥσπερ καὶ ἡ τέφρα τοῦ κεκαυμένου χάρτου, πλὴν ὅσον ἀσθενεστέρα ἐστὶν ἡ τῆς παπύρου, *de simpl. med. temp. ac fac.* 12.94.12–14 K.; "if it is burnt, it already turns into a drying remedy, the same as the ashes of burnt [manufactured] papyrus, with the only difference that the ash of the plant is less powerful"), and later by Orib. *eupor.* 2.5.3; *coll. med.* 10.23.8; 15.16.3. The same passage recurs in Paul. Aeg. 7.3.16 s.v. πάπυρος.

17 The healing properties of the papyrus plant are apparently due to the approximately 60 % cellulosic material in the stems, and to the high mineral concentrations (potassium, sodium, calcium, magnesium, iron, and manganese). As papyrus swamps present considerable surfaces for the absorption of substances, large amounts of nutrient elements are incorporated into the plant. Modern analysis of *Cyperus papyrus* L. has indicated that the amount of nutrients accumulated by papyrus is higher than that of most other macrophytes. Cf. John J. Gaudet, "Mineral Concentrations in Papyrus in Various African Swamps," *Journal of Ecology* 63 (1975): 483–91 (with earlier bibliography).

18 Evidence for these applications is further supplied by Diosc. *simpl.* 1.183.1 (3:221.12–13 Wellmann): ποιεῖ καὶ ἐπὶ τῶν περὶ τὸν δακτύλιον συρίγγων σὺν παπυρίῳ ἐντιθεμένη ("it also works for perianal fistulas introduced into them with a small piece of papyrus") and *simpl.* 1.197.3 (3:226.11–12 Wellmann): δεῖ δὲ προαναστομοῦν τὰς σύριγγας σπογγίῳ ἢ παπύρῳ ἐσκελετευμένοις ("it is necessary to open up the fistulas first with a dried sponge or piece of papyrus").

19 Full editions in Isabella Andorlini, "Un ricettario da Tebtynis: parti inedite di PSI 1180," in Isabella Andorlini (ed.), *Testi medici su papiro; atti del Seminario di Studio (Firenze, 3–4 giugno 2002)* (Florence: Istituto Papirologico "G. Vitelli," 2004), 81–118, and in Ann E. Hanson, "A Receptarium from Tebtunis," in Isabella Andorlini (ed.), *Greek Medical Papyri* II (Florence: Istituto Papirologico "G. Vitelli," 2009), 71–103 (no. 5), respectively.

sheet of medicated paper (i.e., *chartarion*) is applied locally for lichen.[20] This extensive collection of recipes for treating dermatological conditions was compiled in the late first or early second century A.D. and increases our evidence for the adaptation of recipes to an Egyptian environment by revealing the penetration of Egyptian elements into a Greek text produced in a culturally indigenous *milieu*.[21] Furthermore, a small quantity of *chartēs* appears in another receptarium from Tebtunis dated to the late second century A.D., where an eye-salve is prescribed (*P. Tebt.* II 273, col. VI, 9 χάρτου (δρ.) α).

Even a cursory glance at the Latin evidence on the subject reveals that this tradition is neither independent nor original with respect to the Greek one.[22] Cel-

20 *PSI* X 1180, fr. A, col. II, 10–11: πρὸς λέπρας, ἐὰν ἐκ|δέρῃς αὐτάς, βάμμα παπύρου κεκαυμ(ένης) ("against leprosy: when you have scraped off these lesions, prepare an ointment with burnt papyrus"); fr. A, col. III, 5–7: τὸν λιχῆνα προεζμησάμενον κα|τάχριε καὶ ἔξωθεν ὑγρὸν· ἐπάνω δὲ | το[ῦ] φαρμάκου χαρτάριον ἐπίθες ("scrape the area affected by lichen first, smear with the finest meal externally; then cover the application with a bandage made from a papyrus sheet"). Burnt papyrus also figures in a pill prescribed in *P. Ant.* III 127, fr. 2, 5, where the ash is considered to be effective against dysentery.

21 Cf. Andorlini, "Un ricettario da Tebtynis," 91.

22 The relevant references concern (i) the ash, *charta combusta*, or *chartae combustae cinis:* Cels. 5.22.2b, 5; 6.4.3, 15.1, 19.2; Scrib. Larg. *comp.* 114, 237; Q. Ser. 139: *cerussam et chartam, quam gens Aegyptia mittit* ("white lead and papyrus are materials that come from Egypt"); Chiron 88: *si fistula facta fuerit, curabis, … papyro* ("if a fistula results, treat it with a piece of papyrus"); 92; Veg. *mulom.* 2.13.5; 23.2; 27.3: *papyri iniectione* ("by inserting a piece of papyrus"); 96: *fistulae curantur papyro* ("fistulas are treated with papyrus"); Cael. Aur. *chron.* 4.8.117: *chartae exustae* ("[a dose] of burnt papyrus sheet"); Marcell. *med.* 34.101: *ad uarices … lanuginem de papyro adpone …* (*id est illam lanuginem, quae uiridi papyro in summitate est quasi paniculae eminentis*) ("apply the soft tufts of papyrus to varicose veins, i.e., those soft tufts on top of the green papyrus plant that stand out"); Pelagon. 134: *chartam puram combures et bibere dabis cum vino veteri* ("burn a piece of clean papyrus and give it to drink with old wine"); 344; and (ii) the bandage, strip (or instrument): Cels. 5.28.12K: *facile tamen est callum quibuslibet adurentibus medicamentis erodere: satis est vel papyrum intortum vel aliquid ex penicillo in modum collyri adstrictum eo inlini* ("it is easy to eat away the callus with any of the caustic medicaments; it is enough to smear one of them on rolled papyrus, or upon a pledget of wool twisted into the shape of a tent"); Colum. 6.6.4: [i.e., *sanguis*] *inhibetur papyri ligamine* ("[the blood] is stopped by tying [the tail] with a strip of papyrus"); Veg. *mulom.* 2.57.1; 4.4.4: *papyro ligata cauda restringitur* ("the blood is stopped with a strip of papyrus tied round the tail"); Marcell. *med.* 10.43; 58: *papyrus … involuta naribus inseratur* ("by wrapping up a piece of papyrus, insert it through the nose"); Cass. Fel. 20.3: *angustas cavernulas … papyro patefacies. quod papyrum sic praeparabis. papyrum vitriariorum eliges carnosum, id est quod non fuerit fragile vel flaccidum …, et iterum alio papyro paulo robustiore mutabis* ("for opening the narrow hollows (of the fistulas) use a piece of papyrus; prepare the papyrus in this way: choose a fleshy papyrus such as used in the manufacture of glass, i.e., that is not fragile or flaccid … and then, replace it with another and more robust papyrus").

sus, Pliny, Scribonius, and Caelius Aurelianus all include papyrus as a component (i. e., *charta combusta*) of twenty or so prescriptions for diseases of the skin.

We can thus summarize the results of the foregoing analysis by organizing the range of the medical applications of papyrus under a few main headings. First, given its mildly caustic and desiccating properties, papyrus ash served as a medicinal ingredient; also, the ash of the roasted papyrus plant or sheets was valued as an antiseptic and drying agent mixed into various external remedies for wounds, ulcers, and surgical incisions. Second, by far the most common use of papyrus documented in our Greek medical sources is its application in an often cited plaster named after papyrus as its characteristic ingredient (τὸ διὰ χάρτου).[23] Third, papyrus paper was popularly employed instead of linen as a means of keeping the poultice in place on the affected parts of the body, as attested in a Greek papyrus as early as the late first century A. D.[24]

Besides the points raised earlier, two other topics of interest concern the widespread presence of papyrus within the sophisticated *milieu* of the frontier capital, Alexandria, often considered the cradle of advanced medical education.

The evidence of Soranus of Ephesus, the distinguished Methodist physician active in the late first century A. D. and early second century A. D., requires brief discussion here. According to the biographical data provided by our sources, Soranus spent the first part of his career at Alexandria in Egypt, where he probably studied anatomy and gained firsthand experience in everyday anatomical practice.[25] Soranus' *Gynecology* contains many instructions for the treatment and care of women. The author uses the terms *papyros* and *chartēs* in only three passages, one of which refers, however, to the traditional employment of papyrus in vaginal suppositories as an astringent agent.[26] Discussing the anatomy of the uterus in the first book of his *Gynecology*, Soranus describes the tunics (χιτῶνες) by analogy with layers of papyrus (i. e., ἶνες, a term used for the fibrous

23 See above n. 5 (ii).

24 See above n. 20.

25 Cf. Sudae *Lexicon*, Σ 851 and 852 (4.407.20–27 Adler). For Soranus (*fl.* 98–138 A. D.), see now Monica Green and Ann E. Hanson, "Soranus of Ephesus: *Methodicorum princeps*," in Wolfgang Haase (ed.), *Aufstieg und Niedergang der römischen Welt*, II.37.2 (Berlin: De Gruyter, 1994), 968–1075.

26 Cf. Sor. *gyn.* 3.41.8 (121.1–2 Ilberg): εἰ δὲ πρὸς ἀνάβρωσις εἴη, καὶ τῷ διὰ χάρτου μέλανι μετ' ὄξους ἤ τινι τῶν πρὸς τοὺς δυσεντερικοὺς ἀναγραφομένων τροχίσκων ("if, besides, there is an erosion, one should also use the 'black remedy' made of papyrus, together with vinegar, or any of the troches that are prescribed for dysentery" [trans. Temkin]).

tissues of the human body).[27] He describes the features of the membranes as follows:

> ἡ δὲ ὅλη μήτρα συνέστηκεν ἐκ δυοῖν χιτώνων ἐναντίως ἑαυτοῖς ἐσχηματισμένων ἐμφερῶς ταῖς τῶν χαρτῶν ἰσίν. ὁ μὲν οὖν ἔξωθεν νευρωδέστερός ἐστι καὶ λειότερος καὶ σκληρότερος καὶ λευκότερος, ὁ δὲ ἔσωθεν σαρκωδέστερος καὶ δασύτερος καὶ ἁπαλώτερος καὶ ἐνερευθέστερος, δι' ὅλου μὲν καταπεπλεγμένος ἀγγείοις, πλείοσιν δὲ καὶ ἀξιολόγοις κατὰ τὸν πυθμένα καὶ τοῦ σπέρματος ἐκεῖ κολλωμένου καὶ τῆς καθάρσεως ἐκεῖθεν φερομένης. οἱ μέντοι δύο χιτῶνες οὗτοι συνέχονται πρὸς ἀλλήλους ὑμέσι λαγαροῖς καὶ νεύροις, ὥστε πολλάκις ἐπεκτεινομένων αὐτῶν προπίπτειν τὴν ὑστέραν, τοῦ μὲν νευρώδους χιτῶνος κατὰ χώραν μένοντος, τοῦ δὲ ἔσωθεν κατ' ἐκτροπὴν προπίπτοντος. (Sor. *gyn*. 1.13.1–2 = 10.1–12 Ilberg)
>
> The whole uterus is composed of two layers which are arranged crosswise, similarly to the strips of papyrus. The outer layer is relatively sinewy, smooth, hard, and white whereas the inner layer is fleshy, rough, soft, and reddish. The latter is interwoven throughout with vessels, which, however, are more numerous and noteworthy in the region of the fundus, since it is here that the seed adheres and since from here the menses are produced. Now these two layers are interconnected by flexible membranes and nerves and if these are often stretched, the uterus may prolapse, the sinewy layer remaining in its place, whereas the inner layer prolapses by eversion. (trans. Temkin)

This explicit comparison is used by way of illustration and has the ring of authenticity. Soranus' detailed knowledge of the uterine tunics is apparently the result of his own investigation of the female organs, likely carried out at Alexandria within an anatomical tradition going back to Herophilus' remarkable investigations.[28] The image of two separate overlapping layers of tissue opposite

27 Galen adopts the term *is* for a tape consisting of a single papyrus strip, which has to be soft and resistant, in a surgical context where he offers bandaging directions: cf. Gal. *de meth. med*. 10.1000.14–16 K.: καὶ τὸ τῆς ἰνὸς πέρας ἐπικολλᾶν χρὴ διὰ κόμμεως τῷ ὑποβεβλημένῳ ἄνω μέρει τῆς ἰνός· ἐν τάχει τε γὰρ ξηραίνεται καὶ ἀλύπως σφίγγει … ὃ καὶ μετὰ τὸ κολλῆσαι τὴν ἵνα ῥᾳδίως ἐξαιρήσεις ("it is also necessary to smear the upper edge of the strip with gum by placing it underneath, for then it dries quickly, and binds painlessly … something you will remove easily after gluing the strip of papyrus" [trans. Johnston-Horsley]); and above, n. 5 (iii). In a philological context, furthermore, he uses *is* for a strip of a papyrus roll containing writing which has become detached and lost (*in Hp. epid. VI comm*. prooem., 17A.794.17–795.1–2 K. [= 4.12–13 Wenkebach]): δυνατὸν γὰρ δὴ οὕτως καὶ λεπτῆς ἰνὸς ἀπολωλυίας συναπολέσθαι τὴν γραμμὴν ταύτην ("thus it is possible that, having lost a thin strip, one has lost the corresponding letter").
28 Cf. Heinrich von Staden, *Herophilus: The Art of Medicine in Early Alexandria* (Cambridge: Cambridge University Press, 1989), 139–53. The tradition of continuous skeletal anatomy or dissection at Alexandria beyond the time of Herophilus and Erasistratus, however, is a controversial issue, cf. von Staden, *Herophilus*, 142, 146, and Vivian Nutton, "Galen in Egypt," in Jutta Kollesch and Diethard Nickel (eds.), *Galen und das hellenistische Erbe*, Sudhoffs Archiv, Beih. 32 (Stuttgart: Steiner, 1993), 11–32, at 15–17.

one another is compatible both with female anatomy and with the layers of papyrus strips laid across one another at right angles.[29]

In a passage from the second book dealing with obstetric practice, Soranus describes the task of the midwife at the final stage of childbirth.

> λοιπὸν δὲ ἡ μαῖα δι' ἑαυτῆς ἀποδεχέσθω τὸ ἔμβρυον, προϋποβεβλημένου ῥάκους κατὰ τῶν χειρῶν ἤ, ὡς αἱ ἐν Αἰγύπτῳ ποιοῦσιν, λεπτῆς παπύρου ξεσμάτων πρὸς τὸ μήτε ἀπολισθάνειν αὐτὸ μήτε θλίβεσθαι, τρυφερῶς δὲ ἐφεδράσθαι. (Sor. *gyn.* 2.6.4 = 55.5–8 Ilberg)
>
> Finally the midwife herself should receive the infant, having first covered her hands with pieces of cloth or, as those in Egypt do, with scraps of thin papyrus, so that it may neither slip off nor be squeezed, but rest softly. (trans. Temkin)

The obstetric practice to which Soranus refers here is the use of the woody root of the mature papyrus plant, attesting to the enduring popularity of an Egyptian custom.[30]

Both the comparisons, originating with Soranus and not repeated elsewhere, exhibit sophistication and reveal the author's predilection for integrating narrative discussion with etymologies, analogies, and learned digressions. Furthermore, the appropriate distinction between the term *chartēs*, referring to papyrus paper in the former citation, and the word *papyros*, denoting the plant in the latter, seems to reflect scholarly readings and firsthand experience gained in various local contexts.

Although Soranus' comparison between the uterine tunics and papyrus layers does not occur elsewhere, this stylistic device is encapsulated in Meletius' description of the ocular tunics in his *On the Constitution of Man* 2 (63.7–10 Cramer), a passage repeated verbatim in Leo the Physician's *Epitome On the Nature of Man*, or *Synopsis* 35 (30.20–22 Renehan). The dates of the two Byzantine writers remain controversial, ranging from the ninth to the late twelfth or early thirteenth century.[31]

---

29 See, for example, the drawing of the uterine layers in Enzo Brizzi et al., *Anatomia topografica* (Milan: Edi. Ermes, 1978), 392–95.

30 The ξέσματα are the shavings produced by peeling either the stem or the root of the papyrus plant. This procedure echoes Theophr. *hist. plant.* 4.8.4, where he remarks that "the Egyptians use the roots instead of wood, not only for burning but also for making all kinds of utensils" (χρῶνται δὲ ταῖς μὲν ῥίζαις ἀντὶ ξύλων οὐ μόνον τῷ κάειν ἀλλὰ καὶ τῷ σκεύη ἄλλα ποιεῖν ἐξ αὐτῶν παντοδαπά).

