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The ‘Science of Properties’ and its Transmission

Abstract: This paper looks at Arabic compendia stemming from the Abbasid period that group together the properties associated with particular natural objects. This ‘science of properties’ usually gathered together all of the known properties of, say, the body parts and secreta of a single animal within a chapter. The materials in these compendia were often labeled as *manāfi*’ or *ḥawāṣṣ*, terms that describe the ‘properties’ of natural objects and can be differentiated on the basis of the relative transparency of the causal mechanisms underlying a given property. Other labels describe a particular entry as ‘tried’ or ‘tested’, while two different comments that can be translated as ‘astonishing’ and ‘strange’ appear in a number of manuscripts as yet another way of qualifying individual entries. These different labels, in combination with the reorganization of compendia along new lines, were the primary means through which editors could comment on the reliability of particular entries. The paper concludes with a description of the compendia assembled by ibn Zuhr, who developed a set of sigla for assigning individual entries to a specific author. These different types of labels speak not only to questions of effectiveness and underlying models of causation, but also to the nature of authorship within the Arabic compendial tradition.

1 Introduction

I have borrowed the label ‘science of properties’ from Paul Kraus,¹ but I am going to use it in a broader sense in order to facilitate the collection of a wide range of materials that deal with the medical, occult, and magical properties of natural objects – namely plants, animals, and minerals – under a single banner. These properties usually take the form of a recipe, based on a key simple drug of mineral, vegetal, or animal origin. So the recipe appears to be the minimal compositional unit of these texts, and this structure had a significant impact on the transmission

¹ Kraus 1942, 61–70. Kraus used this expression with regard to a particular section of Ġābir Ibn Ḥayyān’s corpus, which deals with the properties of natural objects. Referring to Wellmann 1928, Kraus attributes to Bolos Democritus (or rather to his pseudo-authorship, one would better say today) the massive propagation of the *physikā*, including all kinds of recipes dealing with crafts, agriculture, animals, stones, tricks, etc. Among its sources there probably were the works that reached Hellenism under the name of Ostanos, Zoroaster, Dardanus, and Apollobex. For a discussion at length of the ‘science of properties’, see the contribution to this volume by Rochberg.

of these texts. This particular structure remains constant in all the different genres in which these properties are attested. Since in my view, these properties were the object of a science, the way in which they were compiled and transmitted is of central importance for our inquiry.² In this paper, I will not deal with the huge issue of the sources. For our purposes here, it will be sufficient to say that the origins can be found in a Greek and later Hellenistic tradition, which found one of its first authorities in Bolos of Mendes (3rd/2nd centuries BC).³ Nor will I try to stick positivistic labels on the colourful variety of its contents. The fact that this material can be dealt with in terms of either magic or medicine does not affect its value as evidence for the transmission of knowledge.

The ‘science of properties’ covers a semantic field described by the Arabic words *manāfi‘* and *ḥawāṣṣ*. It is more difficult, however, to make a clear distinction between these two categories. Yet the ‘science of properties’ remains a working hypothesis, and a new label is not enough to wipe away all at once the inconsistencies and the problems intrinsic to such a varied lore. First of all, this label does not imply any characterization of a particular textual genre, since these materials are scattered throughout a number of different textual genres. Moreover, they were able to arouse a constant interest on the part of the ancient readership, so their presence stretches over a long time span. Therefore, I will give here a non-comprehensive list of some indicative landmarks that will help us to follow the distribution of these materials throughout the long and rich history of Arabo-Islamic literature.

2 A long story made short

From a very early stage, in the 9th and 10th century, an interest in the topic seems to be well delineated. In the first Abbasid centuries, at least two monographic works on animal properties were composed. In chronological order, one should mention the *Kitāb A‘ḍā’ al-Ḥayawān* by ‘Īsā ibn ‘Alī, and the *Kitāb al-Ḥayawān* by Ibn Buḥtīshū.⁴ Both were physicians of Nestorian origin and had brilliant careers at the Abbasid court. Of course it should also be noted that the former was a pupil of Ḥunayn ibn Ishāq, the leading figure of the translation movement, and therefore had to be close, if not directly active, in the Graeco-Syro-Arabic translation movement. These works were composed within the medical arena, but their contents

² Ullmann 1978,

³ For the sources of the literature on properties and their transmission, see Kraus 1942, 61–64. Ullmann 1972, 14; 22; 98; 159. Wellmann 1927, Wellmann 1928, Kruk 2001. For one of the most recently published texts, see Käs 2012.

⁴ See Contadini 2012.

and the rich illuminations in some copies gave them a long and a varied textual history. The incredibly fast development of Arabo-Islamic medicine (Ibn Sinā lived less than one century after these first two authors) has probably overshadowed these kinds of monographic works, in favour of larger and more general medical compilations. Anyway, the properties of natural objects continued to have their place in medical works. In the *Firdaws al-Ḥikma* ('The Paradise of Wisdom'), a medical compendium written by 'Alī ibn Rabbān aṭ-Ṭabarī (9th century), a whole section is devoted to the medical properties of animals.⁵ The great physician and philosopher al-Rāzī (864–925), alongside his monumental *al-Kitāb al-Ḥawāwī* (*Liber Continens*, in the Latin tradition), also dedicated a small treatise to the occult properties of natural substances, the *Kitāb al-Ḥawāṣṣ*.⁶

