Introduction

I. Authorship and Genre

I.1 ʿĪsā ibn ʿAlī and his fate

Arabic sources unanimously present ʿĪsā ibn ʿAlī as both one of Ḥunayn Ibn Isḥāq's most brilliant students and the author of a book on the properties of animals. ʿĪsā ibn ʿAlī served as court physician to the Abbasid Caliph al-Muʿtamid (256–279 H/870–892 AD), during an era noteworthy in Islamic culture for its extraordinary vitality and creativity. This portrait of ʿĪsā ibn ʿAlī emerges from a review of several bio-bibliographical sources. The first mention of him is in the *Fihrist*.[1]

> ʿĪsā ibn ʿAlī
> He was one of the pupils of Ḥunayn [Ibn Isḥāq] and an excellent man. Among his books there was *The Book of Useful Properties obtained from the parts of animals*.

In the later tradition, however, the fact that his name so closely resembles that of another physician has partially hidden the historical tracks left by our author. Indeed, he was soon mistaken for the famous oculist ʿAlī ibn ʿĪsā, even though the latter lived a century and half after ʿĪsā ibn ʿAlī.[2] ʿĪsā ibn ʿAlī appears in both the well-known reference works of medieval Islamic medicine, viz. in Ibn abī ʿUṣaybiʿa's *ʿUyūn al-anbāʾ fī-ṭabaqāt al-aṭibbāʾ* ('The Sources of information about the Generations of Physicians') and Ibn al-Qifṭī's *Taʾrīḫ al-ḥukamāʾ* ('Chronology of the Learned Men').

Ibn Abī ʿUṣaybiʿa mentions both physicians in two different entries. ʿĪsā ibn ʿAlī can be found in the eighth chapter, alongside several members of the Buḫtišūʿ's family, where they are referred to as 'Syriac physicians who lived in the early times of the Abbasid rule'.[3]

> He was a noteworthy physician who was also prominent in the field of philosophy and wrote various works on this subject. He studied the practice of medicine under the guidance of Ḥunayn ibn Isḥāq and was considered one of his more brilliant disciples. He served Aḥmad ibn al-Mutawakkil, that is al-Muʿtamid bi-Allāh. He was his personal physician for a long time and when [Aḥmad] obtained the dignity of the Caliphate, he favoured and honoured ʿĪsā ibn ʿAlī and lavishly bestowed precious gifts on him. Several books are ascribed to ʿĪsā ibn ʿAlī: *The Book of Useful Properties obtained from the Parts of Animals*, and a *Book of Poisons* [in two chapters].

The almost homonymous ʿAlī ibn ʿĪsā (d. 400 H/1010 AD) is mentioned in the tenth chapter as an outstanding ophtalmologist, who composed the famous *Taḏkirat al-Kaḥḥālīn* ('The Reference Work for the Ophtalmologist') in three books.[4] So in Ibn Abī ʿUṣaybiʿa's work at least the distinction between the two figures is clear. In Ibn al-Qifṭī's *Taʾrīḫ al-Ḥukamāʾ*, however, the two physicians are conflated and their entries merged.[5]

> ʿĪsā ibn ʿAlī, one of the disciples of Ḥunayn [ibn Isḥāq], an author famous for his book *Reference work for Oculists* (*Taḏkirat al-Kaḥḥālīn*), on which the doctors in this field subsequently based their work—*The Book of Useful Properties obtained from the Parts of Animals*.

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1 See Ibn al-Nadīm 1970, II 699; for the Arabic text, see Ibn al-Nadīm 1872, I 297.

2 See Mittwoch, E., ''Alī b. ʿĪsā', in: *Encyclopaedia of Islam*, Second Edition, Edited by: P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, W.P. Heinrichs. Consulted online on 13 February 2018 http://dx.doi.org/10.1163/1573-3912_islam_SIM_0513.

3 See Ibn abī ʿUṣaybiʿa 1884, 123 and 203.

4 Ibid., 247.

5 Ibn al-Qifṭī 1903, 237. This problematic passage misled Ibn al-Qifṭī's editor, who added a cross-reference to the passage on ʿĪsā ibn ʿAlī in Ibn Abī ʿUṣaybiʿa, see Ibn al-Qifṭī 1903, 247. Wüstenfeld and Leclerc instead followed Ibn al-Nadīm, so the two physicians remain entirely distinct. They blame the misunderstanding on the problematic manuscript tradition of the eighth chapter of Ibn Abī ʿUṣaybiʿa's work, see Wüstenfeld 1840,39, and Leclerc 1876, I 303–304). Both Ullmann and Eisenstein mention ʿĪsā ibn ʿAlī as a prominent figure in the earliest phase of medico-zoographical literature, see Ullmann 1972, 21–22 and Eisenstein 1991, 96).

The figure that emerges from the sources is that of a prestigious author who lived at a very early and golden moment of Arabo-Islamic civilization. However, as a result of the aforementioned confusion over his identity, ʿĪsā ibn ʿAlī partly disappeared from the biographical tradition. Inevitably, this biographical state of affairs affected the transmission of ʿĪsā ibn ʿAlī's text. On the one hand, an ancient and prestigious authorship prevented this collection of recipes from getting lost among the anonymous mass of similar compositions; on the other hand, the long time span of the transmission, and the uncertainty about the authorship created the conditions for a fluid transmission of the text.

This unfortunate homonymic case is not enough, however, to explain the oblivion into which ʿĪsā ibn ʿAlī sank. The extraordinary development of Arabic medicine probably played a role as well. There is no reason to doubt that, during his lifetime, and proably for at least a century after, ʿĪsā ibn ʿAlī enjoyed a reputation as a brillant and important physician. His appointment at the court is a tangible sign of his professional prestige. However, if one compares the collection of recipes edited here with the medical encyclopedias and treatises composed shortly thereafter—al-Tabārī's (3rd cent. H/9th cent. AD) *Firdaws al-ḥikma* ('The Paradise of Wisdom'),[6] al-Rāzī's (250–313 or 323 H/834–925 or 935 AD) *Kitāb al-ḥāwī* (*'Liber Continens'*), Ibn Sīnā's (370–428 H/980–1037 AD) *Qānūn fī-l-ṭibb* ('Canon of Medicine'), to name a few examples—the book by ʿĪsā ibn ʿAlī seems to correspond to a more archaic phase that preceded the unfolding of the golden age of Arabic medicine. The titles mentioned became reference works in the field of medicine, casting their shadow over other 'minor' works. It would be inappropriate, however, to see ʿĪsā ibn ʿAlī's *Manāfiʿ* as the petty result of a primitive age, in which Arabic medicine was clumsily taking its first steps. This was rather a moment when contacts and interactions with a large number of non-Arabic sources were particularly intense, no doubt thanks to the multicultural background of the author: his native language was probably Syriac, he wrote in Arabic, and it highly likely that he came into contact with the Greco-Arabic translation movement.

One may wonder, then, how, in spite of all these disadvantages, the text managed to survive. It is likely that, even as medical interest in this text was waning, a new kind of interest in its contents arose. The recipes started to be read as a collection of curious and wondrous tricks. This delineates two different readerships: one interested in medical knowledge, the other attracted by the more curious aspects of the recipes. However, it would be unwise to trace any kind of sharp division in terms of periods and readership, for the use of animal substances for healing purposes clearly survived alongside new models of medicine and pharmacology. Even after Arabic medicine had moved on, the text survived as a collection of curious and amusing tales, in Arabic *ʿaǧāʾib wa-ġarāʾib*, which maintained a literary interest in the materials.[7] In other words, the textual tradition did not die, but rather shifted in the direction of a 'Book of Secrets'.[8] This change also made the text prone to including all kinds of heterogeneous materials.

According to this scenario, the name of ʿĪsā ibn ʿAlī as the author of a collection of recipes based on animal ingredients remained an important element, conferring authority and reliability upon the text. He was either identified as the most outstanding ophtalmologist, or as a nebulous character, who nevertheless lived during the great and highly idealized phase of early Abbasid rule, an authorial presence that, in any case, would have strengthened the importance of the text.

I.2 Title and introduction

Even if Arabic sources did not always attribute the work to the correct physician, they are in agreement about the title of the work: *Kitāb al-manāfiʿ allatī tustafādu min aʿḍāʾ al-ḥayawān* ('The Book of Useful Properties That

6 The *Firdaws al-ḥikma* is the first medical encyclopedia in Arabic: for this and its early composition date, it is particularly relevant to compare it with ʿĪsā ibn ʿAlī's work, see Ṭabarī 1928; see also Ullmann 1978, 108..

7 Clues to this shift can be found in the manuscript tradition, where one often finds comments in the margins of the recipes. These marginalia often consist of a single word, either *ʿaǧīb* (wondrous) or *ġarīb* (strange). Moreover, the more technical and positive *muǧarrab* ('tried out') can also be found among the marginal comments, see Raggetti 2015.

8 See Eamon's description of this tradition in Mediaeval and Early Modern Europe (Eamon 1994).

Can Be Obtained From Parts of Animals'). The manuscript tradition reveals a number of different titles, but does not include the one recorded by Ibn al-Nadīm and the other sources.[9]

The passage in the text highlighting the authorship is the introduction to the book. It is not possible to ascertain whether this passage really does originate from the pen of the author;[10] nonetheless, there are some clear indications about the composition of the work, the use of the sources, the organization and the purpose of the book. These key elements of the composition cut across the whole manuscript tradition, in spite the general fluidity of its wording. The adherence of later compilers and copyists to the guidelines announced in the introduction should not be taken for granted.

The first point in the introduction describes the author's efforts to collect materials. The composition of the book began with the collection of relevant passages from a variety of ancient sources. The names of a number of authorities in the field of medicine and *physiologika* are mentioned here, whereas in the rest of the text the sources remain unattributed. All the manuscript witnesses mention Hermes Trismegistos and Democritus as sources, and they were almost certainly responsible for the transmission of large amounts of materials on the sympathetic properties of natural objects in the Greek tradition.[11] Other authorities are mentioned as well, for instance Euclides and Hippocrates. Such names, however, appear to have been added in order to give authority to the text of a specific copy, rather than as reference to actual sources. The actual number of sources may well have been much higher, but all of them remain implicit. In the branch (b) of the tradition, there is a further remark on the selection of materials. The author sieved through his sources, discarding any materials that were not relavant for his book, in particular any spells and charms that implied an opposition to the useful properties.[12] This awareness of the problematic relationship between these two entities is evidenced by the author's decision to select recipes on a qualitative base.

The originality of the book emerges on a formal level. While the materials were known and drawn from authoritative ancient sources—so well known or so easily recognized that they could remain implicit—the structure is presented as entirely innovative: the materials are organized in chapters and divided by animal.[13]

All these efforts to reorganize the materials, creating a new arrangement, were carried out for the benefit of the prospective reader: the author aims to facilitate the search for particular pieces of information within the book.[14]

The general impression is that the author is inscribing himself in a long tradition that goes back to antiquity and Hellenism. While the Greek component in the sources is predominant, it does not muffle the echo of other texts. The nature of ʿĪsā ibn ʿAlī's innovation was chiefly formal, and consisted of a radically new organization of the materials.