31 It is customary to place Meletius the Monk and Leo the Physician, whose *Epitome* is a series of excerpts from the similar work of Meletius, tentatively in a ninth- and tenth-century context. For other views on their chronology, see Robert Renehan, "Meletius' Chapter on the Eyes: An Unidentified Source," in *Symposium on Byzantine Medicine*, *Dumbarton Oaks Papers* 38 (1984),

Meletius' exposition of the number and character of the ocular tunics furnishes the nomenclature for a four-tunic system which corresponds to our retina (ὁ ἀμφιβληστροειδής), uvea (ὁ ῥαγοειδής), cornea (ὁ κερατοειδής), and conjunctiva (ὁ ἐπιπεφυκώς) 2 (68.3–70.3 Cramer). In another informative paragraph, whose source is not named, Meletius not only gives the various words for the tunics in Greek but also provides the etymologies of these words. To describe the nervous structure of the retina, Meletius uses the comparison with papyrus and makes the etymology explicit by stating that the internal tunic was so called because of its similarity to a net:

> Διασχίζεται δὲ τὰ νεῦρα εἰς τὰς θαλάμους, ὥσπερ εἴ τις λαβὼν πάπυρον, ταύτην εἰς λεπτὰ κατατεμὼν διασχίζει, ἀναπλέκει τε πάλιν, καὶ ποιεῖ χιτῶνα τὸν λεγόμενον ἀμφιβληστροειδῆ, ὅμοιον ἀμφιβλήστρῳ· ὄργανον δὲ τοῦτο θηρευτικὸν ἰχθύων. 2 (63.7–11 Cramer)[32]
>
> And the nerves are split apart in the thalami as if someone, taking a papyrus and splitting it into fine pieces, entwines it again and makes the so-called net-like tunic in similar fashion to a net; this is an instrument for catching fish.

The correlation between fibrous tunics and strips of papyrus, apparently the result of personal examination, might reflect a mannerism of the original writer on whom Meletius heavily depends. It could be argued that the explicit comparison of papyrus with the uterine membranes introduced by Soranus and with the ocular tunics by Meletius must have been easily understood by readers familiar with both the fibrous nature of papyrus and the construction of the sheet. That this stylistic feature is redeployed in another context by Meletius leads us to believe that he had access to a medical work of some importance or to an abridgement of an otherwise lost treatise. The points of resemblance in the accounts of Soranus, Meletius, and Leo, all of whom adopt the same comparative clause ("just as ..., so also"), provides us with an excellent clue for narrowing down the possible sources of Meletius' chapter on the eye. Although little is known of Soranus' work on the names and etymologies of the parts of the

159–68 (esp. 159 n. 5), and Anna Maria Ieraci Bio, "Leone medico," in Antonio Garzya et al. (eds.), *Medici bizantini* (Turin: UTET, 2006), 787–99. Meletius' work was printed by John Anthony Cramer, *Anecdota Græca e codicibus manuscriptis bibliothecarum Oxoniensium*, vol. 3 (Oxonii: Typogr. Academ., 1836; repr. Amsterdam: Hakkert, 1963), 1–157.

32 Meletius' account, with minor variations, is repeated in Leo medic. *de nat. hom. syn.* 35 (30.20–23 Renehan): διασχίζονται δὲ ἐν τοῖς θαλάμοις ὥσπερ τις, λαβὼν πάπυρον, ταύτην εἰς λεπτὰ κατατεμὼν ἀναπλέκει τε πάλιν καὶ ποιεῖ χιτῶνα τὸν λεγόμενον ἀμφιβληστροειδῆ ὁμοίως ἀμφιβλήστρῳ· ὄργανον δὲ τοῦτο θηρευταῖς ἰχθύων ("[and the nerves] are split apart in the thalami as if someone, taking a papyrus and splitting it into fine pieces, were to entwine it again and make the so-called net-like tunic similar to a net; this is an instrument for hunters of fish").

body, at least Meletius' section on the optic nerves and the four tunics of the eye has been shown to go back to Soranus.[33] Despite the predilection of Soranus for explaining his points by means of analogy (e.g., ὡς, ὥσπερ, ... καί, *gyn*. 1.16, or ὥσπερ καί ... οὕτως καί, *gyn*. 1.40, or καθάπερ γάρ, ... οὕτω καί, *gyn*. 1.35), it is not inconceivable that Soranus himself relied on Hellenistic models.[34] As we have seen, Soranus' adult career began with studies in Egypt, where he became familiar with the dissections of the uterus undertaken by Herophilus in Alexandria and with specifically obstetric practices.[35]

* * *

The selection of topics and ideas that I have put forward creates a picture of a multicultural environment where book-learning and practical training could interact and where Greek physicians managed to pick up therapies or drugs validated by direct experience. Medical studies and the papyrus industry flourished in Alexandria, for a long time the city where Greek doctors travelling to Egypt could achieve fame and fortune and become familiar with the wide variety of

33 Cf. Meletius' *On the Constitution of Man*, 2 (Περὶ ὀφθαλμῶν) (61–72 Cramer). For a discussion of methods of detecting the "anonymous treatise embedded in the pages of Meletius," see Renehan, "Meletius' Chapter on the Eyes," 166–68.

34 Herophilus (ca. 330/20–260/50 B.C.), for example, was credited with works on the anatomy of both the reproductive organs and the eye (see von Staden, *Herophilus*, T61, T87–89 with commentary; T193–96, and p. 300). It has been persuasively argued that the "four-coat" scheme of the anatomy of the eye originated with Herophilus, who also compared the ῥαγοειδής membrane of the eye to a grape skin and the third coat (i.e., the retina) to a casting net (cf. Ruf. *onom*. 153 [154.9–10 Daremberg-Ruelle]: ἐπειδὴ δὲ Ἡρόφιλος εἰκάζει αὐτὸν ἀμφιβλήστρῳ ἀνασπωμένῳ, ἔνιοι καὶ ἀμφιβληστροειδῆ καλοῦσιν, "since Herophilus, however, compares it [the third coat] to a casting-net that is drawn up, some also call it net-like"; and ps.-Ruf. *anat*. 15 [171–72 Daremberg-Ruelle]). Nonetheless, any comparison with papyrus is absent from testimonia to Herophilus.

35 Cf. Sor. *gyn*. 1.10 (8 Ilberg), 3.2–3 (94–95 Ilberg) (with regard to Herophilus' anatomy), or 2.6 (54–55 Ilberg) (referring to Egyptian midwives), and the fuller text of the papyrus fragment of *gyn*. 3.2–3 (*PSI* II 117, fourth c. A.D.), which preserves a passage that is missing from the *Par. Gr.* 2153, where the similarity between the membrane (ὁ χιτών) in the female and that in the male is explicitly described (cf. *recto*, 14–15: ὁ μὲν ἔνδοθεν |[αὐτῆς] χιτὼν σαρκωδέστερός ἐστιν ("the inner membrane of the uterus is fleshier"); *recto*, 16–18: ὁ |[δὲ ἔξωθεν πε]ριτενὴς καὶ λεῖος ὁμοιούμενος|[? ("while the outer membrane is taut and thin like it"). On this direct testimony, see Isabella Andorlini, "Riconsiderazione di PSI II 117: Sorani *Gynaecia*," in Véronique Boudon-Millot, Alessia Guardasole, and Caroline Magdelaine (eds.), *La science médicale antique: nouveaux regards: études réunies en l'honneur de Jacques Jouanna* (Paris: Beauchesne, 2007), 41–71 (esp. 56).

uses of *Cyperus papyrus*, at that time the principal resource for transmission of the written word.[36]

That Soranus could have combined his intellectual interests there with those of a practicing anatomist and clinician is assured by the familiarity he displays not only with the anatomy of the human body, but also with the "anatomy of the papyrus roll."[37]

Bibliography

Alpin, Prosper. *Plantes d'Egypte par Prosper Alpin (1581–1584)*. Traduit du latin, présenté et annoté par R. de Fenoyl (Cairo: IFAO, 1980).

Andorlini, Isabella. "Riconsiderazione di PSI II 117: Sorani *Gynaecia*," in Véronique Boudon-Millot, Alessia Guardasole, and Caroline Magdelaine (eds.), *La science médicale antique: nouveaux regards: études réunies en l'honneur de Jacques Jouanna* (Paris: Beauchesne, 2007), 41–71.

Andorlini, Isabella. "Un ricettario da Tebtynis: parti inedite di PSI 1180," in Isabella Andorlini (ed.), *Testi medici su papiro; atti del Seminario di Studio (Firenze, 3–4 giugno 2002)* (Florence: Istituto Papirologico "G. Vitelli," 2004), 81–118.

Beck, Lily Y., trans. *Pedanius Dioscorides of Anazarbus, De materia medica*, Altertumswissenschaftliche Texte und Studien 38 (Hildesheim: Olms-Weidmann, 2005).

Boudon-Millot, Véronique, and Jacques Jouanna. *Galien, Ne pas se chagriner,* t. IV (Paris: Les Belles Lettres, 2010).

Brizzi, Enzo, et al. *Anatomia topografica* (Milan: Edi. Ermes, 1978).

Chantraine, Paul. *Dictionnaire étymologique de la langue grecque*, 4 vols. (Paris: Klincksieck, 1968–1980).

Cramer, John Anthony. *Anecdota Græca e codicibus manuscriptis bibliothecarum Oxoniensium*, vol. 3 (Oxonii: Typogr. Academ., 1836; repr. Amsterdam: Hakkert, 1963).

36 The bookish nature of a doctor's intellectual life is mirrored in Galen's private collection of books, as emerges from the newly rediscovered *On Consolation from Grief*. See *indol*. 7–8, in Véronique Boudon-Millot and Jacques Jouanna, *Galien, Ne pas se chagriner*, t. IV (Paris: Les Belles Lettres, 2010), 4, 41–44. On this topic, see Vivian Nutton's article "Galen's Library," in Christopher Gill, Tim Whitmarsh, and John Wilkins (eds.), *Galen and the World of Knowledge: Greek Culture in the Roman World* (Cambridge: Cambridge University Press, 2009), 19–34, and Amneris Roselli, "Libri e biblioteche a Roma al tempo di Galeno: la testimonianza del *de indolentia*," *Galenos* 4 (2010), 127–48 (with earlier bibliography).

37 This anatomically oriented approach goes back to Eric G. Turner, *Recto and Verso: The Anatomy of the Papyrus Roll*, Pap. Brux. 16 (Brussels: Fond. Égypt. Reine Élisabeth, 1978), who writes that "these ribands [of the papyrus stem] are laid side by side; … above them a second layer is placed with equal care at right angles" (14). In his works concerned with the manufacture of papyrus, Turner was apparently unaware of the comparison made by ancient medical writers between papyrus layers and tunics of the uterus and the eye.

Daremberg, Charles, and Charles-Émile Ruelle. *Œuvres de Rufus d'Éphèse* (Paris: Imprimerie nationale, 1879; repr. Amsterdam: Hakkert, 1963).
Dietz, Friedrich R. *Severi Iatrosophistae De clysteribus liber* (Regimontii Prussorum: Borntraeger, 1836).
Ebbell, Bendix. *The Papyrus Ebers: The Greatest Egyptian Medical Document* (Copenhagen: Levin and Munksgaard, 1937).
Eigler, Ulrich, Georg Wöhrle, and Bernhard Herzhoff. *Theophrast, De odoribus,* Beiträge zur Altertumskunde 37 (Stuttgart: Teubner, 1993).
Fischer, Klaus-Dietrich. *Pelagonii Ars Veterinaria* (Leipzig: Teubner, 1980).
Gaudet, John J. "Mineral Concentrations in Papyrus in Various African Swamps," *Journal of Ecology* 63 (1975): 483–91.
Goltz, Dietlinde. *Studien zur altorientalischen und griechischen Heilkunde. Therapie – Arzneibereitung – Rezeptstruktur*, Sudhoffs Archiv, Beih. 16 (Wiesbaden: Steiner, 1974).
Green, Monica, and Ann E. Hanson. "Soranus of Ephesus: *Methodicorum princeps*," in Wolfgang Haase (ed.), *Aufstieg und Niedergang der römischen Welt*, II.37.2 (Berlin: De Gruyter, 1994), 968–1075.
Grenfell, Bernard P., Arthur S. Hunt, and David G. Hogarth. *Fayûm Towns and Their Papyri* (London: Egypt Exploration Fund, 1900).
Grohmann, Adolf. *Allgemeine Einführung in die arabischen Papyri* (Vienna: F. Zöllner, 1924).
Hanson, Ann E. "A Receptarium from Tebtunis," in Isabella Andorlini (ed.), *Greek Medical Papyri* II (Florence: Istituto Papirologico "G. Vitelli," 2009), 71–103 (no. 5).
Hort, Arthur, trans. *Theophrastus, Enquiry into Plants*, vol. 1 (Cambridge, Mass.: Harvard University Press, 1916).
Ieraci Bio, Anna Maria. "*Leone medico*," in Antonio Garzya et al. (eds.), *Medici bizantini* (Turin: UTET, 2006), 787–99.
Ieraci Bio, Anna Maria. *Paolo di Nicea, Manuale medico* (Naples: Bibliopolis, 1996).
Ilberg, Johannes. *Sorani gynaeciorum libri IV, De signis fracturarum; De fasciis; Vita Hippocratis secundum Soranum*, CMG IV (Leipzig: Teubner, 1927).
Kramer, Johannes. *Von der Papyrologie zur Romanistik*, Archiv für Papyrusforschung, Beih. 30 (Berlin: De Gruyter, 2011).
Leach, Bridget, and John Tait. "Papyrus," in Paul T. Nicholson and Ian Shaw (eds.), *Ancient Egyptian Materials and Technology* (Cambridge: Cambridge University Press, 2000), 227–53.
Lewis, Naphtali. *Papyrus in Classical Antiquity* (Oxford: Clarendon Press, 1974).
Manniche, Lisa. *An Ancient Egyptian Herbal* (Austin, Tx.: University of Texas Press & British Museum Publications, 1989).
Nutton, Vivian. "Galen in Egypt," in Jutta Kollesch and Diethard Nickel (eds.), *Galen und das hellenistische Erbe*, Sudhoffs Archiv, Beih. 32 (Stuttgart: Steiner, 1993), 11–31.
Nutton, Vivian. "Galen's Library," in Christopher Gill, Tim Whitmarsh, and John Wilkins (eds.), *Galen and the World of Knowledge: Greek Culture in the Roman World* (Cambridge: Cambridge University Press, 2009), 19–34.
Raeder, Ioannes. *Oribasii Collectionum medicarum reliquiae, libri XXIV–XXV; XLIII–XLVIII*, CMG VI 2,1 (Leipzig: Teubner, 1931).
Renehan, Robert. *Leonis medici De natura hominum synopsis*, CMG X 4 (Berlin: Akademie-Verlag, 1969)
Renehan, Robert. "Meletius' Chapter on the Eyes: An Unidentified Source," in *Symposium on Byzantine Medicine*, *Dumbarton Oaks Papers* 38 (1984), 159–68.

Roselli, Amneris. "Libri e biblioteche a Roma al tempo di Galeno: la testimonianza del *de indolentia*," *Galenos* 4 (2010): 127–48.

Skoda, Françoise. "De quelques phytonymes empruntés," *LAMA* (Centre de Recherches Comparatives sur Les Langues de La Méditerranée Ancienne) 4 (1979): 306–308.

Temkin, Oswei (with the assistance of Nicholson J. Eastman, Ludwig Edelstein, and Alan F. Guttmacher), trans. *Soranus' Gynecology* (Baltimore: The Johns Hopkins University Press, 1956; repr., 1991).

Till, Walter C. *Die Arzneikunde der Kopten* (Berlin: Akademie-Verlag, 1951).

Totelin, Laurence M. V. *Hippocratic Recipes: Oral and Written Transmission of Pharmacological Knowledge in Fifth- and Fourth-Century Greece*, Studies in Ancient Medicine 34 (Leiden: Brill, 2009).

Turner, Eric G. *Recto and Verso: The Anatomy of the Papyrus Roll*, Pap. Brux. 16 (Brussels: Fond. Égypt. Reine Élisabeth, 1978).

von Staden, Heinrich. *Herophilus: The Art of Medicine in Early Alexandria* (Cambridge: Cambridge University Press, 1989).

Wellmann, Max. *Pedanii Dioscuridis Anazarbei De materia medica libri quinque*, 3 vols. (Berlin: Weidmann, 1907–1914).

Westendorf, Wolfhart. *Handbuch der altägyptischen Medizin*, 2 vols., Handbuch der Orientalistik I 36.1–2 (Leiden: Brill, 1999).

Wilcken, Ulrich. *Urkunden der Ptolemäerzeit (ältere Funde)*, vol. 1 (Berlin: De Gruyter, 1927).

Wöhrle, Georg. "Papyrophagie," in Raimar Eberhard et al. (eds.), "*… vor dem Papyrus sind alle gleich!*" *Papyrologische Beiträge zu Ehren von Bärbel Kramer (P. Kramer)*, Archiv für Papyrusforschung, Beih. 27 (Berlin: De Gruyter, 2009), 243–47.

Markus Asper

Medical Acculturation?: Early Greek Texts and the Question of Near Eastern Influence

Abstract: This paper looks at early Greek medicine as a case-study of acculturation. First, it tries to establish that there was medical acculturation by giving a survey of non-coincidental points of concurrence between Hippocratic and first-millennium Mesopotamian medicine. The paper focuses on textual conventions as the kind of concurrence that can lead to hypotheses about functions and social backgrounds of such knowledge. Linguistics suggests that the mode of transmission seems to have been one of slowly migrating, rather closed groups of practitioners. Several writings in the Hippocratic Corpus (*De victu acutorum*, *De insomniis* = *De victu* IV, *De morbo sacro*) attack such groups. The "rational" strands of Hippocratic medicine seem to differentiate themselves from those acculturated practitioners, not the least by turning to texts for new usages. The paper assumes that these groups of practitioners are both the starting-point and the contrast against which early Greek theoretical medicine unfolded, that is, the recent result of a development both tiny and local when compared with the "global" traditions of practitioners. Thus, instead of the two dominant narratives about the relations between Greece and her neighboring cultures that offer either seamless continuity or radical break, by way of a case-study, a third one is suggested that locates the significant break within Greek culture.

