Exotic Tastes, Familiar Flavours. Transcultural Culinary Interactions in Early Modern India[1]

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Abstract

The period between the sixteenth and nineteenth centuries was one of increasing global cultural interaction, fuelled first by trade and European maritime explorations, and later, by nascent colonialism. New food items were an important aspect of the global cultural exchange that occurred during this era. Culinary cultures were transformed as a result of these transcultural interactions: who could imagine Italian cuisine without tomatoes, European confectionary without chocolate, or Indian food without chillies? Yet the nature of these transformations and the manner in which they occurred remain a subject of some debate. In this article, I will examine the nature of food-oriented cultural transformations that occurred during this period on the Indian subcontinent with a view to evolving an understanding of the factors that promoted or inhibited cultural evolution. I argue that these culinary changes took place through a process of cultural translation in a largely non-coercive context and following an evolutionary rather than revolutionary pattern. The extent to which these findings may predict trends of cultural exchange in other societies or historical circumstances, however, requires further research.

From the mid-fifteenth century onwards, maritime explorations undertaken by explorers from various European states heralded a new stage of social, economic and cultural interactions in the world (Crosby 1972; Glamann 1958; Subrahmanyam 2012). These changes were by no means sudden or dramatic, but they

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did bring hitherto unknown biological and cultural commodities as well as pathogens to new shores. The so-called "Columbian exchange" set in motion a number of historically momentous migrations and cultural transfers (Crosby 1972). It brought European colonisers to American shores, and along with them, they brought their diseases as well as their crops and livestock. While Europeans migrated voluntarily to the New World, enslaved Africans were forcibly shipped to America. Conversely, numerous New World crops, turkey, as well as the dreaded sexually transmitted disease, Syphilis, spread across the Old World. Many of the fruits and vegetables that originated in the New World became fundamental, even distinctive, aspects of African, Asian and European culinary cultures (Achaya 1994: 218–238). Who could imagine Italian cuisine without tomatoes, an Irish table without potatoes, West and Central African culinary traditions without cassava, European confectionary without chocolate or Indian food without chillies?

Yet the nature of these transformations and the manner in which they occurred remain a subject of some debate. Nor is there any reason to suppose that there exists a particular pattern that characterises all such developments. The absorption and integration of new foods was influenced by varied socio-economic, cultural, political and ecological circumstances in different regions of the world. However, elements of this process of culinary assimilation or incorporation, given a certain set of circumstances, may be understood with respect to specific food items in particular regions.

In this article, I will examine the nature of food-oriented cultural transformations that occurred during the period between the sixteenth and nineteenth centuries on the Indian subcontinent. Cross-cultural comparisons with European experiences vis-à-vis the cultural assimilation of New World foods shall be undertaken to enable a more contextually precise appreciation of the processes that underlie such culinary metamorphoses. As case studies, the trajectories of culinary absorption and indigenisation of three food crops will be taken up: tomatoes, potatoes and chillies. These have been chosen because of their successful integration into Indian cuisines, to the extent even of becoming an inseparable aspect of subcontinental diets. In the contemporary context, a fairly rich répertoire of potato recipes as well as tomato-based dishes generously spiced with chillies are a common feature of local culinary cultures in many parts of South Asia.

The Sour Fruit: Tomatoes

Tomatoes (*Solanum lycopersicum*) are botanically speaking fruits, and belong to a genus of weed-like plants native to North-Western South America, arising

from an original variety called cerasiforme. Early references to the tomato's use in Europe date to the mid-sixteenth century (Achaya 1994: 225; Purseglove 1974: 531–532). In India, as well as in Asia generally, the tomato took much longer to be regularly cultivated and consumed.