The 'science of properties' had found a place in the *Corpus Gabirianum*, a collection of works ascribed to the father of Arabo-Islamic alchemy, Ḡābir ibn Ḥayyān. He composed a *Kitāb al-Ḥawāṣṣ* (Book of Occult Properties), collecting information about the properties of all kinds of natural objects and their possible interactions.⁷ This topic continued to be of interest throughout the long and successful history of this literature, if one considers that al-Gildakī (d. 1342) still includes a section dedicated to the topic in his compilation *Durrat al-Ḡawāṣṣ wa-Kanz al-Iḥtiṣāṣ fī 'Ilm al-Ḥawāṣṣ* ('The Pearl of the Pearl Diver and the Treasure of Competence in the Science of the Occult Properties').⁸

The works, or sections of larger works, mentioned up to now share a common organization of the materials. Either longer or shorter, every chapter is devoted to a single animal, and the succession of animals in turn follows a rough yet empirical classification. One has to add that the criteria inferred from this order are not unambiguous and overlap in more than one case: man, carnivorous and predatory animals, large herbivorous animals, smaller ones, birds, insects, and fish.⁹

Ibn al-Bayṭār (13th cent.) can also be counted among the authors who included the natural properties in their works. In the *Al-Ḡāmi' li-Mufradāt al-adwiya wa-l-aḡḍiyya* ('The Book of Simple Drugs') all the listed ingredients are natural substances and their properties constitute an important section of the many entries.¹⁰ Another Andalusian physician (and a member of a famous medical lineage), Abū 'Alā

5 al-Ṭabarī 1928, EI² X, 17–18.

6 See Ullmann 1972, 383 and Käs 2010, I 34–37. This text is witnessed by just one manuscript, preserved in the *Dār al-Kutub* in Cairo.

7 For the partial edition of the Arabic text see Kraus 1935, 224–332; for the position of this work into the *Corpus Gabirianum* see Kraus 1942, 61–95.

8 EI² Suppl. 270, Ullmann 1970 341, Ullmann 1972 240–242. For the text, see the manuscript Berlin Landberg 157 (also in the digital collection: http://digital.staatsbibliothekberlin.de/dms/werkansicht/?PPN=PPN719059984&PHYSID=PHYS_0022).

9 See Ullmann 1972, 50–54 for other systems of classifying the animal kingdom in the Arabo-Islamic Middle Age.

10 Ibn al-Bayṭār 1874, EI² III, 737. For a translation into French, see Ibn al-Baytar 1877–72.

Ibn Zuhr (1160–1131 ca.), dedicated an alphabetically arranged monographic work to these properties.¹¹ This work, as it turns out, is of particular interest, especially when we take into consideration the fact that Ibn Zuhr wrote two different books on *Muğarrabāt* ('Tried out Remedies') and *Ḥawāṣṣ* ('Occult Properties') respectively.

Another item on the list is the *Tibb Nabawī* ('The Medicine of the Prophet').¹² Many an author composed a collection of medical materials derived from the collections of the sayings and the deeds of Muḥammad, based on more or less reliable traditions. Each author created his own particular redaction and his own imprint on the choice of the materials, and the way in which the materials were structured.

This material found its way into *Adab* literature as well.¹³ In the splendour of the first Abbasid age, one can find some traces of it in the monumental compilation of zoographic materials, the *Kitāb al-Ḥayawān* (Book of Living Beings) by the genial polymath al-Jāhiz (776–868/69).¹⁴ A couple of decades later, the penman Ibn Qutayba (828–889) devoted an entire section of his *Kitāb 'Uyūn al-Aḥbār* (The Choice of Transmitted Information) to animals and their properties. As already implied by the notion of *adab*, these works collected a large variety of information, with a correspondingly large number of sources, written and oral, foreign and autochthonous.¹⁵

The properties of natural objects were later considered worthy for inclusion in works that defined themselves as encyclopedias, thanks to their effort to collect all the knowledge on a certain topic and arrange it in a systematic way. So, in al-Qazwīnī's (1202–1283) *Kitāb 'Ağā'ib al-Maḥluqāt* ('The Book of the Wonders of Creation') – an encyclopedic compendium of natural history which attempts a systematic description of the creation – animals, plants, and minerals are listed in alphabetical order, and a suggestion as to the different ways to benefit from their use is never lacking.¹⁶ The encyclopedic works met with great literary success, and one

¹¹ EI² III, 976–77; Ullmann, 1970 312.

¹² See Ibn Qayyim al-Jawziyya 1998 and Elgood 1962.

¹³ The aim of Arabic *adab* (*Belles Lettres*) was to educate and entertain at the same time. The genre specialised in addressing several different social figures, namely courtly bon companions, penman, physicians, etc. See EI² I, 175–76. For a recent semantic analysis of *adab*, see Guth 2010.

¹⁴ EI² II, 385–87; for partial translations of the *Kitāb al-Ḥayawān*, see Pellat 1969, 130–185 and Jāhiz 1988. Al-Ġāhiz left us a vivid portrait of the widespread attitude towards animals and animal substances in ninth-century Iraq, [III, 253] "Cleanliness of the pigeon and use of its droppings. The pigeon is a domestic bird, common and cherished by people, famous for its cleanliness, to the point that its droppings do not provoke disgust and do not have an unpleasant smell, whereas the rooster's and hen's do. The experts in the treatment of bladder stones use its droppings. The farmers find in these many useful properties. The baker leaves a bit of it in the leavened paste, so as to make the loaves raise; later, it is not possible anymore to distinguish what they contain. Its droppings are useful indeed, as the experts of bladder stones know well. Pigeon's droppings are useful also in a particular phase of the tanning process", al-Ġāhiz 1965, III 253. All the translations, if not otherwise indicated, are my own.

