Mapping the Language of Spices

A corpus-based, philological study on the words of the spice domain

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The Hong Kong Polytechnic University

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by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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Certificate of originality

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Abstract

The majority of existing literature on spices is found in the areas of gastronomy, botany, and history. This study investigates spices on a linguistic level and aims to be a comprehensive linguistic account on the items of the spice trade. Some of these dried plant matter were highly desired at certain points in history, due to their attractive aroma and medicinal value, thus they were ideal products of trade early on. Cultural contact and exchange, and the introduction of new cultural items begets situations of language contact and linguistic acculturation, and so in the case of spices, we not only have a set of items that traveled around the world, but also a set of names. This domain is very rich in loanwords and *Wanderwörter*, but also supplies us with a myriad of cases where spice names are conventional innovations. To make it more interesting, the thesis compares English, Chinese, and Arabic, languages that represent major powers in the spice trade at different times. The thesis has two main parts. Part one identifies the spices under scope with a brief discussion on their botany and history, followed by a presentation of the geographic and linguistic diffusion of spices and their names. Basically, we track and explain word origins and subsequent spread by tracing the materials and the propagation of the accompanying Wanderwort. This part relies on philological literature, and tools from historical linguistics, such as etymological research. Part two examines the language of spices, the terminology and nomenclature related to the spice domain from linguistic-cognitive perspectives. On one hand, it is a systematic investigation on how humans name spices: what are the mechanism and motivations behind the naming principles, and how this relates to the salient sensory features of the products (strong gustatory, olfactory, or visual stimuli). On the other hand, it looks at to what degree spice terminology is used in daily language; which is proposed to be a gauge of a spice's embeddedness in a culture. This part relies on corpora and corpus linguistic tools. Conclusions are made on the connections between the physical properties of the spices, their patterns of diffusion, and the prototypical spices and their effect of naming principles. Besides being a novel and original approach to research and categorize spices from a linguistic point of view, this study offers new insights to our knowledge about (wandering) loanwords, and the effect of the highly sensory nature of spices in the naming process when adopted by a community. It is also intended to be a useful working database for future research, and aims to dispel some of the chaos and confusion surrounding spice names.

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Wanderwort	a word borrowed from one language to another across a broad geographical area often as a result of trade or adoption of newly introduced items or cultural practices[1] 22
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[1] Merriam-Webster, n.d.

Acronyms

OED	Oxford English Dictionary 8
PIE	Proto-Indo-European 29
POWO	Plants of The World Online 3
TCM	Traditional Chinese Medicine 12
TLFi	Trésor de la Langue Française informatisé 28
WALS	The World Atlas of Language Structures 22
WOLD	The World Loanword Database 35

Symbols and Notation

*	reconstructed form
<	developed from
>	developed into
$<^{?}$	uncertain development
†	obsolete
a.	*ante*, attested before the year
ca.	*circa*, around the year/century
fragrance	italic: lexical item, a word or phrase
[fragrance]	square brackets: gloss, literal meaning
‘fragrance’	single quotation marks: meaning, sense
FRAGRANCE	small capitals: a concept

The Data: Spices

1

w

An this chapter, I will introduce the data that this project is build on: the spices and their HEY names. Every section in this chapter introduces a spice, on some occasions two or more closely related items. The set of spices will be presented alphabetically, and all sections are adhering to the following structure:

(0) A *Spice profile*, a name card-like environment for the spice under discussion with short, factual information, linked to a botanical database. This box also identifies the spice by listing its vernacular names in multiple languages. This is intended to be a convenience for the reader, a reference point of sorts one can return to anytime.

(1) A brief description about the nature, characteristics, and importance of the spice. This is intended as an introduction to the spice and its uses, and it includes the physical description of the material, its role as medicine, culinary seasoning, perfume, or dye, and its cultural significance, either locally or globally.

(2) A subsection on the botany, origins, cultivation, and identity of the spice, where the latter is included only if deemed necessary because of the situation is unclear or confusing. Under the heading "botany" I only discuss basic information regarding geographic distribution, native and introduced habitats, and conditions of growth that factor into a plant's "spreadability", which is tightly knit to its value as a crop. Agronomy and harvesting will also be mentioned where it commits to interesting notions about scarcity and demand.

(3) A subsection on the history of the spice follows, focusing on the first mentions, whether it is evoked in religious scriptures, described in pharmacopeias, documented in historiography, or praised in poetry. Besides this, key steps and events on the spices' journey and spread will be introduced, especially where an item's history is not widely known, or there are a lot of misconceptions. Materials whose cultural history, itinerary, and names have already been researched and written about will be only discussed concisely, directing the reader to existing scholarly publications.

(4) Lastly, I will examine the spice terminology in a subsection on the names of the spices under scrutiny, focusing on word origins and etymological analysis on one hand, and collecting and explaining synonyms on the other. This step will be conducted in three languages, English, Arabic, and Chinese, and will cover historic and closely related or alternative names. An alphabetic directory of spices treated in this dissertation follows:

1. allspice (*Pimenta dioica*) 3
2. anise (*Pimpinella anisum*) ??
3. asafoetida (*Ferula assa-foetida* et al.) ??
4. black cardamom (*Amomum subulatum*) ??
5. caraway (*Carum carvi*) ??
6. cardamom (*Elettaria cardamomum*) ??
7. cassia (*Cinnamomum cassia* et al.) ??

8. chile (*Capsicum annuum* et al.) ??
9. cinnamon (*Cinnamomum verum*) ??
10. clove (*Syzygium aromaticum*) ??
11. coriander (*Coriandrum sativum*) ??
12. cumin (*Cuminum cyminum*) ??
13. dill (*Anethum graveolens*) ??
14. fennel (*Foeniculum vulgare*) ??
15. fenugreek (*Trigonella foenum-graecum*) ??
16. ginger (*Zingiber officinale*) ??
17. long pepper (*Piper longum*) ??
18. mace (*Myristica fragrans*) ??
19. nutmeg (*Myristica fragrans*) ??
20. pepper (*Piper nigrum*) ??
21. saffron (*Crocus sativus*) ??
22. Sichuan pepper (*Zanthoxylum spp.*) ??
23. star anise (*Illicium verum*) ??
24. turmeric (*Curcuma longa*) ??
25. vanilla (*Vanilla planifolia*) ??

1.1 Allspice

1. Allspice POWO

English: *allspice*; *pimento*; *Jamaica pepper*. **Arabic:** فلفل إفرنجي *fulful ifranjī* [European pepper]; nan. **Chinese:** 多香果 *duōxiāngguǒ* [many-spice-fruit]. **Hungarian:** *szegfűbors* [clove-pepper]; *jamaicaibors* [Jamaican-pepper]; *amomummag* [amomum-seed].

Plant species:	*Pimenta dioica* (L.) Merr. (syn. *P. officinalis* Lindl.)
Family:	*Myrtaceae*
Plant part used:	unripe fruit; leaf
Region of origin:	S. Mexico to C. America; Caribbean
Cultivated in:	Jamaica, Mexico
Color:	dark brown

(a) berries (b) powder (c) leaves

Figure 1.1 Allspice berries, powder, and leaves from *Pimenta dioica*.

Note 1.1.1. Introducing the *Spice profile box*. As it can be seen above in *Spice profile* 1 presenting allspice, this business-card-like environment gives a quick reference of the spice under scrutiny in a concise way. This is intended to be a convenience for the reader to return and glance back at brief, factual information about a particular item whenever necessary. The box also contains a clickable link to the related plant species in a botanical database, *Plants of The World Online* (POWO), where more information can be found, such as the plants' biodiversity, distribution, botanical synonyms, as well as images of specimens.

Allspice, also known as pimento and Jamaica pepper, refers to the dried unripe fruits of a tropical evergreen tree growing in the Caribbean: the *Pimenta dioica*. The dried berries are dark brown, hard to the touch, and 4–6 mm in diameter (thus larger than black pepper). Their signature crown is by a small ring of the calyx (van Wyk, 2014, p. 210). It is one of the few spices that do not come from the East; chili, vanilla, and allspice are the traditional three when one is listing spice products native to

the Americas (disregarding cacao which is not considered a spice today). It is also the only spice that is exclusively cultivated on the western hemisphere (Duke, 2002, p. 21). The term *allspice* is a coinage playing on the notion that the flavors and aroma of allspice is similar to that of clove, cinnamon, nutmeg, and black pepper (Mabberley, 2017, p. 717) — the most popular spices in Europe at the time when Europeans got in contact with this New World spice. People who only saw ground allspice but not whole, often tend to think that is in fact a spice mixture, after its name and rich flavor profile. Usually ground to powder, allspice is one of the key ingredients of Caribbean cuisine, especially jerk style dry-rub meat preparation. It is also used in European sausage making, pickling, baking, and flavoring liqueurs, it an overall "handy spice".[1] It also found its way into some Middle Eastern spice blends.

Note 1.1.2. Allspice is sometimes called pimento, which is also the name of a cultivar of *Capsicum annuum*, famous from the Southern United States appetizer pimento-cheese. It is therefore important not to confuse allspice with the heart-shaped mild cherry peppers that North Americans also call pimiento or pimento.

1.1.1 The Botany, Origin, and Cultivation of Allspice

The allspice tree is a small mid-canopy tree or shrub with smooth, bay-like leaves and tiny white flowers. The berries turn dark purple if left to ripe, and the leaves and the bark are also aromatic (Riffle, 1998, p. 279). Belonging to the myrtle family (*Myrtaceae*), allspice is related to other aromatic trees, such as clove, eucalyptus, and the bay rum tree. Its binomial name is made up of *pimenta*, the Portuguese (or corrupted Spanish) equivalent of 'pepper', and *dioica* 'of two houses' (Greek *di-* from *dyo* 'two' and *oikos* 'house'), indicating that the male and female flowers are found on different plants (Peter, 2012, vol. 2, p. 166).

Allspice is indigenous to the regions ranging from Southern Mexico to Central America and the Greater Antilles of the Caribbean, especially Jamaica (Czarra, 2009, p. 146). Where naturalized, it spreads by birds carrying the seeds. Allspice has been since introduced to a few neighboring places, such as Colombia, Venezuela, and Florida (POWO, 2022, p. 146). In 1885 it was introduced from Jamaica to Hawaii and Kauai, and it even reached Tonga.

Allspice is cultivated as a crop in a few countries, notably in Jamaica, Mexico, and to a lesser extent in Honduras and Grenada. The primary producer and the source of the highest quality being Jamaica. Saplings are grown from seeds, then soon transplanted when still small. The trees need well-drained soil and humid conditions (van Wyk, 2014, p. 210). It is one of the only spices that no one managed to grow in the East, transplantation efforts were quickly abandoned, and its commercial cultivation is confined to the Americas (Duke, 2002, p. 21). Harvesting happens similarly to how black pepper is harvested; the still green, unripe fruits are picked by hand, and then dried under the sun.

The flavor of allspice mainly comes from the component eugenol, which is dominant both in the fruit and the leaves, but other compounds also add to the complexity of its aroma. Eugenol — also

[1] The Icelandic name is *allrahanda*, literally 'of all hands', meaning 'for various purposes'; showing its multifaceted uses.

called clove oil, for it constitutes 80-90% of the essential oil from clove buds (Barnes et al., 2007, p. 166) — is widely used as a flavoring agent by the food industry and in pharmacology, and is also found in cinnamon, nutmeg, and bay leaves. It has antiseptic, antibacterial, anesthetic, and analgesic properties (Ulanowska & Olas, 2021). The leaves of a related plant called the West Indian Bay Tree (*Pimenta racemosa*) is used to produce bay rum, a popular essential oil used by the perfume industry for its spicy notes.

1.1.2 The History of Allspice

There is not much we know about allspice before the arrival of the Europeans, except that the Aztecs used it to spice up their chocolate drink (Farrell, 1985, p. 27), although Dalby (2000, pp. 145, 177) doubts this was the case that early on. According to Duke (2002, p. 21), the Maya used allspice for embalming. We know that it reached Europe as a consequence of Christopher Columbus's voyages. Spanish colonizers must have encountered allspice in the West Indies sometime after Columbus and his crew explored the islands of Hispaniola, Cuba, and Jamaica, and the year 1494 is reported (Opara & Chohan, 2021, p. 12). Columbus himself did not find it. In fact, he did not recognize any spice he was so keen on finding — pepper, cloves, nutmeg, cinnamon — but kept himself and his patrons in the delusion that he will. In his first letter to Ferdinand and Isabella he writes: "On this island there are many spices and great mines of gold and other metals. [...] I believe that I have found rhubarb and cinnamon." (Columbus, 1893, pp. 10–18) — in reality, he had none.[2]

He was adamant that the islands he *discovered* were full of spices and brought up excuse after excuse (out of season, etc.) after every voyage he returned with no spice (Dalby, 2000, p. 149). He also believed that he was in India or Cathay, on one of the outlying islands. Between apologies, Columbus also promised more gold, silver, cotton, mastic, and slaves. As Dalby (2000, p. 150) reports, what he recorded in his private journal is a bit more honest and realistic version of events: "I think that many trees and plants grow here which will be highly valued in Spain for dyes and medicinal spices. But I am sorry to say that I do not recognize them." Columbus repeatedly regrets his ignorance in botany in his journal (see also Columbus, 1893/2010, p. 57).

Interestingly, authors love to claim that Columbus brought back allspice (together with vanilla and chili): "He returned with allspice from the West Indies, chilies from Mexico and vanilla from Central America." (Craze, 1997, p. 17), and "Columbus brought it back to Europe thinking it was pepper." (Czarra, 2009, p. 146), or "Though he did not find the Spice Islands, Columbus brought allspice, vanilla and red peppers from the West Indies back to his Spanish supporters." (Parthasarathy et al., 2008, p. 1). This is not true, he most likely never even saw allspice, but it was reported him that it is there and can be cultivated, along with cinnamon, and mulberry for silk production (Colón, 1571/1959, p. 151). Columbus returned from his first voyage of 1492–93 with some gold nuggets and jewelry, pearls, a hammock, tobacco, the turkey, and a few poor captured Taínos, but no spices were presented to the Spanish monarchs Ferdinand and Isabella. He did bring back pineapple and cassava

[2] Columbus's first letter of his first voyage, sent on March 4, 1493 from Lisbon to the Spanish court (and its translation) is also available online at King's College London. Transcription: http://www.ems.kcl.ac.uk/content/etext/e021.html, translation: http://www.ems.kcl.ac.uk/content/etext/e022.html

(Turner, 2004, p. 11).

Diego Álvarez Chanca, the court appointed physician who accompanied Columbus on his second expedition in 1493 is often credited with bringing home both chili, and allspice (McCormick, n.d.), but in his 1494 letter describing the flora and fauna, he only mentions *agi*, also *axi* — modern Spanish *ají* from Taíno — (see Corominas, 1987, p. 34), and that the natives use it to season their food, with what we now know as *Capsicum annuum*: the chili pepper (Chanca, 1494/2003, p. 311).

In the following century the Spanish tried to turn Mexico into a spice plantation by transplanting eastern spices, an effort that mostly failed. Only after this did the colonizers start to pay proper attention to native spices (Machuca et al., 2020, p. 6).

Francisco Hernández de Toledo, King Philip II's court physician and naturalist spent 7 years in New Spain between 1571–1577, studying its species and conducting interviews with the natives. He was the first to formally describe allspice. He called it *Pipere Tavasci* 'Tabasco pepper' (today *Pimienta de Tabasco*, after the region of Tabasco, famous today for a brand of hot sauce. Hernández also recorded the Nahuatl name of allspice: *xocoxochitl* 'sour flower'.[3] Hernández likens the flowers to pomegranates, and and the aroma to that of orange blossoms, describing it to be very pleasant and attractive, with a sharp taste of the fruit. (Hernández, 1615, p. 2). In Machuca et al. (2020)'s translation:

> "Xocoxochitl meaning sour flower, is a large tree, with leaves like those of the oranges, red flowers like a pomegranate, but with an aroma like the orange blossom, and in such a smooth and pleasant way, that even the leaves of the tree add to its attraction: the fruit is round, and hangs in clusters, which at first appear green, and then beige, and finally towards black: it is sharp and scathing to taste, and good-smelling"

According to Machuca et al. (2020), although allspice was known by the Spanish from early on "there are few historical records of its production and trade", and only in the 18th century started they to consider American products to have economic potential.

Allspice berries are around 30% larger then peppercorns, and since their color and shape resembles black pepper, and it gave a spicy taste to food, it is no wonder that the Spanish called them *pimiento* 'pepper'. The Portuguese version is *pimento*, and later the botanical name *Pimenta* was given to the genus of plants related to allspice (Farrell, 1985, p. 26). I disagree with the often repeated trope that the Spanish explorers mistook allspice berries for pepper and called them *pimiento* "by mistake"[4], these people knew exactly what they were looking for, and that what they have found is not the mighty black pepper; but for them it was a kind of pepper. The crew showed samples of pepper and cinnamon to presumably confused Native Americans hoping for directions, and as Columbus wrote in his journal on the 4th of November, 1492, they indicated by sign language that there is a lot of it around (Duke, 2002, p. 21; Columbus, 1893/2010, p. 67). The Europeans, however, soon recognized the value of allspice, even if it was not the expensive black pepper, but still more pungent and exotic than some cheap Old World substitutes, the juniper and myrtle berries (which are very similar to allspice in appearance and usage) (Dalby, 2000, p. 150).