Perhaps one of the earliest reliable references to the tomato on the Indian subcontinent comes from the *Nusḵẖa-i Niʿmat K̲ẖān* (1801), which is a Persian translation of a now untraceable English cookbook. This culinary manual, a product of early modern cultural cross-pollination, has a recipe for tomato soup, which is titled *tarkīb-i ṭomāṭā sūp yaʿnī shorbā wilāyatī baigan*, or "recipe for tomato soup otherwise known as *wilāyatī baigan*" (MS BL OR 2028, f. 2r). Throughout the recipe description, the vegetable is referred to as 'eggplant' or *baigan* (MS BL OR 2028, f. ff. 41v–42r). Thus, the tomato is named after a known vegetable, a common process by which the unfamiliar is rendered familiar. The name (*wilāyatī baigan* or 'foreign eggplant') also recalls its foreign origin. The fact that the vegetable is referred to by both its transliterated English name as well as an Indian or Persian name, suggests that the vegetable was relatively new and rare, but nevertheless gathering familiarity in some circles. The tomato was at this time still unknown in Indo-Persian cookbooks, but may have been an exotic vegetable available to the elite.

The earliest references for the routine use of the tomato date from the first half of the 19th century. In 1832, it was recorded as being "very common in India" by William Roxburgh in the *Flora Indica* (Roxburgh 1832, Vol. I: 565). By the late nineteenth century, there is no doubt that the tomato had become ubiquitous. In Birdwood's *Catalogue of Vegetable Productions of the Presidency of Bombay* (1865), it is described as being widely cultivated and being used in sauces and salads (Birdwood 1865: 173). J. F. Duthie and J. B. Fuller, in the *Field and Garden crops of the North-Western Provinces and Oudh* (1882–1893), identify the Hindi name of the "Tomato, or Love-apple" as "*vilāyati baigan*" and note that "this vegetable is coming more into favour with natives as an article of food on account of its acid taste" (Duthie & Fuller 1893, Part III: 30). Even towards the end of the nineteenth century, George Watt (1891, Vol. V: 100) records in his *Dictionary of the Economic Products of India* that "(n)atives are beginning to appreciate the fruit, but the plant is still chiefly cultivated for the European population. Bengalis and Burmans use it in their sour curries". He also records that in the plains tomatoes are sown in the autumn, and the fruit ripens during winter and spring. In the hills, the tomato grows more luxuriantly (Watt 1891, Vol. V: 100). All of this evidence leads to the conclusion that the tomato perhaps first made its initial presence (at least to any noticeable degree)

on the subcontinent towards the end of the eighteenth century, but took several decades to become widely cultivated and consumed.

The Underground Esculent: Potatoes

The potato (*Solanum tuberosum*) is native to the South American Andes, and reached Europe by the mid-sixteenth century (Achaya 1994: 226; Purseglove 1974: 560). The potato emerged as an important staple in many parts of Europe (Purseglove 1974: 562), but is consumed only as a vegetable in India and many other parts of the world. Tracing the early trajectory of the potato in India is rendered somewhat complicated by confounding nomenclature in the sources of the period. Edward Terry mentions potatoes "excellently dressed" as being served at a dinner given by Āṣaf Ḵẖān in 1615 for the English ambassador Thomas Roe (Terry 1777: 197). John Fryer (who travelled in India between 1673 and 1682) noticed "potatoes" being cultivated as a garden crop in Karnataka and Surat (Fryer 1698: 104). However, these may have actually referred to the sweet potato, rather than the white potato. This is because any mention of 'potato' in the English sources of the time could refer to either the white potato, or varieties of sweet potato, or even to yams (Achaya 1994: 226; Habib 1999: 53, fn. 101).

Writing in 1847, George W. Johnson quotes another nineteenth century writer as follows:

> *"Threescore years ago, a basket of potatoes, weighing about a dozen pounds, was occasionally sent, as opportunity offered, by Warren Hastings, to the Governor of Bombay, and was considered a very acceptable present. On acceptance the members of the council were invited to dine with the governor, to partake of the vegetable. Somehow or other, the potato was introduced into Guzerat, and in process of time, Bombay became well supplied with it; so well that the market had ever an abundance at a low price, and very good"* (Johnson 1849: 19).