9 For the titles attested to in the manuscript tradition, see the description of the manuscript witnesses, ch. IV.

10 In theory, it may well be a fictional literary construction.

11 Only fragments of his works survive, transmitted in the form of short passages arranged on a thematic base with, as a consequence, a particularly fluid transmission. Still, there are enough fragments to state that the analogy between their works and the *manāfiʿ/ḫawāṣṣ* literature is real, see Wellmann 1928, 10 and Laurenti 1985, 91.

12 Nevertheless, a number of recipes mention magic, describing practices and suggesting how to protect oneself from it, see 'Thematic Index'.

13 If we are to believe what the introduction says about the ancient sources, properties and sympathies had to be listed simply without any particular criterion for their order. If the perception in the 9th century was such, then the organization in chapters by animal already represents a huge innovation. This lack of internal organization is mirrored more widely by the section on pharmacological preparations based on animal ingredients in the *Naturalis Historia* (XXVIII–XXXII), which ultimately results in an overwhelming entanglement: if we take the introduction at face value, we might have expected arbitrary lists of properties and sympathies. This is just an example, illustrating that, in the perception of the 9th-century audience, the organization of this material in chapters—with each chapter dedicated to ingredients deriving from a particular animal—might genuinely have been perceived as a huge innovation.

14 The introduction in (b) even mentions numbers assigned to the chapters.

I.3 Manāfiʿ vs. ḫawāṣṣ

In connection with ʿĪsā ibn ʿAlī, the Arabic sources only speak of *manāfiʿ* (useful properties), and not about *ḫawāṣṣ* (occult properties). In most of the texts dealing with the 'science of properties',[15] the two terms go side by side, and are used to label a diverse accumulation of recipes and a huge amount of animal lore. In the wider manuscript tradition, the expressions *manāfiʿ* (useful properties) and *ḫawāṣṣ* (occult properties) are used interchangeably.

The apparently inextricable entanglement can be overcome by focusing on the common traits shared by all the recipes and prescriptions: they are all based on the properties of natural objects and circulated under the aforementioned labels of *manāfiʿ*, and *ḫawāṣṣ*. The lexicographical significance of these two categories has turned out to be quite a productive approach to defining their distinct characteristics.

> *Manāfiʿ* (sing. *manfaʿa*): a cause, or means of advantage, profit, utility; or benefit: and simply, advantage; profit or profitableness; utility, use, usefulness; or benefit. Contrary of *maḍarra*.[16]
> *Ḫawāṣṣ* (sing. *ḫāṣṣa*): A property of a thing not found, or not existing, either wholly or partly in another thing.
> *Ḫawāṣṣ* (sing. *ḫāṣṣiyya*): 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 effective property, whether the cause of its existence be known or not. And *ḫawāṣṣ* is a quasi-plural noun, not a plural.[17]

The difference between *manāfiʿ* and *ḫawāṣṣ* seems to be in the transparency of the underlying causal correlations. When the relation between cause and effect is clear and, indeed, can be deduced and known, then it can be classified as *manafiʿ*; by contrast, in respect of *ḫawāṣṣ*, only the effect is known, while the causal process remains unintellegible.

The hidden causal process of the *ḫawāṣṣ* is presented as their signature, also in the theoretical statements formulated by al-Ṭabarī and al-Rāzī shortly after the composition of ʿĪsā ibn ʿAlī's book. The *Firdaws al-ḥikma* can be considered as the first medical encyclopedia in Arabic and, as well as having the features of a genre pioneer, it preserves a number of archaicizing traits,[18] among them a long section on the useful properties of animals. At a different place in the work, al-Ṭabarī defines the *ḫawāṣṣ* in contrast to the *quwwa* ('faculty', often used to translate the Greek term *dynamis*, especially in the context of the Galenic translations).[19] Al-Ṭabarī wrote that the senses can grasp the *quwwa*, whereas hidden properties can be comprehended only through experience.[20]

> **Occult properties of things**
> With the help of God, I have already written what I wanted to write about the faculty (*quwwa*) of the bodies, the diseases and their own peculiar moments, and also other things about the tests, the urine, and other similar issues that the physician should not neglect. Now I will mention the faculty of the natural objects (litt. *ašiyāʾ*, things), the signs of this faculty in the colours, in the flavours, and in the senses, with the permission and the help of God. Each natural object, in fact, has a faculty that can be perceived with the senses, but it has also an occult property (*ḫāṣṣa*) that is unknown, whose depth cannot be grasped but by trying it out several times (*taǧārib*, lit. 'experiences'), because the occult properties are a mystery hidden in the natural objects. Like the occult property of the magnet that attracts iron and the particles of chaff. Among the natural objects whose occult property is to make the bladder stones crumble, when they reach the bladder, there are things like burnt scorpions and wild celery seeds.

15 I borrowed this expression from Paul Kraus, who used it for a particular section of the *Corpus Gabirianum* dealing with the properties of natural objects. See Kraus 1942, 61–70, and Raggetti 2015.

16 Lane 1863, VIII 3036.

17 Ibid., II 747.

18 I discuss the commission of innovative and archaic elements in the *Firdaws al-ḥikma* in a forthcoming article 'The Paradise of Wisdom: Streams of Tradition in the First Medical Encyclopaedia in Arabic', in *Cultural Systems of Classification: Sickness, Health and Local Epistemologies*, in the Routledge Series 'Body and Medicine in Antiquity'

19 Ullmann 2002, 208–209.

20 See al-Ṭabarī 1928, 355.

Al-Rāzī composed a short essay on occult properties, the *Kitāb al-ḫawāṣṣ*, collecting quotations from Classical Greek authors and a few contemporary colleagues, the materials here are arranged alphabetically. Its sharply polemic introduction opposes those who refuse to take advantage of such properties because their underlying *ratio* is not transparent.[21]

> ***Kitāb al-Ḫawāṣṣ* — Introduction**
> Muḥammad ibn Zakariyya al-Rāzī said: 'I do know that there are people whose occupation is the accusation, the opposition, and the hastiness for the derogation of what they ignore, they are quick in censuring us while [in this way they are] declaring themselves stupid. We have observed in the composition of this book that there is no need for us to omit the things—in which we believe there is some usefulness—for the sake of people who are ignorant, and therefore against it. This could have been avoided if only those had been people of reason, careful examination, and waiting before rushing into the refusal of something they have no proof against.
> [...]
> And then how is it that in every moment they see things that go against them, which change in front of them, like the condition of the things that they reject, in spite of the fact that these things that are found evident in front of them, and what situation they see with their own eyes but do not realize it. In fact, they constantly see that the magnet attracts iron, but if someone claims the existence of a stone that attracts copper, or a stone that attracts gold or glass they hastily deny it, and dismiss it as a silly construct'.

Considering the statements of the two physicians, it seems that a clear distinction between *manāfiʿ* and *ḫawāṣṣ* existed at an early phase of the use of these labels, but they soon became inextricably linked. A concrete example is given by the titles transmitted by the manuscript tradition of ʿĪsā ibn ʿAlī, in which the words *manāfiʿ* and *ḫawāṣṣ* are either interchangeable or used side by side.

Al-Ṭabarī's definition introduces a third lexical element to the discussion—the role of experience—already mentioned among the lexicographical remarks. The passive participle *muǧarrab*, 'tried out', can be found—isolated or in some periphrastic expression—not only in the margins, but also at the end of many recipes in the body of the text. The *Muǧarrabāt*, intended as a medical literary genre, comprises records of physicians' case histories, treatments, medical experiences and remedies presented as real cases.[22] Manfred Ullmann argues that these texts are recipes that have proven to be effective through the actual treatment of a patient, making them more *empirica* rather then *experimenta*.[23] Again, lexicography may help our understanding of some of the implications of this expression. The Arabic 'intensive', a verbal stem known to imply a notion of plurality, can be seen as an indication of a particular kind of successfully repeated operation or procedure. The *Muǧarrabāt* 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' readily gives the impression of an 'experimental' phase in its prehistory, thus bestowing its contents with a greater reliability. Any emphasis on the existence of a modern empirical procedure (a test or an experiment), however, would almost certainly turn out to be anachronistic.

The expression *muǧarrab* was also used in manuscripts outside its eponymous and rather limited textual genre: the word was simply added at the end of some recipes, as a comment on their alleged efficacy. In this way, it was possible for the expression to find its way into many different textual traditions: the personal point of view and comment of a single copyist or a particularly active reader—who, for some reason, felt confident enough to 'certify' a recipe's potency—could, potentially, be included anywhere in the text and at any moment of the transmission. Whether the *Manāfiʿ* and *Ḫawāṣṣ* absorbed this expression, extrapolating it from its genre

21 See al-Rāzī, *Kitāb al-ḫawāṣṣ*, MS Cairo DAK Ṭibb Taymūr 264, p. 2; see also Ullmann 1978, 109. The existence of a whole range of magnets capable of attacting a large assortment of substances (hair, cotton, wool, nails, gold, silver, etc.) is attested to in the tradition of the Ps. Aristotle *Book of Stones*, see Ruska 1912, 108–111 and 154–160. The same example was discussed by Ibn al-Ǧazzār in the introduction to his *Kitāb al-ḫawāṣṣ*, see Käs 2012, 31.

22 See Álvarez Millán 2010, 195–197 and Álvarez Millán 1994.

23 See Ullmann 1970, 311–13 and Ullmann 1978, 110.

context, or whether the *Muğarrabāt* genre originated from further reflection on the importance of medical observation, or even from some kind of need in the professional readership, remains an open question.[24]

Combining the lexicographical perspective with the different genres in which these properties appear might give the impression that the riddle is not as obscure as it seemed. The actual state of the texts, however, is much more complex and characterized by many inconsistencies in employing the words *manāfiʿ* and *ḫawāṣṣ*. Each textual tradition has its own peculiarities and a huge number of unedited texts still require study in order to test the validity of these categories.[25]

II. The Structure of ʿĪsā ibn ʿAlī's *Manāfiʿ*

A thorny and ambitious question looms over this and other similar texts. How and where should the line between magic and medicine be drawn?[26] If an ordinary liver complaint, for instance, is cured by a series of knots made on a thread of camel wool, should one focus on the healing properties of this item or on the procedure designed to restore health, which could easily be classified as a kind of ritual or a magical manipulation? Without wishing to deny the intrinsic value of these categories, one is forced to admit that this approach often results in a stalemate. Since the dichotomy and opposition between medicine and magic cannot not be applied consistently to the analysis of the considerable amount of materials transmitted under the name of ʿĪsā ibn ʿAlī, I suggest, here, the combination of a formal approach for the structure of the text with a thematic analysis of its contents.

24 Cristina Álvarez-Millán underlines a singular point: the word *muğarrab* never occurs in a proper collection of medical experiences, but only at the end of other kinds of recipes, see Álvarez-Millán 2010, 198. Moreover, the three main books identified as *Kutub al-Muğarrabāt* ('Book of the Tried Out Remedies', by al-Rāzī, al-Hāšimī, and Abū al-ʿAlā ibn Zuhr) were posthumous compilations of medical cases dealt with by a physician, usually collected by one of the pupils. On the whole, this does not support the hypothesis that the word *muğarrab* migrated from a formal, medical genre to a decontextualized use in popular medicine and magic. On later *Muğarrabāt* and their relationship with magic, see Dorpmüller 2005.