[3] cf. Wood, 2000–2022, s.v. xococ, xochitl.
[4] Britannica, n.d., allspice.

In short, allspice was introduced to Europe by the Spaniards in the 16th century, its import was first recorded in 1601, according to Britannica (n.d.) and Farrell (1985, p. 26). After 1655, when Jamaica became a British colony for nearly three centuries, the Brits developed a taste for allspice and started to use it to season meat dishes, sauces, and pickles (A. Green, 2006, p. 74). They were also responsible for its spread to some extent which is illustrated by the names of allspice in some languages, e.g. Polish *ziele angielskie* 'English herb'.

1.1.3 The Names of Allspice

Allspice is a fascinating case, because it gives us examples for a plethora of names that showcase us many of the motivations, mechanisms, and solutions people choose when naming spices. As I mentioned before, some people are puzzled if allspice is a spice blend or not. The names in some languages often just add to the confusion, for example French *quatre-épices* (lit. 'four spices') can have the sense 'allspice', but also 'a kind of spice mix' made up of four different spices.[5]

English

Etymology 1. English *allspice*, from *all* + *spice*; after the flavour profile that resembles the combined aroma of cloves, nutmeg, cinnamon, and black pepper, 1621[a]

[a] OUP (n.d., s.v. allspice)

Note 1.1.3. Introducing the *Etymology box*. This environment, as seen above in *Etymology* 1, offers a quick look at a words' origins and development.

allspice

Since its introduction to the spice cabinet, allspice has been known by many names from which currently *allspice* seems to be prevailing. *Allspice* was formed by compounding *all* and *spice*, for its flavor was perceived to be a combination of four characteristic spices that the Europeans knew and sought after: black pepper, cinnamon, cloves, and nutmeg.[6] It was first recorded in 1621: "Ambergreese, nutmegs, and all spice."[7], and probably inspired the French *toute-épice* 'all-spice', attested in 1762.[8]

Sadly, the original word for allspice was lost with the demise of the native Taíno people of the Caribbean, nevertheless we got Taíno[9] words such as barbecue, *cassava*, *guava*, *hammock*, and *tobacco* (Rafinesque, 1836, p. 229). As we concluded before, it is assumed that it was the Spanish who first got in contact with the allspice berry, and that they simply called it *pimienta* 'pepper'.

[5] TLFi, 2012, s.v. quatre-épices.
[6] OUP, n.d., allspice; Britannica, n.d.
[7] OUP, n.d., allspice.
[8] TLFi, 2012, toute-épice.
[9] Taíno is a now extinct Arawakan language.

Etymology 2. English *pimento* 'allspice; sweet pepper', ca. 1660 < partly Portuguese *pimenta* 'allspice; sweet pepper; black pepper', 15th c. AD < and partly Spanish *pimiento* 'hot and sweet pepper; formerly also black pepper; pepper plant of both kinds', earlier *pimienta* 'black pepper; peppercorn; ground pepper', 1495 < Spanish *pimienta* 'black pepper; peppercorn; ground pepper', 13th c. AD < Medieval Latin *pigmenta* 'plant juice; food seasoning; condiment; spices; perfumes', plural of *pigmentum*, 9th c. AD < Latin *pigmentum* 'colour, paint; ointment; drug; spiced wine', from *pingō* 'to paint' + *-mentum* 'instrument', 9th c. AD[a]

[a] OUP (n.d., s.v. pimento); OUP (n.d., s.v. pimento); OUP (n.d., s.v. pimiento); Gómez de Silva (1985, p. 415); Corominas (1987, p. 495); C. T. Lewis and Short (1879, s.v. pigmentum)

pimento

For a long time *pimento* (and to a much lesser extent *pimiento*) — the words for 'pepper' in Portuguese and Spanish, respectively — was commonly used in English to refer to allspice. This is still the case in Jamaican English for example, where the term *allspice* is not used. In North American English however, *pimento* now rather refers to a small, round variety of chili pepper (*Capsicum annuum*), commonly known as cherry pepper explained in note 1.1.2.

The corruption and mix-up between the English words *pimento* and *pimiento* and their origins is as confusing as it gets. For the sake of a clear understanding, let us first consider the modern names for allspice in Spanish: *pimienta de Jamaica*, and Portuguese: *pimenta-da-jamaica*. In both cases, *pim-(i)enta*, with a final *-a*, means 'pepper', referring to peppercorns of the usual black and white pepper (*Piper nigrum*). In Spanish and Portuguese, the words endings of *-o* and *-a* mark the grammatical gender, the significance of which dissipates in English. It is important to remember however, that the Spanish form *pimienta* emerged first from a Latin neuter plural suffix in the 13th century. Thus, perhaps a century or so later when the word *pimienta* was already embedded in Spanish, speakers perceived the word as a feminine noun, and a vacuum of a masculine counterpart emerged. This allowed for a practical differentiation by gender between the peppers of the Old Word and the New World. Corominas (1987, p. 459) explains that *pimiento* derived from *pimienta*, and it was first applied in the Americas for the red fruits of the chili.

Gómez de Silva (1985, p. 415) makes the most compact distinction: "*pimienta* '(black) pepper; allspice', *pimiento* '(hot and sweet) pepper' ". In contemporary Spanish, *pimiento* (the masculine form) refers to the fruits and plants of the *Capsicum* family, e.g. the numerous spicy chilies and mild bell peppers of red, green, and yellow, while *pimienta* (the feminine form) refers to the small round fruits of black and white pepper and its powdered forms. The distinction seems consistent, belonging to this latter group see for example *pimienta dulce* 'sweet pepper', and *pimienta gorda* 'fat pepper' both of which refers to allspice, not to be confused with *pimiento dulce*, which refers to sweet paprika powder.[10]

Pimento in English is a partly Portuguese, partly Spanish borrowing, while *pimiento* comes from Spanish. In fact, it is explained in the *Oxford English Dictionary* (OED) that in the 'allspice' sense of the word, *pimento*, from Portuguese *pimenta* (*da Jamaica*), went through an alteration influenced by

[10] Española, 2014, pimiento, -a.

the Spanish word form, which is not attested in the 'allspice' sense. Ergo, Spanish *pimiento* maybe did not refer to allspice in Spanish at the time when the borrowing happened. And if so, *pimento* is a borrowing from Portuguese *pimenta* meaning 'pepper' and, as *pimenta da Jamaica*, 'allspice', influenced by Spanish *pimiento* 'chili, sweet pepper', also in the sense of the pepper plants of both kinds (chili and black). Spanish *pimiento* formerly had the sense of 'black pepper, peppercorns, and ground pepper' (before 1495), with an earlier form *pimienta* (13th century), now usually in sense ground pepper and peppercorns[11]. The Portuguese connection is only discussed by the OED, other dictionaries do not mention it. A direct Spanish borrowing is also plausible if we consider that it was the Spanish who most likely brought it back first, they probably called it *pimiento/-a*, and they were responsible for its subsequent diffusion in Europe. English spellings varied greatly of this this Romance word, using forms such as *piemente* in the late 1600s.

The origin of these words is the classical Latin *pigmentum* 'a material for coloring, a color, paint, pigment', with a transferred meaning 'the juice of plants' in post-classical Latin.[12] The word *pigmentum* is made up of *pingō* 'to paint' and *-mentum*, a suffix denoting an 'instrument, medium', well recognizable from Romance languages and English (i.e. excite*ment*). According to Corominas (1987, p. 459), Catalan *pimienta* is attested in the 13th century and it comes from the plural (*pigmenta*) of Latin *pigmentum* 'coloring, paint', which already meant 'drug, ingredient', and later, 'condiment' in Medieval Latin. Derived from this, in 1495 *pimiento* was applied to the the plants bearing the pungent red fruits of the Americas. *Pigmentum* also entered English as *pigment* 'paint, dye, ingredient in an ointment, drug'. According to the OED, Medieval Latin *pigmentum* also referred to spiced drinks (9th century), perfumes, and hence spice in general. Old French cognates support this, *pigment* had the sense of 'balm, fragrant spice' in the 12th century, Anglo-Norman *pigment/piment* meant 'spice, spice wine'[13], and Middle English *pihmentum* (12th century, later *piment*) had a sense of "a spiced drink, a remedy or concoction containing spices",[14] "a sweetened, spiced wine used for refreshment and in medical recipes; a medicinal potion".[15] *Piment* in French were later applied for chili, especially the cultivar of cayenne pepper. (The OED points to the sense 'cayenne pepper' in a "10th century French source", which must be an error.)

Jamaica pepper

Allspice is also known as *Jamaica pepper*, for it mainly grows on the island and the historical reasons described above. Many languages calqued *pimienta de Jamaica* from Spanish, or another transmitting language (e.g. Italian *pepe della Giamaica*). *Jamaica pepper* was first recorded in 1661: "A kind of Pepper, that tastes like Cloves, and very Aromatick (known by the name of Iamaica-Pepper)".[16]

myrtle pepper

The name *myrtle pepper* echoes the similarities of the allspice tree with European myrtle (*Myrtus communis*), especially after the resemblance of their purple berries. Beyond the physical resemblance, myrtle berries are also edible, and are also dried to add to pepper mills as a spice. Furthermore, the European myrtle has aromatic leaves and wood as well, and it is used to grill and smoke meat in

[11] OUP, n.d., pimento.
[12] C. T. Lewis and Short, 1879, pigmentum.
[13] OUP, n.d., pigment.
[14] Harper, n.d., pigment.
[15] R. E. Lewis et al., 1952–2001, piment.
[16] OUP, n.d., Jamaica.

Southern Europe since Roman times, especially on Sardinia and Corsica; the same way the Caribbean people use allspice wood and leaves. The myrtle berry appears in Roman and Greek mythology as well (van Wyk, 2014, p. 186).

clove pepper

The name *clove pepper* has "chemical reasons", namely that this name arises from the aroma of allspice that reminded people of clove. This is due to its eugenol content we discussed above. *Szegfűbors* lit. 'clove-pepper' is the most common name for allspice in Hungarian still, and it is used in sausage making.

newspice

One of the most interesting spice names we can come across in my opinion is *newspice*. The term is now archaic in English, but the idea still exists in a few European languages, such as Serbian and Macedonian најгвирц *najgvirc* from German (*Neugewürz*), Czech and Slovak (*nové koření/korenie*), and Turkish *yenibahar* and Romanian *ienibahar* from Ottoman Turkish يڭيبهار *yeñibahar*; all the above literally meaning 'new spice'.

The reason behind these names is that during the 17-18th centuries, allspice "suddenly" arrived to Central and Eastern Europe as a new (and possible marketed as a trendy) spice. This happened a century after the red hot paprika took the world by storm (by 16th century it reached Hungary from the Ottoman Empire), and while the chili did not conquer northern Europe, allspice — to an extent — did. We could philosophize why the chili did not deserve the name 'new spice' when it first arrived, or why the Europeans — except on the south — were reluctant to assimilate it into their cuisines. Was the pungent chili too harsh for a Northern palate to consider? Is it the sophisticated chemical complexity of allspice that made it fashionable in Victorian England? All these questions are leading us to deep waters regarding the human palate and cultural attitudes toward spices and spiciness, as well as environmental and genetic factors deciding the heat of preference explored by interesting papers such as Spence (2018) and Törnwall et al. (2012).

We know that in the beginning allspice was overlooked by Europeans, and this is possibly the reason why allspice's original name did not survive unlike the Nahuatl word *chīlli*. Allspice was was later sold and used in beverages and cookery, but its rising star never came close to that of chili. In Asia, where chilies were adopted early on and, eagerly transplanted, they transformed and revolutionized cuisine forever. It is unimaginable to think of Indian, Indonesian, or Chinese dishes without chilies today. Inversely, allspice is mostly unknown in East Asia, and the reasons behind it are just as botanical as historical: In the 16-17th century nobody knew how to grow allspice, while chili can be grown everywhere effortlessly. In addition, Europeans did not sail to Asia to sell spices, they went to take them.

As the 20th century came around, allspice — the only spice still exclusively imported from the Western hemisphere — quietly became one of the many, and its fervor faded a little. America was not new anymore, and the name *new spice* as well became obsolete. An English textbook for students of Italian narrates a letter from 1680 about this *Nuova Spezie* and the author's opinion on it:

> "I Am much obliged to you for the Drug you sent me inclosed in your last letter, about which I cannot tell you any thing but that it is called the New Spice, and it comes as it is said, or as it is guessed, from the West-Indies, and not from the East-Indies; and it is but

six months that I had knowledge of it from Count Laurence Magalotti, who showed it me under the abovesaid name of New Spice. How many different tastes are found in it by several honest folks ! that of the clove is the principal ; that of the nutmeg is the second in rank ; the cinnamon comes as it were the third in order ; next the citron ; then the smell of the musk and of the amber, and the most sweet taste of sugar. The truth is, in my opinion, that it is a pretty Drug. I am in Florence, and with for an occasion to do you service ; so command me with all freedom, and be certain that I will count it as good luck to have any power to serve you. I affectionately kiss your hands. Florence, 26th March 1680." (Baretti, 1755, p. 5)

And so, we have established a few categories when it comes to the names of allspice: (1) names that are made up of *spice* as a headword and a modifying word, (2) names that use *pepper* as a headword with a modifier, and (3) names that are taken from Portuguese and Spanish. See table 1.1 for a concise overview.

#	Species	Name	Source
1	***Pimenta dioica***	**allspice**	**van Wyk (2014)**
2	*Pimenta dioica*	clove pepper	Duke (2002)
3	*Pimenta dioica*	Jamaica pepper	van Wyk (2014)
4	*Pimenta dioica*	myrtle pepper	Peter (2012)
5	*Pimenta dioica*	newspice	Peter (2012)
6	*Pimenta dioica*	pimento	van Wyk (2014)
7	*Pimenta dioica*	pimento berry	OUP (n.d.)
8	*Pimenta dioica*	pimiento	OUP (n.d.)

Table 1.1 Various names for allspice in English.

Arabic

Etymology 3. Arabic فلفل إفرنجي *fulful ifranjī* 'allspice' [European pepper], literally 'Frankish pepper', named so because it was transmitted by Europeans[a]

[a] Baalbaki (1995)

Arabic, similarly to English, boasts with a diverse set of names when it comes to allspice. First and foremost, it is known as *filfil ifranjī* 'European pepper'. *Ifranjī* literally translates to 'Frankish', but it became the epithet of white Europeans, similarly to the term *farang*[17] in Southeast Asia. The rationale behind this name is evident: it was Europeans who introduced this spice to the Middle East and North Africa in the centuries following its debut. filfil ifranji

[17] A word of Persian origin, applied for the Franks during the crusades (from Old French *franc*), and later by extension to any white merchant used from Persia to Thailand.

Allspice's Middle Eastern history is the topic I have found the least amount of information on, considering every other spice in this chapter. As it is an ingredient that have arrived long after the classical times, it is not discussed in the literature I have consulted, and modern articles only deal with it for its pharmaceutical and health benefits, not with its journey. The challenge to find further Arabic synonyms is also increased, because both English names *allspice* and *pimento* are ambiguous. I have found examples of wrongly glossed entries in both Arabic, and Chinese dictionaries. Be that as it may, I have managed to collect a few other Arabic names for allspice from contemporary dictionaries, these can be seen in table 1.2.

Further common vernacular names are *fifil ḥulw* lit. 'sweet pepper', and *bahār ḥulw* lit. 'sweet spice', where *bahār* 'spice', is a loanword from Persian. Persian بهار *bahār* means spring (the season), it was borrowed into Arabic with a sense of blossoms and foliage, alluding to the leaves and flowers of plants as the source of many spices.[18] In the 'spice, seasoning, condiment' sense, the word spread regionally via Ottoman Turkish (loaned from Arabic). Similarly to the case of English, the word for spice was associated with the allspice berries, and consequently resulted in the already mentioned Turkish *yenibahar* [newspice] 'allspice', and μπαχάρι *bachári* 'allspice'. Thus, just like English, Arabic propagates allspice names by using the words for 'spice' and 'pepper' with modifiers indicating qualities of taste, or who carried the spice.

#	Species	Name	Tr.	Gloss	Source
1	*Pimenta dioica*	بهار حلو	*bahār ḥulw*	sweet spice	E. O. T. Wiktionary (n.d.)
2	*Pimenta dioica*	فلفل البساتين	*fulful al-basātīn*	pepper of the gardens	Almaany (n.d.)
3	***Pimenta dioica***	**فلفل إفرنجي**	***fulful ifranjī***	**European pepper**	**Baalbaki (1995)**
4	*Pimenta dioica*	فلفل تابل	*fulful tābil*	spice pepper	Almaany (n.d.)
5	*Pimenta dioica*	فلفل حلو	*fulful ḥulw*	sweet pepper	Baalbaki (1995)

Table 1.2 Various names for allspice in Arabic.