This anecdote is recorded as a quotation within inverted commas from a "recent writer" whose identity has been lost (Johnson 1849: 19). The above quote seems to indicate that potatoes were available in India during Warren Hastings' tenure as governor-general (1772–1785). Mahesh Upadhya (1974: 140) and following him, K. T. Achaya (1994: 226), have taken this as evidence of the white potato's arrival in India by the latter part of the eighteenth century. If the quote is accurate, it certainly does provide us with not only an anecdote of its use and value in the last decades of the eighteenth century, but also tells us of its spread over the next few decades. However, since this is a second hand quote of an anecdote recorded several years after the supposed event, I regard its evidence as suspect. The above quotation is on firm-

er ground in recording events of the nineteenth century, and it is probable that the potato had indeed become fairly common in Gujarat and Bombay by the early decades of the nineteenth century.

We do, in fact, have clearer details emerging for the spread of the potato from the end of the eighteenth century and the beginning of the nineteenth century, both from English as well as Persian sources. In interpreting the evidence from Persian language sources, care must be taken to distinguish between the Persian word *ālū*, which means 'plum' and the identically spelled and pronounced word that derives from the Sanskrit word *āluka* (Achaya 1994: 199). The latter is normally a generic name for esculent roots (Apte 1957–1959: 36), but its derivative also came to be used for the white potato, which is an esculent underground stem.

The *ālū* listed as a *ḵẖarīf* crop (autumn harvest) in the *Kitāb-i Zirā'at* or *Book of Agriculture* – an Indo-Persian agricultural manual dated 1796–97 on the colophon – can be identified as the white potato on account of its categorisation as a *tarkārī* or 'vegetable' (MS BL OR 1741, f. 5r). There is also a detailed description of the emerging potato culture in Bengal (Berhampore or Baharampur, 1797), given by the Rev. William Tennant in his *Indian Recreations* (Tennant 1803: 45–51). Tennant clearly distinguishes this vegetable as the regular potato, rather than the sweet potato whose cultivation had already been practiced for some time (Tennant 1803: 50). Tennant's account provides a mixed picture of the potato's adoption:

> *"In this district, we have first to notice the Culture of Potatoes, which has been introduced into Bengal; and apparently with the most beneficial effect. It is a comfortable circumstance, that superstition in Hindostan, all-powerful as it is, does not shut up every avenue to improvement, or preclude the people from every advantage to be derived from the superior attainments of Europeans in industry, art, and science. No prejudice prevents the Hindoo from the culture and use of the potatoe: the most useful and nutritious of all vegetables in every country where the growing of it is fully understood. If the natives here have hitherto derived but small benefit from this plant, it is because the culture has not become universal, nor has the method of preserving it been so much attended to as in Europe"* (Tennant 1803: 46).[2]

Tennant appears to suggest that the potato had achieved a noticeable, if somewhat limited, presence in Bengal. Indians had begun to incorporate it into their diet, although he later adds that the potato was much more commonly con-

[2] Since I have been unable to reproduce the original typescript, which contains the old form of "s", I have used the regular, modern font instead.

sumed by the European population (Tennant 1803: 47). Tennant also states that he had been informed of the introduction of the potato in Madras and some other parts of the Coromandel (Tennant 1803: 48). Based on similar evidence from the end of the eighteenth century from Roxburgh, Watt suggests that the potato must have been introduced in India sometime between the end of the sixteenth and beginning of the eighteenth century. He adds that it must have been widely cultivated all over India before the beginning of the eighteenth century (Watt 1893, Vol. VI, Part III: 266). However, there does not, in fact, appear to be much evidence of the regular cultivation and use of the potato in most parts of the subcontinent from the seventeenth century, or even from the earlier part of the eighteenth century.