25 The *Nuʿūt* and *Ṭabāʿiʾ*—the 'characteristics' and the 'natures'—of animals are other categories that can be related to *manāfiʿ* and *ḫawāṣṣ*, not least because some of them entered collection of different properties. They deal with the habits and behaviours of animals in a more descriptive way. Although all these words are mixed up in titles, their contents are rather distinct. In the Ps. Aristotelian *Nuʿūt al-Ḥayawān*, the chapters include distinct paragraphs devoted either to useful properties or to the habits of an animal (see MS Tunis 16385, for which I would thank Prof. Remke Kruk, who let me work with her copy of this manuscript), whereas in Ibn Buḫtīšūʿ, this information about the innate habits of animals is concentrated in a specific section that opens the chapter (see MS Dublin Chester Beatty 5006, MS Istanbul Aya Sofya 2916, and MS Istanbul Aya Sofya 2943). These materials have their origin in the book on animals composed by Timotheus of Gaza, see Ullmann 1972,15, and Kruk 2001. Ullmann maintains that the difference between the *ṭabāʿiʾ* and *manāfiʿ* / *ḫawāṣṣ* lies in their main sources, which, for the latter, are to be found in the pseudo-Democritean and Hermetic writings, in Xenochrates of Aphrodisia, and Anassilaos of Larissa (Ullmann 1972, 10). An example of *Ṭabāʿiʾ* in the work of ʿĪsā ibn ʿAlī can be found at the end of the chapter on the lion (2.33 and 2.34). Since *nuʿūt* and *ṭabāʿiʾ* are invariably found at the beginning or at the end of a chapter, there is a concrete basis for the hypothesis that they are a later addition. Another difference can be observed in the textual form: *manāfiʿ* and *ḫawāṣṣ* are structured as prescriptive texts (recipes), whereas *nuʿūt* and *ṭabāʿiʾ* are, on the whole, descriptive ones or narratives. However, the fact that ʿĪsā ibn ʿAlī was counted among the sources of Ibn Buḫtīšūʿ, at least for the contents related to *manāfiʿ*, is attested to in the manuscript MS Escurial 893 (f. 140r), see Ruiz Bravo-Villasante 1980, 125.

26 The scientific literature on this distinction is vast. An attempt to apply a modern, Western distinction to shed some light on complex textual and human phenomena has been a distinctive feature of almost every attempt to write about the history of science. It would be far too ambitious to attempt an acceptable bibliography on the topic here. I will therefore limit the list to those readings that, in different ways, have provided me with a general background for my research questions, namely Frazer 1906–15, Thorndike 1923, Lloyd 1979 and Lloyd 1983, Ullmann 1972.

II.1 Macro level: the chapters and their organization

The work of ʿĪsā ibn ʿAlī is organized in chapters, whose number varies greatly from one manuscript witness to another. Each chapter deals with a single animal and contains a number of recipes.[27] Although the order of the entries is not uniform in the manuscript tradition, it is still possible to detect some trends in the arrangement of the contents. The list begins with man, as the most elevated living being at the peak of the creation. A small group of large carnivorous animals follows (lion, wolf, hyena, bear, chapters 2–5). The chapters 6 to 14 (jerboa, pig, dog, gazelle, mountain goat, deer, fox, and crocodile), present a quite heterogeneous ensemble, and its *ratio* is less clear. The next group includes cattle and beasts of burden, both domestic and wild (chapters 15–24). Chapters 25–44 mainly deal with small animals, such as cat, lynx, badger, weasel, jackal, monkey, etc. The presence among them of the exotic and huge rhinoceros, or the most famous of all lizards—the salamander—is peculiar. The groups of birds (chapters 45–78), creeping animals (chapters 79–100), and water creatures (chapters 101–110) delineate themselves with much less uncertainty. In this picture, one can recognize the different organizational criteria from ancient systems of classification, which were inherited by the Arabo-Islamic tradition: food and diet (carnivorous, herbivorous, onmivorous), relations with men (domestic and wild), method of locomotion (creep, fly, swim) and preferred environment (air, water).[28]

In ʿĪsā ibn ʿAlī's table of contents, all these different criteria are weighted equally and groups are defined on the basis of different overlapping and coexisting principles. The boundaries dividing the groups, however, are quite elastic. This makes the inclusion of additional chapters plausible and could explain some of the odd inclusions and configurations of the groups in the classification. In cases when the addition of an entire chapter entered the tradition and was somehow misplaced in the list, one can imagine that either there was no place considered appropriate for the animal, or that the author of the interpolation exercised his own ingenuity.

The manuscript tradition bears signs of this interest in classification, and the branch (b) is the most conspicuous in this regard. Here, there are additional headings marking the classification and labelling large groups of chapters. In this same branch of the tradition, the MSS T and W include a list of the chapters prior to the beginning of the text. In terms of the sub-groups within some chapters, four groups were singled out in the manuscript tradition: *insān* (human being),[29] *bahāʾim* (animals, possibly with four legs), *ṭuyūr* (birds) and, finally, *ḥišāš al-arḍ* (insects of the earth). Notably, there is no specific classification of water creatures.[30] In the MS Istanbul Saray Ahmet III, 2083, in particular, the headings are rubricated, and the final number of one hundred chapters is also given.[31] In the list of chapters that opens MS Wien 1481/2, there are three different labels: *sibāʿ* (beasts of prey), *ṭuyūr* (birds), and *ḥašarāt* (creeping animals).[32] The text is incomplete, so it is impossible to check whether the classification labels were consistently applied in the text. Although the interpretation of these clues of classification remains open, there is a clear intention to define clusters of animals in a consistent way, and to organize the table of contents as a multi-oriented classification system.

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27 Focusing on a single animal is more a tendency for the chapters than a rule. Also, those chapters with a single protagonist tend to call the animal by different names when referring to the male or female specimen, to the young, etc. In the chapter dedicated to sheep for example, five different names are used: *ḍaʾn* and *šāʾ* as collective nouns, with the addition of the more general *ġanam* for small cattle, *ḫarūf* for the young, *naʿğa* for the female and *kabš* for the ram. The chapter about the dog, in an associative way, includes a recipe based on the shark, literally called 'sea dog' (*kalb al-baḥr*). A similar approach is taken with the horse (*faras*) and the hippopotamus (*faras al-nahr*). By association, I suppose, the chapter devoted to the pearl oyster includes a mineral, meerschaum, as distinctive ingredient (106.15). In the case of chickens, there are two distinct chapters, one for the hen and one for the rooster. There appears to be some confusion, at least at the semantic level, for less common animals. The chameleon (*ḥirbāʾ*), for instance, is mentioned in three different chapters (83, 89 and 94).

28 For a summary of the different classifications in Arabic scientific literature, see Ullmann 1972, 50–54. See also Ibn Qutayba 1949.

29 This sections includes three distinct chapters for man, woman and child.

30 See MS Istanbul Saray Ahmet III 2055 (T), ff. 1v–3r and MS Wien 1482/2.

31 See Ibid., ff. 5v–7v. These quotations deal with: animals with a bony or non-bony penis, animals with a large tongue, fish bones, fish eggs, etc.

32 MS Wien 1481/2 (W), ff. 134r–134v.

II.2 Fortunes and misfortunes of the structure

If the case of homonymity can be seen as an unlucky and unpredictable setback, the problematic aspects of the structure affected its fortune more predictably. The text, as ʿĪsā ibn ʿAlī arranged it, can be searched only by animal, and the search is possible only at a chapter level. Within chapters, there is no systematic order to the recipes (*a capite ad calcem*, for instance, or, alternatively, distinctive ingredients presented in alphabetical order). If, however, the reader wants to search for a remedy for a specific disease, the whole book must be leafed through, or indeed, the contents learned by heart.

It is not surprising, then, that this structure was soon abandoned in favour of something more practical.[33] Nevertheless, in the first medical encyclopedia ever composed in Arabic, the *Firdaws al-ḥikma* by ʿAlī ibn Rabbān al-Ṭabarī,[34] the fourth *maqāla* deals with the useful properties of animals. Forty-two animals are listed, each of them in a dedicated chapter.[35] A single chapter in the *Firdaws* usually contains less recipes than in ʿĪsā ibn ʿAlī, but the recipes are basically given in the same order. The classification implied in the list of animals in al-Ṭabarī strenghtens the hypothesis about ʿĪsā ibn ʿAlī's composition. The main difference between the two texts lies in the position of the predatory and the domestic animals: in ʿĪsā ibn ʿAlī, man is followed first by predators and then by domestic animals, whereas al-Ṭabarī inverts their positions, placing domestic animals immediately after the chapter on man. The fact that portions of text could be moved within a larger textual frame confirms the presence of coherent blocks of chapters defined by an implicit classification.

This formal analogy between the structures of the two works, together with the cultural features shared by the two authors, offers another clue to the fact that we are dealing with a very early stage of this textual genre. In this early phase, the authors were still familiar with the ancient sources, also thanks to the multilingual dimension of their personal and professional lives. They experimented with new textual forms, new structures—not all of them meeting with the same success—to reshape materials inherited from the past.

While later authors radically changed the formal paradigm and adopted a completely different arrangement of the materials, the readership, too, had to cope with the problems posed by ʿĪsā ibn ʿAlī's text. Traces of different attempts to limit the discomfort caused by the textual structure are clear in the manuscript tradition. For instance, the copyist or another hand added marginal glosses, with the aim of indexing the text; another solution was that this text circulated together with others containing similar recipes arranged by illness, from head to toe.[36]

II.3 Micro level: the recipes

If the chapters and their arrangement represent the macro-level of this work, the micro-level is represented by its smallest structural component, i.e. the recipe. Recipes often coincide with a syntactic unit. Thus, the recipes' role is mirrored by some codicological features of the manuscript witnesses, where the coherence of the recipe as a unit of text is explicitly marked by various dividers. The composition of the basic textual unit (the recipe) can also be approached in a formal way. This allows recipes to be compared and helps us understand whether we are dealing with the same one, in spite of the huge number of variants. Each recipe has three constitutional elements: the animal ingredient, processing of the ingredient(s), and the purpose or aim of the recipe.[37]

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33 For the stategies and tools devised in the Arabo-Islamic Middle Age by scholars, see Rosenthal 1947.

34 ʿAlī ibn Rabbān al-Ṭabarī was born near Marw at the beginning of the 9th century, to a Christian Persian family. He worked on the *Firdaws al-Ḥikma* for more than twenty years, completing it at the beginning of al-Mutawakkil's reign (850 ca.). See Meyerhof 1931 and Thomas, D., 'al-Ṭabarī', in: *Encyclopaedia of Islam*, Second Edition, Edited by: P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, W.P. Heinrichs. Consulted online on 13 February 2018 <http://dx.doi.org/10.1163/1573-3912_islam_SIM_7248>.

35 Ṭabarī 1928, 420–444.

36 For a description of the manuscript witnesses, see ch. IV. For a specific description of their material features to be interpreted as clues of evolution and clues of transmission, see Raggetti 2015.