Chinese

duoxiangguo

In Chinese, allspice goes by the name 多香果 *duōxiāngguǒ* [many-spice-fruit], supposedly a Chinese rendering of *allspice*. However, in China allspice is practically non-existent; it is not used in dishes, does not feature in *Traditional Chinese Medicine* (TCM) databases, and generally unknown besides Western specialty grocery shops. A search in Baidu Index yields no results as well. All the names except 甜胡椒 *tián hújiāo* 'sweet (black) pepper' shown in table 1.3 are relatively modern semantic translations of presumably English sources. Just like in Arabic, it obviously does not show up in pre-modern corpora, and scarcely present in the modern corpus.

Summary

[18] Dozy, 1881, p. 121.

#	Species	Name	Tr.	Gloss	Source
1	***Pimenta dioica***	**多香果**	***duōxiāngguǒ***	**many-spice-fruit**	**Kleeman and Yu (2010)**
2	*Pimenta dioica*	全香子	*quánxiāngzǐ*	all/whole-spice-seed	
3	*Pimenta dioica*	甜胡椒	*tiánhújiāo*	sweet-barbarian-pepper	Lau (n.d.)
4	*Pimenta dioica*	牙買加胡椒	*yámǎijiāhújiāo*	Jamaica-barbarian-pepper	MDBG (n.d.)
5	*Pimenta dioica*	眾香子	*zhòngxiāngzǐ*	numerous-spice-seed	MDBG (n.d.)

Table 1.3 Various names for allspice in Chinese.

#	Language	Term	Gloss	Loan	Source
1	English	*allspice*		no	OUP (n.d.)
2	English	*Jamaica pepper*		no	OUP (n.d.)
3	English	*pimento*		yes	OUP (n.d.)
4	English	*pimento berry*		no	OUP (n.d.)
5	English	*pimiento*		yes	OUP (n.d.)
1	Arabic	*fulful al-basātīn*	pepper of the gardens	no	Almaany (n.d.)
2	Arabic	*fulful ifranjī*	European pepper	no	Baalbaki (1995)
3	Arabic	*fulful tābil*	spice pepper	no	Almaany (n.d.)
4	Arabic	*fulful ḥulw*	sweet pepper	no	Baalbaki (1995)
1	Chinese	*duōxiāngguǒ*	many-spice-fruit	yes	Kleeman and Yu (2010)
2	Chinese	*tiánhújiāo*	sweet-barbarian-pepper	no	Lau (n.d.)
3	Chinese	*yámǎijiāhújiāo*	Jamaica-barbarian-pepper	yes	MDBG (n.d.)
4	Chinese	*zhòngxiāngzǐ*	numerous-spice-seed	yes	MDBG (n.d.)

Table 1.4 Conventionalized names for allspice in English, Arabic, and Chinese, found in dictionaries.

The Diffusion of Spices

2

In this chapter, I will present the findings on the diffusion of spices, by looking at the distribution of spice plants and their names. First, an overview about the spices geographical distribution will be presented, then, a discussion on their spread and *spreadability* will ensue. Lastly, I will present my findings on the diffusion of spice names, and how they relate to the botanical reality. The aim of this chapter is to have an understanding of how spices spread around the globe as informed by their names and etymologies, but at the same time supported by the evidences of physical diffusion.

2.1 The Geographic Distribution of Spices

In general, it is true that spices come from the hot and humid tropical regions, especially Asia. However, there are number of aromatic plants that originate from more temperate regions, here we should think about the umbelliferous plants of the West and Central Asia: asafoetida, fennel, cumin and caraway, and others, and we must not forget the three American spices: chile, vanilla, and allspice. Figure 2.1 shows the macroareas where the 24 spices originate.

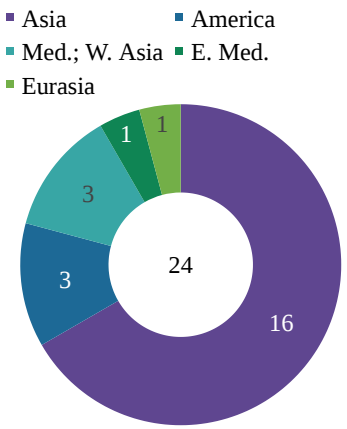
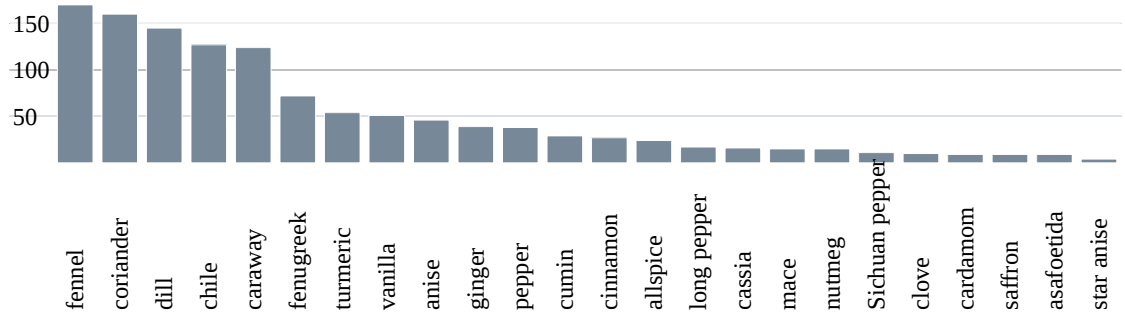


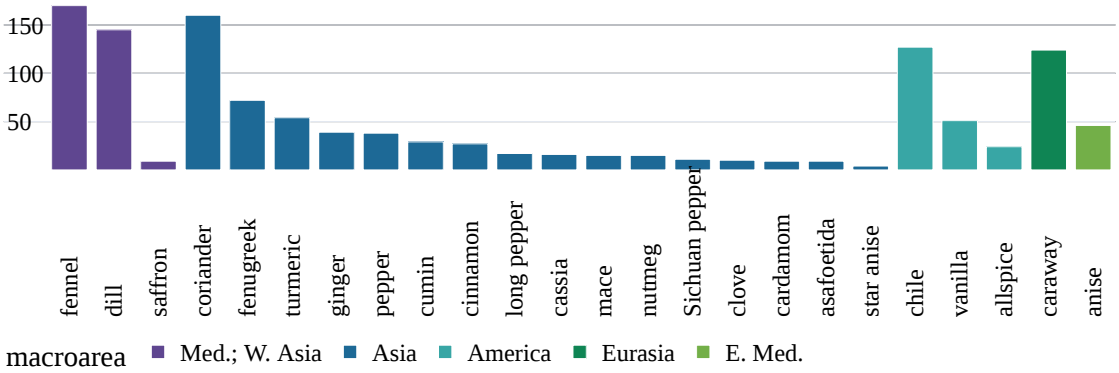
Figure 2.1 The distribution of spice plants by the macroarea of their native habitat.

Botanical databases, such as POWO, often show distribution and give us the regions where a plant is *native* to, and where it has been *introduced*. "Introduced" means that the plant is not native in the area, but now grows wild due to human intervention—whether the plant escaped cultivation, or became naturalized after accidental introduction—or due to natural spreading. Looking at this information reflects on the plants' ability to adapt and grow in new places, but also hints on how human usage and transmission affected habitats. I have collected this information and used it to compare the spices in question. I have simply counted the native and introduced regions, and added them up. In figure 2.2, you can see the spices ranked by the total number of the regions they grow in, including both native and where the plants were consequently introduced. I would like to highlight that the highest ranks are occupied by aromatic plants that are also herbs, both in the botanical and in the culinary definition. This makes sense, since these plants—e.g., fennel, coriander, dill, fenugreek, etc.—are not only cultivated for their seeds, but the leafy green parts are made use of as well, so it is without question that the whole plant "travels" to new places, not only its product. People transplant their ingredients whenever they can, unless the primary goal of cultivation is purely profit.[1]

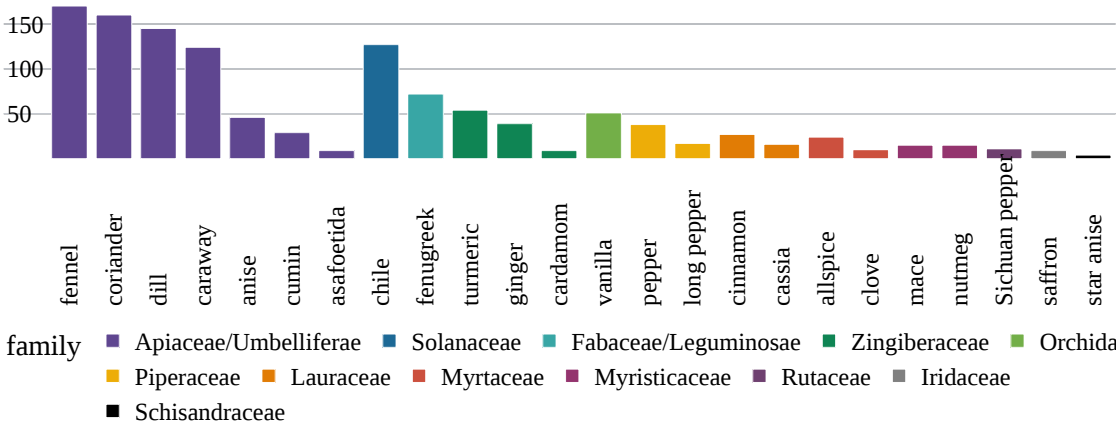
[1]The Dutch for example actively destroyed plant habitats, and wiped out whole islands—including the population—in the Spice Islands of Indonesia to generate scarcity and ramp up value during their monopol rule in the 17th century.



(a) Total number of growing regions.



(b) Spices by total number of growing regions, grouped by macroarea.



(c) Spices by total number of growing regions, grouped by family.

Figure 2.2 Spices ranked according to the total number of regions they grow in, native or introduced.

The far side of the ranking also shows the spices that do not grow extensively across many regions, regardless of how valuable or popular they are. Of course, behind this, are the complex issues of plant biology, ecology and the many factors that decide a plant's resistance to transplantation and if it can grow in new, alien environments. However, there is another point to notice here: labor. The lower ranks feature spices that are highly labor intensive to cultivate and harvest, including star anise, cardamom, and saffron, but the collection of asafoetida is cumbersome as well, and this also effects

prices. Interestingly—and of course, closely related what was just said—all of these are products that are very specific plant parts, the pericarps (star anise, Sichuan pepper), dried oleo-gum-resin, (asafoetida), stigmas (saffron), and dried flower buds (cloves). Figure 2.2 also shows the same data, but grouped by macroarea and by plant family as well.

Based on my readings and data from the botanical databases, I have tried to approximate the geographical origins of each spice in thesis. Figure 2.3 shows this attempt, plotted onto the globe. In cases, where a spice's supposed native are includes a large number of expansive regions, I have opted for a geospatial mid-point as a compromise. Therefore, you can sea caraway placed in the middle of Eurasia, because I used the coordinates for Eurasia, as it it is marked native everywhere in Eurasia. Most spice plants luckily do not have so extensive native areas, and in many cases, the exact origins can be pinpointed: for example, see the case of cinnamon, nutmeg, or cloves neatly situated on tiny islands of the Moluccas in present day Indonesia. The other side of the globe hides the three spices from the Americas.

2.2 The Spreadability of Spices

When it comes to spices of commerce, there is a factor that greatly weighs in on their diffusion: I will call this *spreadability*. I wanted to have a basic understanding of what effect spices' ease or difficulty to spread can have on their diffusion, value, and global popularity, so I created a rudimentary metric based on geographical-botanical data. I have simply divided the sum of the introduced regions with the sum of the native regions to serve as a crude indicator of how "well" a spice plant have spread. Intuitively, this index is about spice plants' ability and "ecological willingness" to spread to new regions, whether it is a result of human hands (by trade and transplantation) or nature (self-seeding, spread by birds, etc.) into neighboring areas.

$$\frac{\sum region_{introduced}}{\sum region_{native}} = spreadability\ index$$

This metric accounts for the initial difference between if a spice was minimally distributed (i.e. only found in one or two regions), or well distributed before being introduced to either a few, or many new places. Figure 2.4 shows the spices ranked by their spreadability index. The figure shows for example tumeric, originally from "one region" (India), is now found in 53 other regions, resulting in the highest score of 53. On the far side of the plot, we can find Sichuan pepper, whose main source, *Zanthoxylum bungeanum* is indigenous to 10 geographical zones in China, but only have been introduced to one region (Uzbekistan), getting a low score of 0.10.

The results of this plot—like any other—greatly depend on the data we feed to it, and like any other quantitative analysis, has its limitations. Although the regions in the POWO database are uniform, they are not clear-cut ecological zones, but rather based on administrative divisions of countries, and it is not perfect. While some large countries are divided to broad areas that represent different biodiversity zones, the borders are arbitrary. For example, the United States, Russia, and China are divided by states, provinces, or greater geographical areas (e.g., New South Wales, Central European

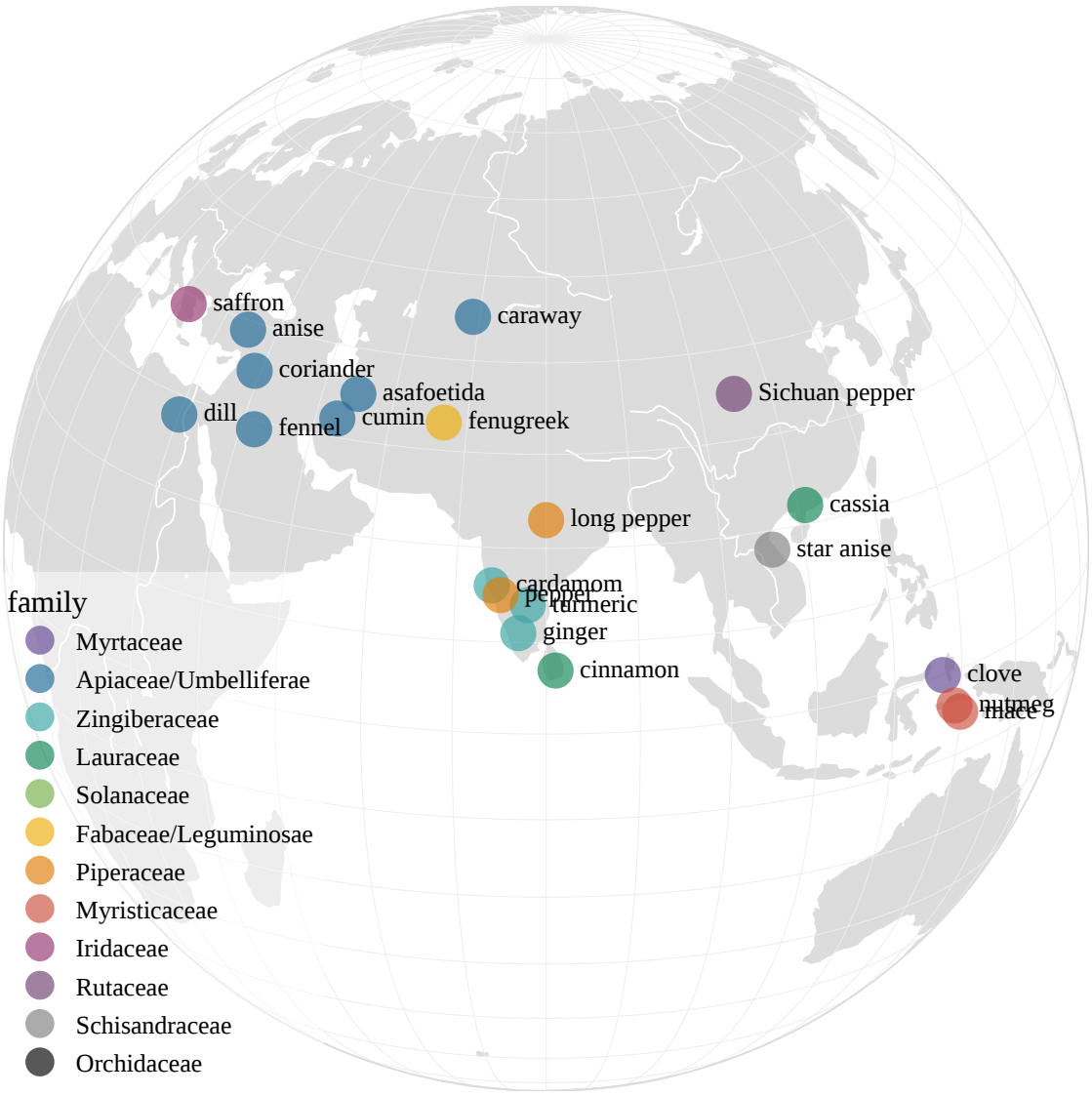


Figure 2.3 The approximate geographical origins of the spices in this thesis.