Various references exist for the use of the potato in the early nineteenth century. The *Nusḵẖa-i Niʿmat Ḵẖān* or *Recipes of Niʿmat Ḵẖān* (1801) has some basic recipes for the potato: two methods for boiling potatoes (*tarkīb-i jūshānīdan-i ālū*) and a recipe for mashed potatoes (*tarkīb-i ālū-i māsh yaʿnī bhūrta*) (MS BL OR 2028, f. 8r).[3] The fact that the potato is called only by its Indian name (*ālū*) is indicative of familiarity. The recipe descriptions leave no doubt that it is the white potato that is being described (MS BL OR 2028, ff. 118r–120r).

Potatoes are also mentioned, albeit infrequently, in the household accounts of Lord Wellesley in Bengal dated April 1804 to August 1805 (MS BL Add. 13891). The fact that these potatoes cost as much as six rupees a maund[4] suggests they were indeed white potatoes (MS BL Add. 13891, ff. 23v, 40r). By the 1820s the potato had become common in Bengal and was also spreading rapidly to other regions of the subcontinent. The monthly bazaar accounts of the Calcutta Great Jail in 1824 regularly mention the potato (MSS BL Eur E392/6/a and E392/6/b).[5] Evidently, the new esculent had become part of the regular purchases for prison inmates. This would indicate that it was no longer a rarity, but an item of everyday consumption.

The *Majmūʿ al-Taʿm* or *Collection of Flavours* (1826) has a recipe for *sālan-i ālū* or potatoes in a sauce or curry (MS BnF Supplemént Persan 1878, f. 13v). In this recipe, potatoes are peeled and kept in fermented or sour milk (*doḡẖ*). Onions are fried with a little turmeric to which ginger and garlic are added. The

[3] The word for mash is normally spelt as *bharta* or *bhurta*, but here in this manuscript is spelt as *bhūrta*.

[4] A maund of Bengal at the time was equivalent to around 80 lbs., which means that 1 rupee could buy approximately 6 kg of potatoes, which would have not been cheap by the standards of the time.

[5] The accounts are collected in two volumes labelled 'a' and 'b' covering the years between 1824–1834. The second volume (E392/6/b) also includes the personal accounts of the jailor, Pearson (March 1836–May 1838).

meat is also washed, kept in *dogẖ* and fried in the aforementioned spice base. Then the potatoes are added and fried. After six minutes some *dogẖ*, water and salt are added. When the water dries up, the dish is ready. Here, we find the potato integrated into a 'traditional' recipe, with Indian spices and a familiar style of preparation.

Another significant reference comes from a *materia medica* titled *Qūt-i Lā-yamūt*[6], authored by Saiyid Faẓl ʿAlī (d. 1834) under the *nom de plume* Shifāʾī Ḵ ān. In this text, there are two entries for *ālū*: one under the section on fruits – which clearly refers to the plum – and another in the section on vegetables. The latter reads as follows:

> *"It belongs to the class of arwī, shakarkand [varieties of taro and sweet potato respectively] etc. that the Christians have brought from their islands to the country of Bengal. Now it has become abundant in Hind [North India] as well. It has also arrived in the country of the Deccan, but has not become very common. The potato is very tasty. Cook it in water and when it has softened, remove the thin peel that covers its skin, and eat with or without salt. It is very delicious"* (MS SJML Ṭibb 183: 54).

The entry goes on to briefly describe some other potato recipes, notably, meat with potatoes and potato mash (*bharta*) (MS SJML Ṭibb 183: 54-55). This description gives details on the potato's penetration into various parts of the subcontinent. For the Deccani author of this text, the potato was a novelty that he was evidently excited about. At the same time, his description suggests that it had already established a happy home in other parts of the subcontinent. Other references indicate that potatoes had been cultivated around the 1830s on the Shimla hills as well as the hills surrounding Dehra Dun and the Khasia, Jaintia, Garo and Lushai hills of Assam (Achaya 1994: 226; Upadhya 1974: 140). Roxburgh (1832, Vol. I: 565) records the potato as being "very generally cultivated over India, even by the natives for their own use". Likewise, Watt (1893, Vol. VI, Part III: 265–272) records the potato as being cultivated and eaten all over India. However, it never attained anything resembling the status of a staple.