¹⁵ Kopf Bodenheimer 1949.

¹⁶ EI² IV 865–67; Von Hees 2005.

may observe an approach to their internal organization that is similar to al-Qazwīnī's work. Ibn Faḍl Allāh al-'Umārī (1301–1349), who served in the Mamluk chancery in Cairo and Damascus, composed the *Kitāb Masālik al-Abṣār fī Mamālik al-Amṣār* ('Ways of Description Concerning the Most Populous Provinces'), an encyclopedic compendium organised around administrative practices.¹⁷ The author devoted three different large sections to animals, trees and herbs, and minerals respectively, giving for each entry a detailed description and a number of its practical and medical uses.¹⁸

Though it was composed as a lexicon rather than an encyclopedic work, the *Ḥayāt al-Ḥayawān al-Kubrā* (The Great Life of Animals) by ad-Damīrī (1344–1405) cannot be excluded from this list. The entries in this lexicon consisted of the names of animals, arranged in alphabetical order; the entries, in their turn, include several different aspects of animal life especially in relation to men, and their properties also find a place in these descriptions.¹⁹

3 Lexicographical clues

Even though textual genre *per se* must be seen as inadequate for a proper systematization of this material, the indisputable success with which this material moved across genres highlights the interest that it found with the contemporary readership. The apparent lack of a definable textual genre does not prevent one from making use of other approaches, so as to bring some order to this entangled mass of information. As said above, these recipes and prescriptions were based on the properties of natural objects and circulated under two different names: *manāfi'*, and *ḥawāṣṣ*. The lexicographical description of these two categories gives us some clues to define the distinctive character of each of these labels.

- *manāfi'*/*manfa'a*: a cause, or means of advantage, profit, utility; or benefit: and simply, advantage; profit or profitableness; utility, use, usefulness; or benefit. Contrary of *maḍarra*.²⁰
- *ḥawāṣṣ/ḥāṣṣa*: a property of a thing not found, or not existing, either wholly or partly in another thing
- *ḥawāṣṣ/ḥāṣṣiyya*: a property, or particular or peculiar virtue which is an unknown cause of a known effect; as that by which a medicine operates: the former differs from the latter in being conventionally applied to an effect, or

¹⁷ EI² III 758–59.

¹⁸ See al-'Umārī 1999 and al-'Umārī 2008.

¹⁹ See Somogyi 1950 and Somogyi 1957.

²⁰ Lane 1968, II 747.

effective property, whether the cause of its existence be known or not. And *ḥawāṣṣ* is a quasi-plural noun, not a plural.²¹

In light of these definitions, the difference between *manāfiʿ* and *ḥawāṣṣ* lies in the transparency of the underlying causal relations. Within a comparative approach, one may infer that the relation between cause and effect in the *manāfiʿ* is clear and can be deduced with a common sense approach. In the latter, the two different aspects meld, resulting in a peculiar and ineffable process of causation. Perhaps something might have been said about a clear distinction between these two categories in the early phase of their use, but they soon became almost inextricably confused.

Another Arabic expression, that is *muğarrabāt*, is often mentioned side by side with *manāfiʿ* and *ḥawāṣṣ*. The *muğarrabāt* include the description of medical practices and procedures that have allegedly been ‘tried out’. Describing them as a proper textual genre, Ullmann has stated that it would be a huge anachronism to define the *muğarrabāt* as a collection of experimental data. He argues that they are instead recipes proven to be effective through experience. So they are more *empirica* rather than *experimenta*.²² In other words, the *muğarrabāt*, intended as a medical literary genre, are records of physicians’ case histories, treatments, medical experiences, and remedies which are at least ‘described’ as real cases.²³ Again lexicography may help us to understand some other implications of this expression:

ğarrabahu: he tried, he made trial of, made experiment of, tested, proved, assayed, proved by trial or experiment or experience. (...) namely, a thing, time after time.²⁴

The Arabic ‘intensive’, a verbal stem known to imply a notion of verbal plurality, can be seen as a hint about a particular kind of successfully repeated experience.²⁵ The *muğarrabāt* seem to depend upon the human experience of a certain recipe or procedure. Based on the curious mixtures and procedures described in these recipes, the addition of the expression ‘tried out’ easily gives the impression of an experimental phase in its prehistory, thereby guaranteeing a higher level of reliability for its contents. However, any stress on the existence of a modern empirical procedure in the background is almost certainly anachronistic: in a pre-galilean/modern society, why would the experimental method have been seen as a guarantor of the soundness of a certain procedure?

²¹ Lane 1968, VIII 3036.

²² Ullmann 1970, 311.

²³ Álvarez Millán 2010, 195–197.

²⁴ Lane 1968, II 402, being *muğarrab* the passive participle of the second form of the verb.

²⁵ I would thank Riccardo Contini for his precious advice on the linguistic aspects of this question.