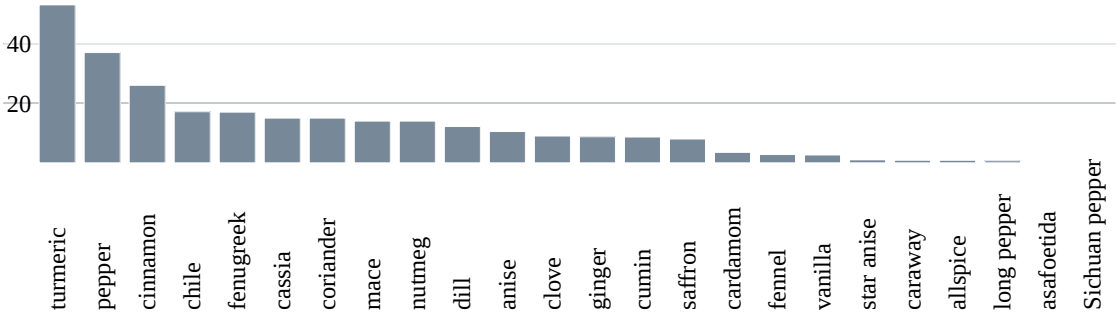
Russia, China South-Central) India is just one unit, explaining the very high score of turmeric.[2] Nonetheless, in terms of general usefulness the index has some merit. If we look at the distribution map of turmeric,[3] we will see that it did indeed spread far and wide, from Southeast Asia through West Africa to the Caribbean, and compared with Sichuan pepper[4]—which is still mostly limited to China—is much more well known globally.

Figure 2.4 (b) and (c) show the spices ranked by their spreadablity index as well, broken down by macroarea and plant family. I have included the plant family groupings because it can be very interesting to those with affinity to the plant sciences, but truthfully this would be much more exciting

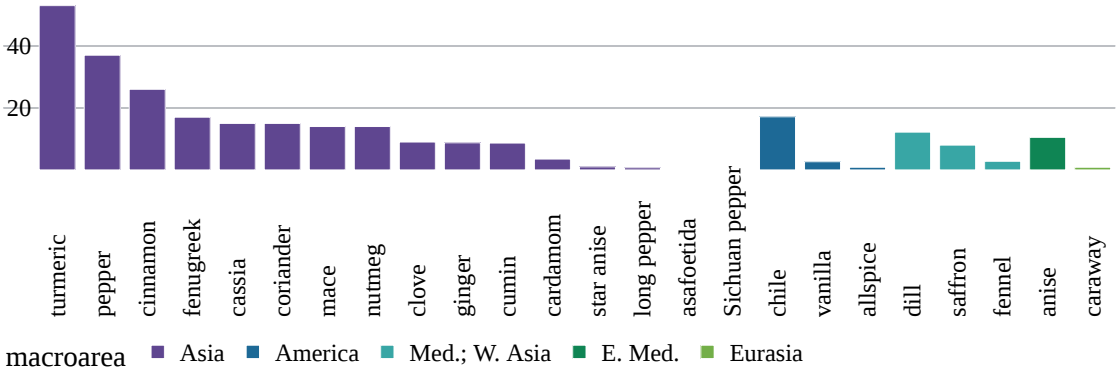
[2] Another limitation might be the age of this database as we find zones named Yugoslavia, or Czechoslovakia, but I doubt the biodiversity changed as much as political borders.

[3] *Curcuma longa* on POWO: https://powo.science.kew.org/taxon/796451-1#distribution-map

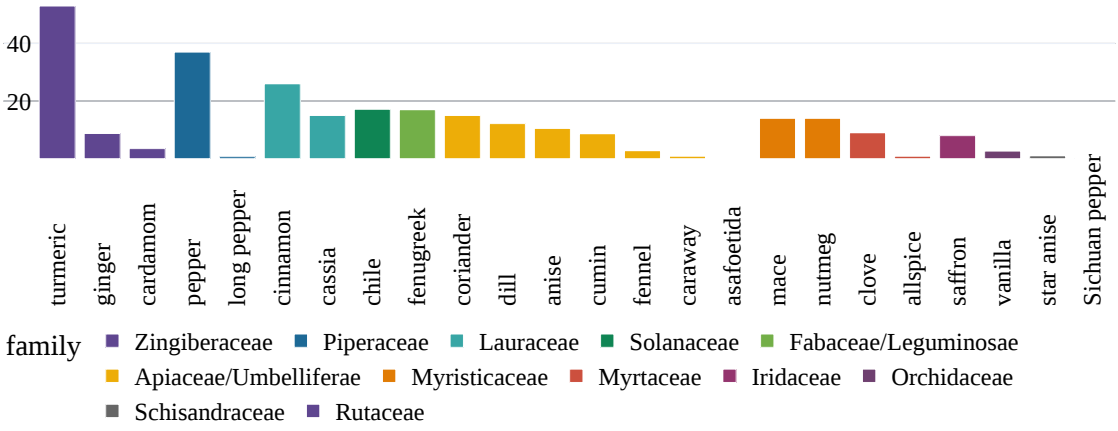
[4] *Zanthoxylum bungeanum* on POWO: https://powo.science.kew.org/taxon/775625-1/#distribution-map



(a) Spices ranked by spreadability.



(b) Spices ranked by spreadability, grouped by macroarea.



(c) Spices ranked by spreadability, grouped by family.

Figure 2.4 Spices ranked by their spreadability index, showing which spice plants spread to more regions, taking into account the initial state of their distribution. ($\frac{\sum region_{introduced}}{\sum region_{native}} = spreadability$)

when including more plants in these analyses.

2.3 The Linguistic Diffusion of Spices

Finally, turning towards the language element of spice diffusion, I will now illustrate the linguistic diffusion of spices, through the investigation of spice names and their spread on spatial and temporal dimensions. In order to present these results in a convenient, reader friendly, and interesting way, I used geospatial mapping. The plots seen in this section are made possible by utilizing the etymological data on spice terminology, collected and introduced for each spice in chapter 1, and justified in **??**.

But before introducing the etymological visualizations, I must touch upon the terms' loanword status. From the

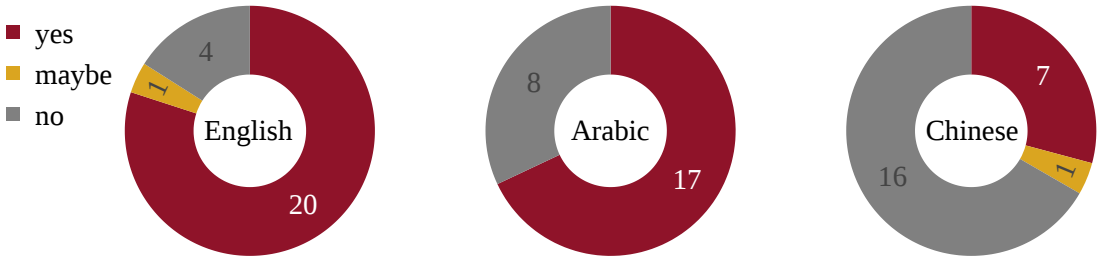


Figure 2.5

2.3.1 Spices flow into Europe: The Case of English

Figure 2.6 shows the diffusion of spice names, when viewed from the words' etymological stages into English. Words that were coined in English (i.e. not loanwords), are not present.

> **Note 2.3.1.** a

2.3.2 Spices through Arabia: The Case of Arabic

2.3.3 Spices in the Middle Kingdom: The Case of Chinese

2.4 The Case of Cinnamon

2.5 One

This chapter aims to give an overview on the terminology used by various languages when referring to cinnamon. These words are connected to the spread of material culture, and a (not-so) specific plant product used and coveted for its aroma, used as spice and medicine. Known by humans for millennia, cinnamon is now present essentially on a global scale, and by exploring its names in multiple languages, we can reconstruct its linguistic genealogy. These results also tell a story; they tell us an account on the linguistic history of *cinnamonic* words, their origins, diffusion, and ultimately, the story of cinnamon. We can infer information on the trade routes and the peoples who transmitted it, and identify the cultures that used and diffused knowledge on it.

#	English	borr.	Arabic	borr.	Chinese	borr.
1	allspice	-	fulful ifranjī	-	duōxiāngguǒ	+
2	anise	+	anīsūn	+	huíqín	-
3	asafoetida	+	ḥiltīt	+	āwèi	+
4	caraway	+	karāwiyā	+	gělǔzi	+
5	cardamom	+	hāl	+	dòukòu	?
6	cassia	+	salīkha	-	ròuguì	-
7	chili	+	fulful ḥārr	-	làjiāo	-
8	cinnamon	+	qirfa	-	xīlánròuguì	+
9	clove	+	qaranful	+	dīngxiāng	-
10	coriander	+	kuzbara	+	yánsuī	-
11	cumin	+	kammūn	+	zīrán	+
12	dill	?	shibiththth	+	shíluó	+
13	fennel	+	shamar	+	huíxiāng	-
14	fenugreek	+	ḥulba	-	húlúbā	+
15	ginger	+	zanjabīl	+	jiāng	-
16	long pepper	+	dārfilfil	+	bìbō	+
17	mace	+	basbās	+	ròudòukòugānpí	-
18	nutmeg	+	jawz al-ṭīb	+	ròudòukòu	-
19	pepper	+	fulful	+	hújiāo	-
20	saffron	+	zaʿfarān	+	fānhónghuā	-
21	Sichuan pepper	+	fulful sītshuwān	-	huājiāo	-
22	star anise	-	yānsūn najmī	-	bājiǎohuíxiāng	-
23	turmeric	+	kurkum	+	jiānghuáng	-
24	vanilla	+	fānīliyā	+	xiāngcǎo	-

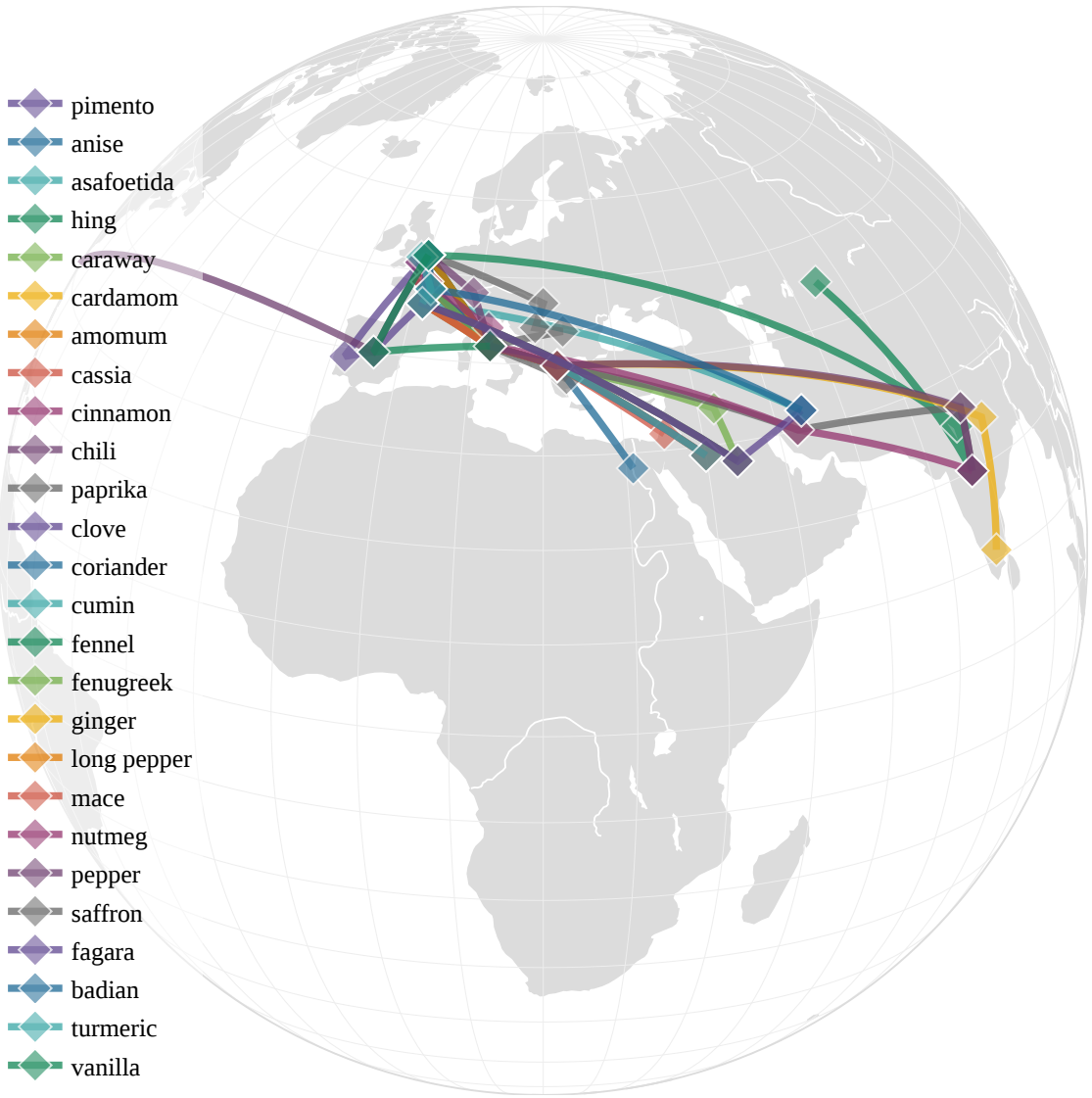


Figure 2.6 The diffusion of spice terminology in English, focusing on loanwords and Wanderwörter. For a full interactive version, please visit https://htmlpreview.github.io/?https://github.com/partigabor/phd-thesis-viz/blob/main/diffusion_en.html

To those of us who interested in the spread of words, especially Wanderwörter and their underlying cultural, historical, and geo-political significance, the map of tea might come to mind. This is a map that shows the journey of words for tea (either from Sinitic *cha* or Minnan *te*), and their distribution in a sample of the world's languages. The point of this map is that it clearly shows if the name for tea arrived by overland trade or via a sea route. This peculiar phenomenon is a feature on its own (138A) in *The World Atlas of Language Structures* (WALS), and have been described in a chapter by Dahl (2013).[5] Discussions and maps of the land vs. sea distribution of tea terminology have since made it into popular science magazines and articles, made rounds on Twitter, and hence relatively well

[5]The accompanying map is available online at https://wals.info/feature/138A#2/25.5/143.6

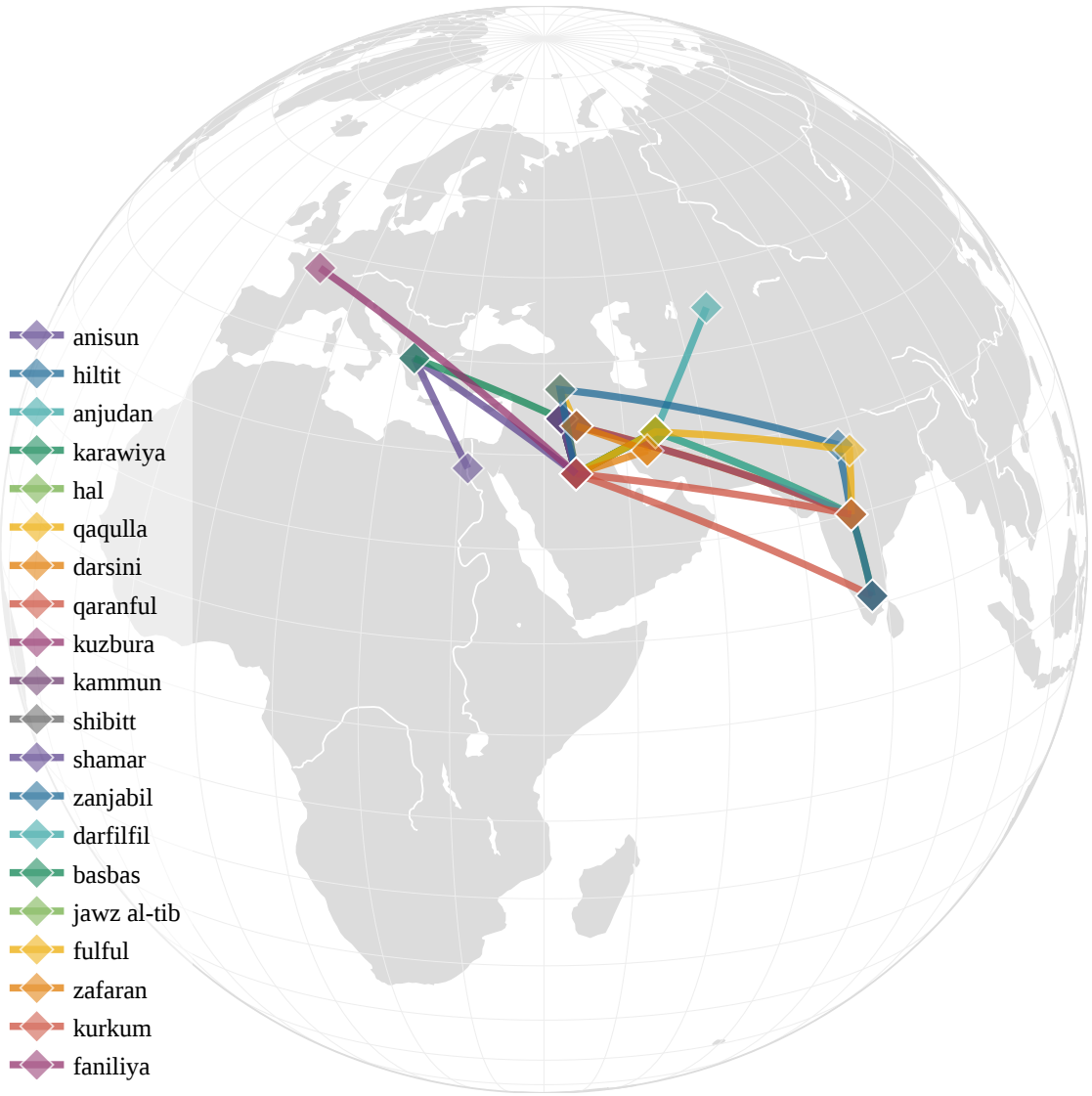


Figure 2.7 The diffusion of spice terminology in Arabic, focusing on loanwords and Wanderwörter. For a full interactive version, please visit https://htmlpreview.github.io/?https://github.com/partigabor/phd-thesis-viz/blob/main/diffusion_ar.html

known.[6] On a more scientific note, the distribution of tea words are discussed in detail by (Mair & Hoh, 2009, pp. 261–270) in an appendix titled *A Genealogy of Words for Tea*, with including a discussion on historical phonology.