The New Pepper: Chilli

Perhaps the most notable import from the New World that transformed palates was the chilli. Chillies belong to the genus *Capsicum* and family *Solanaceae* (the family of nightshades). There are various species of it in use all around the world. The species most commonly used in India are the *Capsicum annum* and

[6] The term 'qūt-i lā-yamūt' refers to a substance that when ingested in very small quantities, was believed to prevent death and extend life.

the *Capsicum frutescens*. The chilli is a fruit that typically starts out green, but turns red upon ripening. The active ingredient that lends chillies their pungency is the alkaloid capsaicin. Of all the New World imports that spread across the world from the fifteenth century onwards, it is the one food that is initially highly unpalatable, but (unlike coffee, for instance) is without any attenuating desirable psychotropic properties (Rozin & Schiller 1980: 79). How and why certain populations (mostly in South Asia, Southeast Asia, parts of West and East Africa, parts of China and Hungary) incorporated the chilli into their diets following the discovery of the New World is not entirely known (Rozin & Schiller 1980: 79). I hope that my investigations in this article provide some clues to this puzzle, at least as far as the South Asian context is concerned.

There is no record of the chilli in India prior to the past few centuries. Achaya (1994: 227) has drawn attention to a tantalising reference to it in a composition attributed to the South Indian devotional poet Purandaradāsa (1489–1564).[7] However, the historical authenticity of Purandaradāsa's verses is uncertain, since they were not textually codified and compiled until the late nineteenth century (Divya T. 2011: 15). Manrique mentions pimienta pickles at a dinner hosted by a Mughal notable (Manrique, 1649: 329–330).[8] The English translation of this passage renders pimienta as green chillies (Manrique, 1927: 127). But this is misleading, since the Spanish referred to the newcomer chilli as pimiento and not pimienta (Toussaint-Samat 1994: 515–516). What Manrique actually refers to is green peppercorn. Jan Huyghen van Linschoten, who spent several years in Portuguese ruled Goa during the 1580s, tells us that green peppercorns were often used to prepare achār or pickles, just as Manrique describes (van Linschoten 1885: 75).

Most probably, the chilli was first introduced in parts of Southwest India, particularly in and around Goa, primarily through the agency of the Portuguese from the sixteenth century onwards (Collingham 2006, ch. 3, par. 12, loc. 928). Even towards the end of the nineteenth century, Watt notes that the chilli (*Capsicum annum*) was cultivated more extensively in Goa than in any other part of the western coast, and was known in Bombay as *gowa'ī mirchī* or Goanese chilli (Watt 1889, Vol. II: 135). The paucity of references to it in the sources of the period between the sixteenth and early eighteenth centuries

[7] "I saw you green, then turning redder as you ripened, nice to look at and tasty in a dish, but too hot if an excess is used. Saviour of the poor, enhancer of good food, fiery when bitten, even to think of [the deity] Pānduranga Vittalā is difficult."

[8] I am grateful to Borayin Larios of the University of Heidelberg for translating this passage of the Spanish text of Manrique's account for me. He suggested to me a reading for the term *pimienta* that I was able to confirm as correct from my consultation of other sources.

suggests that the chilli may have taken a considerable period of time to become a regular item of consumption, as well as to spread across the subcontinent. The spice that was usually used to add heat and pungency to food was black pepper (*Piper nigrum*), both round and long (Tavernier 2000, Vol. II: 11). Black pepper derives its pungency from the alkaloid piperine rather than from capsaicin, and most varieties of black pepper do not have the same intensity of heat as do green or red chillies.