The expression *muğarrab* was also actually used outside of its peculiar textual genre: the word was simply added at the end of some recipes, as a comment stating their alleged efficacy. In this way, the expression could easily find its way into many different textual traditions: the personal point of view and comment of a single copyist, who felt confident enough to 'certify' a recipe's efficacy, could be included in the text almost anywhere in the process of transmission. Whether the *manāfi'* and *hawāṣṣ* have borrowed the expression extrapolating it from its genre-context, or the *muğarrabāt* genre originated from a further reflection on the importance of medical observation or from some kind of discontent towards such properties, remains an open question which can only be answered by an extensive study of the sources.²⁶

Combining the lexicographical perspective with the different genres in which these properties are attested might give the impression that the riddle is nearly solved. However, the actual state of the texts is much more complex, and there are many overlapping situations and inconsistencies in the use of the words *manāfi'* and *hawāṣṣ*. Each textual tradition has its own peculiar aspects and a huge number of unedited texts still need to be studied before we can formulate a more precise general description of the topic.

4 Authorship and tradition

Authorship can be seen from many different perspectives and warrants careful scrutiny. In almost all the the works listed above, one can point to a strong authorial figure, who could allegedly have provided a guarantee for the transmission of the text.²⁷ But again the situation is actually much more complex.

There certainly were some cases in which a strong authorial figure and his pupils were able to safeguard and have some control over the transmission of a text. Notwithstanding a strong authorship, for example that of al-Qazwīnī or Ibn Buḥtīṣū', some of these traditions are witnessed by hundreds of manuscripts within

²⁶ Álvarez-Millán 2010, 198 underlines a singular point: the word *muğarrab* never occurs in a proper collection of medical experiences, but only at the end of other kind of recipes. Moreover, the three main books identified as *Kutub al-Muğarrabāt* ('Books of Tried out Remedies', by ar-Rāzī, al-Hāšimī, and Abū 'Alā ibn Zuhr) were posthumous compilations of medical cases dealt with by a physician, usually collected by one of the pupils. All in all, this does not support a hypothesis suggesting that the word *muğarrab* migrated from a proper and high medical genre towards a de-contextualized use in popular medicine and magic.

²⁷ For the attempt of the Arabo-Islamic scholarship to control the transmission of authorial texts, see Rosenthal 1947; for the certificate of copy (*iğaza*) see Gacek 2009, 52–56.

the complex frame of a multilingual tradition. Thus far relatively few of them have been actually taken into account in writing of a critical history of the text.²⁸

Then there are those works whose author was an outstanding intellectual figure, but later sank into oblivion, or legend. These conditions generally result in a high degree of variability in the transmission, with copyists taking on an increasingly authorial role.²⁹ In other words, they produced huge innovations at different levels in the texts, either carrying out a selection of the materials (additions or abridgements), or modifying the text's structure and the disposition of the materials, the language, the style, etc.

Pseudo-epigraphic attributions represent another possible variation on the general idea of authorship. The author or transmitter could decide to ascribe the work either to an authoritative figure (e.g. Aristotle), or to a fictitious and mythic character, such as Hermes Trismegistos, Idris/Enoch,³⁰ or Iṣrāsīm, the Indian concubine of the caliph Hārūn al-Rašīd.³¹ In such cases, the copyist is probably granted even more compositional liberty in that the alleged and the actual 'author' no longer reside in the same person.

And finally, there are the enormous number of anonymous works and fragments on this topic, probably – however unfairly – at the very bottom of the list of unstudied texts. Again it emerges that the texts that have been edited and studied up to now are far from sufficient, if we are to formulate a plausible hypothesis about the effect of different kinds of authorships upon the fluidity of such traditions. Still, a few case studies in which the features just described are concretely embodied may provide a glimpse into the complex reality of these textual traditions.

4.1 Abū 'Alā bin Zuhr and his *Kitāb al-Ḥawāṣṣ*

Abu 'Ala ibn Zuhr was a member of a famous lineage of Andalusian physicians. His medical literary output includes two different works, a *Kitāb al-Muğarrabāt* ('Book of Tried out Remedies') and a *Kitāb al-Ḥawāṣṣ* ('Book of Occult Properties').³² So it seems that in the 11th century the distinction between the two spheres

²⁸ Many of these works have been printed, but they are still waiting for a thoroughly critical edition based on all the available witnesses. See Witkam 1988, 94–98.

²⁹ For the idea of the copyist as author see Cerquiglini 1999, 33–34.

³⁰ EI² III 1030–31 ; Ullmann 370–71.

³¹ De Slane, 476; Ullmann 1972, 382.

³² The *Kitāb al-Muğarrabāt* has been edited and translated into Spanish, see Álvarez Millán 1994; as for the *Kitāb al-Ḥawāṣṣ*, the preparation of a critical edition and translation in English is in progress; for the moment six witnesses have been available to me: Wien 1460, Bodl. M. Marsh. 520, Berlin 6166, Paris Ar. 2954, Cambridge Or. 1418, Hamburg Or. 100, Leiden Or 713 For a complete list of manuscripts, see Ullmann 1972, 28.

was still clear, at least for someone drawing on a particular interpretation of the two terms. The contents of the two books differ so considerably that this difference seems to be beyond any reasonable doubt. Two concrete examples – a preparation from the *Muğarrabāt* and the *Ḥawāṣṣ* of an animal, a plant, and a mineral – will help to clarify the differences between the two works:

- *Kitāb al-Muğarrabāt*:
 - Prescription by him [Abu Ala l-Zuhr] for a man who suffered from pain and roughness in his throat and who had developed a cold. On an empty stomach he must gargle with this, that is, he must take one ounce of mulberry syrup and half ounce of walnut syrup, mixing it all with three and a half ounces of rose-water. He must gargle with it hot, if God pleases, be He exalted.³³
- *Kitāb al-Ḥawāṣṣ*:
 - *The Man*: if one fumigates something with man's hair, then this will become yellow; if a dead man's tooth is hung on an aching tooth, then the pain will cease; and if it is put over the head of a sleeping man, his sleep will become deeper.³⁴
 - *The Squill*: if a wolf steps on it, then it will fall ill, and sometimes it may die; so, the fox places it around its pups to keep the wolf and other predators away from them; if the squill is dried, a *dirham* of it is pulverized with the same quantity of pigeon's droppings, mixed with honey and drunk for some days, then this will crumble bladder stones.³⁵
 - *The Magnet*: if it is hung on a broken bone, it will fix it; if it is held by a hand suffering from gout, then it will be useful to it and it will prevent its spread; if a man wears it in a signet ring, then he will heal from all the problems of the joints.³⁶

Given the many other examples, which cannot be presented here, the differences seem to concern the ingredients, the preparation, and the relation between cause and effect. The *ḥawāṣṣ* are often based on *Dreck-Apotheke* ingredients. In general the simple drug is the starting point of every recipe. The preparatory process is pretty simple, and the cause-effect relation remains unknown: it appears to be something given which does not need (or cannot be provided with?) any explanation. On the other hand, the *muğarrabāt* are practical descriptions of more complex pharmacological preparations, the effect of which is based on galenic physiology.³⁷

³³ Álvarez Millán 2010, 197.

³⁴ Ms. Wien 1460, 2r.

³⁵ Ms. Wien 1460, 8r–8v.

³⁶ Ms. Wien 1460, 86v.

³⁷ On the other hand, *Manāfi'* and *Ḥawāṣṣ* seem to be implicitly ruled by sympathy, analogy, homeopathy, etc.

They hardly ever make use of any ‘disgusting ingredient’ of animal origin and the focus of the text is on the illness which needs to be cured and the way of doing so.

Even though the differences in the contents seem to be so easily observable, the manuscript tradition of the book on occult properties has sometimes misled some scholars, largely due to misunderstandings of its various titles.³⁸

- Wien 1460: “*qad ḡami‘tu fi kitābī hadā min al-fawā’id al-muntaḥabat munta-khabat wa-l-ḥawāṣṣ al-ṣaḥīḥah*” (1v).
- Bodl. M. Marsh. 520: “*hadā kitāb muḡarrabāt al-ḥawāṣṣ*” (1v)
- Berlin 6166: “*Ḥawāṣṣ ibn Zuhr*” (1r)
- Paris Ar. 2954: “*Ḡami‘ fawā’id al-muntaḥab al-ṣaḥīḥ min al-ḥawāṣṣ al-muḡarrabah*” (4v)
- Cambridge Or. 1418: “*Hadā kitāb al-ḥawāṣṣ al-muḡarraba*” (1r)
- Hamburg Or. 100: “*Kitāb al-ḥawāṣṣ al-kabīr li-Zuhr bin Zuhr al-Maḡribī fi-l-ma‘ādīn wa-l-nabāt wa-l-ḥayawān*” (72r)
- Leiden Or. 713: *Fawā’id al-muntaḥab al-ṣaḥīḥ min al-ḥawāṣṣ* (1r)³⁹

Now clearly it is only through a careful perusal of the contents – and by no means merely the titles – that we can evaluate the actual contents of this tradition.

The value of Abū ‘Alā ibn Zuhr as a landmark in the complex tradition of the ‘science of properties’ is also confirmed by the list of sources given in the introduction.⁴⁰ Thanks to this single precious example that makes use of a system of abbreviations to track every recipe back to its source,⁴¹ it offers us an overview of the state of art in the 11th century. In this list one may find Greek authors (Aristotle, Polemon, Galen, Dioscorides), physicians who wrote in Arabic (al-Rāzī, Yuḡannā ibn Masawayh, Yuḡannā ibn Serābīūn, al-Ṭabarī), a number of authors of books on agriculture (Greek, Indian, Persian agriculture), mythical authors (Hermes, Kimās, Mahrārīs), and names associated with still unidentified sources (Wahmātūs, Isqrādiūs).

One of the manuscript witnesses, namely Wien 1460, brings into the discussion the ideas of ‘*aḡīb* and ‘*ḡarīb*. In this manuscript several glosses and emendations have been added by a different hand than that of the copyist.⁴² This active reader

³⁸ For the titles of the manuscripts used for the *Kitāb al-Muḡarrabāt* edition, see Álvarez Millán 1994, 67–76.

³⁹ For this manuscript see Witkam 2007, 297.

⁴⁰ Among the manuscripts available to me, only Bodl. M.Marsh. 520 and Cambr. Or. 1418 lack this list of abbreviations. The critical analysis of the materials is not yet finished. In any case, the tendency to simplify while copying might point to the voluntary omission of a complex system of reference, which was not always fully understood by the copyist of Berlin 6166 either.

⁴¹ On the abbreviations in Islamic manuscripts, see Rosenthal 1947, 35–37 and Gacek 2009, 2–6. Thus far, almost nothing has been said about abbreviations in scientific literature.

⁴² The glosses may be attributed to one of the two physicians, who wrote an ownership statement in the first blank folio.