Cinnamon as a spice is relatively well known around the world, and the history of its diffusion goes back to thousands of years, with words attested as early as the Bible itself, as it was discussed in ??. This is in contrast with the story of tea, in the sense that the international spread of tea is a relatively recent process in the economic history of plant products and colonial powers, and so we have

[6] See for example Sonnad (2018) in Quartz: https://qz.com/1176962/map-how-the-word-tea-spread-over-land-and-sea-to-conquer-the-world/ or Netchev and Macquire (2022) in the World History Encyclopaedia: https://www.worldhistory.org/image/14112/movement-of-tea--cha-around-the-globe/

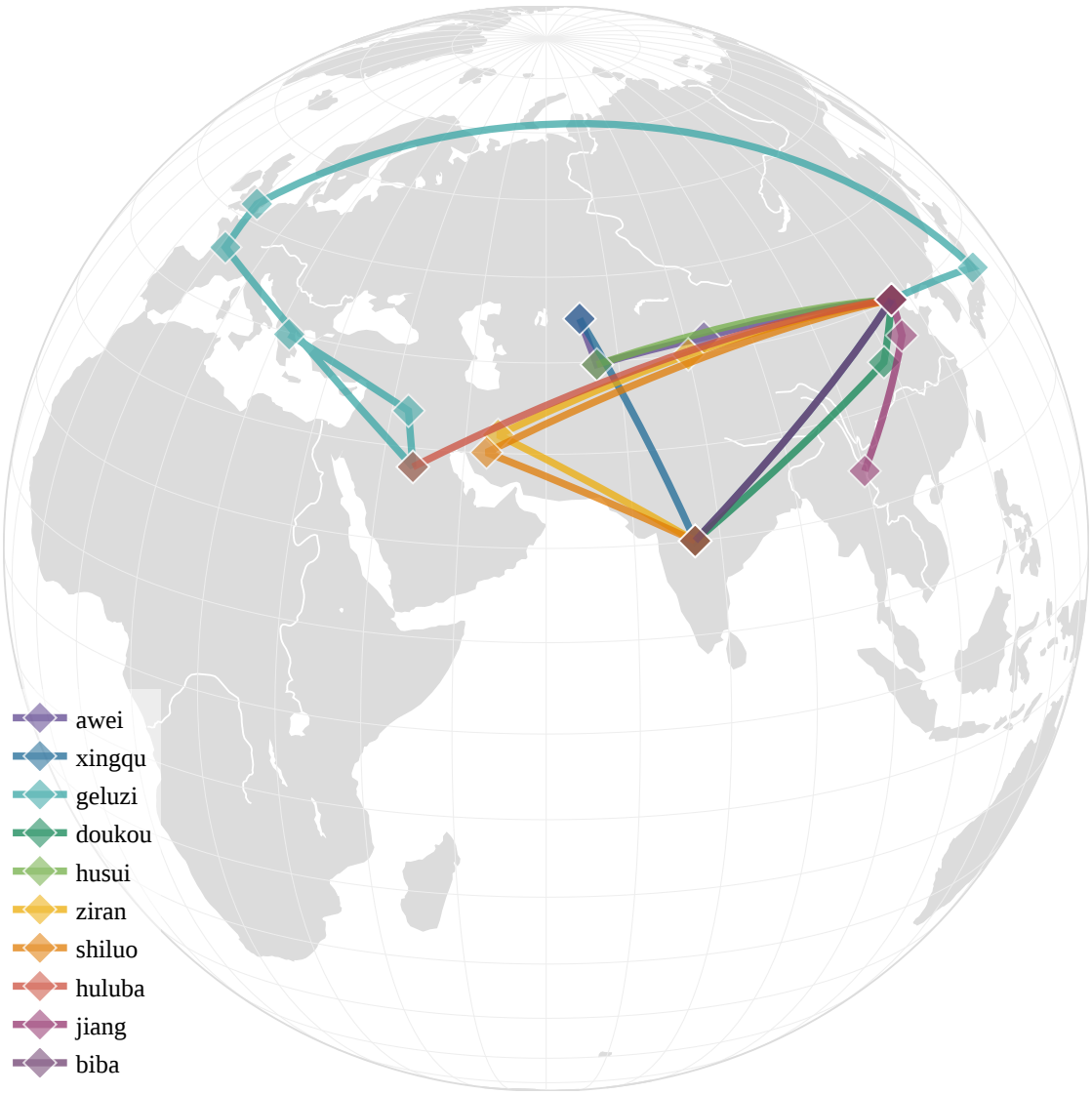


Figure 2.8 The diffusion of spice terminology in Chinese, focusing on loanwords and Wanderwörter. For a full interactive version, please visit https://htmlpreview.github.io/?https://github.com/partigabor/phd-thesis-viz/blob/main/diffusion_zh.html

a much clearer picture on the exact ways it was transmitted. Although tea-drinking in its homeland was practiced from time immemorial, and trade allowed it to spread regionally on networks, such as the Tea Horse Road, its present global domination is a result of 17th-century European fascination and large scale shipping. While the tea map illustrates the long haul trade connections of the time, such as those between Europe and the Far East, the map of cinnamon shows traces of an older, more gradual spread that happened in stages, outlining a more geographically contiguous development, and incremental trade networks. The propagation of cinnamonic Wanderwörter mirrors the historical processes, and just as the story of cinnamon, the words' origins are sometimes obscured by the sheer time-depth that is covered.

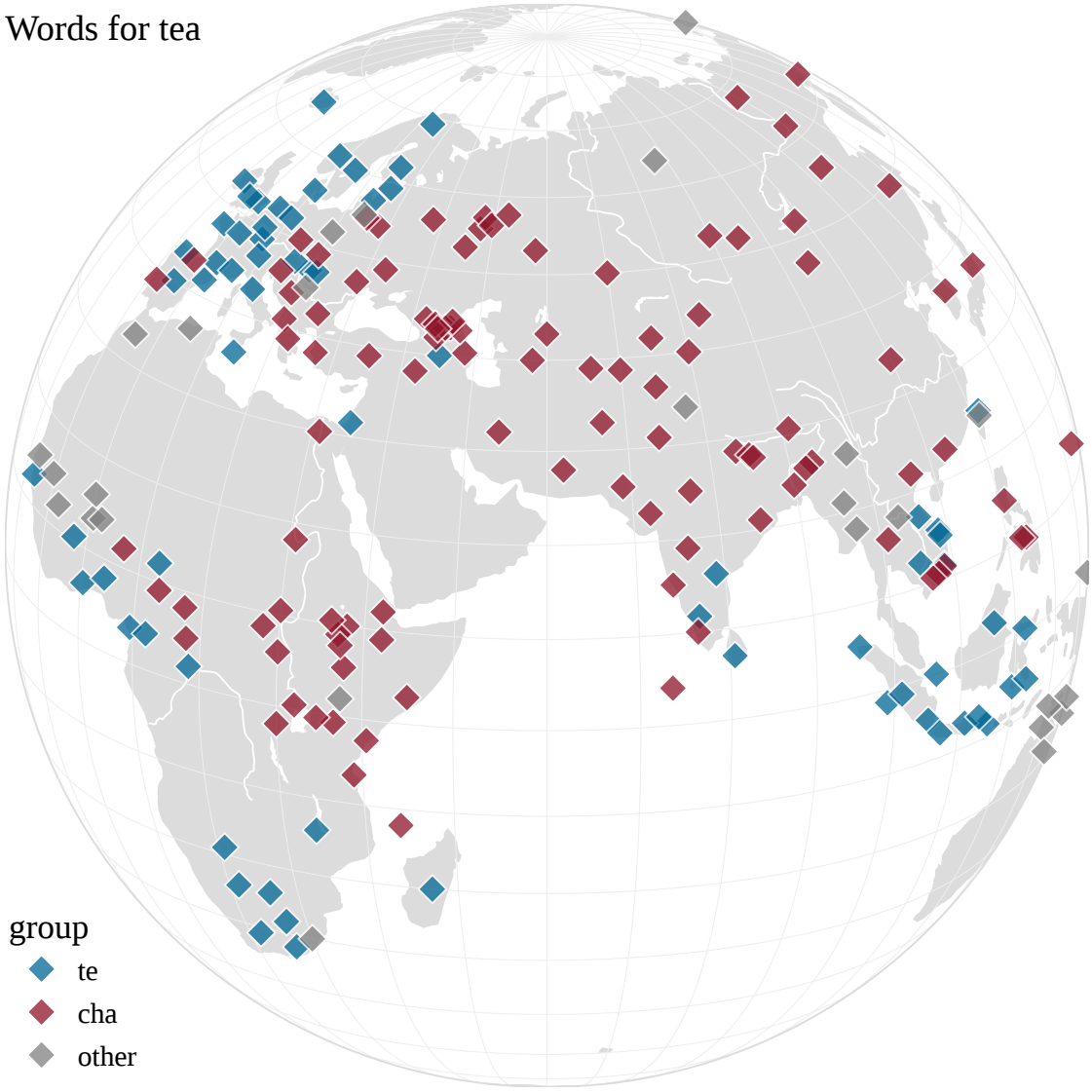


Figure 2.9 Distribution of words for tea from Sinitic *cha* and Minnan *te*, based on the data around the globe.

2.6 Methods and Data

Informative geospatial visualizations such as figure 2.9 above are a powerful tool in conveying the information about spread and distribution of words, and they can also help us to notice patterns and connections faster and easier than studying long tables of words, especially when the distributions are more complex than the somewhat neat duality of tea. In this case study, I will attempt a classification for the words for cinnamon by looking at clusters and categorizing them according to their source, to see what the distribution of names today can tell us about the spread and history of cinnamon.

Because words for cinnamon or other spices are not included as features in balanced typological datasets, such as WALS (tea is an exceptional feature in this database), I have attempted a manual collection of words for cinnamon based on dictionary entries. As a starting point, I have crawled data

from the Wiktionary (https://en.wiktionary.org), which is the closest resource we currently have to an open- and crowd-sourced multilingual dictionary. Similarly to the Wikipedia, the Wiktionary is edited and reviewed by the community, which has both advantages and disadvantages. On one hand, information on the Wiktionary is free, broad in scope, it usually represents the public consensus, and often well cited. On the other hand, it is not always complete, the available languages do not represent a balanced sample from a typological point of view, and the information can sometimes be ill-informed or deprecated. In any case it is a rich resource to start with.

For cinnamon, first I scraped the translations for the word *cinnamon* in the sense 'spice' (Wiktionary, n.d.), and cleaned the data using regular expressions. After this, I have performed a round of manual checking where I fixed obvious mistakes in word forms and transliterations by consulting other dictionaries and reference works, in the languages and scripts I felt competent to do so. I proceeded to add a few missing translations with the help of other lexicographical resources and the Google Neural Machine Translation engine's Python API (Wu et al., 2016).[7] Then, I analyzed each word in terms of etymological origin, and assigned them to categories. For example, words derived from Greek *kinnámōmon*, such as Lithuanian *cinamonas* or English *cinnamon* constitute one category, and words derived from Persian *dârčin*, such as Turkish *tarçın* or Hindi *dālcīnī*, make up another. I continued this categorization for all instances, and created a new category for every group that has at least three attested members. Instances that do not belong to any group or undetermined were assigned to "other". Finally, I merged this dataset with language data obtained from the databases of both WALS (Dryer & Haspelmath, 2013) and Glottolog (Hammarström et al., 2022) to prepare for geospatial plotting. The datasets were handled using the `pandas` library in Python, and the visualizations were created using the `plotly` Python library (McKinney, 2011; Plotly Technologies Inc., 2015).

2.7 Results and Discussion

Figure 2.10 shows the results of the analysis above, on a geographical scatter plot. As it can be seen, there are six groups in total: canela, kinnamon, korica, qirfa, darchin, and gui, with a seventh one — other — containing those that do not belong to any of these. It is also noticeable that the groups that were manually identified form geographical clusters, for example, the gui group appears in East Asia, while the canela group is mainly found in Europe. Lastly, I would like to draw attention that the "other" group has a high number of members in regions where cinnamon (or cassia) is native. The canela group represent words that derived from Latin, the kinnamon group contains words going back to Greek, and the korica group represent mostly Slavic languages. Qirfa words are derived from Arabic, darchin gathers terms from the Persianate world, and gui embraces some terms from the Sinosphere. Let us now look at these categories one by one.

[7] https://pypi.org/project/googletrans/

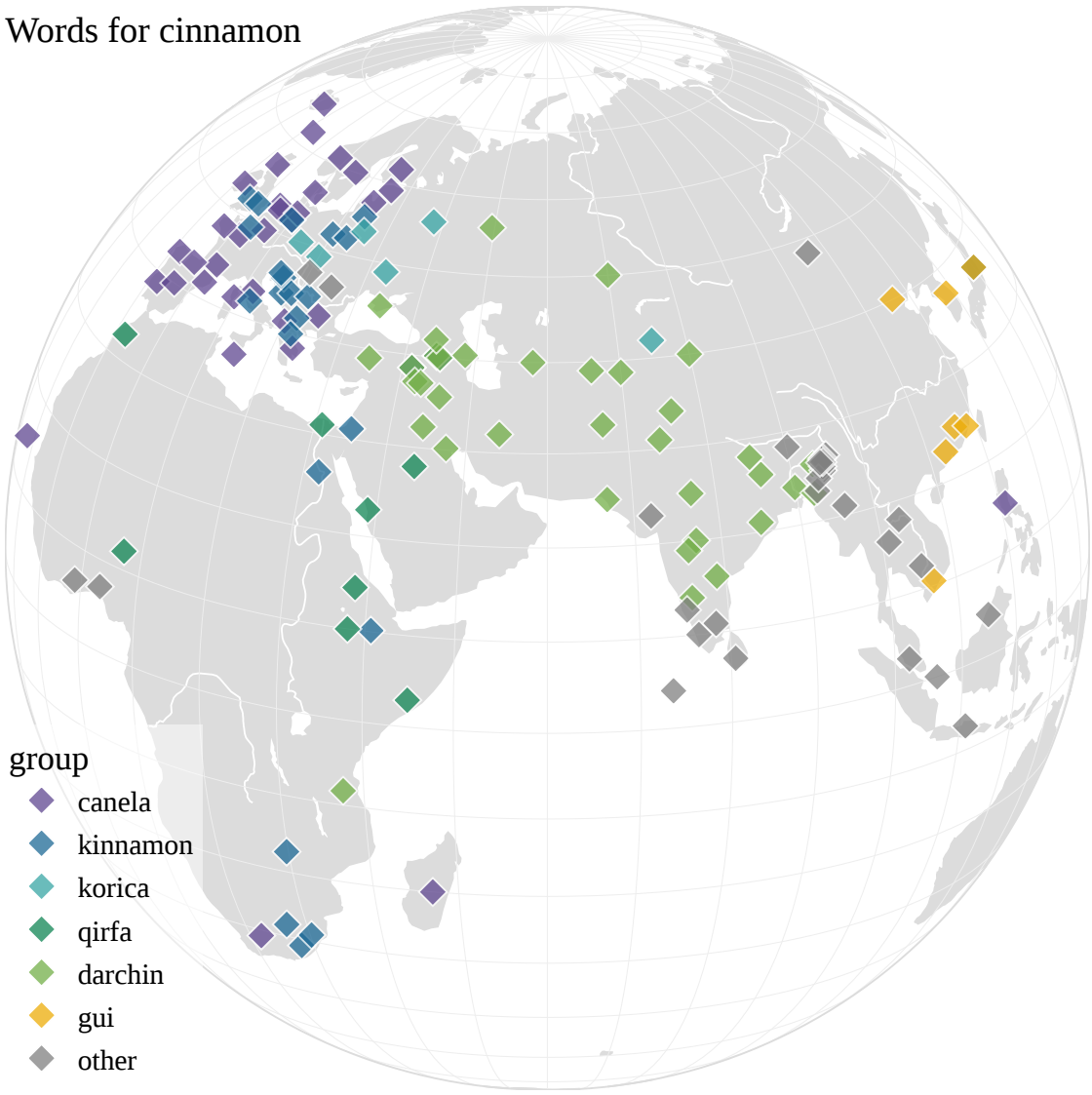


Figure 2.10 The distribution of *cinnamonic* words in a few languages around the globe.