In sixth- to fourth-century B.C. Greece, certain peculiar forms of discourse emerged, concerned with medicine and zoology, but also with astronomy and mathematics. These (often fragmentary) texts all share a modern-looking obsession with truth and a modern-looking interest in method, argument, explanation, sometimes even proof, and refutation. When studying these forms of discourse, it is difficult, even for the modern reader who is aware of the dangers of anachronism, to avoid terminology and notions like "theory," "science," and "rationality." From a contemporary, ahistorical, and Eurocentric point of view, therefore, these forms of discourse do not look peculiar; rather, one is tempted to take them as clear harbingers of modern science. From the perspec-

Thanks to Maria Börno, Klaus-Dietrich Fischer, Kerstin P. Hofmann, Brooke Holmes, Alexandra von Lieven, Steve Kidd, Dave Lunt, and Gonzalo Rubio for their generous help at various stages of this paper. It is my great pleasure to dedicate it to Heinrich von Staden who has changed my academic life more than once, all for the better.

tive of a comparative historian, however, who looks at how neighboring cultures in the Near East and in Egypt engaged with the same questions and problems at roughly the same time, it is evident just how peculiar the Greek way of dealing with these phenomena actually was. In order to make sense of the facts, one has essentially a choice between two narratives: one describes the Greek scenario as a brilliant "explosion" against a Near Eastern-Egyptian background painted in dull colors; the other one prefers a model of continuous exchange and gradual acculturation,[1] which regards Greek forms of rational practice[2] as offshoots of a Near Eastern/Egyptian substrate. The former stresses how singular "Greek" discourse is; the latter shows how many elements it shares with ancient Near Eastern and Egyptian culture. While the former has been the orthodox position for a long time, recent research and the debate about orientalism have shattered both the evidence and the underlying assumptions for what once looked like a clear cultural divide.[3]

In this paper, I will look at medicine as providing material for a case study that one can (and should) supplement with parallel studies, focusing on, e. g., mathematics,[4] astronomy, omen-texts, and perhaps practices of jurisdiction as well. I am convinced that all such studies would point towards the same result,

1 For recent discussion of the loaded term "acculturation," see U. Gotter, "'Akkulturation' als Methodenproblem der historischen Wissenschaften," in S. Altekamp, M. R. Hofter, and M. Krumme (eds.), *Posthumanistische Klassische Archäologie. Historizität und Wissenschaftlichkeit von Interessen und Methoden* (Munich: Hirmer, 2001), 255–80; and, in my context, the especially relevant C. Ulf, "Rethinking Cultural Contacts," *Ancient West & East* 8 (2009): 81–132; for a survey of the debate among ethnologists, A. M. Ervin, "A Review of the Acculturation Approach in Anthropology with Special Reference to Recent Change in Native Alaska," *Journal of Anthropological Research* 36 (1980): 49–70 is still useful.

2 For "rational practice" as an umbrella concept useful for avoiding the anachronistic notions of "science," see J. Ritter, "Translating Rational-Practice Texts," in A. Imhausen and T. Pommerening (eds.), *Writings of Early Scholars in the Ancient Near East, Egypt, Rome, and Greece* (Berlin: De Gruyter, 2010), 349–83.

3 For example, W. Burkert, *Orientalizing Revolution: Near Eastern Influence on Greek Culture in the Early Archaic Age* (Cambridge, Mass.: Harvard University Press, 1992); M. L. West, *The East Face of Helicon: West Asiatic Elements in Greek Poetry and Myth* (Oxford: Oxford University Press, 1997). See also the reactions to Bernal's Black Athena (e. g., as charted in M. R. Lefkowitz and G. MacLean Rogers, eds., *"Black Athena" Revisited* [Chapel Hill: University of North Carolina Press, 1996]). From this perspective, R. Palter, "Black Athena, Afrocentrism, and the History of Science," in Lefkowitz and Rogers, *"Black Athena" Revisited*, 209–66, offers a useful discussion of, especially, mathematical and medical continuities (he arrives at a negative conclusion, especially for Egyptian traditions).

4 See my essay on Greek mathematics, arguing for a more or less parallel case: M. Asper, "The Two Cultures of Mathematics in Ancient Greece," in E. Robson and J. Stedall (eds.), *The Oxford Handbook of the History of Mathematics* (Oxford: Oxford University Press, 2009), 107–32.

namely that in trying to historically contextualize the phenomenon of Greek "scientific" discourse within the Eastern Mediterranean *koinē*, rather than choosing one of the two narratives mentioned, one arrives at a third. From my point of view, that which is usually presented as a difference between Greek and non-Greek discourse is located within the Greek cultures of rational practice themselves. In the course of my argument, the respective marginality of theoretical and non-theoretical approaches to medicine will be reversed, at least partly. For lack of other evidence, my argument relies almost exclusively on texts, but "writing science" is only one of several practices that comes with "doing science." Thus, what is true for the former also throws a light upon the latter, which means that texts will be used here almost like "index fossils."

In ancient Mesopotamia and Egypt, professional medicine and its literature have a history that reaches back into the third millennium B.C. Given the many cultural contacts between Greece and the ancient Near East, particularly Egypt and Mesopotamia and its surrounding cultures, from at least Mycenaean times down to Seleucid culture in the third century B.C., one would expect to find some signs of contact and acculturation in the realm of medicine, just as, for example, they exist in the fields of writing, metallurgy, and time-reckoning. Sometimes, close connections between early Greek medicine and its Near Eastern neighbors are simply taken for granted.[5] If by "signs" one means certain, identifiable pieces of knowledge, however, the results are scarce.

I Early Greek Medicine and Eastern Mediterranean Traditions: Contacts

Among the writings in the so-called Hippocratic Corpus there is a sub-group, once believed to be "Cnidian" (as opposed to the "Coan" school of Hippocrates and his disciples).[6] These treatises are *De internis affectionibus*, *De morbis* II, *De*

5 E.g., J. Laskaris, *The Art Is Long: "On the Sacred Disease" and the Scientific Tradition* (Leiden: Brill, 2002), 52; compare, however, V. Nutton, *Ancient Medicine* (London: Routledge, 2004), 40–44. Brief discussion of points of contact in M. Geller, "West Meets East: Early Greek and Babylonian Diagnosis," in H. F. J. Horstmanshoff and M. Stol (eds.), *Magic and Rationality in Ancient Near Eastern and Graeco-Roman Medicine* (Leiden: Brill, 2004), 11–61, and J. Scurlock, "From Esagil-kīn-apli to Hippocrates," *Le Journal des Médecines Cunéiformes* 3 (2004): 10–30, at 10–11 (see n. 10 for criticism of Geller's approach).

6 The hypothesis of the two competing medical schools should be discarded: see V. Langholf, *Medical Theories in Hippocrates: Early Texts and the "Epidemics"* (Berlin: De Gruyter, 1990), 12–36, following W. D. Smith; H. von Staden, "Women and Dirt," *Helios* 19 (1992): 7–30, at 13 n. 38.

affectionibus, *De morbis mulierum*, and two texts on diseases quoted by Galen as "Cnidian."[7] They all focus on descriptions and classifications of diseases, adopt an impersonal, non-polemical style, and are mostly free from arguments or elaborate etiological speculation.[8] It is generally believed that these texts reflect the style or even preserve the content of earlier, pre-Hippocratic, non-speculative Greek medicine. Assuming that some exchange between the two cultures and their respective medical traditions must have existed long before the fifth century,[9] Assyriologists have looked for parallels between this group of writings and roughly contemporary Mesopotamian medical literature, especially in two series of tablets called the *Diagnostic* and the *Therapeutic Handbook*, respectively.[10] There are few such parallels,[11] and their significance is disputed. I give here only the more significant ones:

1. Egyptian, Babylonian, and Greek sources share a common structure to arrange lists of symptoms, diseases, wounds, treatments, etc.: the so-called schema *a capite ad calcem*, which is still used today.[12]
2. *morb.* II 47b.4, 7.70–72 L. (= 181.16–182.19 Jouanna) describes in a detailed manner how, when all pharmaceutical approaches have failed, to drain pus from a diseased lung over the course of ten days, including the day of prognosis. There exists a close parallel in Akkadian medicine.[13]

Nonetheless, it is still commonly accepted that these writings form the oldest stratum in the Hippocratic Corpus.

7 Langholf, *Medical Theories*, 20 quotes both passages; J. Jouanna, *Hippocrates*, trans. M. B. DeBevoise [orig. 1992] (Baltimore: The Johns Hopkins University Press, 1999), 145–46; Geller, "West Meets East," esp. 29–30. For historical differentiation within this group, see H. Grensemann, *Knidische Medizin, Teil II: Versuch einer weiteren Analyse der Schicht A in den pseudohippokratischen Schriften "De Natura Muliebri" und "De Muliebribus" I und II* (Stuttgart: Steiner, 1987), 66–73.

8 Langholf, *Medical Theories*, 12–36.

9 Even the assumption of continuities has met with considerable resistance, especially among historians of Greek science (for medicine, see P. J. van der Eijk, "Introduction," in Horstmanshoff and Stol, *Magic and Rationality*, 1–10, at 4 n. 10).

10 Key studies are D. Goltz, *Studien zur altorientalischen und griechischen Heilkunde. Therapie – Arzneibereitung – Rezeptstruktur* (Wiesbaden: Steiner, 1974); M. Stol, "An Assyriologist Reads Hippocrates," in Horstmanshoff and Stol, *Magic and Rationality*, 63–78; Geller, "West Meets East."

11 Goltz, *Studien*, 240–42 gives a list of fifteen matches of Greek and Mesopotamian medicine most of which she dismisses herself as insignificant. Stol, "Assyriologist," 65–67 discusses her remaining items and adds five more (71–76).

12 M. Asper, *Griechische Wissenschaftstexte. Formen, Funktionen, Differenzierungsgeschichten* (Stuttgart: Steiner, 2007), 58, 114 n. 149; similar cases: 267 n. 337, 371.

13 Translated and discussed by Stol, "Assyriologist," 71–72.

3. Late Babylonian texts advise the physician in certain cases of lung diseases to "seize the tongue" of the patient and then to give some medication to drink, apparently under the impression that the drug will reach the lungs that way.[14] In *De morbis* II one frequently finds the same technique mentioned, again applied to the treatment of lung diseases (for example, in II 47b.2, 7.66 L. [= 180.4–5 Jouanna]: ἐξειρύσας τὴν γλῶσσαν).[15] For Galen, to seize the tongue was a typical technique of "Cnidian" medicine, which may also point towards an older stratum of Greek medicine.
4. Both *De morbis* II and late Babylonian medicine advise the physician to shave the patient's head in the case of headaches or other pains that afflict the head (although they do *not* require shaving for technical reasons).[16]
5. Late Babylonian physicians count days, just as *De morbis* II does (e. g., 63, 7.96 L. [= 202.10 Jouanna]; 67, 7.102 L. [= 205.22 Jouanna]; 69, 7.106 L. [= 208.19 Jouanna]), and as, of course, does later "Hippocratic" medicine. More significantly, days are counted for the same purpose, namely in order to identify the disease and to give a valid prognosis. Tablet 16 of the *Diagnostic Handbook* gives a long row of prognoses, arranged according to the number of days that a certain symptom prevails.[17]
6. *morb.* II 72.1, 7.108–10 L. (= 211.15–20 Jouanna) gives two unusual symptoms for the disease *phrontis:* Φροντίς· δοκεῖ ἐν τοῖσι σπλάγχνοισι εἶναι οἷον ἄκανθα καὶ κεντεῖν … καὶ δείματα ὁρᾷ καὶ … τοὺς τεθνηκότας ἐνίοτε. ("Fright disease: There appears to be a thorn in his [i. e., the patient's] viscera and to sting … and he sees terrifying visions … and occasionally the dead.") The comparison of a certain pain with a thorn appears in the *Diagnostic Handbook*.[18] To "see the dead" is a frequent symptom in Akkadian prognosis.[19] Although in the Akkadian tradition the two symptoms do not appear in the diagnosis of the same disease, at least Greeks and Babylonians apparently used the same descriptions of symptoms at the same time, within roughly the same conceptual framework.

14 Goltz, *Studien*, 245; compare Stol, "Assyriologist," 74.

15 See the parallels collected by Goltz, *Studien*, 125 n. 149.

16 Goltz, *Studien*, 241–42 n. 16.

17 N. P. Heeßel, *Babylonisch-assyrische Diagnostik* (Münster: Ugarit-Verlag, 2000), 171–86.

18 Tablet 13, 42'–44' (R. Labat, *Traité akkadien de diagnostics et pronostics médicaux* [Leiden: Brill, 1951], 114) or, even closer, the text quoted by Geller, "West Meets East," 44. See also Langholf, *Medical Theories*, 54.

19 See Heeßel, *Babylonisch-assyrische Diagnostik*, tablet 28, 35' (trans. at 314). This tablet shows how close general prognosis is to omen texts in Akkadian literature.

There are more parallels of this sort, but it is more difficult to prove that they are not coincidental.[20] A typical case is trepanation.[21] In some cases, Hippocratic medicine appears to apply what is known in Near Eastern and Greek religious contexts as purification in a "secularized" manner as medical therapy.[22]

The most significant class of parallels, however, does not consist of definite borrowings of therapy or diagnostic know-how but of shared assumptions of disease and prognosis,[23] in a similar use of texts that results in strikingly similar

20 See Geller, "West Meets East," 22–23 on similarities between the *Diagnostic Handbook* and the Hippocratic *Prognosticon*; ibid. 32 on similar etiologies for a hip disease (*ischias*) in *De internis affectionibus* and the *Diagnostic Handbook*; ibid. 48 on similar words for pain that involve the notion of "biting" and "sharpness." Goltz, *Studien*, 242, 247 quotes a "magic" recipe in *Mul.* I 77 (8.172 L.), which shows a close resemblance with Babylonian amulets (see A. E. Hanson, "Uterine Amulets and Greek Uterine Medicine," *Medicina nei Secoli. Arte e Scienza* 7 [1995]: 281–99, 288 for amulets in gynecology). Geller, "West Meets East," 47 contends that these parallels are not arbitrary, but fails to give a methodologically sound rationale of how to tell arbitrary from non-arbitrary parallels. M. J. Geller, "Phlegm and Breath—Babylonian Contributions to Hippocratic Medicine," in I. L. Finkel and M. J. Geller (eds.), *Disease in Babylonia* (Leiden: Brill, 2007), 187–99 discusses the two etiological concepts of the four humors and of "breaths" and their parallels in Babylonian medicine (vague conclusions). Compare Scurlock's differing views ("From Esagil-kīn-apli to Hippocrates," 14–15). Klaus-Dietrich Fischer brings an interesting paper by Tanja Pommerening to my attention ("βούτυρος '*Flaschenkürbis*' und κουροτόκος im Corpus Hippocraticum, *De sterilibus* 214: Entlehnung und Lehnübersetzung aus dem Ägyptischen," *Glotta* 86 [2010]: 40–54). Pommerening demonstrates close parallels between an Egyptian twelfth-century B.C. text dealing with a prognosis of pregnancy and a fourth-century B.C. Hippocratic one. These parallels combine both linguistic and medical aspects on more than one level; thus, there is no doubt that the knowledge concerning the prognosis has somehow been handed down for more than eight hundred years and crossed the boundaries between two cultures.

21 See Stol, "Assyriologist," 75–76. Trepanation is briefly mentioned in *morb.* II 15, 7.26–28 L. (= 149.1, 150.6–7 Jouanna): ἢν ὕδωρ ἐπὶ τῷ ἐγκεφάλῳ γένηται ... τρυπῆσαι πρὸς τὸν ἐγκέφαλον ("if water occurs next to the brain ... drill up to the brain"). Stol quotes a Late Babylonian passage which begins "if a man's skull holds water" and then goes on to recommend "scrape the scull" (*gulgullašu teserrem*); to me, this does not seem to imply trepanation. See also G. Majno, *The Healing Hand: Man and Wound in the Ancient World* (Cambridge, Mass.: Harvard University Press, 1975), 59. Trepanation techniques, however, may well emerge without cultural contacts: compare the Inca cases discussed in V. A. Andrushko and J. W. Verano, "Prehistorical Trepanation in the Cuzco Region of Peru: A View into an Ancient Andean Practice," *American Journal of Physical Anthropology* 137 (2008): 4–13 and *passim*, and, in general, Dan Potts in this volume.

22 Von Staden, "Women and Dirt," esp. 16–18 on fumigation in gynecological therapy. Generally, see also a (rather disappointing) article by P. Demont, "L'ancienneté de la médecine Hippocratique: un essai de bilan," in A. Attia and G. Buisson (eds.), *Advances in Mesopotamian Medicine from Hammurabi to Hippocrates*, Cuneiform Monographs 37 (Leiden: Brill, 2009), 129–49, esp. 148–49.