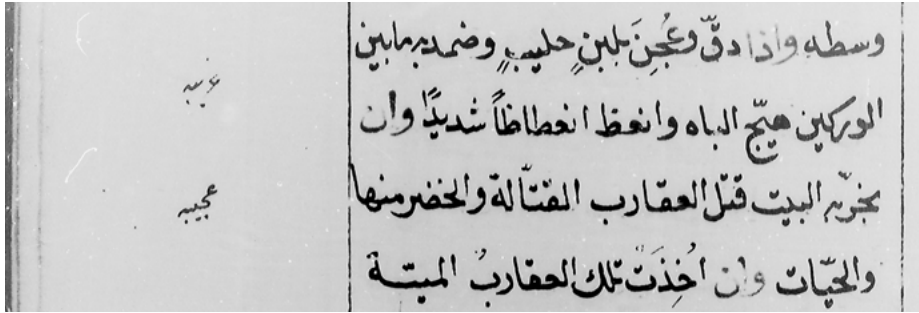


Fig. 1: Wien 1460. f. 9r, the comments *ġarībah* and *‘aġībah* in margin, respectively on a recipe to increase sexual desire and on a fumigation to kill scorpions and snakes.

comments upon the recipes, adding in the margins these two expressions, usually related to literature rather than to medicine.⁴³ They express two different kinds of amazement: *‘aġīb* is an astonishment caused by the observer’s occasional and variable lack of knowledge and ignorance of the causes, whereas *ġarīb* represents a type of astonishment that is characterized by a total disconnect between the state of affairs described in the text and the reader’s knowledge of the material world.⁴⁴ These comments in the margins may hint at a literary connotation perceived or attached to these materials, and it is of crucial importance to inquire when and how this perception might have spread among the readership.

4.2 ‘Īsā ibn ‘Alī and his *Manāfi‘ al-Ḥayawān*

The case of ‘Īsā ibn ‘Alī reveals another possible form of authorship. He served as personal physician to the caliph al-Mu‘tamid (870–892),⁴⁵ and the Arabic sources unanimously present him as one of the most brilliant students of Ḥunayn ibn Isḥāq. He is recognised as the author of a book on the properties of animals. Under these circumstances, we might expect his authorship to be a strong and prestigious one.

⁴³ Cfr. EI2 1,203–204.

⁴⁴ Cfr. Fahd 1978, 118–119. “merveilleux ordinaire: il exprime l’incertitude de l’homme face à tout phénomène naturel [...] dont il ne saisit pas la vraie cause et dont il ignore la manière d’agir sur lui [...] le merveilleux est fonction du degré d’instruction et d’information de l’homme [...] merveilleux extraordinaire: [...] il s’applique à toute manifestation du merveilleux qui se produit rarement et qui tranche par rapport à ce qui est habituel et familier”; and Sadan 2006, 403 “This depends not only on how each individual perceives the ‘conventional’, but also on the nature of the source of astonishment. It is important to differentiate between a non-conventional or supernatural phenomenon on the one hand, and a marvelling attitude toward what are basically quite plain and ordinary matters, even according to the viewer’s concept”. The presence of such comments can be also observed in one of the manuscript of ‘Īsā ibn ‘Alī’s *Manāfi‘*, that is Sehid Ali Pasha 2096 (see below).

⁴⁵ Cfr. Ibn al-Nadīm 1970, II 699; Ibn al-Qifṭī 1903, 237; Ibn Abī Uṣaybi‘a 1884, 203.

However, ʿĪsā ibn ʿAlī is almost lost to oblivion, and his name remains confined to the manuscript tradition of his work, which has evolved with little regard to his initial authority. His demise as an author is partly due to the confusion of ʿĪsā ibn ʿAlī with the oculist ʿAlī ibn ʿĪsā, who lived more than one century later. Moreover, the quick unfolding of the golden age of Arabic medicine might have overshadowed him. The result of this is a fluid textual tradition for his work on the useful properties of the animal parts. Taking the recipe as the basic unit of the text structure definitely helps to track processes of selection and the addition of materials. The same can be said for the chapters as well. Each chapter is devoted to a single animal, so it would have been easy to interpolate an entirely new one, as long as it were inserted in the proper place.⁴⁶ Just to give a quantitative idea of the amount of variation, the shortest attested version includes forty chapters, while the longest contains eighty-six.

Ibn an-Nadīm, almost contemporary with ʿĪsā ibn ʿAlī, gives us the title under which the book circulated in the 10th century: *Kitāb Manāfiʿ allatī tustafādu min Aʿdāʾ al-Ḥayawān* ('Book of Useful Properties obtained from the Parts of Animals'). Nevertheless, the manuscript tradition presents quite a variety of titles:⁴⁷

- Berlin 6240: carpet front page with the name of the author, ʿĪsā ibn ʿAlī *al-Mutaṭabbib* (the medical practitioner)
- Sehid Ali Pasha 2096: *Kitāb Mağmuʿ al-Ḥawāṣṣ min Aʿdāʾ al-Ḥayawānāt*
- Gotha 67/2: *Kitāb Manāfiʿ al-Ḥayawān*
- Wien 1481/2: *Kitāb Manāfiʿ al-Ḥayawānāt*
- Leipzig 770: *Durra al-Ġawāṣṣʿalā Manāfiʿ al-Ḥawāṣṣ* (Pearl of the Diver on the useful aspects of the occult properties)
- Cairo, *Ṭibb Taymūr* 20013: *Durra al-Ġawāṣṣʿalā Manāfiʿ al-Ḥawāṣṣ*

The manuscript tradition of ʿĪsā ibn ʿAlī's work on properties also gives some clues about the evolution of monographic works on this topic. The structure of the book probably appeared at times to be inadequate, and made searching for specific entries difficult. Since each chapter is devoted to a single animal, if one wanted to look for a recipe against a particular illness, then the only possibility would have been to go through the entire text. The first clue about this inadequacy may be found in the glosses added in the margins. For example, Gotha 67/2 shows the systematic presence of marginal glosses indicating the illness to be cured. The same thing happens in Leipzig 770, but in Leipzig 770 and in Cairo 20013 something else seems to be going on as well. The text of the *Manāfiʿ* is followed by

⁴⁶ A sketchy kind of systematic order can be inferred from the sequence of the chapters: the first entry is 'man', followed by predatory animals, wild animals, mounts and beasts of burden, smaller animals, birds, insects, and fish.