Note 2.7.1. For a full, interactive and explorable version of the plot, please visit the following link: http://htmlpreview.github.io/?https://github.com/partigabor/phd-test/blob/main/cinnamon.html.[a] The interactive plot can be rotated, zoomed in and out, and the groups of data points can be isolated with a double-click on the group name/icon. Hovering over a data point will bring forward further information on the term, its transliteration, associated language and language family.

[a] For an annotated version, please visit http://htmlpreview.github.io/?https://github.com/partigabor/phd-test/blob/main/cinnamon_annotated.html

2.7.1 The canela group

Words belonging to this group are cognates of Spanish *canela* and its variants in Romance languages, which have been formed with the diminutive of Latin *canna* 'reed, cane'. It is named so after the curled shape of the cinnamon sticks resembling a little, hollow reed-pipe (OED, "cannel"). Latin *canna* itself is a loanword from Greek κάννᾱ *kánna* 'reed, pole', which is probably a borrowing from a Semitic language (cf. Arabic قناة *qanāh* 'hollow spear, cane; conduit, canal', Hebrew קָנֶה *qāneh* 'stalk, reed, cane', Aramaic ܩܢܝܐ *qanyā* 'id.'[8]) (OED, "cane"). According to Beekes and van Beek (2010, p. 636) the Greek word is from "Babylonian-Assyrian" (Akkadian) 𒄀𒈾𒀀𒋗 *qanû* 'reed', which may come from "Sumerian-Akkadian" (Sumerian) 𒄀𒄭 *gin* 'id.' (cf. Roth et al., 1968/2004, vol. 13, p. 85), and proceeds to give Ugaritic *qn* and Punic *qn*' as further Semitic attestations.

The distribution of this group is overwhelming in Europe, which seems to echo the strong influence of Latin vocabulary, especially in the developing Romance languages. One example would be Old French *canele* (modern *cannelle*), which was formed within French from *canne* 'cane', and first attested in the first half of the 12th century from an epic poem describing a fictional expedition of Charlemagne to Jerusalem[9], and the local vendors selling cinnamon, pepper, and "other fine spices" (*Trésor de la Langue Française informatisé* (TLFi), "cannelle")[10]. The TLFi explains that this word exists in most romance languages and it is impossible to determine its progress, and also notes that the medieval Latin is not attested in the 'cinnamon' sense. Either French or Italian was the usual donor for other European languages, take for example Dutch *kaneel*, or Finnish *kaneli* through Swedish *kanel*. Spanish *canela* is attested around 1250, from "Italian" (Medieval Latin) *cannella* (Corominas, 1987, p. 125; Gómez de Silva, 1985, p. 98). Due to later colonization by European powers, many of these terms spread elsewhere, e.g.: Tagalog *kanela* from Spanish, or Haitian Creole *kannèl*.

†*Cannel*, also earlier as *canel* had entered English usage in the 13th century from French, but is now obsolete. It existed in Early Modern English up until the 18th century, and was gradually replaced by *cinnamon* (also arriving through French), which was first attested in the first half of the 15th century (see Etymology ??). Neo Latin *canella* also appeared for a brief time, but its meaning as 'cinnamon' waned, and now it is used in botany to refer to a plant genus.

In many other languages of Europe the opposite happened, and an existing word from Greek was replaced by the Latin term. Even Modern Greek uses *kanéla*, re(?)-borrowed from Italian *cannella*, instead of the Ancient Greek *kinnámōmon*.

2.7.2 The kinnamon group

This group centers around Ancient Greek *kinnámōmon*, most possibly a loanword from a Semitic language as I discussed in ??. *Kinnámōmon* is the source of words for cinnamon in many European languages (e.g.: German *Zimt*, Lithuanian *cinamonas*, and English *cinnamon*), prominently in Central Europe and the Middle East. In most cases, these words represent an area where words derived from

[8] https://cal.huc.edu/oneentry.php?lemma=qnh+N&cits=all

[9] *Le Pèlerinage de Charlemagne* [*The Pilgrimage of Charlemagne*], or *Voyage de Charlemagne à Jérusalem et à Constantinople* [*Charlemagne's Voyage to Jerusalem and Constantinople*], (c. 1140).

[10] https://www.cnrtl.fr/definition/cannelle

Latin cannella (or one of its descendants) did not replace the earlier word derived of *kinnámōmon*. This group also contains South Slavic languages in the Balkan linguistic area (e.g. Slovenian *cimet*, Serbian цимет *cimet*) where it arrived via the earlier German term *Zimmet* (now *Zimt*), and therefore it diverges from West and East Slavic branches for this lexical item. It reached Southeast Europe in the 16th century (Snoj, 1997, s.v. cimet)[11], from which we can assume that cinnamon started to arrived here from the West during this turbulent time in the Balkans, in the middle of the Ottoman Empire's European expansion.

2.7.3 The korica group

The korica group contains languages that use words derived from the inherited Slavic lexicon, in this case the East and West Slavic branches. Proto-Slavic **korica* 'bark' is a derivative of **korà* 'bark'[12], the suffix *-ica* is diminutive. Old Church Slavic *koricę* meant 'cinnamon', and further cognates are Russian *koríca* 'id.', Ukrainian кори́ця *korýcja* 'id.' (East Slavic), Czech *skořice* 'id.' (West Slavic). In other cases, words derived from **korica* can mean 'bark, crust' (e.g. Serb-Croatian) or 'cover (of a book), binding' (e.g. Bulgarian) (Derksen, 2008, p. 235). Due to the influence of Russian during Soviet times, some Central Asian Turkic languages ended up with a foreign words in their vocabularies, e.g. Kirghiz корица *korica* ??.

2.7.4 The qirfa group

The qirfa group contains languages from Africa and the Middle East, whose words for cinnamon were borrowed from Arabic *qirfa*, for example Hausa *kirfa* (Newman, 2007, p. 114) and Amharic ቀረፋ *qäräfa* (Leslau, 1996, p. 74).

2.7.5 The darchin group

Names for cinnamon in this category originate from Persian, as it was explained in ??. According to the data this cluster has the largest geographical extent, and by number of instances constitutes the largest group, almost head to head with the group of canela. Darchin represents the earliest stage of cinnamon's westward spread from South, Southeast, or East Asia, depending which cinnamon or cassia we think became the first cinnamon of commerce. Consulting the plot we can witness the huge influence Persian had in this step of transmission to the Middle East and Central Asia. We can also see that central and north Indian languages use a loanword from Persian, which can be explained by the Persianate[13] societies that resulted from the Islamic conquest of India, starting from the 13th century. The first sultan to ravage the land, Mahmud of Ghazni was a Persianized *mamluk* Turk, who laid the foundations with his raids in the 11th century for a series of Muslim dynasties on the Indian subcontinent, culminating in the Mughal Empire (1526–1857) and what we define today as Indo-Persian culture (Eaton, 2019, p. 33).

[11] Fran — https://fran.si/193/marko-snoj-slovenski-etimoloski-slovar/4285437/cimet?View=1&Query=cimet
[12] *Proto-Indo-European* (PIE) *(*s*)*kor-* 'to cut' ??
[13] For a discussion on this term, see N. Green (2019).

2.7.6 The gui group

The gui group contains terms from the Sinosphere, words that borrowed the Sinogram 桂 *gui* (see ??), such as Japanese 桂 *kei* 'cinnamon or cassia tree', synonym with 肉桂 (肉桂) *nikkei*, Korean 계 *gye* as 계피 (桂皮) *gyepi* and 육계 (肉桂) and the Sino-Vietnamese quế. This shows that the the Chinese transmitted their cassia to their immediate neighbors East and Southwest, together with the word and character for it. However, there is little evidence for trade in cinnamon between China and Southeast Asia in early history, Wang (1958) does not give any information on it in his "The Nanhai Trade: A Study of the Early History of Chinese Trade in the South China Sea." (Wang, 1958) This makes sense if we remember that all regions active in the South China Sea maritime trade — from Guangdong to Sumatra to Lanka — had their own source of cinnamon, and traders would only transport it westwards.

2.7.7 Others

We can see that the category of "other" is prevalent in areas where cinnamon of various kinds is native and therefore these languages often have native words to refer to it. Many words from these group are derived from the meaning of 'tree bark, skin, peel' Malay/Indonesian *kulit kayu manis* [bark-wood-sweet] 'sweet wood bark', where *kulit* 'skin, bark' is often omitted, or Dhivehi *fonithoshi* [sweet-bark].

Hungarian *fahéj* [tree-bark] is made by compounding and was attested in ca. 1395 (Zaicz, 2006, s.v. fahéj),

Romanian *scorțișoară*[14], is perhaps modeled after Slavic **korica*.

scortea,

scortum

*(s)ker- ("to cut")

2.8 Two

So what does this tell us exactly? It shows that in East Asia Chinese, especially the Chinese writing had influence over its neighbors...?

2.9 Conclusion

2.10 Limitations

[14] Diminutive of *scoarță* 'bark', from Latin *scortum* 'hide, skin', PIE *(s)ker- 'to cut'.

3 The Names of Spices

Now that the detailed introduction of the spices is complete, let us examine these spice names comparatively as three sets representing the nomenclature in English, Arabic, and Chinese. This chapter constitutes the analysis and findings part of the thesis, and will thematically introduce certain aspects of the terminology of the spice domain, guiding the reader from a general overview towards more nuanced probes that can be derived from the results. The aim of this chapter is to showcase the many ways we can interpret, analyze, and visualize the data.

3.1 Overview: Figures and Statistics

As a result of the data collection set forth in chapter 1, the database now contains 369 spice names. Of these, 159 are in English, 87 are in Arabic, and 123 are in Chinese; figure 3.1 shows this distribution. The total number is the accumulation of the lengthy process of carefully compiling the nomenclature for the set of spices as defined at the beginning of the thesis, which consists of 24 different spices. The data collection methods were detailed in ??.

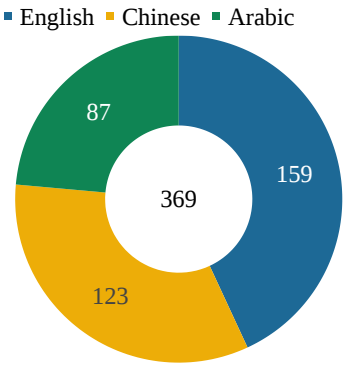


Figure 3.1 The distribution of spice names across the three languages.

On average, a spice has 14 names, where the max is 44 (chile), the min is 4 (fenugreek and mace). Figure 3.2 show the top ten and the bottom ten spices that have the most and least number of names including all three languages. This measurement might raise some eyebrows, but in fact it is a very good indicator of which spices are more complex in their nomenclature, and therefore which are the most "problematic" to untangle. As we can see, spices that boast with many names include the chili pepper, Sichuan pepper, cassia, false cardamoms, and allspice. These are—not incidentally—the very items that I have dedicated substantially more pages to than some of the other spices, due to issues about their identity or the complexity and richness of their nomenclature. This seems to go hand in hand with matters of biodiversity: chile has countless varieties that have spread to faraway corners of the earth, and now it is a hobby in its own right to cultivate, breed, and crossbreed hot chili pepper cultivars. As we saw, Sichuan peppers species are used across vast regions, and it can cause headache to pin them down exactly, their "boundaries" are not that well defined, and it also needed some explanation to isolate the various sources of cassia types.

On the other hand, spices with the lowest number of names are presumably the most straightforward items, take for example cloves, or vanilla. But What makes a spice "straightforward", or in other words, simple? In my opinion, it is their uniqueness and recognizability. Indeed, if we reflect on our investigation on vanilla in the last section of the previous chapter, we have already established

that it is a rather special item: there is no other spice that is made from the fruits of an orchid—it is unique. Or, if we think of cloves, they are unmistakable in their shape and in many language they are known by their shape (see ??). These two items are also very well circumscribed in terms of their geographic origins. Although now cultivated in multiple tropical regions, vanilla is known to be from the jungles of Central America and Brazil, there is no doubt about its origins. The native habitat of cloves is even more narrow, as it is only indigenous only to North Maluku and the "spice islands" of Makian, Ternate, and Tidore. We see nutmeg and mace as well among the bottom five items with the least amount of names, and we should notice that nutmeg and its mace are also from this region, they were exclusively found on the Banda islands of Maluku, and nowhere else until the second half of the 18th century. Now, it makes a bit more sense to look at these same charts deconstructed by language, this can be seen on figure 3.3. The most conspicuous feature of these pie charts is that chili has the most names, across every language.

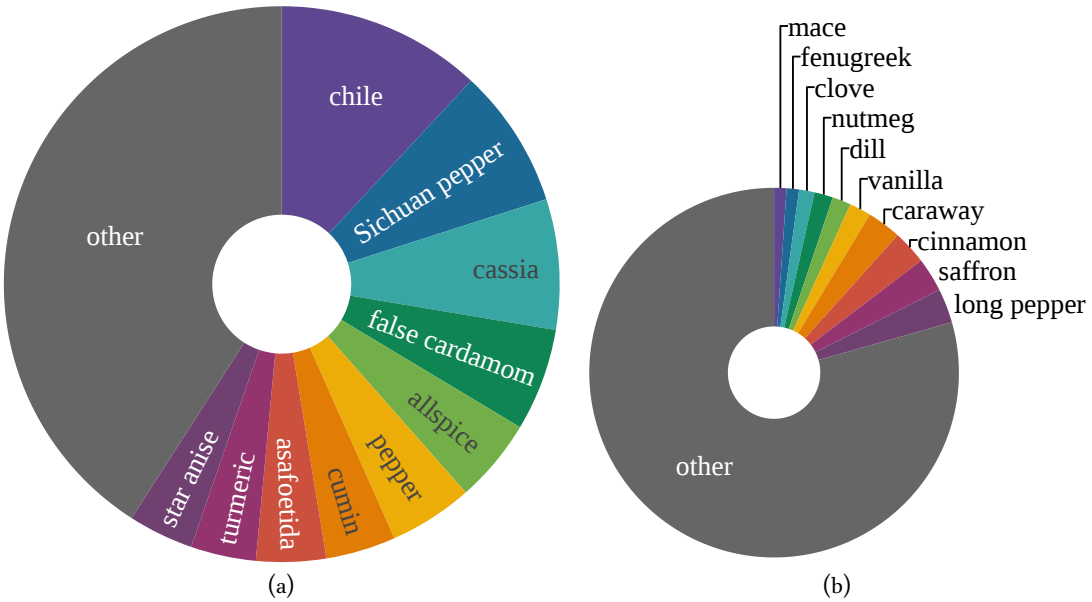


Figure 3.2 Top 10 spices with the most number of names (a), and bottom 10 spices with the least number of names (b).

3.2 The Attestation of Spice Words

One of the most exciting part of this thesis, is the data that was collected regarding dates of attestation. In other words, I tried to find out the earliest possible mentions for each spice, then combine this information in a way that enables us to see the diffusion of spices throughout the history of a language and culture. This kind of information is a valuable indicator, as it shows the approximate times of the earliest contact with the material. In essence, we can see the history of the spice trade in the words, how and when they arrived, which spices were the earliest to be recorded, and which ones make the latest additions in our vocabularies and spice cabinets.

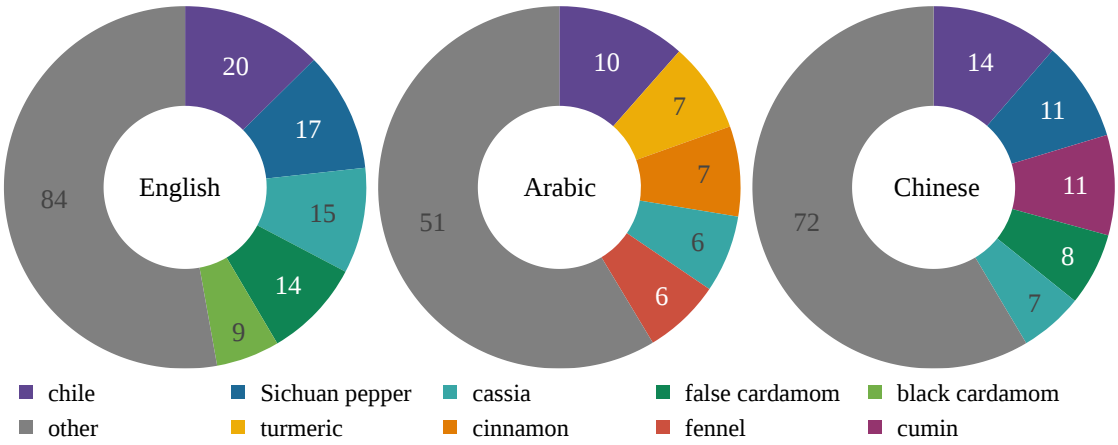


Figure 3.3 Top 5 spices with the most number of names, broken down by language.