23 See, e.g., on classifications, Scurlock, "From Esagil-kīn-apli to Hippocrates," 14.

textual structures. Such similarities point, ultimately, towards similar forms of how medicine is institutionalized in Near Eastern and archaic Greek society. It has often been observed that these Hippocratic treatises list and describe diseases in a format quite similar to Mesopotamian and Egyptian texts: name of the disease, symptoms (these two can sometimes fall into one category, when the disease is not defined by name but by its symptoms),[24] therapy, and prognosis following one another in the same order, within a similar textual frame, and employing a similar impersonal rhetoric (Jouanna's "schéma nosologique").[25] These four parts often even use similar phraseologies, e. g., conditionals or recipe-like structures in the same places. Consider the textual patterns of the following three examples, one Egyptian, one Assyrian, and one Greek:

> Another. If you see a man with bruises in his neck, suffering from the two members (i. e., the joint) of his neck, suffering from his head (*dp.t*), the vertebra of his neck being strong (i. e., stiff), his neck being heavy and it being impossible for him to regard his belly, it being difficult for him, you are to say: "One with bruises in his neck." You should let him anoint (*wrḥ*) himself, rub himself (i. e., with ointment) (*sdm*), so that he will be well immediately.[26] P. Ebers 295 (New Kingdom, ca. 1550 B. C.)

> If a man [suffers from] colic [.....] (and) food and drink are regurgitated, his bowel ... his abdomen is cramped ... he drinks *taramuš* in premium beer, crush juniper, *kukru*, ... and mix (them) in fat, [make] a pessary and insert it into his anus and he will improve.[27] Ass. 13955bu (Late Assyrian, ca. 9th–7th c. B. C.)

> Another disease: excessive pain grips his head and when he moves even a little, he vomits bile. Sometimes he has trouble urinating and is delirious. When the seventh day comes, he sometimes dies. If he survives this day, he dies on the ninth or the eleventh, if he does not bleed from the nose or the ears. When this is the case, during the headache ... let him drink. ... When he bleeds from his ears and the fever recedes and the pain, let him eat laxative foods. ... If the ears do not dry up this way but the hemorrhage continues, wash them carefully and pour into them "silver-blossom," and, realgar, white lead, of all the same amount, mix them until smooth. Fill the ear completely. ... They also die, if after the sharp pain has

24 See Geller, "West Meets East," 44.

25 J. Jouanna, *Hippocrate: pour une archéologie de l'école de Cnide* (Paris: Les Belles Lettres, 1974), 85–87; J. Jouanna, *Hippocrate, Maladies II*, t. X.2 (Paris: Les Belles Lettres, 1983), 15–23; H. Grensemann, *Knidische Medizin, Teil I: Die Testimonien zur ältesten knidischen Lehre und Analysen knidischer Schriften im Corpus Hippocraticum* (Berlin: De Gruyter, 1975), 177–94; Grensemann, *Knidische Medizin, Teil II*, 67; Langholf, *Medical Theories*, 55–70. For a wider context, see Asper, *Griechische Wissenschaftstexte*, 378–80.

26 I am very much indebted to Alexandra von Lieven for graciously providing this translation. Compare W. Westendorf, *Handbuch der altägyptischen Medizin*, 2 vols., Handbuch der Orientalistik 1.36 (Leiden: Brill, 1999), 2:602.

27 Ed. and trans. M. J. Geller, *Renal and Rectal Disease Texts*, Die babylonisch-assyrische Medizin in Texten und Untersuchungen 7 (Berlin: De Gruyter, 2005), 267, no. 54.

> wandered into the ear, there is no bleeding within seven days.[28]
> *morb.* II 14, 7.24–26 L. (= 147.8–148.14 Jouanna) (ca. 450–400 B.C.)

The structural parallels between these texts are evident: they all present identification, symptoms, therapy, and prognosis in a similar way, in the same order, and with a similar partly impersonal, partly imperatival, rhetoric. The Egyptian and the Akkadian texts at least belong to traditions that extend further into the past and future and could be matched with many more—in the Akkadian case, even with hundreds of—texts that show the exact same structure (which I cannot even list here). In Greek, the number of instances preserved in the "Cnidian" writings[29] warrants the assumption that, at some time, this method of textual organization, the "schéma nosologique," must have been a conventional way to structure medical texts.

Apparently, all three traditions share the same concept of "disease" as an entity, defined by a set of observable symptoms, caused by external factors, having the same trajectory in all patients, which allows for a general prognosis. In all three traditions, Egyptian, Assyrian, and Greek, individual case histories are apparently unknown. They must be a "Hippocratic" invention—one more reason to believe that with "Cnidian" writings we have access to an older tradition of medicine in Greece. The disease is an individual, identifiable entity that behaves in the same, predictable way with all humans it attacks. The similar importance of prognosis in all three traditions indicates that patients and physicians interacted in a comparable way, which allowed the physician to use prognosis both to enhance his reputation and to protect himself (thus, occasionally, we read similar warnings against treating the terminally ill in Greek, Mesopotamian, and Egyptian medical texts).[30]

Beyond these shared notions, the textual similarities point toward similar functions for their respective authors and addressees: their anonymity and their impersonal style, for example, hint at a closed group within which medical knowledge was thought to be collective, protected probably by guild-like institutions.[31] These texts were obviously not intended to act as vehicles for

28 The text is longer. I have concentrated on the main structural elements.

29 See the discussion in Jouanna, *Maladies II*, 15–32.

30 Compare Heeßel, *Babylonisch-assyrische Diagnostik*, 61 nn. 89–91 with Jouanna, *Maladies II*, 251 n. 3 (on *morb.* II 48.3, 7.72 L.); Geller, "West Meets East," 39. Qualifications for the Greek case in Laskaris, *Art Is Long*, 8.

31 I have argued that style and structure in scientific writing provide some information about the social structure of the communication involved: see Asper, *Griechische Wissenschaftstexte*, 43–45, 371–74.

physicians to advance personal ambitions, perhaps because they served merely as works of reference, as indicated by their additive structure, and of schooling, as indicated by their authoritative, succinct rhetoric that leaves no room for doubt.

These parallels seem on the one hand close enough to rule out any notion that early Greek medicine was entirely independent of Near Eastern and Egyptian medicine.[32] On the other hand, almost all the details of, for example, specific treatments, clusters of symptoms, drugs, and terminology are sufficiently different to preclude any assumption of very close, direct, and synchronic contacts. Apart from the fact that Greek medicine must have been at the receiving end of the tradition, which is evident from the dates of some of the texts, the age and the stability of the Near Eastern-Egyptian traditions, especially the time in which and the way by which knowledge was transmitted, are open to discussion. Neither problem, that is, the time and the way of transmission, is solved by assuming that, with respect to medicine, and as with many other discourses, there ever existed an Eastern Mediterranean *koinē*, an assumption which seems to be widely accepted now.[33] As for the time of transmission, the ninth to seventh centuries B.C. seem probable: in that case, medical knowledge would have crossed the Aegean in ways similar to alphabetic writing techniques and similar to so many crafts, practices, and narratives, ranging from techniques of decoration to time-reckoning and motifs in folk-narrative (whatever these ways were precisely), that is, in the context of the "Orientalizing revolution."[34]

Near Eastern and Egyptian luxury products and techniques, however, had found their way into mainland Greece already in the second millennium, especially from the fifteenth to the thirteenth centuries.[35] Mycenaean palace medicine *might* well have employed Egyptian or Babylonian physicians—a case which has recently been argued, with due stress on the social stratification of medicine.[36]

---

32 The extent to which Egyptian and Mesopotamian medicine relate to one another is difficult to pin down. In any case, they are much closer to one another than even to early Greek medicine: see Goltz, *Studien*, 251–57.

33 Geller, "West Meets East," 59.

34 The term was coined by Burkert in *Orientalizing Revolution*. He was probably inspired by Kuhn's famous concept of scientific revolutions. The evidence is summed up admirably by Burkert, *Orientalizing Revolution*, 14–33 and West, *East Face of Helicon*, 8–9, who does not, however, mention medicine.

35 See West, *East Face of Helicon*, 507; Demont, "L'ancienneté," 135.

36 R. Arnott, "Minoan and Mycenaean Medicine and its Near Eastern Contacts," in Horstmanshoff and Stol, *Magic and Rationality*, 153–73, esp. 155–63; 159 on medical instruments found in Nauplion (1450–1400 B.C.) that bear a strong resemblance to instruments described in a contemporary text from Ugarit. See also Laskaris, *Art Is Long*, 34–35.

Such an early acculturation would account for the scant similarities of content but similar concepts and textual structures between the two traditions.[37] (As the mathematical material may show, these structures are amazingly conservative and even cross language borders, provided there exists some institutional continuity.)[38] Nonetheless, although one should certainly assume that many remedies and therapies described in the Hippocratic Corpus are traditional and may, perhaps, even go back to Mycenaean times, it is impossible to know which ones do.[39] Admittedly, medical knowledge presents a different case than, say, categories of physical speculation or motifs in mythical narrative: those who can afford it will likely have the best medical care they can get. Therefore, Egyptian or Babylonian physicians might have conceivably practiced their art in Knossos or Mycenae in 1300 B.C. It is more difficult to see, however, how the knowledge of this elite palace medicine could have trickled down, as it were, to become an indigenous tradition as appears to be the case in the early Hippocratic writings mentioned above, roughly nine hundred years later. On the whole, it seems thus more natural to assume that an acculturation of medical concepts from the East took place at some time between the ninth and seventh centuries B.C. (the great reputation of Egyptian medicine among the Greeks seems to reflect the "Egyptophilia" of a slightly later period).[40]

As for the mode of transmission, we are hardly better off: knowledge does not travel by itself. It depends on carriers or some form of media. In this case, different from later times, texts or texts alone cannot have been the carriers, because it is difficult to see how they would have overcome the barriers of different languages, writing-systems, and terminologies. Essentially, the transmission

37 Compare the dream omens discussed by Geller, "West Meets East," 53: only the if-part is parallel, that is, the "system": the interpretation is completely different.

38 See Asper, "Two Cultures," 125–29.

39 Despite the fascinating approach taken by Arnott, "Minoan and Mycenaean Medicine," his article makes painfully clear that virtually nothing is known about the practices (let alone concepts) of Mycenaean court or folk medicine. On some long-standing medical traditions in Greece (trepanation, herbalists), see Laskaris, *Art Is Long*, 35–44. Compare A. E. Hanson, "Continuity and Change: Three Case Studies in Hippocratic Gynecological Therapy and Theory," in S. B. Pomeroy (ed.), *Women's History and Ancient History* (Chapel Hill: University of North Carolina Press, 1991), 73–110, who investigates the assimilation of already existing medical knowledge by "Hippocratic" medicine (esp. 78, 89, 95). The older traditions' social setting and provenance, however, remain unclear.

40 See, e.g., Hom. *Od*. 4.228–32 and Hdt. 2.84. Compare R. Thomas, "Greek Medicine and Babylonian Wisdom: Circulation of Knowledge and Channels of Transmission in the Archaic and Classical Periods," in Horstmanshoff and Stol, *Magic and Rationality*, 175–85, at 181–85; Nutton, *Ancient Medicine*, 40–41.

must have been oral and thus personal.[41] In the light of parallel acculturations,[42] it is most plausible to think of migrant physicians as "carriers." Greek traditions knew of individual physicians who traveled to the East, e. g., Democedes of Croton in the sixth century (Hdt. 3.129–30) or the Cnidian physician Ctesias, who, as of 405 B. C., had already lived for a long time at the Persian court.[43] These physicians may have come into contact with local or Babylonian medicine there and brought back some knowledge of it. I find it difficult to imagine, however, that such one-person contacts should be responsible for the *structural* similarity of pre-"Hippocratic" medicine (that is, Cnidian medicine) with the Near Eastern-Egyptian traditions. It seems therefore more probable that neither texts nor individuals but entire groups of medical practitioners migrated, groups who guarded their expert knowledge by trading on it in an institutionalized, controlled way: that is, by apprenticeship within an established group structure (it is tempting to use the medieval "guild" as an analogy).[44] Since successful medicine contains a dominant practical element *and* relies on writing for storage of information, reference, and, presumably, transmission, the "carrier" of the tradition—here a group—must have been itself institutionalized, involving a social structure that determined the forms of texts and their use, institutionalized recruitment, and "education."

As is typical for even much later practitioners in the Mediterranean (and elsewhere: compare Shapin's "invisible technicians"),[45] there is hardly any direct evidence for these groups. Two peculiarities of the Greek versus the Mesopotamian-Egyptian traditions can, however, perhaps lead to some inferences. First, there are no obvious Akkadian (or Egyptian) loanwords in early Greek medicine;[46] at the same time there are clear parallels as far as key concepts

41 See already Goltz, *Studien*, 239.

42 Compare Burkert, *Orientalizing Revolution*, 14–25, 41–45. On the problem of ethnicity in the transmission of knowledge, see the brief remarks in F. Rochberg-Halton, "The Cultures of Ancient Science: Some Historical Reflections," *Isis* 83 (1992): 547–53, 549–50.

43 Compare Stol, "Assyriologist," 66.

44 Thomas, "Circulation of Knowledge," 180–81 is greatly hampered by her concentration on "highly specialized or technical knowledge such as astronomical observational data or theories" and her disregard of actual practices. The same is true for Nutton, *Ancient Medicine*, 41–42, whose only model of transmission is of Greek individuals traveling east.

45 See S. Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1994), 360 on the triple invisibility of technicians. S. Cuomo, *Technology and Culture in Greek and Roman Antiquity* (Cambridge: Cambridge University Press, 2007), 77 applies the concept to ancient practitioners.

46 *Pace* Geller, "West Meets East," 29 and Stol, "Assyriologist," 70, a "loanword" σίἄλος/*suālu* ("coughing disease") does not exist, I am afraid. Σίαλος in the Hippocratic Corpus and elsewhere

and structures of medical knowledge and texts are concerned. By contrast, in other realms of early Greek culture, Semitic loanwords or "loan-concepts" do exist, mostly for acculturated techniques or luxury goods.[47]

If one can build anything on this evidence (I am not sure one can and, thus, the following is speculative), the acculturation of medicine must have been unlike the exchange of luxury goods in significant aspects: it must have been slow and taken place within small and closed groups.[48] The slow pace would have excluded a stage in which many foreign words were adopted, that is, a stage in which the practitioners crossed the language barrier quickly. Rather, they must have worked in a bilingual context for a considerable time. Occasionally, literal translation might have occurred: so far, the only known instance of this is the word for "suppository" for which both Greek and Akkadian use the word for "acorn" (βάλανος and *allānu*, respectively).[49] The groups' "closed" character would have ensured that it did not become part of the wider lexicon while the knowledge was in transition. Both criteria could be compared to the most blatant case of acculturation, namely, the adoption of a West Semitic alphabet. Here, the knowledge concerned remains firmly tied to its Semitic origins (even until today): the names, basic shapes, and the order of the letters; their phonetic equivalents; the whole concept of alphabetic (as opposed to syllabic or iconographic) writing; and probably the primary ways to handle the new technology (writing directions, inscriptions and their functions, tablets, leather-books, letters, etc.).[50] It spread rapidly and became at least passively part of the cultural competence of wider groups. Apparently, there was neither time nor need for a translation of any sort, unlike in medicine. Second, the almost complete

means "fat" (adj.), σίαλον "spittle." There is not a trace of "cough" (see J.-H. Kühn and U. Fleischer, *Index Hippocraticus* [Göttingen: Vandenhoeck & Ruprecht, 1986–1989], 732–33). In general, however, Greek tends to "Hellenize" words taken over from non-Greek languages. Thus, in theory words in the medical lexicon for which no plausible Indo-European etymology exists would qualify as candidates for being Semitic loanwords.

47 See the list in West, *East Face of Helicon*, 12–14 and the discussion in Burkert, *Orientalizing Revolution*, 33–40.

48 Compare Ulf's diagram ("Rethinking Cultural Contacts," 87) and his attempts to draw conclusions about the "contact zone" from observable features of the acts and products of acculturation. His concept of "heterarchy" (100), for example, probably applies to my case.

49 See J-H. Kühn and U. Fleischer, *Index Hippocraticus*, 119. In Akkadian, the word for "finger" is used, too (*ubānu*), for which no Greek parallel exists (compare, however, δάκτυλος IV LSJ = βάλανος). See Goltz, *Studien*, 75–76.

50 See M. Asper, "Medienwechsel und kultureller Kontext. Die Entstehung der griechischen Sachprosa," in J. Althoff (ed.), *Philosophie und Dichtung im antiken Griechenland* (Stuttgart: Steiner, 2007), 67–102, at 77 on early Greek "acculturated prose."

lack of congruence in medical detail and, at the same time, close resemblances in concepts and structures (which tend, apparently, to be far more conservative) point to the same picture: our model "carrier" is not a well-traveled, multilingual, highly paid expert of tongue-seizing therapy or *namburbî* rituals with an international group of customers, but a closely-knit group of practitioners sticking to their own traditions, traditions that take several generations to cross cultural and language boundaries, thereby avoiding the need for rapid translation. Ironically, the best—nonetheless, indirect—evidence for such groups comes from the polemics against them that some later Hippocratic writings have preserved.