Regular references to the chilli begin trickling into Indo-Persian cookbooks from the mid-eighteenth century onwards. There is a reference to *mirch-i surḵẖ* (red chilli) in the chutney recipe recorded in the *Risāla Dar Bayān-i Aṭʿima* (*Treatise on the Description of Foods*), which probably dates to sometime between the third and fifth decades of the eighteenth century (MS RAS Codrington/Reade 213, f. 13v). It is mentioned in the chutney recipe of another eighteenth century text, the *Ḵẖwān-i Niʿmat* or *Table of Delights* dedicated to Nawāb Qāsim ʿAlī Ḵ ān Bahādur (*Ḵẖwān-i Niʿmat wa Shakaristān-i Ḵẖayāl* 1882: 11 marginalia). A reference to *mirch-i surḵẖ* also appears in an untitled manuscript of vegetarian recipes dating to the late eighteenth or early nineteenth centuries (MS BL IO Isl. 717, f. 10r). In Ḥājī Qambar's *Alwān-i Niʿmat* (*Varieties of Good Things*),[9] the red chill is used in two pickle recipes: *achār-i līmūn kāg̱ẖazī* or pickle of paper-thin lemon slices and *achār az khichṛī* or pickle of hodgepodge (MS SBB Sprenger 2002, ff. 310–11). In addition, there is a reference to *mirch-i surḵẖ* in the translated cookbook, *Nusḵẖa-i Niʿmat Ḵẖān* (MS BL OR 2028, f. 192v).[10] Thus, early references to the chilli in Persian cookbooks are in chutney or pickle recipes. In other dishes, pepper continued to be the pungent spice of choice. Perhaps the chilli was still considered too hot for use in regular food, and thus its use was restricted to spicy relishes such as chutneys and pickles.

Āzād Bilgrāmī, writing in 1762–63 seems to indicate that the chilli had become fairly common (Bilgrāmī 1871: 48; Habib 1999: 52, fn. 96). He argues that the reason for the dry temperament of the Indian people could be traced to their diet (Bilgrāmī 1871: 48). Such 'anthropological' observations reflect the

[9] This text probably dates to sometime between the mid-eighteenth and early nineteenth centuries on account of the style of its presentation, the fact that its only known manuscript copy uses the hard 'ṭ' as well as the fact that it reproduces some recipes almost verbatim from another Indo-Persian cookbook – the *Ḵẖulāṣat-i Mākūlāt u Mashrūbāt*, which itself is a late seventeenth or early eighteenth century text.

[10] The red chillies are here used in a curry recipe. This of course is a translation of an English cookbook, so it is not possible to draw inferences regarding typical use of the chilli based upon this reference. But it is nevertheless relevant since red chillies were evidently by now an established ingredient with an indigenous name (*mirch-i surḵẖ*). In this recipe, the seeds are removed from the chillies so that they do not lend much heat.

close interface between medical and socio-cultural thought in the early modern period. Whether rich or poor, according to Bilgrāmī, the base of the Indians' diet was *dāl-i tūr* (split pigeon pulse; *Cajanus cajan*), to which they added little to no oil or ghee (*be raugẖan yā kam raugẖan*). Instead, they added red chillies (*mirch-i surḵẖ*), asafoetida (*ḥiltīt*) and turmeric (*zard chūba*) to all their dishes. He adds that some Indians had learned the use of the chilli in the past ten or twenty years (Bilgrāmī 1871: 48). From Bilgrāmī's slightly inconsistent account, it is not possible to say exactly how common the chilli had become, since he first seems to indicate that it was in wide use, but later qualifies this with the statement that *some* Indians (*barḵẖī mardum-i Hindūstān*) had learned its use (Bilgrāmī 1871: 48). Thus, his initial generalisations about the Indian diet must be read with some scepticism. This is reinforced by the fact of his belief that this diet was responsible for the humoural imbalances of the Indian temperament. Nevertheless, the inescapable and conservative conclusion that we must draw from this reference is that the chilli was at least in the process of coming into common use in various parts of the subcontinent by around the mid-eighteenth century. By the end of the eighteenth century (1796–97), the chilli had apparently acclimatised itself sufficiently as an agricultural commodity for it to find place in the *Kitāb-i Zirāʿat* (MS BL OR 1741, f. 5r). By the third decade of the nineteenth century the chilli seems to have become common, since Roxburgh notes in the *Flora Indica* that dried chillies (*C. frutescens*) were available in markets all over India (Roxburgh 1832, Vol. I: 574).