From the nearly 400 names, I have chosen a selected few that—for lack of a better word—I marked with "default". These are the names most people are familiar with, the most people search by, and the most prevalent in corpora. These are the names that act also as keys in my datasets. For the attestation visualizations, I only used the default terms, and a couple of historic terms precede the contemporary names. This allows for more clean overview, and a way to compare the attestations in the three languages.

The following plots should give a bird's eye view of the history of the spice domain, and its mark on vocabulary. In figures 3.4 to 3.6, you can see the timeline of the spice nomenclature language by language. Obviously, these figures will show the native spices that are to be found the closest to the homeland of the ancestors of English, Arabic, and Chinese speakers, are recorded first. This means dill and fennel in English, saffron and fenugreek in Arabic, and Sichuan pepper and cassia in Chinese. The figures also show which are the early products of transnational trade, that spread first despite its origins are distant and unknown to the early speakers of the language. These include pepper and ginger. In the final, overlapping plot ??, there is a chance to compare the main attestation periods for these items, followed by a compact version of the same plot (??) accompanied with a histogram to better see which periods have seen the emergence of new spice words, indicating flourishing (scientific) literature and trade.

3.3 The Analysis of Spice Nomenclature

This chapter will present the analysis on these spice names, and try to answer the main question: How do people name spices, specifically, new spices that they came into contact with? Immediately, we can think of two ways: languages either borrow, or conceive a name. But how does this naming process work exactly? What are the underlying mechanisms and critical factors that influence the naming, and how does the nomenclature reflect the contact situation? How does borrowing work, and how languages invent new names for novel materials and substances? In an attempt to give answers to these questions, I will take a bottom-up approach and look at examples from the data I collected to

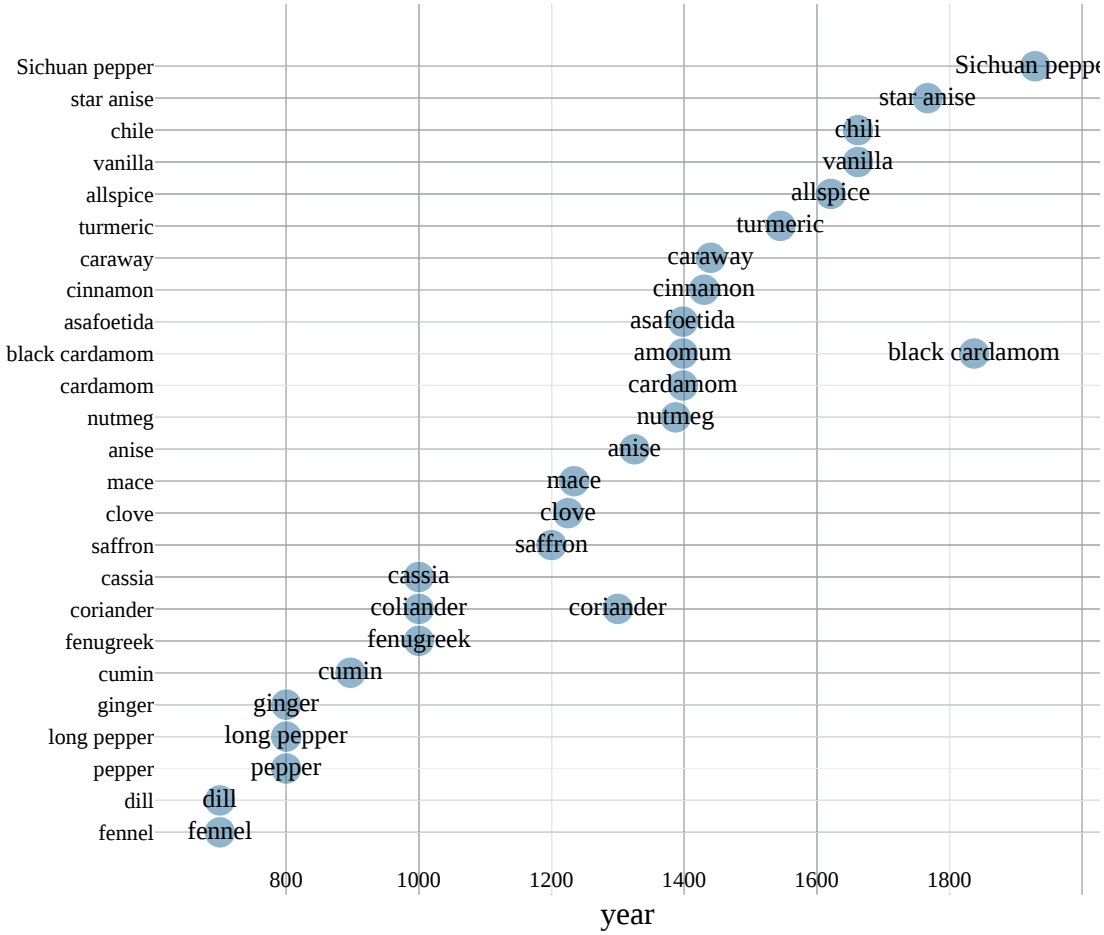


Figure 3.4

arrive to some conclusions.

3.3.1 Terminology

During the analysis, I will take into account the term's (a) analyzability, their (b) borrowed status, and inspect the ways spice terms are generated using (c) prototype words and distinguishing words.

Analizability

Analyzability of words is an idea from the 20th-century philological movement and method *Wörter und Sachen* (words and things in German), which had a big influence on linguistics and ethnography. Outlined by Hugo Schuchardt and based on the titular journal started by Indo-Europeanist Rudolf Meringer in 1909, it proposed the close study of the etymology of words together with the artifacts/concepts (Ortutay, 1977–1982).

"Ohne Sachwissenschaft keine Sprachwissenschaft mehr!" There is no linguistics anymore without the study of material culture!

Basically, the more opaque a name is in terms of morphological analysis, the longer it is assumed

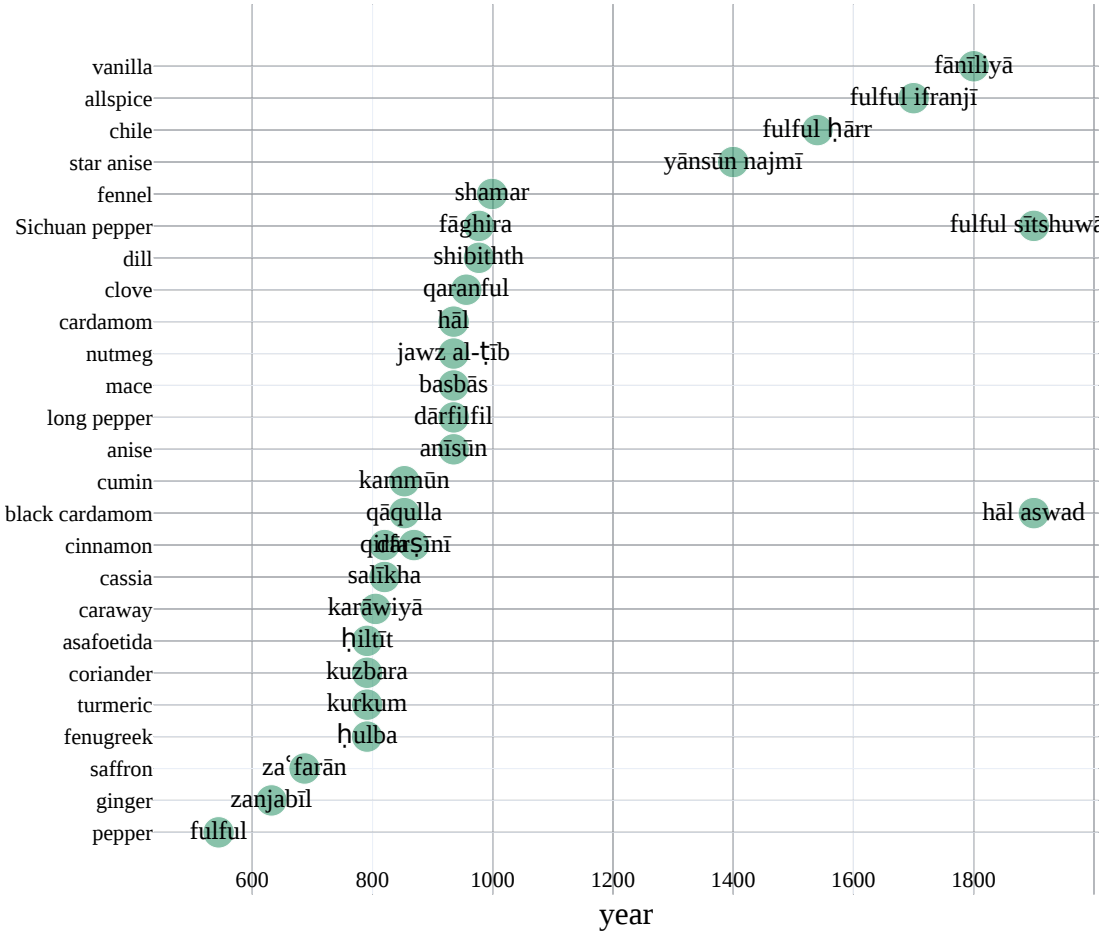


Figure 3.5

to be present in the language. A basic example would be *York* (monomorphemic) vs. *New York* (analysable), which provides a potential chronology for the concepts the words signify. This approach was incorporated into historical linguistic research and philology, often studied in parallel with findings in archeology. SOURCE??

Haspelmath and Tadmor (2009a, p. 12) also used the term "analyzability" in the creation of their loanword database (*The World Loanword Database* (WOLD)) as a first step to assess a word's loanword status, although — to the grief of — in a purely linguistic way.

If the word is morphosyntactically complex, "it was almost certain that it was created by speakers of the language rather than borrowed from some other language" — we can read. The authors also state that these are not considered loanwords, even when they contained borrowed elements.

Borrowed Word or Native Invention

Closely related to analyzability, is the question if a term is borrowed or not.

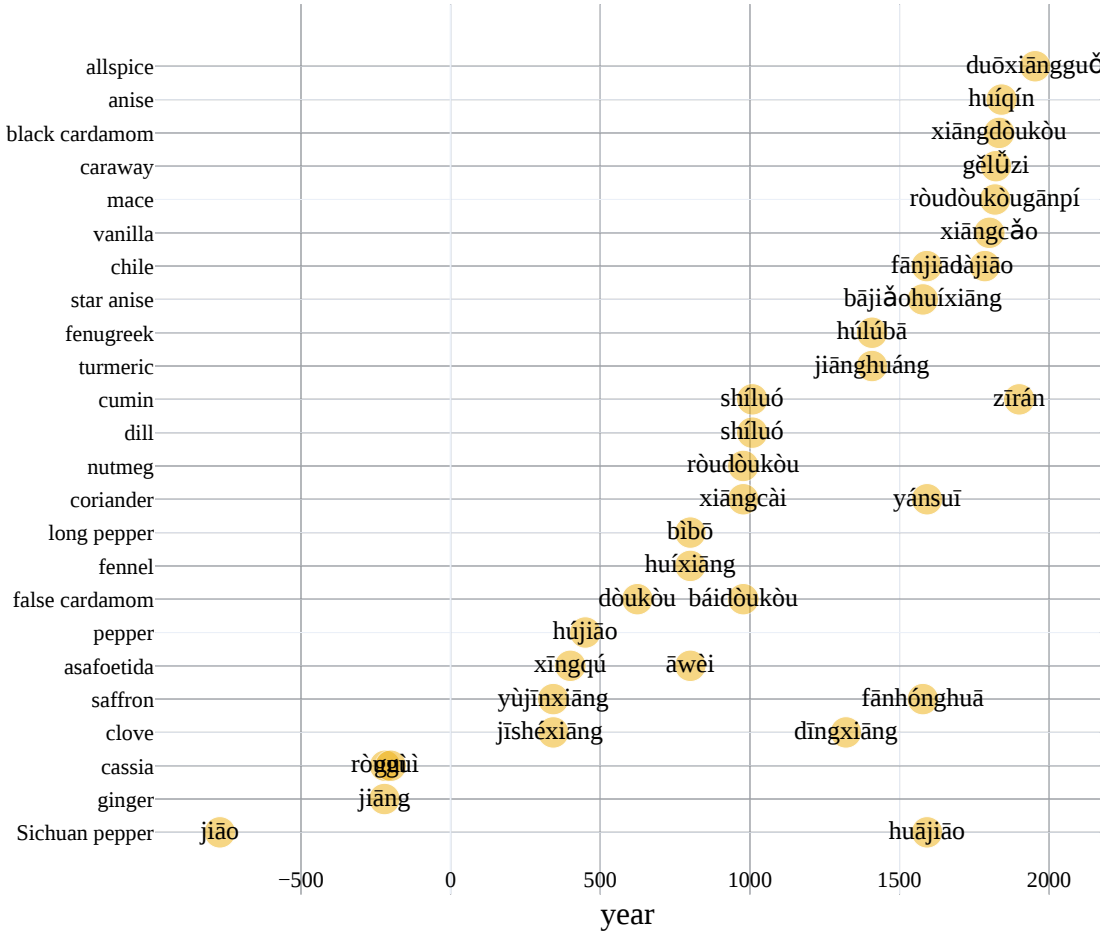


Figure 3.6

Prototype and Distinguishing Words

3.4 The Case of Star Anise

Let us consider the nomenclature of star anise in the three languages (see ??). In English, there is the default *star anise*, which is a native invention, obviously after the fruit's unmistakable appearance. On a rare occasion, we have information on the exact time of star anise's arrival to England, which is dated to 1588, as it was introduced in ??. The same idea for a name is found in most European languages, either influenced by 16-17th-century spice dealer terminology, or devised on their own conviction, looking at its recognizable shape. I used the word "native", even though the phrase is obviously mixed from an etymological point of view: *anise* is a loanword ultimately from Greek. However, when faced with this type of phrases, I consider that at the time of the contact situation, *anise* was already part of the English lexicon — as well as *star* — therefore, this phrase was coined within English, and deemed as a native creation. This practice is consistent with the approach took by the team of Haspelmath and Tadmor (2009b) at WOLD. English also has the term *Chinese anise*, which is a phrase consisting of *anise*, again, and *Chinese*, referring to star anise's geographical location and the origin of