II Polemics: Who Is Attacked in "Hippocratic" Writing?

The group of Hippocratic writings discussed above (*De internis affectionibus*, *De morbis II*, *De affectionibus*, *De morbis mulierum*) shares, among other features, an impersonal rhetoric, just as Egyptian or Babylonian medical texts do:[51] not only do the authors avoid revealing their names, they do not even refer to themselves or their audiences as individuals (except for the occasional, rather generic, imperative in recipe-like structures), for example, by making use of the authorial "I" and, more generally, by employing a rhetoric of expert authority, the "je scientifique."[52] All these strategies, however, are employed by another set of Hippocratic treatises that are particularly fond of "boundary-work":[53] here, the authors take pains to distinguish themselves polemically from a group of competitors. As the attack unfolds, an authorial construction of both author and

51 For this category as applied to the reading of science writing in general, see Asper, *Griechische Wissenschaftstexte*, 43–45; in mathematics, Asper, "Two Cultures," 118.

52 Compare the "authorial personae" of Celsus as analyzed by H. von Staden, "Author and Authority: Celsus and the Construction of the Scientific Self," in M. E. Vázquez Buján (ed.), *Tradición e innovación de la medicina latina de la antigüedad y de la alta edad media* (Santiago de Compostela: Universidade de Santiago de Compostela, 1994), 103–17, esp. 110–14. For the "je scientifique," see A. Debru, "La suffocation hystérique chez Galien et Aétius: réécriture et emprunt du 'je,'" in A. Garzya (ed.), *Tradizione e ecdotica dei testi medici tardoantichi e bizantini* (Naples: D'Auria, 1992), 79–89, at 85–87 and my remarks on Galen's "I" (Asper, *Griechische Wissenschaftstexte*, 333–34).

53 See T. Gieryn, "Boundaries of Science," in S. Jasanoff (ed.), *Handbook of Science and Technology Studies* (Thousand Oaks: SAGE Publications, 1995), 393–443; Asper, *Griechische Wissenschaftstexte*, 166; Geller, "West Meets East," 15–16 on the Hippocratic Corpus as "a transition period" (that is, from anonymity and impersonality to personality and then, later, to very personal and name-dropping authors such as Galen).

competitors takes place. At the same time, these treatises show a new approach to medical problems, both regarding therapies[54] and, most conspicuously, explanations and logical argument. For competitive purposes, they explicitly stress the latter and have, therefore, often been claimed as "rational" or as the beginning of "rational" medicine.[55] It may suffice here to discuss only three instances of this boundary-work,[56] all three taken from treatises usually dated to the late fifth century B.C. In all three cases, the attacks offer us brief, and both indirect and heavily biased, glimpses of other forms of medical practice. What is more, in all three cases, these non-Hippocratic practitioners closely resemble their Mesopotamian colleagues.

De victu acutorum discusses how patients with "acute," that is, the most dangerous, diseases should be treated. It begins with an attack against "the Cnidians" (οἱ ξυγγράψαντες τὰς Κνιδίας καλεομένας γνώμας, *acut*. 1, 2.224 L.) who have allegedly neglected regimen, as was generally the case with "the old guard" (οἱ ἀρχαῖοι, *acut*. 1, 2.226 L.) who, according to this author, focused too much on (useless) nosological definitions and classifications. In addition, the author attempts to reorganize the traditional taxonomy of diseases, on the grounds that his predecessors did not know classes of diseases.[57] Both objections fit perfectly the group of writings discussed above (that are termed "Cnidian" according to polemics like these)[58] and, by implication, Babylonian-Egyptian medical texts. By means of polarization, the author implicitly presents himself as "modern" against the background of inadequate "old-timers." Similarly, Diocles of Carystus, a fourth-century B.C. physician, criticizes the "old-timers" for using the phases of the moon as a means of prognosis[59]—a method similar to Late Babylonian medicine, which sometimes used stars in prognosis.[60] Here, too, a direct line from Greek "old" medicine to first-millennium Mesopotamian medicine ex-

54 Geller, "West Meets East," 60 gives a list of fifth-century Greek therapeutic innovations (diet and regimen, purging/evacuation, blood-letting).

55 Discussion and refutation in van der Eijk, "Introduction," 3–7.

56 One can glimpse the same structure also in Hipp. *virg.* 1, 8.468.17–20 L.: the author lists some conditions typical for young women, among them seizures and fits of all kinds, including the "sacred disease" (8.466.4 L.). When the epileptic girls regain consciousness, they are prone to consider religious causes, namely Artemis, for their ailments and act accordingly, deceived by "seers."

57 Jouanna, *Hippocrates*, 153; compare Scurlock, "From Esagil-kīn-apli to Hippocrates," 22.

58 See Geller, "West Meets East," 19.

59 Text in P. J. van der Eijk, *Diocles of Carystus: A Collection of the Fragments with Translation and Commentary*, 2 vols. (Leiden: Brill, 2000–2001), 1:130, fr. 64.

60 See BM 56605 (from the late Seleucid period) as discussed in Heeßel, *Babylonisch-assyrische Diagnostik*, 112–27; Geller, "West Meets East," 38.

ists. In both cases, the author, employing a personal rhetorical stance, attacks competitors who remain anonymous, but are clearly part of a collective. The competition, however, is mainly diachronic, as it seems: the self-styled newcomer sets himself up against what he perceives as the "old guard."

A Hippocratic book on dreams, the so-called treatise *de victu* IV or *de insomniis*, presents a parallel case: against the current and widespread practice of dream-interpreters, the Hippocratic author tries to establish secure grounds for how one may use patients' dreams for prognosis. In this case, we learn more about the people the treatise attacks: first, it is again an anonymous collective against which the author competes directly. His main strategy of boundary-work is to divide dreams into separate categories. First, there are dreams sent by gods (*theia*) that portend favorable or unfavorable events for city-states or individuals (*vict*. IV 87.1, 6.640 L. [= 98.1–2 Joly]). This field is rightly claimed by professionals who command a pertinent (and, apparently, widely accepted) body of expert knowledge (*technē*).[61] But then there is a second class of dreams that originate in the soul, are caused purely by physical factors, and indicate, accordingly, physical states of the body (*vict*. IV 87.1, 6.642 L. [= 98.4–5 Joly]: ὁκόσα … ἡ ψυχὴ τοῦ σώματος παθήματα προσημαίνει, "all the bodily ailments that the soul foretells"). These must be the object of the true physician, then. According to the Hippocratic author, the dream-professionals falsely claim to interpret both. Then, the final blow: not only are they sometimes right, sometimes wrong, but either way they do not understand the reason why (*vict*. IV 87.1, 6.642 L. [= 98.8 Joly]: οὐδέτερα τούτων γινώσκουσι δι' ὅ τι γίνεται, "of none of which they understand the reason of why it happens"). Instead, the dream-professionals suggest prayers.[62]

The Hippocratic author proceeds by describing a long series of "things that appear" (*ta phainomena*) in dreams and how to treat the dreamer. As Philip van der Eijk has recently shown,[63] both the practices of the group attacked and some features of the treatise itself show close similarities with Late Babylonian dream

61 For a discussion of the term, see Cuomo, *Technology and Culture*, 7–40 (with many medical examples).

62 The author recommends prayers himself (e. g., *vict*. IV 89.14, 6.652 L. [= 104.17–21 Joly]; IV 90.7, 6.656–58 L. [= 107.6–7 Joly]), but he complements them with therapy. On his dualistic approach see IV 87.2, 6.642 L. (= 98.12–13 Joly). As for his piety, compare his last sentence: εὕρηταί μοι δίαιτα ὡς δυνατὸν εὑρεῖν ἄνθρωπον ἐόντα σὺν τοῖσι θεοῖσιν, "I have found a healthy way of life as a human is able to find it, with the help of the gods" (IV 93.6, 6.662 L. [= 109.19–20 Joly]). See P. J. van der Eijk, "Divination, Prognosis, and Prophylaxis: The Hippocratic Work "On Dreams" (*De victu* 4) and its Near Eastern Background," in Horstmanshoff and Stol, *Magic and Rationality*, 187–218, at 213.

63 Van der Eijk, "Divination, Prognosis, and Prophylaxis."

literature,[64] sometimes even in style and syntax.[65] At one point, "seeing the dead" in a dream (*vict*. IV 92.1, 6.658 L. [= 107.21–22 Joly] points to a certain, generally positive, prognosis, just as in Late Babylonian diagnostic literature. The order in which celestial bodies seen in dreams are treated (ch. 89) corresponds to Mesopotamian omen texts.[66] In Mesopotamia, dream interpreters (*šā'ilu*) could be part of diagnosis and prognosis.[67] The Hippocratic author operates upon the same simple principle of matching dream vision with prognosis (e. g., "crossing rivers and soldiers and wars and strange apparitions signify illness or madness," *vict*. IV 93.5, 6.662 L. [= 109.12–14 Joly]). In this case, the suggested therapy consists of a light diet, emetics, five days rest, then appropriate physical exercise, etc.). In the Babylonian tradition, there is no fundamental difference between divination and prognosis. The Hippocratic author newly constructs this difference as a fundamental one[68] that applies to two different kinds of dreams, the treatment of which falls under the expertise of two different groups of professionals. I do not suggest that the Hippocratic author directly targets Babylonian *šā'ilu*. The practices, however, and the knowledge of the professional group attacked show so many resemblances with older Mesopotamian traditions that they must be ultimately derived from them.

My third example, the famous Hippocratic treatise *De morbo sacro*, fits into the same pattern: by attacking a group of competitors, the author not only sketches out his own "rationalist" agenda as opposed to "magical" practices but also gives an impression of the practitioners, practices, and concepts he criticizes. Some of these practices and concepts show Near Eastern influences. He denounces his opponents as "sorcerers, purifiers, mendicants, and charlatans" (μάγοι τε καὶ καθάρται καὶ ἀγύρται καὶ ἀλαζόνες, 6.354 L. [= 3.20–4.1 Jouanna]; cf. 6.396 L. [= 33.3–4 Jouanna]). I will refer to them as "healers." Mainly, the Hippocratic author criticizes the healers on two grounds: first, for their religious etiologies of epilepsy that claim the disease is caused by the gods, an explanation

64 Van der Eijk, "Divination, Prognosis, and Prophylaxis," 214. The tradition reaches back into the second millennium, but most texts are from seventh-century Ninive. See N. P. Heeßel, *Divinatorische Texte I. Terrestrische, teratologische, physiognomische und oneiromantische Omina* (Wiesbaden: Harrassowitz, 2007), 10.

65 See the long conditional passages in, e. g., *vict*. IV 89, esp. 4–7, 6.646–48 L. (101.1–102.4 Joly).

66 Compare Asper, *Griechische Wissenschaftstexte*, 294 n. 514.

67 See Heeßel, *Babylonisch-assyrische Diagnostik*, 76–77, tablet 18, 12'–14' (trans. at 220) and compare texts quoted in 93 n. 94, 223–24.

68 The two tend to coalesce nonetheless: G. E. R. Lloyd, *The Revolutions of Wisdom: Studies in the Claims and Practice of Ancient Greek Science* (Berkeley: University of California Press, 1987), 41–42; Langholf, *Medical Theories*, 232–54; van der Eijk, "Divination, Prognosis, and Prophylaxis," 187.

which, he believes, contradicts certain theological assumptions that he takes for granted among his audience.[69] Admittedly, to explain certain diseases as punishment by a certain god for an individual's transgression is so widely attested all over the world that one cannot use it as an argument for the healers' Babylonian background.[70] Nonetheless, the healers' method of identifying definite "symptoms" in order to diagnose a certain god's wrath as the cause establishes a closer similarity.[71]

> If they [the patients] imitate a goat and if they roar and if they have convulsions in the right side, they [the healers] say the Mother of Gods is the cause. If he [the patient] shouts shriller and louder, they compare him to a horse and say Poseidon is the cause. (1.11, 6.360 L. [= 8.1–5 Jouanna])

In the following lines (6.360–62 L. [= 8.5–12 Jouanna]), Enodia, Apollon, Ares, and Hecate are all identified as causes for the disease, based on the symptoms of stool, a foaming mouth, and panic attacks. Not only do the concept and the conditional structure of the passage closely resemble Babylonian diagnostics, but the parallels are even more suggestive. In a Neo-Assyrian collection of diagnostics that is not part of the canonical Late Babylonian *Diagnostic Handbook*'s section (tablets 26–30) on "epilepsy," we find the following passages on *miqtu* ("fall" or perhaps "falling sickness"):[72]

> If, at the time it overwhelms him ..., he growls like a dog ...: Lord of the Roof has seized him. ... If he brays like a donkey ... an.ta.šub.ba ... his disease ...; he will not be saved. ... If a fall falls upon him and [...] like an ox, he roars ... [...]: an.ta.šub.ba has seized him.[73] ... If, at the time it overwhelms him, he moans like a dove ... his disease will [...]. (trans. Stol)[74]

---

69 P. J. van der Eijk, "The 'Theology' of the Hippocratic Treatise *On the Sacred Disease*," *Apeiron* 23 (1990): 87–119.

70 W. Burkert, *Creation of the Sacred: Tracks of Biology in Early Religions* (Cambridge, Mass.: Harvard University Press, 1996), 102–28.

71 On this passage, see R. Parker, *Miasma: Pollution and Purification in Early Greek Religion*, 2nd ed. (Oxford: Clarendon Press, 1996), 244–45 and Geller, "West Meets East," 20–21: "If one simply imagines the phrase 'hand of' the particular god here, one has a reasonable replica of a text resembling the Akkadian *Diagnostic Handbook*."

72 M. Stol, *Epilepsy in Babylonia* (Groningen: Styx Publications, 1993), 91: "It seems to be an older version and is known from only two fragments, the one from Middle Babylonian Nippur, the other from Neo-Assyrian Sultantepe." Stol believes that the *Diagnostic Handbook* reacts to this text.

73 "An.ta.šub.ba" and the enigmatic Lugal-gìr.ra ("Lord of the Roof") are two of several diseases (or disease-causing demons) in Babylonian diagnostics that are usually understood as epilepsy. On the problem of identifying "epilepsy" in Babylonian texts, see H. Avalos, "Epilepsy

The parallels are obvious and close. Furthermore, they include not only etiology and diagnostics, but also therapy which consists, mainly, in purifying rituals. The Hippocratic author ridicules the healers for the following practices:

> They perform purifications (καθαίρουσι) and of the purifying objects (καθαρμοί, perhaps καθαρμάτων, "offscouring," is preferable) some they hide in the earth, others they throw into the sea, others they carry away into the mountains, where nobody will touch or come across them. (1.12, 6.362 L. [= 9.4–8 Jouanna])[75]

Mark Geller has observed that these practices show parallels with parts of the so-called *namburbî*-ritual, practiced in the first millennium in Mesopotamia.[76] These rituals are purifications which partly consist of "sending off" the curse that has befallen the sick onto a magic substitute, a living scapegoat,[77] or an effigy of the sick person, or some other substance that is then hidden or buried or sent away.[78] After the house has been purified, the magician destroys the offscourings, by throwing them into the river, hiding them somewhere, or burning them.[79] Thus, for the aetiology, diagnosis, *and* therapy for epilepsy, there exists a first-millennium Mesopotamian background of the healers' concepts and practices, which strongly suggests a continuous tradition of some sort.[80] Against this tradition, the Hippocratic author unfolds his rationalist etiology and treatment, both of which rest on the assumptions of humoral pathology. Epilepsy is caused

in Mesopotamia Reconsidered," in Finkel and Geller, *Disease in Babylonia*, 131–36 *contra* Stol, *Epilepsy in Babylonia*.

74 I have excerpted a longer passage in order to bring out the parallels. The whole text is published, translated, and discussed in Stol, *Epilepsy in Babylonia*, 91–98, quote from lines 133–40, 141–47, 148–51, and 152–58 (pp. 93–95). Compare Heeßel, *Babylonisch-assyrische Diagnostik*, 222–23 and the objections of Scurlock, "From Esagil-kīn-apli to Hippocrates," 12–13.

75 Parker, *Miasma*, 210–11, 229–30.

76 Geller, "West Meets East," 24.

77 *De morbo sacro* does not mention living scapegoats. There is a proverbial curse, however, in Greek (κατ' αἶγας ἀγρίας "On to wild goats!") that refers to such practices, especially in the treatment of epilepsy. See Callimachus fr. 75.13 (Pfeiffer) and the material quoted by Pfeiffer *ad loc*.

78 See S. Maul, *Zukunftsbewältigung. Eine Untersuchung altorientalischen Denkens anhand der babylonisch-assyrischen Löserituale (Namburbi)* (Mainz: Verlag Philipp von Zabern, 1994), 91–92, 94–100. For methodological criticism of Maul's useful work, see N. Feldhuis, "On Interpreting Mesopotamian Namburbi Rituals," *Archiv für Orientforschung* 42/43 (1995/1996): 145–54, esp. 146–51; for background, see P. Attinger, "La médecine mésopotamienne," *Le Journal des Médecines Cunéiformes* 11/12 (2008): 1–96, at 2–6.