37 Anna Contadini has suggested the existence of a treatment syntagm composed by five elements (condition, choice of body part, manner of preparation, specification of dosage, result). She seems, however, quite pessimistic about the possibility of identifying

II.3.1 The distinctive animal ingredient

The distinctive element of every recipe in this collection is an ingredient of animal origin and this determines its inclusion within a specific chapter. These ingredients include organs (liver, testicle, brain, etc.), tissues (skin, horn, hoof, etc), fluids and secretions (blood, urine, sweat, etc.), and body parts (leg, wing, paw, etc). The origins of some ingredients, however, are more opaque. One recipe, for instance, is based on a worm that can be found inside the head of wild cattle: the presence of such a worm makes the animal restless; therefore, if this worm is placed on a man, he will not be able to sleep (29.1).[38] Bezoar stones are another peculiar ingredient. They are not actual stones or minerals, bur rather conglomerates of hair and other materials, usually found in the digestive tracts of animals. ʿĪsā ibn ʿAlī's work features a number of animals from which these 'stones' can be obtained: cow (15.58), rooster (61.10), goose (64.6), swallow (50.14), and chameleon (84.X). In the chapter on the dog (8.28), a pseudo-bezoar is mentioned. This is a stone that has been swallowed and which is subsequently regurgitated by the animal. Moreover, this text refers to a greater diversity of useful properties of bezoar stones than the purpose for which they became famous, that is as a powerful and universal antidote.

The inherent beneficial power of the animal ingredient—its 'vis' or faculty—can be more or less transparent. In many recipes, the effect depends on a sympathetic or antipathetic interaction. For instance, the ingredients provided by the mule—a notoriously sterile crossbreed—are meant either to act against sterility, or to provoke it. Similarly, the sparrow, believed to hold a record among animals for the frequency of its sexual intercourse, serves as a key source for ingredients that affect desire and sexual potency.[39] Sympathy is stated and interpreted in many different ways. An immediate association occurs when a particular organ cures the corresponding body part in a human patient. In many cases, however, the connection between the intrinsic power of a certain ingredient and its effect is less clear, and none of the solutions suggested until now is valid. By applying the lexicographical observations on the possible difference between *manāfiʿ* and *ḫawāṣṣ* to this collection of recipes, the properties that can somehow be reconnected to a sympathetic relationship—or that, generally, have a transparent causality—can be considered *manāfiʿ*; whereas those whose causal relation remains obscure are *ḫawāṣṣ*. Nevertheless, the issue of the difference between *manāfiʿ* and *ḫawāṣṣ* is so complex that this criterion is only the first tentative step, rather than a definitive solution. What cannot be excluded, however, is that a cause that today remains unintelligible, may well have been self-evident in the context of the composition and circulation of this work.

The fact that some effects are governed by sympathies suggests that the ingredients are literally meant as animal organs and substances; that is, they are the actual vehicle for the *vis animalium*.[40] The power preserved

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common materials through formal analysis. See Contadini 2008, 146. Medical recipes, in different fields of study, have recently been the object of scholarly attention. See, for instance Totelin 2009 and Lehmhaus-Martelli 2017.

38 This parasite is mentioned in connection with two different animals, the wild cow in branch (b), and the buffalo in branch (a) and branch (c).

39 See al-Ǧāḥiẓ 1965, II 330.

40 Robert Muth suggested the name *Träger des Lebenskraft* for some of these substances, and offers a collection of examples from Greek and Latin on the use of saliva, urine, and excrement. He reiterates, however, a dichotomy between magic and medicine in the two groups of materials in his analysis: *Zaubermittel* and *Volksmedizin und Heilungswunder*, see Muth 1954. Pliny vehemently attacked the use of disgusting animal ingredients in Greek medicine, and, from the sources mentioned, it seems that this use was imported from the East: 'To examine human entrails is deemed an act of impiety; what then must it be to devour them? Say, Osthanes, who was it that first devised these practices; for it is thee that I accuse, thou uprooter of all human laws, thou inventor of these monstrosities; devised, no doubt, with the view that mankind might not forget thy name! Who was it that first thought of devouring each member of the human body? By what conjectural motives was he induced? What can possibly have been the origin of such a system of medicine as this? Who was it that thus made the very poisons less baneful than the antidotes prescribed for them? Granted that barbarous and outlandish tribes first devised such practices, must the men of Greece, too, adopt these as arts of their own? We read, for instance, in the memoirs of Democritus, still extant, that for some diseases, the skull of a malefactor is most efficacious, while for the treatment of others, that of one who has been a friend or guest is required. Apollonius, again, informs us in his writings, that the most effectual remedy for tooth-ache is to scarify the gums with the tooth of a man who has died a violent death; and, according to Miletus, human gall is a cure for cataract. For epilepsy, Artemon has prescribed water drawn from a spring in the night, and drunk from the skull of a man who has been slain, and whose body remains unburnt. From the skull, too, of a man who had been hanged, Antæus made pills that were to be an antidote to the bite of mad dog. Even more than this, man has resorted to similar remedies for the cure of four-footed beasts even—for tympanitis in oxen, for instance, the horns have been perforated, and

in the animal body parts is activated by the processing, and then transferred to the patient. However, the phenomenon of zoological *Decknamen* to encode the names of mineral and vegetal ingredients is attested to in other Arabic sources, and in Ancient technical literature more generally.[41] A number of recipes raise the suspicion that the animal ingredient may, in fact, be a code name for other substances, for instance, the recipe stating that crows' eggs are able to negate the effects of lime (59.12), while bat droppings congeal it (52.25), swallow droppings are used to slake chalk (50.16), and horse hooves can be used to harden glass and make gold and silver look like copper (16.13). A recipe based on the abdomen of a black cat equates its effect to that of tar (30.2), and given the resemblance in colour this could be a clue to a *Deckname*. In general, however, the trend in the ʿĪsā ibn ʿAlī tradition seems to be towards a literal interpretation. Some recipes are based on a single animal ingredient, but it is common to find a longer list of ingredients that includes plants, oils, and mineral substances.

Any kind of ingredient needs to be quantified on order for a procedure to be repeated and to obtain a specific result. If an ingredient is quantifiable in units, then a precise number is given, for instance, seven lice taken from a dog (8.23). If, instead, the weight or the volume of the ingredients has to be quantified as a whole, there are three distinct approaches. The first adopts a precise unit of measurement (*raṭl*, *dirham*, *qīrāṭ*, *dāniq*, *miṯqāl*, etc.), the second uses empirical units of measurement, determined by common sense and daily life experience (a handful the quantity equivalent to a chickpea, etc.), while the third adopts a relative measurement based on the part against which the other ingredients can be proportionally measured. In the pre-modern world—and Arabo-Islamic society was no exception—the units of measure could vary not only from place to place, but also from one individual to the other.[42] This implies that, in the transmission of a text, relative measures represent a more reliable approach to preserving the intended proportion of ingredients in a recipe.

II.3.2 Processing the ingredients

The second structural element in the recipes can be considered from several perspectives. It may deal with the application or administration of the animal substance (salves, pills, compresses, fumigations, eyedrops, mixed with food or beverages, etc.), or with the preparation of an intermediary object to convey the effect of the animal ingredient (talismans, lanterns, phylacteria, etc.). Different operations may coexist in the formal space of the 'main ingredient's processing', and this component of the recipes can easily be enlarged by selecting and combining different procedures. Moreover, additional indications are easily introduced into this part of a recipe. They also consist of supplementary therapeutic indications: whether the medicament must be applied to the right or the left part of the body, taken in the bath or on an empty stomach, additional handling of the main ingredient (to be pulverized, ground, burnt, filed, liquefied, etc.), and the indication of different media for the administration of the medicament.

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human bones inserted; and when swine have been found to be diseased, fine wheat has been given them which has lain for a night in the spot where a human being has been slain or burnt!' (*Nat. Hist.* XXVIII.2). For the nature of his work, Pliny as been chosen here as an example of a wide collection of many different traditions circulating in antiquity. Despite the many centuries and cultures in between, there still it a resemblance between the recipes mentioned by Pliny and ʿĪsā ibn ʿAlī. See Pliny 1963, 5–9.

41 In a manuscript witness to the astro-mineralogical work attributed to ʿUṭārid ibn Muḥammad, dealing with the stones associated with the seven planets and their engraved seals (MS Paris BnF Ar. 2775, f. 108v), there is one clear example of a *Deckname*. In the chapter describing the preparation of the seal of Mars, there is an explicit identification of a vegetal ingredient alongside a second name referring to a plant: 'the tongue of the black bird, which is a mollusc which lives in the ponds, and a medicinal plant called scorpion'. In the copy preserved in MS Istanbul Aya Sofya 3610, f. 156v, the indication of an equivalent name in Greek is missing. On the use of *Decknamen* in alchemy, see Siggel 1951.

42 For this complex technical topic, see the second edition of the *Encyclopaedia of Islam* s.v. *Makāyil*, (Ashtor, E. and Burton-Page, J., 'Makāyil (a.)', in: *Encyclopaedia of Islam, Second Edition*, Edited by: P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, W.P. Heinrichs. Consulted online on 13 February 2018 <http://dx.doi.org/10.1163/1573-3912_islam_COM_0635>); see also Sauvaire 1884a, 1884b, and 1885. Armin Schopen borrows the values given by Oliver Kahl, see Schopen 2006, 236 and Kahl 2002, 225–228; see also Bos 2009. Sara Fani has formulated an admirable synthesis of the question in her PhD dissertation, summarizing in the glossary what is stated in primary sources, as well as the discussion in the secondary literature, see Fani 2013.

There are two distinct approaches to the processing of the main ingredient. The first points at those mechanical and technical processes that belong to the ordinary activities of an apothecary. The second, by contrast, refers to all those magical and ritual actions involved in the preparation.

The first group includes many different procedures aimed at reducing the main ingredient to the most suitable consistency, in order to mix it with other components. Hard materials are ground up and pulverized, while fluid or soft ones are diluted with decoctions of plants and oils. The different kinds of meats have to be cooked until they dissolve in a broth, alternatively they are baked in a clay oven or roasted. Different kinds of oven are mentioned, used in connection with specific activities: the kiln for lime (79.6), the oven in which the seller of sheep heads prepares his goodies (21.8), and an already warm oven used to bake bread (50.12). Some alchemical instruments are mentioned as well, like the alembic and the 'cucurbit' (16.13).

Some recipes prescribe that one or more ingredients are to be left to putrefy for a certain number of days, sometimes in a vessel buried in the ground or in manure. The creatures generated during the process of fermentation can be used as a source for medical ingredients. Fermentation and generation of peculiar creatures from the decayed matter are also used in other works as a metaphor for the description of alchemical operations.[43]

Some of the preparations are not meant for immediate use, but rather are to be preserved in small bottles or containers, so that they are at hand in moments of need.

As for the 'magical' and ritual processing, the most common procedure suggested by the recipes is the preparation of a phylactery, usually consisting of a part of an animal that is carried around in a small purse made of skin, either from the same or from a different animal. Significant attention is paid to the correspondence between left and right. In the case of paired limbs and organs, it is not uncommon to find a precise indication about the side from which the part has to be taken, or to which the medicament must be applied. There are less indications about colours, but they are still significant. They deal with the specific nuance of a thread or a piece of cloth to be used in the preparation of a protective talisman (15.58, 16.13 and 56.10). Other traces of magical procedure can be seen in a recipe to bind someone's tongue (where the mouth of a frog has to be sewn shut with a silk thread, 108.9), in the dismembered parts of a large rat arranged in a particular configuration in order to chase pests away from the fields (43.10), and with the cat, whose blood is used for a love potion (30.9). Only in one case, an animal, namely the turtle, is presented as a medical scapegoat, to be burnt once the disease has been transferred to it (104.15). Among the few examples of written amulets, there is a little scroll against fever (1.29)—the recipes suggest modifying the text in accordance with the kind of fever to be cured—and a tanned piece of weasel skin inscribed against epilepsy (33.5).