⁴⁷ The list includes only the manuscripts that were concretely available to prepare a critical edition of the text for my PhD; for the list of the theoretically extant manuscripts, see Ullmann 1972, 21–22.



Fig. 2: Gotha 67/2, top of ff. 44v–45r. Circular orientation of the glosses on the margins.



Fig. 3: Leipzig 770, top of ff. 15v–16r, here the glosses are written in black and red ink.

another one, where the recipes are re-ordered by illness. This second text included in the same manuscript does not simply rearrange the recipes of the first one, however. It adds new material and mentions different sources. So, these two cases of multiple-text manuscripts and the system of marginal glosses are clues as to the concrete measures that were adopted in order to overcome the less amenable aspects of its textual structure.

4.3 How many books on the properties of stone are in the manuscript Paris Ar. 2775?

The manuscript catalogued as Arabe 2775 in Paris is a multiple text manuscript. It includes different kinds of texts: some on astrological mineralogy (that is, the relation between a stone and a planet) with the practical aim of engraving the stone for a signet ring that was to be worn as talisman. Another group of seven stones is categorized on the basis of the colours, while other texts focus on the occult properties of the stones. All the texts that include detailed descriptions of the image to be engraved on a stone as a talisman are also illustrated. These illustrations seem to have had a strong connection with the actual realization of the talismans and the activity of craftsmen. A detailed list of the manuscript's contents may give some idea of its complexity:

1. (1r–75v) al-Tifašī, *Kitāb fī Khawāṣṣ al-Jawāhir wa-l-Aḥjār* ('Book on the Occult Properties of Gems and Stones', also translated as 'Best Thoughts on the Best of Stones')⁴⁸
2. (76r–89v) *Ḥawāṣṣ al-Aḥḡār li-Ḥunayn ibn Ishāq* ('Occult Properties of the Stones' of Ḥunayn ibn Ishāq, illustrated)
3. (90r–101r) Same text, without incipit and explicit (illustrated)
4. (101v) Library's description in French
5. (102r–112v) *Kitāb Ḥawāṣṣ al-Aḡār wa-Manāfi'ha wa-ma yunqaṣu 'alayha min al-Ṭilasmāt li-'Uṭārid ibn Muḥammad* ('The Book of the Occult Properties of Stones, their useful properties and the talisman that can be engraved on them of 'Uṭārid son of Muḥammad', illustrated)
6. (112v–114r) fragment of the same text (illustrated)
7. (114r–116v) *Kitāb al-Aḡār al-Sabi'a*, ('The Book of the Seven Stones', organized on the basis of their colours.
8. (116v–121v) *Ṣifat Aḡār al-Kawākib al-Sabi'a wa-Nuqūsiha* ('Description of the stones associated to celestial bodies and their engravings', illustrated)
9. (121v–123v) List of stones with Greek names and the connection between planets and some particular stones (illustrated)
10. (123v–127r) fragment of the *Kitāb al-Aḡār wa-l-Fuṣūṣ li-'Uṭārid Muḥammad*, see n.5 (illustrated)
11. (127r–131r) *Kitāb Aūḡāyki fī al-Ṭilasmāt*, 'The *Physiologika* of the Talismans', no explicit (illustrated)
12. (131v–161v) *Risāla ba'd al-Ḥukamā' wa-l-'Ulamā' al-Qudamā' fī Ġawāhir wa-Ḥawāṣṣ* – 16 Chapters on medical and occult properties of stones
13. (161v–173v) *Qāla Hirmis fī Ġawwāb al-Aḡār wa-Ḥawāṣṣiha* (incipit: Hermes told on the Stones and their occult Properties)- mutilus.

There is much to say about this manuscript and the texts that it transmits; however, the focus here will be on the different levels of compilation offered by this case study. Let's work from the micro-level and move toward the macro-level of its compilation.

The first level of compilation deals with the material dimension of this multiple-text manuscript. In this small codex, the presence of two different codicological units, rebound together in a later moment, is made recognizable by the presence of two different systems of quire numeration. In the first unit (1r–101r) text no. 3 appears to be an addition of spare leaves to texts no. 1 and no. 2. These leaves were probably added there because they contain the same text of no. 2, but are lacking of the incipit and the explicit. Moreover, the resemblance between the lay-

⁴⁸ For the translation, see Raineri 1843 and Abul Huda 1998; no critical edition is available and the two translations have been based respectively upon a copy in the Biblioteca Medicea Laurenziana in Florence and the manuscript Ar. 2775 in Paris.

out and illustrations of no. 2 and no. 3 suggests that these two texts were close also in the phase of their material realization. The second unit (102r–173v) includes a greater number of texts, copied by different hands. Text no. 4 and no. 5 show the same situation described for no. 2 and no. 3, but it is likely that also text no. 9 belongs to the same tradition. It is noteworthy that all the short and incomplete texts are separated by formulas for the incipit and explicit, but this discontinuity is not marked in the layout. The items from no. 7 to no. 11 might have been copied from spare leaves that were too damaged to be safely included in the new binding. In both the codicological units, the work on engraved stones associated to planets is followed by the text on the seven coloured stones.⁴⁹ At least in the context of production of this very collection of texts, they were probably supposed to circulate together. But it is not the only possible combination. For example, in Aya Sofya 3610 the text on the engraved stones follows a copy of the Pseudo-Aristotle *Book of Stones*, alongside with the text on the seven coloured pearls.