By the mid-nineteenth century, chillies were already considered characteristic of Indian cuisine. The cultural trope (not without basis) of the 'hot Indian curry' had well and truly arrived. Private Robert George Hobbes, in his unpublished account of India (1852), writes in his usual sensationalistic style of the breakfast enjoyed by the English at Fort William:

> *"...and down the centre [is] a row of tables at which a batch of recruits lately arrived from Europe are taking their hazree* [*Breakfast]. What a glorious spread they seem to think that before them! See the gusto with which they devour those savoury but apparently hot curries; which while they tickle the palate, bring streams of water from their eyes! Observe how they lick their lips..."* (MS BL Eur B260, f.25).[11]

It would be fair to assume that the hot curries that Hobbes mentions would have been spiced with chillies, rather than with the milder black pepper. Towards the end of the nineteenth century, Watt observed that chillies could be purchased at

[11] Asterisk indicates footnote provided in the manuscript itself.

every Indian bazaar. They were an indispensible ingredient in Indian curries and a ubiquitous flavouring agent in pickles (Watt 1889, Vol. II: 138).

The gradual but sure manner in which these new foods were absorbed within Indian culinary cultures naturally begs the question of what circumstances and factors underlay this process. To understand the absorption of New World imports into the dietary traditions of the Indian subcontinent, it is necessary to first take a detour through Europe.

Becoming Indian: The Culinary Assimilation of Foreign Foods

In his *De Historia Stirpium* (1542), Leonhart Fuchs, a botanist and Lutheran professor of medicine at the University of Tübingen records a description of the chilli, which had recently arrived in the German lands (Andrews 1995: 24). Fuchs mistakenly identifies India as the original home of the chilli, and in fact refers to it as "Calicut pepper" and "Indian pepper" (Anderson 2016: 64; Andrews 1995: 24). On the one hand, this misidentification is testament to how closely associated spices were to India, and particularly to the Malabar Coast, in the European imagination. But it also begs the question as to why the chilli was not very successfully absorbed into German, or in general, most European cuisines, even though the earliest German references to it date as far back as the first half of the sixteenth century.

Not all foods find acceptance in new homes. In Italy, the tomato's association with the nightshade family meant that it was initially feared for being poisonous and harmful to health (Gentilcore 2010, ch. 1). Similarly, the potato, despite its eventual significance in European history, was at first slow to progress as a crop and as a dietary component. Potato cultivation required practices that were different from that of traditional grain cultivation, and also conflicted with traditional land use patterns. Furthermore, the early potatoes that arrived in Europe were variably coloured and gnarly in appearance. For all these reasons, John Reader (2009: 111–114) argues that potatoes were eventually accepted only out of necessity. Chillies were a New World import that had a highly variable rate of acceptance and assimilation into the cuisines of different cultures. Thus, the fairly dramatic impact that the advent of tomatoes, potatoes and chillies eventually had on Indian culinary traditions was by no means a forgone conclusion.

Climate and soil conditions may not prove ideal for their cultivation. But there is also the possibility that they may not appeal to people's tastes. Cultural sensibilities, food prejudices and previous experiences with similar foods mediate the reception to new foods. The psychologist Paul Rozin, for instance, has described the phenomenon of the 'omnivore's dilemma' (or generalists dilem-

ma), which refers to the tension between the neophilic and neophobic tendencies inherent in the omnivore's approach to unfamiliar foods (Rozin, 1976; Rozin, 2002; Rozin & Rozin, 2005). This phenomenon can be seen as operating both at the individual as well as cultural levels. The fact that the foods discussed above found acceptance in India thus begs certain questions: why and how did these become such a ubiquitous part of Indian diets, what were the factors that promoted their culinary integration, and what were the impediments that had to be overcome?