As for the administration of medicaments, some recipes contain more detailed indications: the dosage may be different for adults and children (1.35), some preparations have to be taken in the bath on an empty stomach or at certain intervals. The administration of remedies against epilepsy can be related to the phases of the moon, with the beginning of a new lunar cycle as the most propitious moment. The awareness of the patient—or, more often, the lack of it—is a significant detail, especially in the case of love potions. Fumigations are a common

43 See, for instance, the chapter on wondrous fermentations (*al-taʿfīnāt al-ʿağība*) in the *Kitāb Išrāsīm*, (MS Paris Ar. 2634 ff. 27v–35v and MS Paris Ar. 2635, pp. 83–90). 'Chapter on the fermentation that has a huge effect and on the extraordinary secret. The Egyptians said: if Indian peas flour is taken, kneaded with bull blood, stuffed in a vessel filled with bull urine, buried as mentioned for one day, then a beast will be generated from it. This has the head of flowers [?], the body of a bird, and its colour tends to red. When it is like this, give it ram blood to drink for four days, one *raṭl* every day. When you hear a rustling noise, seal the lid of the vessel with clay and close it, drill a small hole through it, fill the receptacle with old wine and *Is* [?] water, and then bury it in the manure for fourteen days. Then open it, purify the wine and the water that comes out of it, and you will obtain a yellow water. Then add water for a second time, when it is needed, and close the hole. Then put it in a moderately hot oven for a whole night, let it cool, and put it back in the manure for three days. Then open it—but only after you have rubbed your hands with lily and violet oil—and you will find a red worm in it. Then purify the water and pour some of it on the worm. Then grind it with water and let it precipitate from the 'cucurbit' (*qarʿa*) and from the alambic. Then store it, and this will make people blind. No wonder that when three hundred dirhams of melted lead are diluted with one ounce of it—after it has been melted for three times—turn into red gold of the highest quality. If some of it is given to a man to eat with his food in a suitable quantity, then he will die. If leprosy is rubbed with it for three days, then this will cure it. If a man struck by a paralysis enters a hot bath, and rubs himself with this, then he will immediately be healed' (see MS Paris Ar. 2635, pp. 85–87). For the *Kitāb Išrāsīm*, see Ullmann 1972, 382 and Coulon 2017. For a study of the processes of fermentation in magical literature, see Saif 2016; for the phenomenon of spontaneous generation in general, see Kruk 1990.

application and in the case of gynaecological applications the woman has to stand over the source of smoke, so that it can penetrate her womb (21.13). Sometimes, the medicament is administered via a specific medium: it is quite common to dilute it in wine, but there also are more peculiar ways like inserting it into an egg (8.25).

The chapter about the dog describes a procedure that may have been intended as an empirical diagnostic test. In order to understand whether a man is going to survive the bite of a rabid dog, one has to check his reflection in a mirror: if the mirror reflects the image of a dog, it means that the patient is doomed (8.17). Other examples are a pregnancy test based on the observation of lice in milk (95.2), the use of a feather to sort out which one of the two owl eggs has the faculty to remove unwanted hair (60.1), and the effect of kite gall on snakes tested in the basket of the snake charmer (58.5).

II.3.3 The purpose of the recipe

Every recipe aims to obtain some effect, and this text contains a wide range of them. These can vary a lot, from relieving a patient from an illness to the preparation of wondrous and probably amusing tricks. If a recipe mentions more than a single outcome, then these are usually related in some way. When a recipe is meant to cure a specific skin problem, such as freckles, it is likely that it may be used for treating other skin conditions (leprosy, pigmentation spots, impetigo, etc.)

To summarize, the recipe can be seen as the minimum structural component of the text, the smallest textual block conveying a coherent and enclosed segment of procedural knowledge. This unit works thanks to the interaction of three different components (ingredient, processing, and purpose), whose extension determines the length of the recipe itself. Recipes can reach a considerable length and complexity, as a consequence of the addition and multiplication of elements to any of its components. The formal approach to recipes adopted here helps us to explain how blocks were constructed up and transformed over time;[44] but the complexity of individual recipes cannot be used as evidence of any clear-cut chronological distinction between specific recipes. In other words, formal complexity alone does not demonstrate that the simplest recipes represent the oldest layer of the text.

III. The world of recipes: a thematic approach

The description of the formal structure of recipes, however, does not by any means fully exhaust their significance. Recipes do not simply convey a structured procedure; they also offer a vivid image of the readership's interests and tastes, and of many aspects of daily life and widely held beliefs. The purpose of the recipes describes the needs and wishes of those who read, copied and carried them out. This aspect can be especially appreciated in the purpose of the recipe. A relatively limited number of issues are dealt, if compared with that of the recipes. Below is a detailed description of the recipes' themes, whose distribution is recorded in the 'Thematic Index'.[45]

Absent from the *Manāfiʿ* of ʿĪsā ibn ʿAlī is a physiology that might explain the origin of the diseases and the properties of drugs. The traces of humoral physiology in the compendium are so scant that their presence could be merely accidental (52.25 with the pigeon excrement containing much hotness). Another element missing is any explicit reference to Islamic practices and beliefs. Although many recipes conclude with a pious invocation to the will of God, as *conditio sine qua non* for a successful result, this remains a superficial veneer. This also gives the impression that a light Islamic touch was enough for these materials to be fully accepted, although they might not always concur with Islamic precepts, for instance those concerning ritual purity. Only one manuscript mentions a Qur'anic verse, used as an invocation to calm a beast, and this too is easy to consider as a

44 For the notion of 'erratic block', see Ullmann 1978, 24.

45 When translating the recipes, I have tried to avoid anachronisms and retrospective projections of modern medical knowledge. The identification of ingredients is made on a lexocographical basis, and aims to give the reader an idea of the substance in question. For the most significant elements in the text, the choices of translation are recorded in the 'Glossary'.

material that entered the text in the course of its transmission, not least because it differs from the main stream of the *Manāfiʿ* recipes (20.17).

III.1 Diseases of the body, body parts and organs

Some diseases receive particular attention, as evidenced by their frequent appearance: illnesses of the internal organs (liver complaints, bladder stones, kidney complaints, heart palpitations, palsy, colic, etc.), skin diseases, eye diseases, swellings and tumours, haemorrhoids. It is known that skin and eyes are affected by a number of endemic diseases, still widespread in the Middle East, and also in the *Manāfiʿ* ophtalomological problems. Different manifestations of leprosy receive particular attention as well.[46] Various fevers are treated and classified on the basis of the frequency of their occurrence (tertian, quartan, etc.). Epilepsy has a special position along with insanity, etymologically connected to a devilish possession.

III.2 Sex and love

The topics of sex and love receive prominent attention, and the number of related recipes is considerable. Many of them deal with sexual potency, aiming to give men amazing power during coitus. They are somehow related to preparations that bind a woman to her lover in an exclusive way. Another possibility offered to would-be lovers is a potion that makes them visible only to the beloved one. In this field, prescriptions and purposes take on a somewhat different nuance with respect to gender. If a recipe is designed for both men and women, then there might be a difference in the outcome, which may also depend on their social class (1.25 and 1.26). The fear of being cheated on often goes hand in hand with sensual love and so, by placing the appropriate animal part under a woman's head while she is asleep, a man can obtain a full disclosure of everything she has done (9.23).

III.3 Reproduction and birth

The issue of human reproduction follows as a logical implication of the previous subject. Several recipes meant for sexual potency also offer help in conceiving. Both fertility and sterility can be induced. In most cases, it seems to be a unilateral male decision, since the awareness and the will of the woman are never mentioned. Moreover, if a woman gets pregnant, several pharmacological interventions are possible to interrupt the pregnancy and abort the child. On the other hand, in case of a difficult pregnancy, an unwanted miscarriage can be avoided and the foetus protected. The delivery can be eased or induced under difficult circumstances; as can the expulsion of a dead foetus from the womb.

III.4 Sleep and insomnia

Sleep can be either induced or prevented with the use of various preparations. There are cases in which the text suggests that prolongued wakefulness is meant to be imposed as an unpleasant condition. In this collection of recipes, several solutions are offered to cope with troubled and agitated sleep, especially when it afflicts children. Only one recipe mentions a procedure to induce nightmares (35.2).

46 In a number of cases, it seems that leprosy is equated with those skin diseases that provoke a similar decay of the epidermis, for instance vitiligo or black spots.

III.5 Cosmetic

Treatments for beauty and aesthetic improvement are another relevant topic and, mainly, relate to the skin and hair. Several recipes describe the preparation of ointments that removes freckles and unsightly spots from the face or the whole body. The hair can be made shinier and more beautiful, and its colour can be changed. The possible colours are limited to black and white: white hair can be turned black, and vice versa. More than a dyeing process, one is left with the the impression that the change is of a different nature, i.e. that it is an expression of spite or animosity, or a trick. Depilatory concotions can be prepared to remove superfluous hair from the body in general, or in particular from the area of the eye. Moreover, hair growth can also be induced in the hairless spots left by alopecia. A few recipes deal with the female figure, in particular with the breasts, offering a solution to prevent their excessive growth and for preserving their youthful shape (1.45).

III.6 Nature, husbandry, agriculture and hunting

Domestic animals are not only a source for ingredients, they also are counted among the beneficiaries of the recipes, and the protection of domestic animals is one of the main purposes of such preparations, for example, to ensure the safe return of cattle and beasts of burden to their stable, to calm them when they are afraid, and to heal them when afflicted by a number of diseases (1.39 and 38.16). As for the birds that live in close contact with humans, pigeons and their lofts have to be kept safe from predatory animals so that the birds can multiply; while the hunting hawk has to be kept healthy and well fed, so that its plumage may shine. A few recipes mention fishing, suggesting ways to attract water animals to the surface so as to catch them more easily (18.4). Much less numerous are the beneficial effects for plants and other agricultural activities. Among the rare cases, there is a recipe that explains how to protect vines from a particular parasite (5.18), and another one explaining how to induce a fig tree to bear fruit outside its season (21.10). Dealing with nature and animals also means knowing the hidden tensions and attractions that affect living beings. Though these might better pertain to other kinds of properties, the *Manāfiʿ* of ʿĪsā ibn ʿAlī contain a number of remarks on antipathies. Antipathies affect both domestic and wild animals, they may run between two animals (scarab and gazelle, 10.7 and 10.8), between an animal and a substance (cat and rose oil 30.6, and cat and rue water 30.7), or between and animal and a plant (lion and oak, 2.34).

III.7 Vermin and obnoxious animals

Other animals pester the daily existence of humans, in particular insects and rodents. Primarily fumigations, but also other actions, are carried out in order to drive away scorpions, bugs, lice, snakes, rats and all the other animals that are troublesome to mankind or domestic animals. Some recipes target a particular kind of vermin, for instance in the case of the prescription suggesting the placing of a lion skin among other textiles in order to protect them from moths (2.27).