To say something about the micro-level of compilation, I will focus on the structure of the text on the engraved stones associated to the seven planets. The texts labelled as no. 2, no. 3, no. 7 and no. 9 are witnesses to the same tradition, with a pseudepigraphic attribution in turn to the great translator Ḥunayn ibn Isḥāq in the first codicological unit and to 'Uṭārid (Mercury) son of Muḥammad in the second one. Here the seven planets and their spheres of influence are associated with stones, which have to be engraved along with a figural representation at a particular astrological moment, so as to obtain a powerful talisman. The engraved gems have to be mounted on the metal associated with the planets, then also supplementary inscriptions may be added on the band, and a medicinal plant can be placed under the stone. The last component is a list of ritual prescriptions to wear the stone properly. The chapters are probably the result of the combination of materials coming from different sources. For example the Hellenistic tradition of the first book of the Cyranides,⁵⁰ or materials that can be linked to the tradition of the *Ġāyat al-Ḥakīm*.⁵¹ As for the illustration, they do not seem to belong to the Hellenistic tradition, but rather show Indian iconographic motives.⁵² Though a much deeper inquiry would be needed in order to understand how the sources were used and combined (they could be even more numerous, including oral ones as well), it is evident that it is a composite compilation of several sources re-organized to fulfill new and different needs.⁵³ The case of the first book of the Cyranides offers a clear

⁴⁹ The list of seven stones organized by colour was probably inspired by Iranian models; see Ullmann 1972, 102–103.

⁵⁰ See Toral-Niehoff 2004.

⁵¹ Cfr. Pseudo-Maḡrīṭī 1933, 106–132.

⁵² See Ruska 1919 and Pingree 1989.

⁵³ Text no. 7 contains almost the same materials, but differently arranged. Namely, there are two different sections: the first lists the astrological indication about the best moment to engrave the each stone, while the second includes the description of the figural representations of planets.

example of a source which needed to be reorganized in order to make its use easier. The structure of the Greek *Cyranides* and its Arabic translation follow the Greek alphabetical order.⁵⁴ In the Arabic translation, however, this meant having to use transliterated Greek names, with all the related problems of phonetics and understanding, in order to remain in the same frame of reference. So, it does not seem too surprising that the materials underwent a process of simplification: the Greek names were translated and the materials reorganized in a new and less rigid structure, no longer conditioned by initial letters. However, the influence of the *Cyranides* emerges in the combination of engraved figural representations and medicinal plants in the talisman.

In combining these textual and codicological data it appears that both the two units and the codex itself have a precise intention behind them: to collect works on stones, their properties, and their connections with celestial objects. In that case the two major units may have circulated separately for a while, but for the moment it is not possible to say more.⁵⁵ In any case, there are already enough clues to consider this multiple-text manuscript as an important witness to the material organization of knowledge in manuscript cultures: it shows how some texts were considered close, if not contiguous, and how different texts carrying similar contents were circulating together. In other words, this multiple-text manuscript can be considered a corpus organizer, through which knowledge was arranged so as to be transmitted, leaving us with material and concrete evidence for how knowledge evolved through time.⁵⁶

5 Conclusions

In this paper I have presented a schematic and synthetic picture of an enormous and highly varied group of materials. One is stating the obvious by saying that any kind of generalization results in a compromise at the expense of a number of meaningful details. And this may sometimes turn out to be a naïve solution.

In the field of the ‘sciences of properties’ the use of the words *manāfi*’ and *ḥawāṣṣ* is not always coherent. First of all because it is not easy to distinguish

54 For each of the twenty four Greek letters there is a chapter in which an animal, a plant, a mineral, and an aquatic animal are listed. These four elements have to be combined in a talisman which exalts channels and strengthens their respective properties and powers. Usually, the figures of the animals have to be carved on the stones (either on the upper and lower surfaces, or in one of the surfaces and on the edge), while a leaf of the correspondent plant has to be put under the stone mounted on a signet ring.

55 I have based my observation on a PDF black and white reproduction, and it is not to be excluded that a direct examination of the original may lead to new discoveries.

56 For the idea of corpus organizer and the related terminological discussion see Bausi 2011.

between the two groups, and it is with the titles that this entangled mix appears to be almost inextricable. Perhaps once many more texts have been studied and are made available to a larger readership, it may be possible to get closer to the crux of the matter.

Secondly, another huge question regarding these materials deals with their fluid movement from genre to genre, and from one form of compendium to another over many centuries. To grasp how these text units or blocks were circulating would probably disclose new perspectives on these texts. For the moment, one may observe a relative stability of the contents, side by side with a constant evolution of the forms in which it was expressed.

The group of texts included in the 'science of properties' offers a particular challenge to how we understand editorial practice: one needs to take into account and convey the very peculiar features of a tradition, show the evolution of the materials during their fluid transmission, rather than trying to reconstruct an alleged original form, often losing thereby a lot of the information transmitted by the variety and variability of the material.

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