79 Maul, *Zukunftsbewältigung*, 99.

80 For therapeutic "secularizations" of Greek/Near Eastern religious purifications in the Hippocratic Corpus, see von Staden, "Women and Dirt," 13–18.

by an excess of phlegm in the brain and the able physician can diagnose the problem, treat, and heal it accordingly.

III Practitioners and Theoreticians

In the three cases discussed, the knowledge of the groups attacked by the authorial "I"—that is "old" or "Cnidian" physicians, dream-interpreters, and healers—shows affinities with Mesopotamian concepts, many of which are known to us from texts written not too much earlier. I believe that, considered together, the medical parallels are both too close and too wide-ranging to be explained by anything other than some kind of continuous tradition. As agents or "media" of this tradition—since the tradition cannot have consisted in trafficking decontextualized texts, oral or written,[81] nor in "international exchange," as knowledge might travel today—people are the most probable. Some of the parallels regard the structure of knowledge (e. g., the schema *a capite ad calcem*), which, preserved along with knowledge as a means of application, suggest not traveling individuals, but groups. Linguistic evidence or, rather, the lack of such evidence, might, as indicated above, point towards the slowness of such travel from East to West. For all these reasons I believe that guild-like groups of practitioners, partly itinerant and originating from Mesopotamia, spread this knowledge and its structures all over the (Eastern) Mediterranean. The famous Hippocratic Oath, as well as Near Eastern parallels, indicate how these groups tried to control their knowledge by institutionalizing family-structures.[82] As has often been pointed out, besides "rational" medicine, many other forms of medical care were still on offer in Greece in classical and Hellenistic times.[83] In the *Odyssey,* Eumaeus famously counts the "seer" (*mantis*) and the "healer of evils" (*iētēra kakōn*) as professional experts (itinerant *dēmoiergoi*).[84] The mythical case of Melampus and the historical ones of Epimenides, Thaletas, and Empedocles would fit the latter category.[85] In Plato's *Republic*, incantations (*epōdai*) appear as part

81 *Pace* Scurlock who even assumes verbatim quotation from Akkadian in Greek ("From Esagil-kīn-apli to Hippocrates," 24 and elsewhere).

82 For the *Oath* and Mesopotamian–Egyptian parallels (*Diagnostic Handbook*, Papyrus Ebers), see Geller, "West Meets East," 14. These artificial family structures are not only known from the Coan "Asclepiads" but even from such unlikely groups as the "Ouliadai" ("Parmenideans": see Nutton, *Ancient Medicine*, 46).

83 See van der Eijk, "Introduction," 6.

84 Hom. *Od.* 17.382–85; see Burkert, *Orientalizing Revolution*, 41 and my remarks in *Griechische Wissenschaftstexte*.

85 See Geller, "West Meets East," 54; Burkert, *Orientalizing Revolution*, 42–43.

of medical practice just as drugs, cauterization, and surgery (4.426b1). These must have been only the proverbial tip of the iceberg, the hidden part which probably had more in common with the integrative approach of the Babylonian *āšipu* than with the strictly rationalist-empiricist method of the Hippocratic physician.[86] Magic *and* medicine are part of Babylonian and Greek socio-medical reality. Magic *versus* medicine, however, is a polemical-rhetorical invention of "Hippocratic" medicine, very much in the style of the similar polemical distinction of *historiē*/*logos* versus *muthos* made by contemporary Greek historians.[87]

As the consistent polemic shows, Hippocratic writers perceived these people as serious competitors. I suggest that instead of viewing the healers, dream-interpreters, and others like them as marginal and thereby buying into Hippocratic rhetoric, one should put things into a more probable perspective and, instead, assign marginality to the empiricist-rationalist approach and its promoters, at least in the fifth century.[88] The healers vilified by Hippocratic authors, who are usually invisible from our perspective (this invisibility is caused by the bias of our sources and, in the end, largely contingent on their social status),[89] provided the medicine that was most pervasive in the day. Their knowledge, concepts, structures, and treatments were part of an "undercurrent"—at least viewed from the theorists' tradition in which modern scholars usually include themselves—that formed a continuous tradition reaching from, at least, second-millennium Mesopotamia to Roman Imperial times and that was all-pervasive in the Eastern Mediterranean. This undercurrent surfaces occasionally: for example, in Hippocratic polemics, in occasional therapies in Pliny, and in the Talmudic tradition.[90]

86 S. Maul, "Die 'Lösung vom Bann': Überlegungen zu altorientalischen Konzeptionen von Krankheit und Heilkunst," in Horstmanshoff and Stol, *Magic and Rationality*, 79–95, at 78 and Avalos, "Epilepsy," 135 have, from different angles, criticized the neat distinction between *asû* and *āšipu* as anachronistic. In fact, it probably reflects the modern dominance of "rationalist" medicine.

87 For Hecataeus, Herodotus, and Thucydides, see Asper, *Griechische Wissenschaftstexte*, 39; G. E. R. Lloyd, *Demystifying Mentalities* (Cambridge: Cambridge University Press, 1990), 46. Compare T. E. Rihll and J. V. Tucker, "Practice Makes Perfect: Knowledge of Materials in Classical Athens," in C. J. Tuplin and T. E. Rihll (eds.), *Science and Mathematics in Ancient Greek Culture* (Oxford: Oxford University Press, 2002), 274–305, at 297–304.

88 See Laskaris, *Art Is Long*, 32–33. On a similar project of reversing marginality, see Cuomo, *Technology and Culture*, 164–68.

89 Shapin's comments (*Social History of Truth*, 359–61) on the invisibility of technicians in seventeenth-century England partly apply to the ancient world, too.

90 For the latter two, see M. J. Geller, *Akkadian Healing Therapies in the Babylonian Talmud*, Preprint 259 (Berlin: Max Planck Institute for the History of Science, 2004), and Westendorf,

Thus, I assume that these practitioners are both the starting-point and the contrast against which early Greek theoretical medicine unfolded as an epiphenomenon, that is, the result of a development both tiny and local when compared with the broad and "global" traditions of practitioners. Here, as is often the case elsewhere in Greek writing, polemics tend to camouflage conceptual debt.[91] I have suggested a similar constellation as emerging in the realm of mathematical knowledge, that is, tiny groups of theoretical mathematicians positioning themselves against a background of mighty practitioners.[92]

If this is really what happened, the question of why it happened remains. The explanation that is, to me, still the most satisfying but nonetheless rather vague[93] refers to the "openness" of the Greek medical market that called for competitive strategies, among which writing, a "personal" style, and logical rather than empirical arguments formed a strategic union. In an open-market situation and a world where all medical practitioners enjoy more or less the same success rate, the emphasis on causal explanation, theoretical explanation, and refutation of opponents by way of logic might have been the most successful way to persuade patients to sign up with one's own group. From this angle, Hippocratic medicine, especially in its textual aspects, appears close to both sixth-century natural speculation and fifth-century sophists. Conceivably, one may understand these medical texts as an overlap of the two. To me, the crucial factor appears to be "openness." To our ears, "openness" and the lack of monopolization have a positive ring. In early Greece, however, the lack of medical authority that allowed medical practitioners of all sorts to thrive in free competition with one another is probably best understood as an effect of the earlier breakdown of the structure of palace societies, and especially its designated space for an elite and highly specialized palace medicine that was sufficiently protected against outside competitors by being part of the palace administration.[94] Far from being "elite," Hippocratic medicine is, thus, a typical offshoot of archaic Greece with its comparative

Handbuch, 2:571 n. 32 on a striking parallel in the Egyptian medical Papyrus Ebers (ca. 1550 B. C.) and Plin. *nat.* 30.70 (first C. A. D.).

91 See Laskaris, *Art Is Long*, 4–5; M. Asper, "*Un personaggio in cerca di lettore:* Galens *Großer Puls* und die 'Erfindung' des Lesers," in T. Fögen (ed.), *Antike Fachtexte—Ancient Technical Texts* (Berlin: De Gruyter, 2005), 21–39, esp. 32; *Griechische Wissenschaftstexte*, 361–63.

92 Asper, "Two Cultures," 129.

93 I have tried to give an account of the discussion in Asper, *Griechische Wissenschaftstexte*, 27–45, 377–83.

94 See Nutton, *Ancient Medicine*, 40 and 329 n. 23.

lack of social stratification (the same is true for Greek discourses on political power).[95]

Conclusion

This brief story of how a culturally distinctive form of medicine emerged in fifth-century B.C. Greece could and should be supplemented by parallel stories focusing on mathematics, astronomy, possibly "grammar," and so forth. I believe that they would all yield similar plots, part of which might be the following elements:

1. The oldest Greek forms of medical discourse that we can identify are long-term products of acculturation and in my view contingent upon what Burkert has called the "Orientalizing revolution."
2. The theoreticians put writing to new uses. Hippocratic medicine produces a whole new host of genres, from display speeches to collections of case studies.[96] Mathematics develops the stylistically odd but efficient Euclid-style treatise. If one can generalize from the colophons in the *Diagnostic Handbook*, Near Eastern medical traditions used texts mainly as storage devices, to be used by practitioners either for instruction or for reference.[97] Both functions remain popular among Greek medical and mathematical writers, too (for example, in lists of diseases or symptoms). Nonetheless, the group of "Hippocratic" writings presents arguments to audiences they apparently cannot reach by other means of communication. In mathematics, one possible explanation for the conceptual rigor of Euclid-style treatises is that they were developed exclusively for written communication (as is evident in the case of Archimedes and Apollonius).[98]

95 For Bronze Age Greece, Egypt, and ancient Mesopotamia, see Arnott, "Minoan and Mycenaean Medicine," 155–63 ("largely confined to the elite," 156). The Asclepiad clan at Cos and Cnidos certainly was part of the local social elite (see Langholf, *Medical Theories*, 25–28), but there is no reason to assume that they restricted their therapies to peers.

96 See, especially, P. J. van der Eijk, "Towards a Rhetoric of Ancient Scientific Discourse: Some Formal Characteristics of Greek Medical and Philosophical Texts (Hippocratic Corpus, Aristotle)," in E. J. Bakker (ed.), *Grammar as Interpretation: Greek Literature in its Linguistic Contexts* (Leiden: Brill, 1997), 77–129, and R. Wittern, "Gattungen im Corpus Hippocraticum," in W. Kullmann, J. Althoff, and M. Asper (eds.), *Gattungen wissenschaftlicher Literatur in der Antike* (Tübingen: Narr, 1998), 17–36.

97 See Heeßel, *Babylonisch-assyrische Diagnostik*, 186, 314, 364.

98 R. Netz, *The Shaping of Deduction in Greek Mathematics: A Study in Cognitive History* (Cambridge: Cambridge University Press, 1999), 271–312; Asper, *Griechische Wissenschaftstexte*, 147–56.

3. "Boundary work" accompanies the self-differentiation from practitioners' traditions. In medicine, the authors engage in extensive polemics that construct both the opponent and the writer himself (certainly in the eyes of the modern reader).
4. One might think of understanding both the emergence of rationalist medicine and of theoretical mathematics as a transition from "social" technologies of trust, that is, a rhetoric based on social authority (for example, the guild's pristine tradition, the specialist status of its practitioners, and the knowledge's commonly accepted usefulness) to "epistemic" technologies of trust, that is, logically compelling or, at least, persuasive arguments. Actually, it is the preference for epistemic rather than social authority that makes the two traditions, and any other "scientific" tradition, appear so similar.

Oddly, the seemingly clear divide of Eastern versus Western practices of argument that the modern historiography of science has found so compelling for so long was never really acknowledged by Greek theoreticians and their doxographers: quite the opposite, they constructed continuities where we moderns cannot perceive any. Greek theorists had their founding fathers spend time in Egypt or in the East (Pythagoras and Thales in Egypt, Democedes in Persia, Hippocrates in Egypt, and so on) whence they brought the main elements of their knowledge to Greece.[99]

99 For Hippocrates in Egypt, see J. R. Pinault, *Hippocratic Lives and Legends* (Leiden: Brill, 1992), 132. The so-called "Brussels Life of Hippocrates," a Latin translation of a Greek text with unclear provenance states: *eodem tempore accepit septem libros de Memfis ciuitate a Polibio, filio Apollonii, quos secum inde portauit et ex his libris suis canonem medicinae recte ordinauit* ("at the same time he received seven books in (?) the city of Memphis from Polybius, the son of Apollonius, which he took with him from there and with the help of which he prepared the canon of medicine in the right way," fol. 52v 38–43). In addition, Hippocrates spends some time with the Persians: *postquam reuersus est a Medis de Batchana ciuitate ab Arfaxath rege Medorum* ("after he returned from the Medes, from the city of Batchana and from Arfaxath, the king of the Medes," fol. 52v, 34–37). Admittedly, this is a late and somewhat sub-scholarly fiction. One finds nothing like that in Soranus' *Vita Hippocratis* (ed. Ilberg, CMG IV). The traditions about early Greek philosophers present a similar, more prominent case, conveniently summed up by Diogenes Laërtius (Thales [Diog. Laërt. 1.24], Solon [Diog. Laërt. 1.50], Plato [Diog. Laërt. 3.6–7], Pythagoras [Diog. Laërt. 8.2–3]). M. R. Lefkowitz, "Visits to Egypt in the Biographical Tradition," in M. Erler and S. Schorn (eds.), *Die griechische Biographie in hellenistischer Zeit* (Berlin: De Gruyter, 2007), 101–13 discusses the case with respect to Euripides', Plato's, and Eudoxus' fictional visits to Egypt, which she understands as "testimony to the desire on the part of *Hellenistic* Greeks to be associated with Egyptian learning" (111, emphasis added).

The big divide that *they* apparently were concerned about and tried to gloss over in silence or, in the case of Aristotle's narrative of discovery in *Metaphysics* A, explicitly tried to marginalize, was, instead, the one of practitioners and theorists *in Greece*. It seems that a great deal of attention and ingenuity went into ignoring the obvious question in what respects theory was influenced by and dependent on practice.

So what we see going on here is a reversal: instead of acknowledging their debt to a practitioner *koinē* that reaches to the far East, the theorists write these practitioners out of the picture and invent for themselves an "Eastern" pedigree, but a purely theoretical one that never existed. The substitution results in a fictitious, socially immaculate past, instead of a real past that leads down into lower social strata. An acculturated East is substituted for a fictitious East, or: what we see as an East-West divide not only is not a divide, it is even constructed into *one* fabricated narrative of linear transmission and perfection (e. g., Proclus on the emergence of Euclid-style mathematics). The divide that really counts, however, is the one between practitioners and theorists, and this one is solved by ignoring it.

Thus, allegedly typically Greek "rationalist" medicine, a core discourse of what is traditionally understood as "the emergence of science," turns out to be a case study of Greek acculturation. This acculturation resulted in a certain duplicity: solutions to medical and mathematical problems were on offer from two quite different perspectives. One wonders whether more case studies could enrich the picture in parallel ways: in the fields of, say, calculation and metrics, astronomy, music, architecture, and expert storytelling one might expect similar constellations. In all these cases, specific Greek forms did not directly differentiate themselves from Near Eastern or Egyptian traditions but rather from acculturated Greek adaptations of the former, based on practitioners' groups. Thus, instead of the two dominant narratives about the relations between Greece and her neighboring cultures that offer either seamless continuity or radical breaks, I suggest a third one that locates the break within Greek culture.

Bibliography

Andrushko, V. A., and J. W. Verano. "Prehistorical Trepanation in the Cuzco Region of Peru: A View into an Ancient Andean Practice," *American Journal of Physical Anthropology* 137 (2008): 4–13.

Arnott, R. "Minoan and Mycenaean Medicine and its Near Eastern Contacts," in Horstmanshoff and Stol, *Magic and Rationality*, 153–73.

Asper, M. "The Two Cultures of Mathematics in Ancient Greece," in E. Robson and J. Stedall (eds.), *The Oxford Handbook of the History of Mathematics* (Oxford: Oxford University Press, 2009), 107–32.

Asper, M. *Griechische Wissenschaftstexte. Formen, Funktionen, Differenzierungsgeschichten* (Stuttgart: Steiner, 2007).

Asper, M. "Medienwechsel und kultureller Kontext. Die Entstehung der griechischen Sachprosa," in J. Althoff (ed.), *Philosophie und Dichtung im antiken Griechenland* (Stuttgart: Steiner, 2007), 67–102.

Asper, M. "*Un personaggio in cerca di lettore:* Galens *Großer Puls* und die 'Erfindung' des Lesers," in T. Fögen (ed.), *Antike Fachtexte—Ancient Technical Texts* (Berlin: De Gruyter, 2005), 21–39.

Attinger, P. "La médecine mésopotamienne," *Le Journal des Médecines Cunéiformes* 11/12 (2008): 1–96.

Avalos, H. "Epilepsy in Mesopotamia Reconsidered," in Finkel and Geller, *Disease in Babylonia*, 131–36.

Burkert, W. *The Orientalizing Revolution: Near Eastern Influence on Greek Culture in the Early Archaic Age* (Cambridge, Mass.: Harvard University Press, 1992).