III.8 Crafts

Only a few examples of craftsmanship can be found among the great number of ʿĪsā ibn ʿAlī's recipes. For instance, a long procedure for obtaining splinterproof glass (16.13). There are also recipes to treat different materials, from wool (100.2 and 110.10) to precious stones (22.19 and 22.31), and for the preparation of an invisible

ink (104.13).[47] Recipes like these could have been addressing a particular professional category, but some of them could also be intended as targeted tricks.[48]

III.9 Tricks

A significant number of the recipes describe different kinds of tricks and pranks. They remind us of the *Paignia*, those tricks of *magie amusante* well attested to in Anassilaos of Larissa, in the pseudo-Democritean tradition, and in other Greek authors.[49] Several magic lanterns, whose wick has been soaked in a particular substance or mixture, create different illusions: people with the head of a dog or headless, women undressing and dancing around, a room entirely made of silver, even endless farting. Other tricks are meant to make fun of a particular professional category. For instance, those fumigations capable of shattering all the items in a glass shop (103.4), or those for splitting the membranes of drums and tambourines (3.7 and 3.8). Professional guilds may also avail themselves of these tricks, with mischievous and deceitful intentions: thieves carry with them a dog's tongue so that dogs will not bark at them (8.20), while street tricksters used to prepare an ointment to bring about an allegedly supernatural resistence to fire (108.2).[50] There are also commercial tricks, like the one to lower the price of an animal at the moment of the purchase by making appear the animal sick (93.9). If we are to believe the accompanying comments to the recipe, turning black hair white was also considered an amusing trick (50.2).

III.10 At court

The most detailed descriptions of antidotes and ways of detecting poisons always appear in connection with a courtly environment. This is explicit in the remarks about how kings and sovereigns used to carefully store these precious substances and objects in their treasures (42.3). Another issue strictly related to a courtly environment is the use of expedients or tricks to enter the court, and to ensure the king has a benevolent disposition. These practices also produce as a side effect a generalized love and admiration for the user, including the love of all women. The other side of this coin is represented by enmity, legal quarrels, verbal disputes, and the way to triumph over an adversary in such situations.[51]

III.11 Evil eye and black magic

The evil eye and the hideous effects of black magic are very concrete issues in the scenario offered by the recipes of ʿĪsā ibn ʿAlī. A man can protect himself from these supernatural attacks using a number of phylacteria and ointments. Some of them offer a form of protection against evil spirits and demons. A related therapeutical topic is the use of a prescription to darken blue eyes, in the inauspicious case that a baby is born with them, since blue eyes were—and still are—considered a powerful source of the evil eye. Some recipes, however, offer

47 See Raggetti 2016, 324.

48 See the following paragraph.

49 See Hershbell 1987, 7–8, and Martelli 2011, 99–114.

50 In a variant reading, this practice is associated with devils.

51 These materials are probably textual relics from the past, perhaps even an echo of the Babylonian *Egalkura* incantation, as I discuss in the forthcoming article 'Tricks to enter the court. Amulets, Rulers, and Social Distress', proceedings of the BabMed Workshop *Patients and Patrons* (Eisenbrauns). As for the connection with the ancient tradition, for instance in the case of the fat between the eyes of the lion (2.2), we can find in Pliny the Elder a remark on the Oriental origin of this unreliable remedy: 'The frivolous lies of the magicians assert that persons who are anointed with lion's fat, will more readily win favour with kings and peoples; more particularly when the fat has been used that lies between the eyebrows of the animal-a place, in fact, where there is no fat to be found!' (*Nat. Hist.* XXVIII.25). See Pliny 1963, 63–64.

more active interaction with the supernatural world. For instance, by applying a particular ointment on the eyes, it becomes possible to see the world of *ǧinns* and to interact with them (30.3).

IV. The edition

IV.1 Introduction to the edition

The description of the structure of ʿĪsā ibn ʿAlī's *Manāfiʿ* highlights a number of features that deeply affect the critical work on the text.[52] A text like this—with the recipe as minimal textual unit, arranged in chapters devoted to a single animal, and whose chapters follow an order that sketches a classification—is prone to being transmitted by a fluid tradition.[53] The fluidity manifests itself at different levels, and clearly emerges from the collation of the manuscript witnesses: a different number of chapters, a different number of recipes in the chapter, different formulations of the same recipe, an abundance of variant readings in the various manuscript witnesses.

The huge number of variants and the fluid development of the tradition, together with the early date of composition and the considerable time gap between this and the manuscript tradition, are all elements that make it impossible to reconstruct a form of the text that is close to the author's version.

In spite of this discouraging premise, the critical work on the text remains necessary. In this scenario, the edition becomes the occasion to display the development of the tradition, trying to explain the mechanisms that influenced it, rather than an attempt to reconstruct a version close to the unattainable original.[54]

The physical limits of a paper edition—instead of a digital one—and the necessity to cope with the limited space of the page, have also influenced the definition of the editorial approach.

In a fluid textual tradition like the *Manāfiʿ* of ʿĪsā ibn ʿAlī, it is not easy to find 'errors'. In order to sort out and group the manuscript witnesses, contextually relevant variants and structural features are often the only clues. Shared traits in the structure (the addition of a specific chapter or a shared lacuna, for instance) represent the strongest clue. In a fluid tradition, the variants are not alternatives in the reconstructrion of an original, rather they are complementary in the development of the tradition and in its philological reconstruction. A great number of these variants are carriers of meaning, relevant information and peculiar interpretations of the text. These meaningful variants deserve to be considered differently than other variants that only produce 'background noise', without really surrendering any important information. These variants, moreover, are valuable in the context of the whole textual tradition, rather than in isolation.[55]

As an easy solution to this problem, one could choose one manuscript witness, a so-called best manuscript. This decision results from the assumption that one manuscript is better than the other ones. Basing this choice on more or less reasonable criteria (date of the manuscript, length and therefore alleged completeness of the text, even readability) would not save us from a huge loss of material and information.[56]

On the other hand, it must be said that this rich variety easily strays into a chaotic and entangled mass, in which it is easy to get lost and lose courage. To spare first the editor and then the reader from such a predica-

52 The problematic aspects, in other words, are not simply due to the circumstances of the transmission, but to the nature of the work. These reason are instrinsic, rather than accidental. See Varvaro 1999

53 See Trovato 2014, 155–160.

54 Jan Just Witkam constructively warned against the fanatical search for an archetype in many Arabic textual traditions, see Witkam 1986 and Witkam 2013. On the other hand, in terms of scholarly practice he has shown that it is of fundamental importance to examine all the manuscript witnesses available, and to look at them with the eye of a historian.

55 The words of Alberto Varvaro are illuminating apropos the value of variability and its manifestation: 'The awareness of the very fertile variability of medieval and modern texts does not by any means imply unbrindled enthusiasm for variability as such. To begin with, Medieval variability (variance) is never the simultaneous presence of variants, but rather of the instability of a text in different locations, environments, and times. There has never existed a simultaneous competition of variants except in the margins of the *editiones variorum*. Moreover, neither variability nor its absence constitute value; they are only to be considered circumstances. As textual critics, we look insted for meanings and values'. See Varvaro 1999, 57.

56 On the importance of a complete *recensio*, see Bausi et al. 2015, 336.

ment, the variants must be looked at from a different perspective, in which the idea of an original text remains marginal. The primary sources agree on the fact that, in the 9th century, there lived a physician named ʿĪsā ibn ʿAlī and, among other things, he wrote a book on the useful properties of animal parts. Although some details remain unknown, and the information given by the sources might be not completely genuine, there is no reason to doubt the author's existence or his prestigious position in his time. That version of the text is, however, to be considered beyond our reach.

The image of the broken vase that has to be reconstructed from its fragments can be used to describe the state of this textual tradition, and the difficulties that the critical work on it encounters. In the 9th century, ʿĪsā ibn ʿAlī shaped a collection of useful properties, the original vase whose form we can guess in some detail. The fragments that have been handed down to us come from vases whose fashion was inspired by the original, but that were also freely reshaped in the course of centuries, with the introduction of additional elements or simplification of the form. The uncritical glueing of these fragments would only create a wildly eclectic hybrid. The aim of this edition is to collect and display all of them in an ordered and rational way, stressing their formal connection, so that the history of the textual tradition can be told and its contents made available.

So, after a complete collation of these large and varied materials, I opted for a division of the manuscript witnesses into three families, whose ties must be looked for in the order of chapters and recipes, their style, and in some *loci critici* where particularly meaningful structural variants can be found. Consequently, the edition is constructed in three different columns, representing the three branches (a), (b), and (c). In this way, visible parallels and gaps in the textual tradition are immediately detectable. One manuscript has been chosen to represent the textual tradition of each branch.[57] The choice fell upon the more inclusive in terms of contents—in other words, the longest text—and it was oriented by the pragmatic approach to this fluid tradition. The manuscripts chosen to carry the banner of each branch are not the best ones, but rather the most suitable and practical witnesses to the fluid tradition in all its richness.

The variants from the other manuscripts are given in the positive apparatus, whose structure mirrors the three branches of the tradition. In many instances, it was necessary to note in the apparatus the whole recipe, as attested to by another witness, either because the formulation is completely different, or because its syntactical arrangement did not allow for a more syntetic display of the variants.

IV.1.1 Order of the chapters

As for the order of the chapters, the choice has been strongly oriented by the implicit classification of animals that can be detected in all the manuscript witnesses. However, the order of the chapters in the edition is not exactly mirrored by any extant manuscript; rather, it is the result of an inclusive edition. The reason for the anomalous position of a chapter in a particular manuscript or branch is not always clear. The impression is that it may depend more on the innovation of a specific witness, rather than on the general fluidity of the order of the chapters in the textual tradition. To varying degrees, all the manuscript witnesses show oddities in terms of chapter order. In the making of the edition, I have decided to give some of the chapters a different position to the one they have in the manuscript. All these interventions are clearly marked in the 'Appendix', where the chapter order of the edition is matched with that of the manuscripts, by means of a synoptic table. The replacement of the chapters is, of course, a hypothesis based on the general idea of a formal structure of the work impressed by the implicit classification of the animals. The chapters are progressively numbered, and the edition of the *Manāfiʿ* counts one hundred and ten of them. The chapter numbers are an addition to the edition.

The degree of variance that may affect the level of the chapter finds an example in ch. 34, which is devoted to a curious pair of animals, the jackal and the chamois. Here, paleography is responsible for the co-presence of the jackal (*ibn āwā*) and the chamois (*arwī*). The implicit classification suggests that probably the 'right' animal here is the jackal. In the manuscript tradition of the text, however, this paleographically problematic reading generated different results. Branch (c) has two distinct headings followed by two clusters of recipes, respective-

57 Here I use the expressions branch, family and group of manuscripts practically as synonyms. The preference for branch is determined by the fact that it better conceptualizes, in concrete, the tripartite structure of the edited text.

ly associated with the jackal and the chamois (in other words, the more inclusive version); branch (b) has only the section on the chamois, whereas branch (a) has the chapter heading *ibn āwā* ('jackal') and is followed by the recipes that, in (b) and (c), are associated with the chamois. In the edition, this case is represented by a single chapter with the two inextricably related entries.

The case of the jerboa and the pig (chs 6 and 7) could be handled differently, because the the two different clusters of recipes remained distinct, and only one witness of branch (b) had put them together in the same chapter.