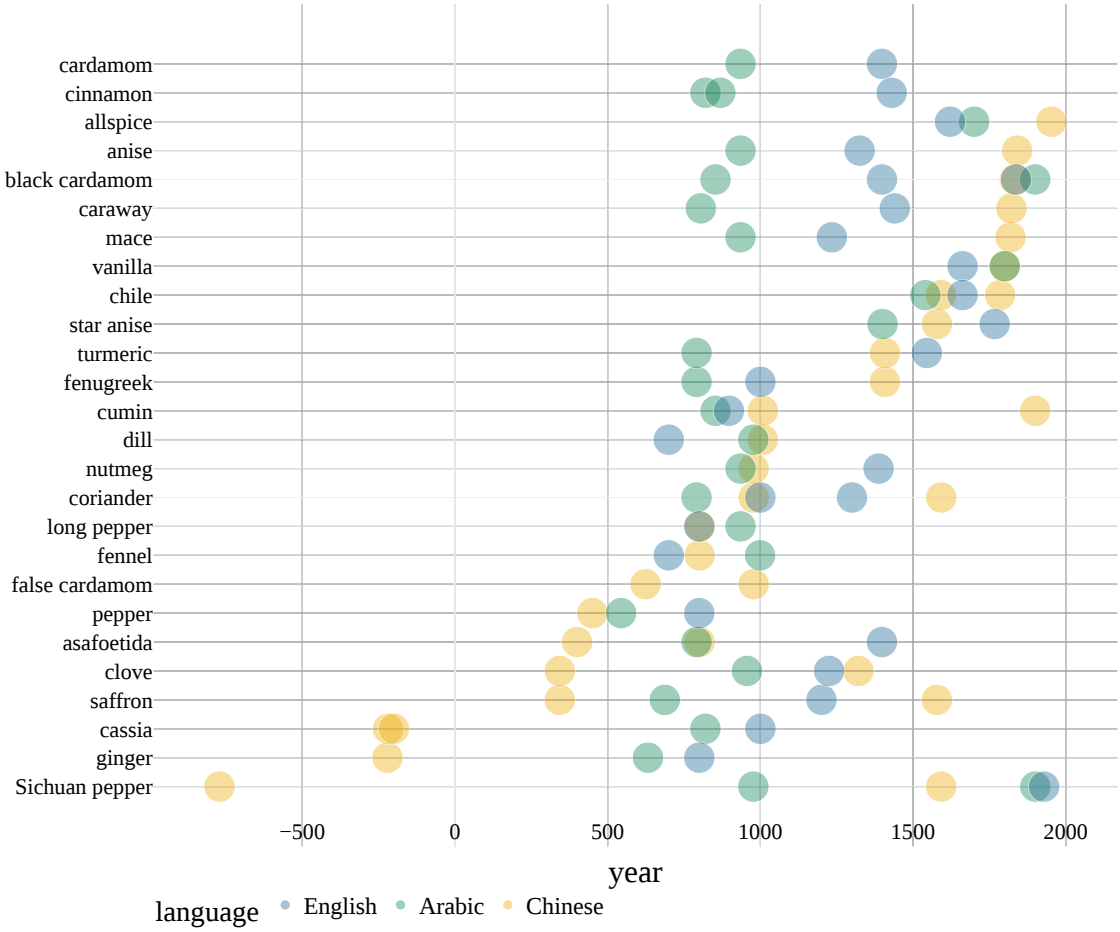


Figure 3.7

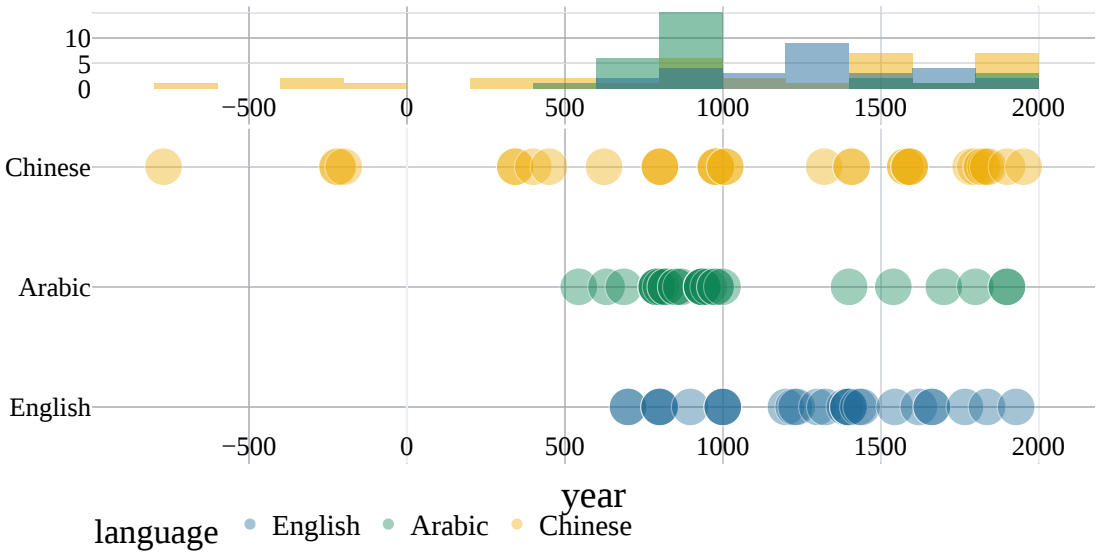


Figure 3.8

its procurement for the English. Both phrases utilize the term *anise*, which refers to the small anise seeds of the Mediterranean, used as a spice, and flavouring for liqueurs and confectionary (see ??). Why is there a connection to anise? The two plants could not be more different, they are geographically distant, they are botanically unrelated. The only thing that connects them is their highly similar flavor profile, dominated by the volatile oil anethole, the same nauseating and sweet chemical compound that is found in fennel and licorice. And so, for the Europeans who were familiar with anise and its taste, the novel product reminded them of anise's aroma. Hence, the names are in part inspired by taste/plant chemistry, defining anise as a prototype spice and protoype term. To avoid confusion, (the existence of which will be clear to anyone who tries to do a brief search about anise or star anise), distinguishing words are used for the new material. These modifiers are attached to the head word, and in one case inspired by the spice's shape, on the other hand referring to its geopgraphical origin. The existence of a Chinese star anise could be explained by the fact that there is a Japanese star anise as well, a similar looking but poisonous fruit and tree, *Illicium anisatum*. In short, the two phrases have different ways to identify this spice. English also has a now archaic form referring to star anise: *badian* from French, which arrived via a land route through Persian, perhaps a phonetic loan from Chinese, but there is no documentary evidence for this (see Etymology ??).

Arabic *yansūn najmī* [star anise] was devised along similar lines, using a native Arabic word for 'star', the prototype word is anise, and the more interesting instances are to be found in neighboring Persian. *Bādyān khatā'ī* or *khatāyī* [star anise] is star anise, while *bādyān rūmī* [Roman anise] is anise.[1] *Bādyān* alone could also refer to fennel.[2] This shows, that in Persian, the prototype word was *bādyān*.

As for Chinese, we do not find any loanword among the terms used to refer to star anise, all names are local "inventions". The modern "proper name" for star anise is *bājiǎohuíxiāng* [eight-horn-hui-spice], where [eight-horn] means 'octagonal', and [hui-spice] is fennel, therefore it can be translated as 'octagonal fennel', or 'eight-horned fennel'. An other name, *dàhuíxiāng* 'big-fennel' strengthens the assumption that in Chinese, *huíxiāng* 'fennel' is the prototype. Again, the flavor profiles of fennel and anise are basically identical, hence the connection (and confusio). The formal Chinese names of star anise are not attested in historical corpora as we discussed in ??, and I assume that the vernacular name of *bājiǎo* [eight-horn] was first applied to star anise, and the formal name was modelled later driven by the plant sciences. In modern dialects star anise is also referred to as *huíxiāng* 'hui-spice' (historically 'fennel') and *dàxiāng* 'big-spice'. In modern TCM, fennel is referred to as *xiǎohuíxiāng* 'little-hui-spice', contrasting the two spices that are confounded due to their taste, using size. In fact, the Chinese 大/小 *dà/xiǎ* 'greater/lesser' contrast is not necessarily a marker of size, but a semantic tool to convey unmarked/marked, or proper/imitator.

To summarize the points I intended to make above: First, I determined if the words and phrases are analyzable (morphologically, syntactically, semantically), then I examined those names further, while also stating why a specific item is unanalyzable. E.g., *badian* as a loanword does not carry any useful information for an English speaker that is not familiar with the word, it cannot be dissected

[1] Hayyim, 1934–1936, vol. 1, p. 197.
[2] Steingass, 1892, p. 140.

or interpreted alone. Next, I looked at the borrowed status of the names to determine if the word or phrase is borrowed, or devised locally. E.g., the Chinese names are native "lexical creations", while English and Arabic use a non-native headword (*anise/yansūn*) and a native distinguishing word (*star/najmī*). Finally, I have looked at the inspirations behind these lexical inventions, and identified the rationale and motivation behind them. For phrases and compound words, we can separate a prototype word (headword), and a distinguishing word (modifier). In each case, we can discern the reasons why that prototype word was used, what feature of the prototype item (referent) is the most salient. The same is true for the distinguishing word(s). For example, *star anise* is named so after (1) similarity in taste + (2) shape; and *Chinese star anise* is named so after (1) similarity in taste + (2) shape + (3) geographic origin. In table 3.1, you can see a concise overview of the analysis of star anise terminology.

Term	**Gloss**	**Analyzability**	**Borrowed**	**Prototype**	**Modifier**
star anise		analyzable	native	similarity in taste	shape
badian		unanalyzable	borrowed		
Chinese anise		analyzable	native	similarity in taste	origin
Chinese star anise		analyzable	native	similarity in taste	shape + origin
yansūn najmī	star anise	analyzable	native	similarity in taste	shape
bājiǎo	octagonal	analyzable	native	shape	
bājiǎohuíxiāng	octagonal-fennel	analyzable	native	similarity in taste	shape
bóhuíxiāng	ship-fennel	analyzable	native	similarity in taste	shape
dàhuíxiāng	big-fennel	analyzable	native	similarity in taste	size*
dàliào	big-ingredient	analyzable	native	function	size*

Table 3.1 Cap

In this sense, the space names are layered. Intuitively, the more layers a spice name has, the more distant the item was culturally, and on the converse, the less components there is to a term, more familiarity with the substance is presumed (e.g., anise vs. star anise in English). Therefore, spice names' modifiers can be categorized according to what salient feature contributed to the naming the most, and in this specific case, it is star anise's distinct shape. As we will later see, shape is just one of many properties that can distinguish/identify a spice, for others, different properties are salient, including color, taste, smell, and the geographical origin we mentioned. Furthermore, these names reflect on the materials' physical qualities, and the perception and importance of a spice for various sensory modalities in the human experience: vision, gustation, olfaction, etc.

3.4.1 Borrowed

3.4.2 Donor Languages

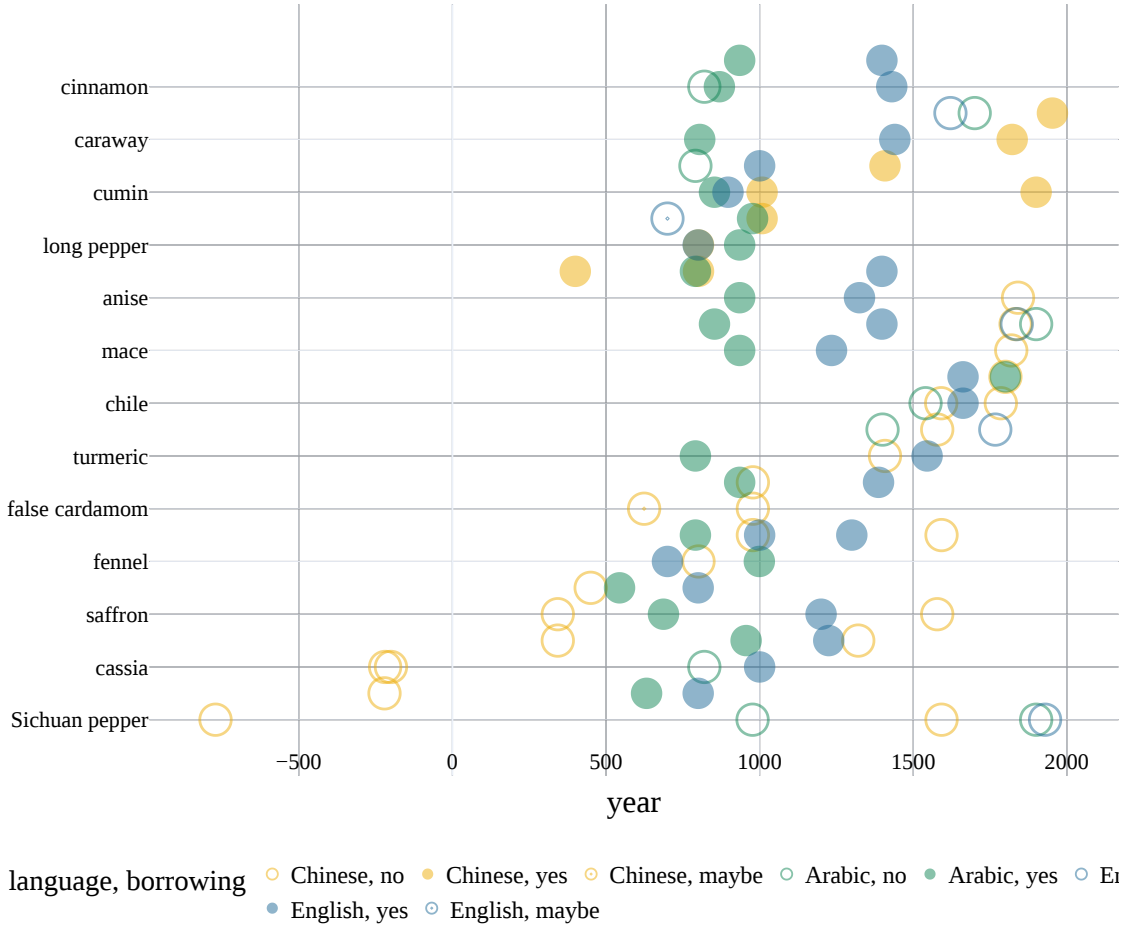


Figure 3.9 Borrowed spice terms across the three languages

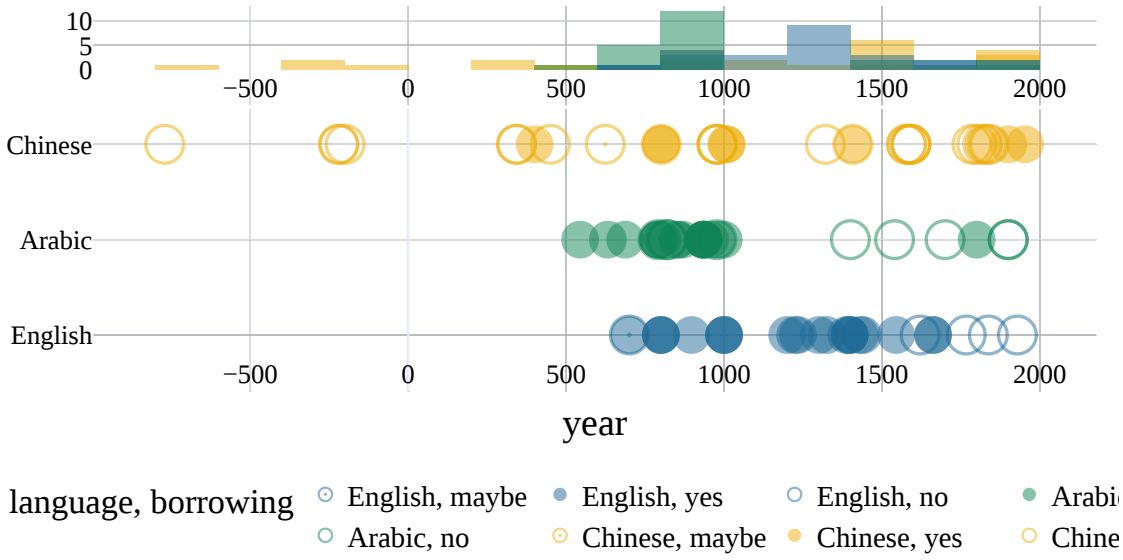


Figure 3.10

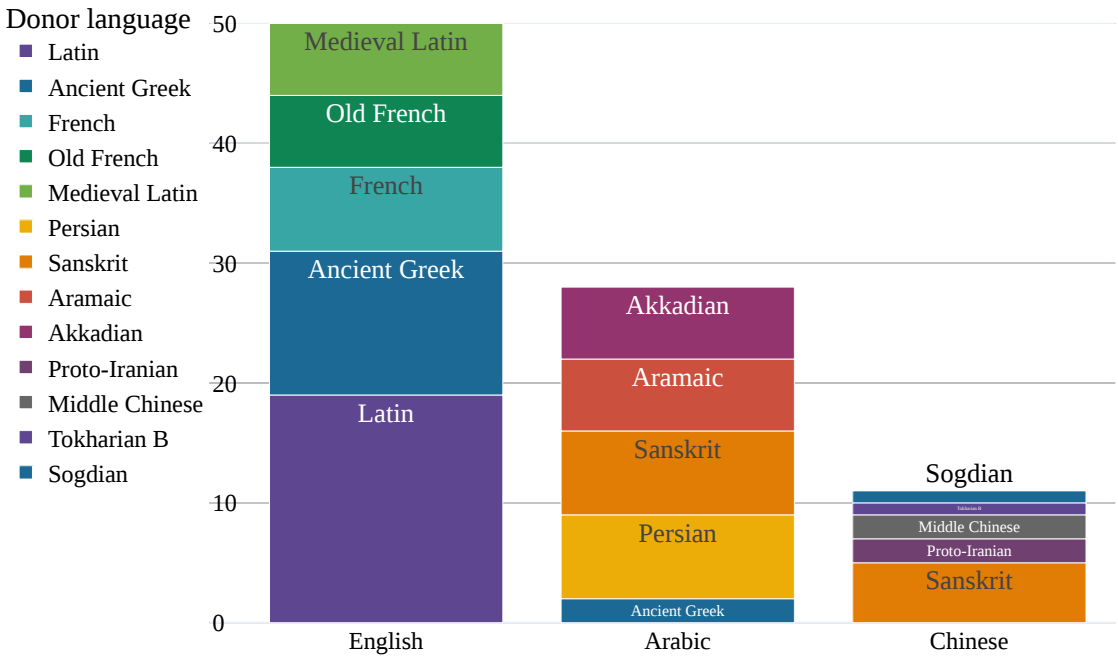

Donor language
Latin
Ancient Greek
French
Old French
Medieval Latin
Persian
Sanskrit
Aramaic
Akkadian
Proto-Iranian
Middle Chinese
Tokharian B
Sogdian
50
40
30
20
10
0
Medieval Latin
Old French
French
Ancient Greek
Latin
Akkadian
Aramaic
Sanskrit
Persian
Ancient Greek
Sogdian
Middle Chinese
Proto-Iranian
Sanskrit
English
Arabic
Chinese

Figure 3.11

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