Burkert, W. *Creation of the Sacred: Tracks of Biology in Early Religions* (Cambridge, Mass.: Harvard University Press, 1996).

Cuomo, S. *Technology and Culture in Greek and Roman Antiquity* (Cambridge: Cambridge University Press, 2007).

Debru, A. "La suffocation hystérique chez Galien et Aétius: réécriture et emprunt du 'je,'" in A. Garzya (ed.), *Tradizione e ecdotica dei testi medici tardoantichi e bizantini* (Naples: D'Auria, 1992), 79–89.

Demont, P. "L'ancienneté de la médecine hippocratique: un essai de bilan," in A. Attia and G. Buisson (eds.), *Advances in Mesopotamian Medicine from Hammurabi to Hippocrates*, Cuneiform Monographs 37 (Leiden: Brill, 2009), 129–49.

Ervin, A. M. "A Review of the Acculturation Approach in Anthropology with Special Reference to Recent Change in Native Alaska," *Journal of Anthropological Research* 36 (1980): 49–70.

Feldhuis, N. "On Interpreting Mesopotamian Namburbi Rituals," *Archiv für Orientforschung* 42/43 (1995/1996): 145–54.

Finkel, I. L., and M. J. Geller, eds. *Disease in Babylonia* (Leiden: Brill, 2007).

Geller, M. J. "West Meets East: Early Greek and Babylonian Diagnosis," in Horstmanshoff and Stol, *Magic and Rationality*, 11–61.

Geller, M. J. *Akkadian Healing Therapies in the Babylonian Talmud*, Preprint 259 (Berlin: Max Planck Institute for the History of Science, 2004).

Geller, M. J. *Renal and Rectal Disease Texts*, Die babylonisch-assyrische Medizin in Texten und Untersuchungen 7 (Berlin: De Gruyter, 2005).

Geller, M. J. "Phlegm and Breath—Babylonian Contributions to Hippocratic Medicine," in Finkel and Geller, *Disease in Babylonia*, 187–99.

Gieryn, T. "Boundaries of Science," in S. Jasanoff (ed.), *Handbook of Science and Technology Studies* (Thousand Oaks: SAGE Publications, 1995), 393–443.

Goltz, D. *Studien zur altorientalischen und griechischen Heilkunde. Therapie – Arzneibereitung – Rezeptstruktur* (Wiesbaden: Steiner, 1974).

Gotter, U. "'Akkulturation' als Methodenproblem der historischen Wissenschaften," in S. Altekamp, M. R. Hofter, and M. Krumme (eds.), *Posthumanistische Klassische Archäologie. Historizität und Wissenschaftlichkeit von Interessen und Methoden* (Munich: Hirmer, 2001), 255–80.

Grensemann, H. *Knidische Medizin, Teil I: Die Testimonien zur ältesten knidischen Lehre und Analysen knidischer Schriften im Corpus Hippocraticum* (Berlin: De Gruyter, 1975).

Grensemann, H. *Knidische Medizin, Teil II: Versuch einer weiteren Analyse der Schicht A in den pseudohippokratischen Schriften "De Natura Muliebri" und "De Muliebribus" I und II* (Stuttgart: Steiner, 1987).

Hanson, A. E. "Continuity and Change: Three Case Studies in Hippocratic Gynecological Therapy and Theory," in S. B. Pomeroy (ed.), *Women's History and Ancient History* (Chapel Hill: University of North Carolina Press, 1991), 73–110.

Hanson, A. E. "Uterine Amulets and Greek Uterine Medicine," *Medicina nei Secoli. Arte e Scienza* 7 (1995): 281–99.

Heeßel, N. P. *Babylonisch-assyrische Diagnostik* (Münster: Ugarit-Verlag, 2000).

Heeßel, N. P. *Divinatorische Texte I. Terrestrische, teratologische, physiognomische und oneiromantische Omina* (Wiesbaden: Harrassowitz, 2007).

Horstmanshoff, H. F. J., and M. Stol, eds. *Magic and Rationality in Ancient Near Eastern and Graeco-Roman Medicine* (Leiden: Brill, 2004).

Ilberg, J. *Sorani Gynaeciorum libri IV, De signis fracturarum; De fasciis; Vita Hippocratis secundum Soranum*, CMG IV (Leipzig: Teubner, 1927).

Joly, R. *Hippocrate, Du régime*, t. VI.1 (Paris: Les Belles Lettres, 1967).

Jouanna, J. *Hippocrate : pour une archéologie de l'école de Cnide* (Paris: Les Belles Lettres, 1974).

Jouanna, J. *Hippocrate, Maladies II*, t. X.2 (Paris: Les Belles Lettres, 1983).

Jouanna, J. *Hippocrates*, trans. M. B. DeBevoise [orig. 1992] (Baltimore: The Johns Hopkins University Press, 1999).

Kühn, J.-H., and U. Fleischer. *Index Hippocraticus* (Göttingen: Vandenhoeck & Ruprecht, 1986–1989).

Labat, R. *Traité akkadien de diagnostics et pronostics médicaux* (Leiden: Brill, 1951).

Langholf, V. *Medical Theories in Hippocrates: Early Texts and the "Epidemics"* (Berlin: De Gruyter, 1990).

Laskaris, J. *The Art Is Long: "On the Sacred Disease" and the Scientific Tradition* (Leiden: Brill, 2002).

Lefkowitz, M. R. "Visits to Egypt in the Biographical Tradition," in M. Erler and S. Schorn (eds.), *Die griechische Biographie in hellenistischer Zeit* (Berlin: De Gruyter, 2007), 101–13.

Lefkowitz, M. R, and G. MacLean Rogers, eds. *"Black Athena" Revisited* (Chapel Hill: University of North Carolina Press, 1996).

Lloyd, G. E. R. *The Revolutions of Wisdom: Studies in the Claims and Practice of Ancient Greek Science* (Berkeley: University of California Press, 1987).

Lloyd, G. E. R. *Demystifying Mentalities* (Cambridge: Cambridge University Press, 1990).
Majno, G. *The Healing Hand: Man and Wound in the Ancient World* (Cambridge, Mass.: Harvard University Press, 1975).
Maul, S. *Zukunftsbewältigung. Eine Untersuchung altorientalischen Denkens anhand der babylonisch-assyrischen Löserituale (Namburbi)* (Mainz: Verlag Philipp von Zabern, 1994).
Maul, S. "Die 'Lösung vom Bann': Überlegungen zu altorientalischen Konzeptionen von Krankheit und Heilkunst," in Horstmanshoff and Stol, *Magic and Rationality*, 79–95.
Netz, R. *The Shaping of Deduction in Greek Mathematics: A Study in Cognitive History* (Cambridge: Cambridge University Press, 1999).
Nutton, V. *Ancient Medicine* (London: Routledge, 2004).
Palter, R. "Black Athena, Afrocentrism, and the History of Science," in Lefkowitz and MacLean Rogers, *"Black Athena" Revisited*, 209–66.
Parker, R. *Miasma: Pollution and Purification in Early Greek Religion*, 2nd ed. (Oxford: Clarendon Press, 1996).
Pfeiffer, R., ed. *Callimachus*, 2 vols. (Oxford: Clarendon Press, 1949–1953).
Pinault, J. R. *Hippocratic Lives and Legends* (Leiden: Brill, 1992).
Pommerening, T. "βούτυρος '*Flaschenkürbis*' und κουροτόκος im Corpus Hippocraticum, *De sterilibus* 214: Entlehnung und Lehnübersetzung aus dem Ägyptischen," *Glotta* 86 (2010): 40–54.
Rihll, T. E., and J. V. Tucker. "Practice Makes Perfect: Knowledge of Materials in Classical Athens," in C. J. Tuplin and T. E. Rihll (eds.), *Science and Mathematics in Ancient Greek Culture* (Oxford: Oxford University Press, 2002), 274–305.
Ritter, J. "Translating Rational-Practice Texts," in A. Imhausen and T. Pommerening (eds.), *Writings of Early Scholars in the Ancient Near East, Egypt, Rome, and Greece* (Berlin: De Gruyter, 2010), 349–83.
Rochberg-Halton, F. "The Cultures of Ancient Science: Some Historical Reflections," *Isis* 83 (1992): 547–53.
Scurlock, J. "From Esagil-kīn-apli to Hippocrates," *Le Journal des Médecines Cunéiformes* 3 (2004): 10–30.
Shapin, S. *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1994).
Stol, M. "An Assyriologist Reads Hippocrates," in Horstmanshoff and Stol, *Magic and Rationality*, 63–78.
Stol, M. *Epilepsy in Babylonia* (Groningen: Styx Publications, 1993).
Thomas, R. "Greek Medicine and Babylonian Wisdom: Circulation of Knowledge and Channels of Transmission in the Archaic and Classical Periods," in Horstmanshoff and Stol, *Magic and Rationality*, 175–85.
Ulf, C. "Rethinking Cultural Contacts," *Ancient West & East* 8 (2009): 81–132.
van der Eijk, P. J. "The 'Theology' of the Hippocratic Treatise *On the Sacred Disease*," *Apeiron* 23 (1990): 87–119.
van der Eijk, P. J. "Towards a Rhetoric of Ancient Scientific Discourse: Some Formal Characteristics of Greek Medical and Philosophical Texts (Hippocratic Corpus, Aristotle)," in E. J. Bakker (ed.), *Grammar as Interpretation: Greek Literature in its Linguistic Contexts* (Leiden: Brill, 1997), 77–129.
van der Eijk, P. J. *Diocles of Carystus: A Collection of the Fragments with Translation and Commentary*, 2 vols. (Leiden: Brill, 2000–2001).

van der Eijk, P. J. "Introduction," in Horstmanshoff and Stol, *Magic and Rationality*, 1–10.
van der Eijk, P. J. "Divination, Prognosis, and Prophylaxis: The Hippocratic Work 'On Dreams' (*De victu* 4) and its Near Eastern Background," in Horstmanshoff and Stol, *Magic and Rationality*, 187–218.
von Staden, H. "Women and Dirt," *Helios* 19 (1992): 7–30.
von Staden, H. "Author and Authority: Celsus and the Construction of the Scientific Self," in M. E. Vázquez Buján (ed.), *Tradición e innovación de la medicina latina de la antigüedad y de la alta edad media* (Santiago de Compostela: Universidade de Santiago de Compostela, 1994), 103–17.
West, M. L. *The East Face of Helicon: West Asiatic Elements in Greek Poetry and Myth* (Oxford: Oxford University Press, 1997).
Westendorf, W. *Handbuch der altägyptischen Medizin*, 2 vols., Handbuch der Orientalistik 1.36 (Leiden: Brill, 1999).
Wittern, R. "Gattungen im Corpus Hippocraticum," in W. Kullmann, J. Althoff, and M. Asper (eds.), *Gattungen wissenschaftlicher Literatur in der Antike* (Tübingen: Narr, 1998), 17–36.

Han Baltussen

"Hippocratic" Oaths?: A Cross-Cultural Exploration of Medical Ethics in the Ancient World

Abstract: This paper considers the cross-cultural similarities and differences between medical covenants from different ancient cultures (Greek, Indian, Chinese) which claimed to regulate doctor-patient interactions. While the differences are clearly determined by the cultural and social environments in which these covenants were formulated, detailed comparison reveals the presence of shared moral values which seem to be universal. It is suggested that the reason for this "universality" must lie in the doctor-patient relationship, in particular the intimacy of the specific interpersonal interactions, which transcends particular cultural contexts. This comparative approach also allows us to clarify the importance of such "mission statements": they are attempts to make the most of a delicate situation, in which physicians—as healer and confidante—tried to gain the trust of actual and potential patients, despite the limitations of their scientific knowledge.

I The Continuing Importance of the "Hippocratic" *Oath*

Recently declared the second most authoritative text today,[1] the so-called "Hippocratic" *Oath* continues to draw the attention of physicians and historians: on the one hand, it retains its intriguing and enduring value as a fundamental text of the Western European medical tradition, on the other, it keeps being referred

---

It is my honor and pleasure to dedicate this essay to a distinguished colleague in ancient world studies as a token of my respect, but also of gratitude for his hospitality and kind advice during my stay at IAS. Some of the ideas presented here are also based on my course "Ancient Medicine and its Legacy" and H. Baltussen, "Hippocratic Corpus," in M. Gagarin (ed.), *Oxford Encyclopedia of Ancient Greece and Rome*, 7 vols. (Oxford: Oxford University Press, 2010), 4:1–4, and idem, "Hippocratic Oath," in Gagarin, *Oxford Encyclopedia*, 4:4–6.

1 V. Nutton, *Ancient Medicine* (London: Routledge, 2004), 53: "Except for the Bible, no document and no author from Antiquity commands the authority in the twenty-first century of Hippocrates of Cos and the Hippocratic *Oath*."

back to when medical scandals appear in the news.[2] What is remarkable about the "Hippocratic" *Oath* is that it articulated its rules at the very start of a new field of knowledge. The oath consists of three broad sections (see Appendix A): first, the physician calls upon certain gods to witness the oath (1); next, he offers a number of clear injunctions and prohibitions to protect the life of the patient as much as possible (2–7); and finally he calls down blessings (8.i) or curses (8.ii) upon himself, as a consequence of observing or violating the oath. It can thus boast having separated killing and curing, something which was not always guaranteed in the earliest healing methods. For Greece the new medical approach was coming into view as a more "scientific" branch of knowledge with Hippocratic medicine in the fifth century B.C. The "Hippocratic" *Oath* is thought to have been written some time after, and constitutes a remarkable and remarkably economical declaration of self-regulation by a budding profession. In approximately four hundred words it defines principles of proper behavior and confidentiality, as well as the core responsibilities of the physician. Galen would later express his misgivings at how obvious one of its central tenets ("do no harm") was, but its novelty and the perceived need for a declaration of principles to ensure trust are clearly intimately linked and a major factor in its continuing success.

The excellent scholarly analyses that have clarified the "Hippocratic" *Oath*'s philological aspects as well as its immediate cultural and medical contexts have as a rule emphasized its special place and value in Greece and the European medical tradition. They have placed less emphasis on the fact that it is not unique.[3] This is not to say that scholars are unaware of other ethical codes and "mission statements" for medicine, but the focus tends to be on the *Oath*'s foundational value and lasting influence across the ages in Western cul-

2 I refer to the Oath as "Hippocratic" because of its uncertain authorship: although it was claimed for Hippocrates by the first C. A.D. (Scribonius Largus), there is "no independent corroboration for this claim" (O. Temkin, "What Does the Hippocratic Oath Say? *Translation and Interpretation*," in *"On Second Thought" and Other Essays in the History of Medicine and Science* [Baltimore: The Johns Hopkins University Press, 2002], 21–28, at 21). The recent paper by H. von Staden, "'The *Oath*,' the Oaths, and the Hippocratic Corpus," in V. Boudon-Millot, A. Guardasole, and C. Magdelaine (eds.), *La science médicale antique: nouveaux regards* (Paris: Beauchesne, 2007), 425–66, offers a fascinating analysis of the language of the *Oath* in relation to the Hippocratic Corpus. The modern responses have also not abated: see, e.g., S. H. Miles, *Oath Betrayed: America's Torture Doctors*, 2nd ed. (Berkeley: University of California Press, 2009) in relation to the Abu Ghraib scandal.

3 See especially Thomas Rütten, "Receptions of the Hippocratic Oath in the Renaissance: The Prohibition of Abortion as a Case Study in Reception," *Journal of the History of Medicine and Allied Sciences* 51 (1996): 456–83 and previous note.

ture, even if its transmission up to the Renaissance is rather poorly documented.[4] In this paper I would like to compare the "Hippocratic" *Oath* to two further cases of medical oaths in other ancient cultures (India, China), which exhibit many interesting parallels with the Greek *Oath*. It is my claim that a comparison will illuminate how the core requirements for a set of regulatory rules in the medical profession are universal, and for very specific reasons. Once we take a closer look at the three texts, we are confronted with two questions: (1) What do the cross-cultural parallels teach us about the establishment of ethical codes for doctor-patient relationships?; and (2) Would we consider any of these oaths as being "ahead of their time"?

The first issue raises the additional question of whether the various oaths and pledges represent a universal of human thought (this is what a medical *oath* looks like) or whether the core notions underlying them are simply related to the central issues surrounding doctor-patient interaction (this is what a *medical* oath looks like): from the patient's point of view it is about the trust to be given to a stranger, and the courage to rely on new, "alternative" medicine when traditional ways still held sway. The second issue is intended as a mild criticism of retrospective accounts of medical ethics, but it also deals with the broader point of positivist interpretations of the history of medicine as it has arisen in the twentieth century.[5] To say that someone is "ahead of their time" more often than not involves a (misguided) value judgment about progress as a linear process, but usually also means that we measure earlier achievements by modern standards. In this case the ethical principles seem to transcend time, as both diachronic and synchronic evidence suggests.

II The "Hippocratic" *Oath* in Context

As a fundamental statement of prohibitions and injunctions for medical practice the "Hippocratic" *Oath* (HO) is an important marker of ancient medical ethics,

4 In his pioneering history of the *Oath*'s transmission, Thomas Rütten, *Geschichten vom Hippokratischen Eid* (Wiesbaden: Harrassowitz, 2007), CD-ROM, illustrates how sparing the concrete evidence for the *Oath*'s use really is. It may well be a twentieth-century perception that it is of such fundamental importance, because of the increased role ethical questions have played in recent times, often in lockstep with technical advances, which force us to ask whether we ought to do certain things just because we can.