IV.1.2 Order of the recipes

In the edition, the recipes of each chapter are numbered progressively. In the critical apparatus, it is possible to see whether a recipe is omitted by other manuscripts of the same branch. The apparatus also informs the reader of cases when the manuscript chosen to represent a certain branch lacks the recipe. In this case, two possibilities are given. If the recipe is attested to in at least one of the other two branches, then it enters the text, and the apparatus tells the reader that the text of that particular recipe is taken from another manuscript of the same branch. If, instead, the recipe is attested to only as a singular feature of one manuscript, which has not been chosen to represent the branch, then the text of the recipe is given in the apparatus as an addition by a particular witness, together with a summary of its contents.[58]

The order of the recipes in the edition has been enstablished by a comparison of the relative position they have in the different manuscript witnesses. This is basically an internal and empirical criterion, but it relies on the fact that the order of the recipes in the manuscripts is quite stable. If a recipe, or a cluster of them, has a peculiar position in one of the manuscripts that diverges from the general trend, then this is indicated in the apparatus, by giving its position in relation to the other recipes in the edition.

IV.1.3 Parallel recipes: variants and positional value

This formal approach, adopted to determine the sequence of the recipes in the edition, raises a more general question about the possibility of comparing materials in a fluid tradition. As said, from the collation it emerges that these recipes were transmitted in a fairly stable order. It is not easy to guess why, in some instances, a recipe, or a cluster of them, appears in a different position. This change in the order, however, cannot simply be described as the result of a whim: almost any change in a formal frame requires a will and a plan behind it, though this may remain unknown to its modern readers.

In the case of added recipes, they usually share either the distinctive ingredient or a purpose with the one with they are are juxtaposed.

Then, when the focus moves to the recipes displayed in parallel, on the same line—and therefore considered not just as comparable materials, but relatively free variants of the same text—the issue of the degree of congruence emerges. To what extent can two or more recipes be considered as equivalent, i.e. a variant of the same procedural text, rather than different preparations? Since variants may emerge in each of the three components that construct a recipe (distinctive ingredient, processing of the ingredients, and aim), and in more than one simultaneously, the result is a bewildering number of possible combinations. Nevertheless, their position in the text is a strong clue to their analogy, which allows us to compare materials that, usually, are tricky objects of comparison, if one is only looking for an exact correspondence in the wording. The inclusive criterion applied here, next to their positional value, considers that one common element in one of the three parts of the recipe is already enough to consider them akin. In other words, when it comes to establishing a parallelism between two or more recipes, the specific contents and the position weigh more than the wording.

The wealth of variants is the result of the fluid tradion, in which the re-writing of a textual unit is a normal practice. Moreover, there is no end to the addition or omission of elements and this phenomenon was also possibly influenced by the readability of a particular *Vorlage*, the degree of creativity and literacy of single copyists,

58 This formal difference in the presentation and annotation of the text is an editorial choice that allowed for the sifting of singular additions of the particular manuscripts.

his expertise, the availability and the familiarity with supplementary ingredients, etc. Many other hypothesis can be formulated about the generation of variants, but what can be surely inferred from the textual tradition is that, in the fluidity of the process of copy and transmission, both trivial and relevant variants accumulated and interwove, becoming complementary rather than alternative. A further step in the direction of the definition of a more complex system of textual affiliations can be taken only after a similar formal comparison with other related works is carried out, not only on short textual samples, but on a larger scale that includes entire compendia.

To recapitulate, the methodological approach devised for this edition allows two or more recipes to be considered as variants of the same procedural text, insofar as their position in the text and at least one of their three structural components remain the same.

The edition is as inclusive as possible, aiming to display the rich variety of this textual tradition.[59] All the interventions on the composition of the text are recorded, with a view to leaving as little room as possible for eclectism: at any moment, the reader can easily check the position of a particular chapter or recipe in the general picture of the textual tradition. The thematic analysis offers the possibility to evaluate the single recipes, and peculiar connections between distinctive ingredients and purposes (see 'Thematic Index').

The position of a chapter or of a particular cluster of recipes is also important for grouping the manuscript witnesses. The chapters on the sheep (ch. 21) and the goat (ch. 22), for instance, see a small cluster of four recipes in different positions. The manuscripts of branches (a) and (b) record them as recipes based on sheep ingredients, whereas the witnesses to branch (c) include them in the subsequent chapter on the goat. Such fluctuations are also present in the lexical ambiguities generated by animal names that can be generically applied to small cattle. Nevertheless, it provides a significant clue to structural relationships between manuscripts. The phenomenon of recipes that fluctuate from one chapter to another is attested to more than once, favoured by the affinity between the animals dealt with, like the wild cow and the buffalo (23.3 and 29.1), the mantis and the bedbug (89.4 and 92.3), or the sandgrouse and the vulture (45.8 and 46.1).

IV.2 Variants and linguistic features

An edition is a compromise between fidelity (to the author, to the manuscript witnesses and the text they transmit, to an alleged archetype) and legibility of the edited text, a compromise that the editor makes with the prospective readership of the edition in mind.[60] I have opted for an edition form that offers a tendencially normalized Arabic in order to reach a larger readership. At the same time, I have paid attention to preserving—in the apparatus or, in particular cases, in the edition—those linguistic features that might be relevant for a deeper linguistic study of this text, and of technical literature more generally.

In the context of an open recension like the *Manāfiʿ*, the copyst may decide to give the text a different formulation, which he finds more appealing, without affecting at all the meaning (e.g. second or third person singular, active or passive formulation of the sentence). The background noise of the orthographical variants and the different syntactic formulations of the recipes is loud. Some orthographic elements that produce this background noise have been normalized, since a different choice would have impared the readability of the edited text, without preserving any other relevant linguistic information (orthography of the *hamza*, *tāʾ marbūṭa* and *hāʾ*, *yāʾ* and *alif maqṣūra*). The alternance between emphatic and non-emphatic (ḍ — d, ṣ — s), interdental and non-interdental letters (ḏ — d, ṯ — t) in the spelling of the same word is normalized in the edition, but the record of relevant ortographic variants is recorded in the apparatus and in the glossaries.[61]

Together with the open recension, the linguistic peculiarities of middle and mixed Arabic gave the copyist a huge set of variants (orthographical, lexical, syntactical), and he was guided in their choice by many different

59 See Trovato 2014, 155–160.

60 See Varvaro 2012, 44–47.

61 See Varvaro 2012, 94 and Bausi et al. 2015, 345.

needs and reasons.[62] In general, these deviations from the standard can be regarded either as a conscious intention to mix registers for the sake of style, or as the result of a lack of familiarity with the contents, or sometimes a simple slip of the pen. In any case, an unintentional deviation from the standard might also be a trace of the influence of spoken language on orthography. For this reason, it remains important to record these relevant features as linguistic documents of the witness that contains them.

IV.2.1 Typology of the variants

As anticipated, the large degree of variation produces a huge number of equally acceptable readings: these do not offer any genealogical information, but carry with them meaningful knowledge.

In the great wealth of variants, it is still possible to stress some trends in terms of their character and genesis. The distinctive ingredient can vary in an associative way: the brain (*dimāġ*) can alternate with marrow (*muḫḫ*), which may be considered as a synonym for the anatomical notions about the the nervous system. A similar shift of meaning may happen between the penis (*qaḍb*) and the tail (*ḏanab*), where the sexual organ of some animals is placed; or between the saliva (*luʿāb*) and the foam (*luġām*) of a camel (20.10); or, like in the case of the deer (12.15), between the quite specific hooves (*aẓlāf*) and the more general extremities(*aṭrāf*). An interesting case (22.29) is one in which the variation features an organ on one side (*minfaḥa*), and an entire periphrasis on the other (*man aḫaḍa muḫḫ*).

A complex list of supplementary ingredients rarely remains stable, and its elements vary from one manuscript witness to another, revealing omissions and additions (12.2). A variant concerning the name of a simple drug may consist of a quite lengthy explanation and collection of synonyms (20.9 and 26.1).

Sometimes, an apparently negligible variant (singular/plural, or the addition of a pronoun) can give a completely different flavour to the recipe. For instance, a procedure that aims to confer a man with a particular appeal, is very different to saying that his woman or all women will find him irresistible (76.2). In other cases, a variant offers a different perspective on the same object: a mound of earth can be described as an anthill, or as the sign of a molehill (10.11).

These variants acquire a particular meaning when they do more than create an equivalent and basically synonymic expression. That is, when a paleographical similarity leads to a semantic ambiguity in the specific field of medicine and pharmacology.

As already seen for ch. 34, a paleographical ambiguity may affect entire chapters. In the case of ch. 82, all the manuscripts show an irregular and uncertain dotting. The majority opts for the reading *ǧirdawn* (large rat), the others go for *ḥirdawn* (lizard), suggesting the former as a more familiar name. On the other hand, the position of the chapter rather suggests that it should be read as lizard, and the edition follows this positional line.

As for the distinctive animal ingredient, the brain (*dimāġ*) and the blood (*damm*) are interchangeable. One of the names used for the herbivorous dung (*ḫaṯan*, and its different plurals) can alternate with *ḥašan*, 'bowels' or 'intestine' (15.17). Other ingredients show this kind of variation: (12.20) safflower (*qirṭim*) and alfalfa (*qurṭ*) with a third and more banal reading that may emerge on the side (*qirāṭ*); and (15.5) Indian hemp (*šahdānǧ*) and fumitory (*šāhtraǧ*). Pitch (*zift*) and oil (*zayt*) are not hard to confuse either (21.18), while honey (*ʿasal*) is just one dot away from being red like washing (*ġusl*) (15.4). It is striking how one of the manuscripts from branch (b)—MS Istanbul Saray Ahmet 2083—always uses *zaybaq* (quicksilver) instead of *zanbaq* (lily).

Two verbs used frequently in the recipes—that is, *saḥaqa* (to grind) and *saqā* (to give to drink) frequently alternate (22.26). In respect of hair, the paleographical similarity concerns the verbs *nabata* (to grow) and *natafa* (to pluck out), which have entirely opposite meanings.

Much rarer are cases—often connected to unusual ingredient names—in which none of the readings preserve a plausibly correct form. Only in one case, that of gum ammoniac (13.15), has it been possible to reconstruct the ingredient, whereas a question mark remains over the names of remedies and electuaries that are impossible to identify (3.21 and 10.9).

62 See Lentin and Grand'Henry 2008; Zack and Schippers 2012.

Similar phenomena are attested to in connection to diseases. The characterization of a swelling (8.9) can vary from warm (*ḥarr*) to acute (*ḥadd*). Laboured breathing (*buhr*) and the skin disease called (*bahaq*) can generate a similar kind of variant too (24.2). The shift from hotness (*ḥarāra*) to impetigo (*ḥizāza*) represents another example.

The processing phase offers a case that occurs very often with the verbs that mean 'to mix, dilute'. The frequency of this phenomenon is high, but the different forms are irregularly distributed in the manuscript tradition. The origin of the variants remain partially unclear, and it is possible to propose more than one reason for their genesis. The forms attested to in the tradition include the verb *ḏāba*/*yaḏūbu* and the verb *dāfa*/*yadūfu*.[63] Both generate a number of variants that may depend on both paleographical similarity and influence of the spoken language. The verb *ḏāba* is also attested to as *dāba*, which Wehr describes as a form derived from *ḏāba* seen mostly in modern Egyptian Arabic.[64] The verb *dāfa*—which specifically refers to the moistening of medicines or perfumes—also appears as *ḏāfa*, which Lane describes as a dialectal variant.[65] Another variant associated to this second verb is *ḍāfa*/*yaḍīfu*, which, in its fourth form, means the adding of something to something else. More rare, but still present, is the variant *ḍāba*/*yaḍību*. In sum, the origin of these variants can be connected with different and non-mutually exclusive causes: a paleographic similarity and the consequences of defective writing, the semantic closeness of the forms, influence of spoken language in the written realization. Considering the complex nature of these variants, largely attested to in technical texts, the edition preserves them as they appear in the manuscripts.

Sometimes, the genesis of the variant crosses the border of the recipe as textual unit, and the collation shows that, often, two recipes are merged into one (for instance, 8.20–21 and 15.21). Usually, two recipes are attracted to each other by a shared element, the distinctive ingredient or purpose (26.5), in a homoteleuton that also involves contents next to forms.

V. The manuscript witnesses and the branches of the tradition

The literature on *Manāfiʿ* and other properties is vast and largely unexplored. The materials, moreover, are quite repetitive in nature, creating the impression of being at the forefront of a tradition 'where everything is similar but nothing is the same'.[66]

In order to be included in the recension, a manuscript witness has to have the introduction (preferably mentioning the author's name), the contents have to be arranged by animal, and it must deal with useful properties. Exploring the standard repertories, I was able to collect seven manuscript witnesses.[67] I have omitted all the indirect tradition, or better, all the other texts in which a certain recipe appears. The exploration of these materials are the subject of my ongoing research interests and intentions.

Already in the collation phase, the great fluidity of the materials required the development of a specific approach, mainly based on practical and empirical instances. From the synoptic overview of the manuscripts emerged a need to present more than one text in the edition. It has not been possible to establish among the witnesses those relations that are usually shaped in a *stemma codicum*. Nevertheless, on the basis of the aforementioned common structural features, the manuscript witnesses have been divided into three different groups. They represent three different recensions of the text, or three different branches of the tradition, at least as they

63 Lane 1863, I 933.

64 Wehr 1979, 343.

65 Lane 1863, I 988.

66 Special thanks to Remke Kruk, who shared with me this aphoristic formulation that so precisely depicts the circulation of the 'science of properties'.

67 See Brockelmann 1943, 267 and Brockelmann 1937, 417; Sezgin 1970, 377; Ullmann 1972, 21–22. The autoptic examination of manuscripts and the research in different libraries have made an important contribution to the bibliographical research. The text attributed to ʿAlī ibn ʿĪsā (the ophtalmologist) in the Chester Beatty catalogue, in fact turned out to be a copy of Ibn Buḫtīšūʿ's book on animal properties, see Arberry 1964, 3. On the other side, during a research period in Cairo at the National Library, I was struck by a title on animal properties attributed to Ibn Sīnā, which turned out to be a misattributed copy of ʿĪsā ibn ʿAlī's *Manāfiʿ*.

are attested to by the extant manuscript witnesses. Manuscripts belong to the same branch when they share, firstly, formal features (disposition of chapters and recipes) and, secondly, similarities in terms of formulation.

V.1 Branch (a)

(S) MS Istanbul Şehid Ali Pasha 2096, 181 ff., 7 ll. per page.

Some blocks of folia are in disorder and some are missing, possibly as a result of a new binding given to the manuscript. This hypothesis, however, cannot be checked against quire numbers. The foliation was added after the misplacement. There are no catchwords, and the correct order of the folia had to be reconstructed on the basis of the text and the average order of its entries in the rest of the tradition. This manuscript is a particularly rich copy: it is written in *nasḫ* script, largely vocalized, just a few lines per page and ample margins. The title page is written in gold letters outlined in black and vocalized in blue—the chapter headings are written in the same fashion—the text of the introduction is framed by a blue rule-border. The text on this first folio, however, is more of a descriptive subtitle. The title page is missing, but it is plausible to imagine it decorated with a squared panel containing a medallion. This manuscript was probably one of those copied in the Mamluk barracks as school exercises. This institutional training system seems to have counted the sciences of nature among its interests.[68]

The subtitle page gives the following information about the work and the author: *Kitāb maǧmūʿ ḫawāṣṣ min aʿḍāʾ al-ḥayawānāt taʾlīf al-šayḫ al-ḥalīm al-awḥad ʿAlī bin ʿĪsā al-mutaṭabbib bi-madīnat al-Andalus* ('Collection of the occult properties from the parts of animals, the author is the clement the unique ʿĪsā ibn ʿAlī the medical practitioner, in the city of al-Andalus'). The attribution Andalusian origins to the author is unique and can be explained as an attempt to place the author, whose name revealed little, in the most prestigious location for Mediaeval Islamic medicine.

(B) MS Berlin Pet. II 244 (Ahlwardt 6240), 91 ff., 10–11 ll. per page.[69]

Written in a plain *nasḫ* script by a book hand, the text is partially vocalized. The front page has a simple carpet decoration in black, dark blue and red. There is no title on the front page, only the name of the author (*ʿAlī bin ʿĪsā al-mutaṭabbib*). The text is framed by a black double line, chapter headings are inscribed in a rectangular cartouche. The beginning of the recipes is marked either by rubrics, or by a bolder script. From f. 40 onwards the decoration, the rubrics and the frame are incomplete.

V.2 Branch (b)

(T) MS Istanbul Saray Ahmet III 2055/1, 55 ff. (1r–54r), 15 ll. per page.

Written in an elegant *nasḫ* script by a professional book hand, largely vocalized. A title is given in the recto of the first folio: *Kitāb mā fī al-ḥayawān wa-baʿḍ ḥikāyāt min al-ṭibb*. This one is probably a partial transcription of the longer title given in red at the beginning of the text (f. 1v): *Kitāb mā fī al-ḥayawān wa-baʿḍ ḥikāyāt min al-ṭibb min al-manāfiʿ mimmā yaǧmaʿuhū ʿĪsā ibn ʿAlī al-mutaṭabbib* ('Book about the Useful Properties of Animals and Some Stories of Medicine Collected by ʿĪsā ibn ʿAlī, the Medical Practitioner'). Then follows a list of the chapters,[70] more numerous than the actual chapters that are attested in the manuscript (See 'Appendix'). Chapter headings are either rubricated or marked by a red stroke over them: a small *hāʾ* (ه) marks the end of the recipes. The text shows corrections and annotations that may be by the same hand. The first chapter, on man, is

68 As I discuss in a forthcoming article 'Rolling Stones Do Gather: MS Istanbul Aya Sofya 3610 and Its Collection of Mineralogical Texts', the Proceedings of the workshop *The Emergence of Multiple-Text Manuscripts*, held in Hamburg in November 2016.

69 See Ahlwardt 1893, 505–506.

70 At the end of the list, the chapters are said to be one hundred and twenty three but, in fact, they are less numerous (see 'Appendix').

interpolated with a long Aristotelian passage on the description and classification of animals. The text has a number of lacunae that suggest that parts were already missing in the *Vorlage*.

(W) MS Wien 1481/2 (ff. 134v–145v), 15 ff., 21 ll. per page.[71]

Written in a clear *nasḫ* book hand. The first line of f. 134v gives a rubricated title: *Kitāb manāfiʿ al-ḥayawānāt*. This is followed by a list of all the chapters that were supposed to be included in the text. However, there are only thirteen chapters (see 'Appendix'), out of a much longer list given in the manuscript. Chapter headings and some incipts of recipes are rubricated. The text is incomplete, ff. 146–149 show a melange of incantations and magical prescriptions always related to animals that, however, do not belong to the work of ʿĪsā ibn ʿAlī. The codex is a multiple-text manuscript that also contains a hippiatric work of the 14th century.

(G) MS Gotha 67/2 (ff. 32v–61v), 30 ff., 15 ll. per page.[72]

Written by a book hand in a plain *nasḫ*, sporadically vocalized. The chapter headings are written in a bolder script. A dot inscribed in a circle is used to mark the end of a recipe and the beginning of the following one. The same hand indexed the text, by systematically adding the purpose of the corresponding recipe in the outer margins. This manuscript shows a consistent gap in the contents, i.e. chapters 38–63 do not appear (see 'Appendix'). Among the witnesses of this branch of the tradition, G is the only one that does not have the initial list of chapters. Other formal aspects, however, resultedin its inclusion in this branch. The *Manāfiʿ* represents the second of two units in a multiple text manuscript. The first contains a text on the use of animal substances in agriculture, with a small addition of various properties arranged by purpose.

V.3 Branch (c)

(L) MS Leipzig 770 (ff. 2r–45v), 45 ff., 15 ll. per page.[73]

Written by a book hand in a plain and regular *nasḫ*. The title page gives the following title and description for the book in a spear-shaped arrangement: *Kitāb durrat al-ġawāṣṣ ʿalā al-manāfiʿ [wa] al-ḫawāṣṣ, min manāfiʿ al-waḥš wa-l-ṭayr wa mā ḍaḫarahū al-mulūk mimmā lā yuṭlaʿu ʿalayhī* ('Book of the Pearls of the Diver about the Useful and Occult Properties of Wild Animals, Birds, and the Highest Things that the Kings Recorded'). The codex is a multiple text manuscript. On the second line of f. 45v another text begins, in which other recipes are arranged by vegetal simple drugs. From f. 52r onwards the text is arranged by disease *a capite ad calcem*. The second text ends on f. 71r, with a spear-shaped colophon dating the copy to the year 1074 H. (1663–64 AD).This manuscript contains the longest version of the text.

(C) MS Cairo Dār al-Kutub, *Ṭibb Taymūr* 205, 31 ff., 23 ll. per page.

Written by a book hand in a cursive *nasḫ*, sporadically vocalized. The title page gives the following title and description for the book, arranged in the form of a spear: *Kitāb durrat al-ġawāṣṣ ʿalā al-manāfiʿ [wa] al-ḫawāṣṣ, min manāfiʿ al-waḥš wa-l-ṭayr wa mā ḍaḫarahū al-mulūk mimmā lā yuṭlaʿu ʿalaihi al-ġayra min asrār al-ḥikmat wa-fawāʾid al-ǧumla* ('Book of the Pearls of the Diver about the Useful and Occult Properties of Wild Animals, Birds, and the Highest Secrets of Wisdoms and all the Advantages that the Kings Recorded'). The chapter headings have their own dedicated line and are written in a bolder script (from the black-and-white reproduction it is

71 See Flügel 1865, 550–551.

72 See Pertsch 1878, 121–122.

73 See Vollers 1906, 249–250. This manuscript has been digitased by the Refaya Project and is available online: <https://www.refaiya.uni-leipzig.de/servlets/solr/select?fl=*&sort=ihsinvent+asc&q=%2BobjectType%3A%22islamhs%22+-ihsstatus%3A%22STAT0001%22+%2BallMeta%3Avollers&mask=search_form_islamhs_simple.xed&XSL.lastPage.SESSION=%2Fsearch_form_islamhs_simple.xed&version=4.5&start =562&fl=id,returnId&rows=1&XSL.Style=browse&origrows=25> (last accessed 11 February 2018).

not possible to see whether these were rubricated as well). In ff. 30v–50r there is a second text containing recipes arranged by illness and purpose, rather than by animal.[74]

74 It is significant to observe, in particular in branch (c), how the text of the *Manāfiʿ* used to circulate in association with one or more text that offered a different perspective on the properties. L and C are also very close in terms of wording, though L includes a higher number of recipes and chapters.