5 See, for instance, P. J. van der Eijk, *Medicine and Philosophy in Antiquity: Doctors and Philosophers on Nature, Soul, Health and Disease* (Cambridge: Cambridge University Press, 2005), 3–5 for the rise of this type of research and the turning away in recent decades towards a history of medicine under the influence of cultural anthropology, social history, and comparativism.

but the document is not unique, nor can we be sure that it was universally accepted. It may well have come to represent the idea of medical ethics in the West, but there are several other, very similar pledges or "mission statements" of the medical profession in other ancient cultures, such as India and China, which deserve our attention.[6] The striking similarities among these oaths and pledges also raise the question of whether such declarations of principle may have come about through connections between them. The kind of similarities one finds are all closely linked to the intimate nature of the interactions between doctor and patient, and perhaps more importantly, to the very special nature of healing as the continuous effort to preserve and prolong life.

It is worthwhile to note that, so far as we know, Egypt has not produced an oath, despite the important role that Egyptian medical knowledge played in the development of ancient medicine.[7] The presence of a confidentiality clause imposing trustworthiness in the HO illustrates the need for proper behavior in the case of the doctor-patient relationship, which is an asymmetrical one. By "asymmetrical" I simply mean the imbalance of power which exists between the doctor and patient, as one between expert and lay customer. What is at stake is the vulnerability of the patient, in particular the integrity of women.[8] The HO contains other rules which ensure patient confidentiality (e. g., an injunction of non-disclosure). All these recommendations come in a tightly arranged solemn pledge of around four hundred words. Such remarkable brevity was no doubt dictated by the need for memorization, which would enhance its power as a constant guide for behavior.

---

6 It is noteworthy that Greek medicine was introduced into Tibet in Late Antiquity and given priority over Indian or Chinese medicine (C. I. Beckwith, "The Introduction of Greek Medicine into Tibet in the Seventh and Eighth Centuries," *Journal of the American Oriental Society* 99.2 [1979]: 297–313, at 301). One text alludes to principles of ethics which can be considered "a version of the HO" (Beckwith, "Introduction of Greek Medicine," 304–305 with nn. 72 and 73). According to W. H. S. Jones, *The Doctor's Oath* (Cambridge: Cambridge University Press, 1924), 31 and 33, the "Arabic Oath" found in Ibn abi Usaybia's *Lives of Physicians* (*'Uyun al-anba*, 13th c.) is a descendent of the HO; for a translation see F. Rosenthal, *The Classical Heritage in Islam*, trans. Emile and Jenny Marmorstein (Berkeley: University of California Press, 1975), 183–84 [= *Das Fortleben der Antike im Islam* (Zürich: Artemis Verlag, 1965), 250–51].

7 The peculiar "Oath of Imhotep" (quoted in S. G. Pérez, R. J. Gelpi, and A. M. Rancich, "Doctor-Patient Sexual Relationships in Medical Oaths," *Journal of Medical Ethics* 32 [2006]: 702–705, at 704) may seem close to the HO (e. g., "I shall refrain from sexual practices with my patients and others under my guard"), but is a modern construct motivated by (post)modern ideas derived from the HO.

8 Pérez, Gelpi, and Rancich, "Doctor-Patient Sexual Relationships," 704.

The issue of trust is naturally one of intimacy, including potential embarrassment over exposing one's naked body; the gender issue of a female being examined by a male (physicians were as a rule male);[9] the risk of the abuse of power in the imbalance the relationship represents; and the delicate question of whether a reward should play a role. It is of course important to note that these texts see things very much from the point of view of the physician, but with the aim of establishing a code of behavior in working *with* the patient as well as maintaining trustworthy reputation with the public at large.

The right ethical behavior of doctors has clearly been a concern of patients and doctors themselves in all periods of history, even when the healing process was a complex matrix involving divine and human factors. Whereas a covenant may seem mostly focused on the encounter itself, both parties are also very much concerned about the *consequences* for their reputation beyond the walls of the surgery or the home: the patients will want their private matters kept private, and the physician wants to keep his reputation in order to maintain a clientele.[10] In aiming to provide a professional code, oaths of this kind take care of both concerns. At the core is a concern for trust, reliability, and continuing business. A second important aspect is the emphasis on reliable prognosis, as emphasized in *Prognostic* and *Art*.[11]

III Cross-Cultural Comparison: An Exploration

1 "Hippocratic" Oath

The general similarities among medical practices and theories across the ancient world is striking and calls for an explanation. It is tempting to look for one in deep-seated psychological mechanisms (one is tempted to speak of Jungian archetypes), a need for such ethical codes arising in places so far apart geographically. Although Jung may have wanted to argue that humans produce behavior

9 On female physicians see Holt Parker, "Women Doctors in Greece, Rome, and the Byzantine Empire," in Lilian R. Furst (ed.), *Women Healers and Physicians: Climbing a Long Hill* (Lexington: University of Kentucky Press, 1997), 131–50, and idem, "Galen and the Girls: Sources for Women Medical Writers Revisited," *Classical Quarterly* 62.1 (2012): 359–86. His brief account and "database" of known female doctors indicates that there were quite a few female physicians who were accepted as colleagues, but the numbers he presents (55 female physicians for the classical and Byzantine periods are listed in *Women Healers*, 140–47) also show that the majority of physicians were male—which is why I continue to speak of "he/his" in this context.

10 The same holds for many cultures. See below on China, §III.3.

11 A. R. Jonsen, *A Short History of Medical Ethics* (New York: Oxford University Press, 2000), 5.

of a universal type, it is not easy to uphold that claim for this specific context of medicine; surely his notion of archetype was related to human character and psyche at the most general level. Another possibility for health and sickness is perhaps to maintain an essentialist view about the human response. But the differences between cultures militate against such a line of argument. Yet it is not difficult to see the interaction between a physician and patient as a very special one, which, due to its confidential nature, may generate very similar responses to cope with, either before, during, or after the doctor's visit: the emotions such as anticipatory anxiety, potential embarrassment, pain, and possible lasting impairment or mutilation would make the decision to see a travelling healer (often the norm in ancient Greece), either at home (Hipp. *epid*. II 2, 5.84–98 L., case studies include domestic location; Hipp. *decent*. 12–13, 9.238–40 L., cf. Plut. *de prof. virt*. 11.81F) or in a surgery of some kind (e. g., Hipp. *medic*. 2, 9.206–208 L.). Besides, medical healing of the Hippocratic kind was a new and alternative treatment to traditional ways.

The crucial aspects of the HO can be summed up as follows (text in appendix A):

1. Its form (an *oath*) belongs firmly to a religious tradition of solemn statements as distinct from a mere promise or simple act of self-promotion.
2. The teacher-student relationship is one that transcends the formal educational set-up and resembles that of father and son (as was often the case).
3. Principles of etiquette and ethics go hand in hand and promote the importance of the patient, confidentiality, discretion, and trust.
4. Specific treatments and medications which involve treatments with high risk and ethical dilemmas should be avoided (abortion, surgery,[12] poison); one is tempted to suggest that the HO was intended for the "general practitioner," but it may also be a cautionary note for the novice physician (the difference between "generalist" and "specialist" can not be corroborated by good evidence for the archaic and classical periods).
5. The invocation of a higher authority to ensure compliance with the rules; an appeal to a higher being is considered important, which in a sense gives the gods a role equivalent to that of a modern "regulatory body."[13]

12 An interesting parallel is found in China, where Confucianism declared itself against surgery (P. U. Unschuld, *Medicine in China: A History of Ideas* [Berkeley: University of California Press, 1985], 152).

13 It is this religious context which made Edelstein argue that the HO has a Pythagorean origin and therefore a very narrow following originally (L. Edelstein, "The Hippocratic Oath," in O. Temkin and C. L. Temkin [eds.], *Ancient Medicine: Selected Papers of Ludwig Edelstein* [Balti-

The Oath establishes values for the profession, which in the fifth century B.C. was quite new. The Hippocratic approach to medicine was trying to replace the traditional healers, who were an unregulated group of practitioners, ranging from priest-healers to quacks. Clearly the new science was best served with a new ethic.

The other two "mission statements" to be compared are from India and China. The Indian "Oath of Initiation" (IO) is taken from the *Carakasamhita*, one of the oldest medical handbooks in Sanskrit, thought to originate around 1000 B.C. and still influential to this day.[14] Its core values come very close to the HO in several respects, as we shall see. The third oath, which is from the Chinese encyclopedic work *A Thousand Golden Remedies*, has a declaration of medical ethics of very similar nature. All three are deontological, although the Greek writings do not *present* the HO as such, but rather as a "morality of aspiration and virtue."[15]

2 Indian Oath

The IO, dated to ca. 100 A.D. but surviving in a version from around 300–500 A.D., is an intriguing text worth considering as a parallel (references are to the text in Appendix B). It is part of the sixth chapter of the *Carakasamhita*, entitled "Cikitsasthana," and the relevant section discusses therapies (§6.1) and practitioner-sages, "Asvins," who are miracle workers of sorts (§6.1.3 lists their extraordinary achievements), with particular comments on Indra's teachings (§6.1.4.6–7). The section ends with comments on the outcome of medical training:

> A physician who has completed a full course of training obtains a sattva (mental disposition) of the brāhma or ārsa type and is called thrice-born (trija) (4.52–54). The ethical principles he should adhere to are outlined 4.55–62.[16]

---

more: The Johns Hopkins Press, 1967], 3–63, at 17–20 and 53–54). This view is no longer generally accepted.

14 I am using the translation in I. A. Menon and H. F. Haberman, "The Medical Students' Oath of Ancient India," *Medical History* 14 (1970): 295–99, esp. 295–96 (the same authors discussed the date of the text in "Dermatological Writings of Ancient India," *Medical History* 13.4 [1969]: 387–92). Dating and section numbering come from G. J. Meulenbeld, *A History of Indian Medical Literature*, 3 vols. (Groningen: E. Forsten, 1999–2002), 1 A:52–53.

15 Jonsen, *A Short History*, 123 n. 22.

16 Meulenbeld, *A History*, 1 A:53.

The "Oath of Inititation" considers themes so close to the HO that comparison imposes itself even from a cursory reading. This is not to say there are no differences (on which see below), but it is best to sum up briefly the similarities in order to understand the rationale behind my exploration of these texts as well as to illustrate why one is tempted to think of universals. Major aspects and themes are its religious context (§§1–2 and 9), the demand of obedience (§3), and the authority of the teacher (§4). Then there are the stipulative rules about proper behavior, availability, exchange of presents (from women), and the notion of confidentiality (§8).

The IO starts by mentioning teaching and taking of the oath in the presence of a sacred fire (§1) and encouraging the student to follow certain restrictions in diet ("no meat, pure articles of food," §2—a form of moral and physical purity implied in the HO, §§3–7). Total obedience to the master is demanded by way of an absolute command ("thou shalt regard me as thy chief," IO §4). The relationship between teacher and student is described as that of father and son or master and slave/supplicant. This is a more authoritarian position than in the HO, where the relationship is described more in terms of "family" (HO §2–3, "regard him as equal to my parents"). Although to modern eyes the HO's formulation seems preferable and more benign, the emphasis is here on the considerable power the teacher has over his student—in the ancient family fathers often had absolute power over their dependents. A very strong injunction is stated regarding the importance of the patient. This includes a principle of around-the-clock availability ("day and night," §6), stipulations about appropriate behavior (not to be "a drunkard or a sinful man"), and a strong emphasis on truthfulness and purity in word. We may compare HO §5, in which the physician is encouraged to perform his duties in a "pure and holy way."[17]

There are also some marked differences which should not come as a surprise: the cultural contexts would almost certainly lead to other forms of managing the doctor's activities and professional self-definition. But as cultural context includes more than deliberate self-presentation, we should also be on the lookout for signs which result from the time, place, and societal circumstances in which an oath is written. Such a "cultural signature" does not, however, detract from the core ethical message of the covenant.

For instance, there is an unusual detail in §6 concerning the importance of the patient: it mentions the prohibition on treating people who "hate the king or

17 For a detailed interpretation of the phrase see H. von Staden "'In a Pure and Holy Way': Personal and Professional Conduct in the Hippocratic Oath," *Journal of the History of Medicine and Allied Sciences* 51 (1996): 406–37.

who are hated by the public or who are haters of the public." This constitutes the "right and obligation to deny services."[18] It has no counterpart in the HO. But since it is motivated by political or social reasons, this aspect seems less relevant to setting the parameters of medical ethics, even if this is perhaps a point of doubtful morality on the side of the (potential) patient. But it also indicates how medical decisions could become politicized in certain contexts. In this case, then, striking differences turn out to be based on the immediate political and historical context.[19] The IO acknowledges the importance of the king as the highest authority, over and above the usual authority that a physician has over his students.

Furthermore, in the IO there is greater emphasis on the availability of the physician ("day and night," §6), and more detail regarding the avoidance of inappropriate and unlawful behavior. Special attention is paid to the "time and place" and "past experience" of a patient (§6). A whole section is dedicated to the house visit, prescribing certain attire (cf. Hippocratic etiquette in *Precepts* or *The Physician*), full focus on assistance of the ill, and a specific comment about the way in which one should respect the "peculiar customs of the patient's house" as confidential (§8). The oath ends with a religious section, placing great store in the proper relation to the gods (§9). The significant similarities are clear: a religious framework, asceticism, full dedication, moral rectitude, and a patient-centered outlook.

3 Chinese "Oath"

By bringing in a third example (not an oath in the strict sense) I am hoping not only to diversify the investigation but also to reinforce the argument that doctor-patient relationships have been regulated similarly in different cultures. If two examples begin to offer validity to the scholarly principle of generalization, on which we base our hypotheses and conclusions—one being hardly enough to base significant conclusions on, and two being the start of a pattern—a third should surely allow us to claim an even firmer basis for generalization. At least this approach goes beyond the *dictum* "Einmal ist keinmal, zweimal ist immer," attributed to Ulrich von Wilamowitz-Moellendorff (1848–1931). Together

18 As Menon and Haberman put it in their commentary ("The Medical Students' Oath," 297).
19 A point also argued by S. Aksoy, "Ancient Indian and Chinese Medical Oaths and the Comparison of their Medical Rules," *Yeni Tip Tarihi Arastirmalari* 7 (2001): 65–76, which was only available to me in abstract (article in Turkish). Menon and Haberman characterize it as "an indigenous product of Indian thought and culture" ("The Medical Students' Oath," 298).

the three examples suggest that a universal moral understanding emerges in such basic interactions between humans in which trust is fundamental to make this intimate relationship work, in particular when decisions of life and death may be required.[20]

In his compilation of all known Chinese medical knowledge to his day, the *Ch'ien Chin Yao Fang* ("A Thousand Golden Remedies"), Sun Ssu-miao (581–673 A.D.) writes the following (paragraph numbering is mine):

> [1] Medicine is an art which is difficult to master. If one does not receive a divine guidance from God, he will not be able to understand the mysterious points. A foolish fellow, after reading medical formularies for three years, will believe that all diseases can be cured. But after practicing for another three years, he will realize that most formulae are not effective. A physician should, therefore, be a scholar, mastering all the medical literature and working carefully and tirelessly.
>
> [2] A great doctor, when treating a patient, should make himself quiet and determined. He should not have covetous desire; he should have bowels [*sic*] of mercy on the sick and pledge himself to relieve suffering among all classes. Aristocrat or commoner, poor or rich, aged or young, beautiful or ugly, enemy or friend, native or foreigner, and educated or uneducated, all are to be treated equally. He should look upon the misery of the patient as if it were his own and be anxious to relieve the distress, disregarding his own inconveniences, such as night-call, bad weather, hunger, tiredness, etc. Even foul cases, such as ulcer, abscess, diarrhea, etc., should be treated without the slightest antipathy. One who follows this principle is a great doctor, otherwise, he is a great thief.
>
> [3] A physician should be respectable and not talkative. It is a great mistake to boast of himself and slander other physicians.
>
> [4] Lao Tze, the father of Taoism, said, "Open acts of kindness will be rewarded by man while secret acts of evil will be punished by God." Retribution is very definite. A physician should not utilize his profession as a means for lusting. What he does to relieve distress will be duly rewarded by Providence.
>
> [5] He should not prescribe dear and rare drugs just because the patient is rich or of high rank, nor is it honest and just to do so for boasting.[21]

Though of a relatively late date, it is likely that this list of injunctions (a moral code rather than an oath) goes back to much older versions, given that the work in which it appears summarizes a long medical tradition which tradition-

20 Note that the argument in favour of the transferability of the ancient *Chinese* ethical principles has recently been made by D. Fu-Chang Tsai, "Ancient Medical Ethics and the Four Principles of Biomedical Ethics," *Journal of Medical Ethics* 25 (1999): 315–21.

21 Translation by T. Lee, "Medical Ethics in Ancient China," *Bulletin of the History of Medicine* 13 (1943): 268–77, at 268–69.