The deleterious associations that nightshades suffered from in Europe did not exist in India, and thus some of the negative feedback that these might have generated was not an impediment to the assimilation of tomatoes, potatoes or chillies into South Asian diets. Nevertheless, the eventual integration of these vegetables into Indian culinary traditions was a gradual process. People had to get used to their taste and find ways to cook them that pleased their palates.

The evidence that we have to reconstruct the process of culinary assimilation is somewhat limited, but it is enough for us to draw a few broad extrapolations. What seems clear is that the new vegetables were sought to be used in ways that were indigenous and familiar. This was often done by associating them with already familiar ingredients, and cooking them in similar ways. Borrowing new vegetables from another culture did not necessarily mean that ways to cook these new ingredients were adopted along with the foods themselves. For the tomato, we have very limited evidence of its early use. The recipes found in the *Nusḵẖa-i Niʿmat Ḵẖān* obviously do not represent instances of typical use. However, the evidence of Duthie and Fuller suggests that it was commonly used as a souring agent in familiar dishes (Duthie & Fuller 1893, Part III: 30). The methods prescribed by the *Qūt-i Lā-yamūt* for cooking the potato mostly recall well-known recipes. Apart from a basic recipe for boiling the potato, it suggests that potatoes with meat be prepared in a manner similar to meat with *arwī* (taro). It also gives a recipe for potato *bharta* or mashed potatoes (MS SJML Ṭibb 183: 54–55). The evidence of Indo-Persian cookbooks reveals that mash or *bharta* recipes had a familiar place in culinary praxis.

Chillies, although hotter than black pepper, came to occupy a familiar space in Indian culinary traditions. The concept of adding heat and pungency to recipes was a well-established one, and familiarity with black pepper has been proposed as a reason for eased acceptance of the chilli in other parts of the Old World as well (Rozin 1990: 238). Indeed, in India, the chilli inherited its name from pepper (*mirch*), which indicates that it was associated and compared with black pepper. The initial induction of these highly pungent chillies in chutney and pickle recipes may have lent a pathway to their eventually ubiquitous use

in a broad array of preparations. This was thus a process of gradual acclimatisation and graduation to higher levels of heat and pungency. To some extent, it mirrors – at a macro-level – the process of preference acquisition among children in chilli eating cultures described by Paul Rozin and Deborah Schiller, i.e. one of gradual and incremental exposure (Rozin & Schiller 1980).

A significant contribution to the debate on why the use of spices (including chillies) is more prolific in some cultures and parts of the world than in others was made in 1998 by Jennifer Billing and Paul Sherman. They argue that spices are consumed in greater quantities in hot regions because their antibacterial properties provide protection against the higher incidence of infection in tropical and subtropical climates (Billing & Sherman 1998; Sherman & Billing 1999; Sherman & Hash 2001). Billing and Sherman put forward a carefully collated and persuasive statistical analysis of spice use, which does provide some clues as to why preparing food spiced with chillies may have certain advantages in the tropical and subtropical climes of the Indian subcontinent. But their hypothesis does not answer all questions on the prevalence of spice use among various human populations (Romanovsky 2015; Abdel-Salam 2016; Bosland 2016).[12] It does not, for instance, answer the question as to why or how chillies came to be gradually integrated into South Asian culinary cultures, although these cuisines had long done without the pungency of capsaicin. How did people acclimatise themselves to its sharp taste, and in what manner did socio-economic and cultural factors influence this process? The evidence points to a multifactorial process that includes biological, ecological and cultural factors acting in conjunction to produce culinary transformation.

With regard to all three newcomers discussed in this chapter – tomatoes, potatoes and chillies – the evidence gleaned from the South Asian experience suggests that local contextualisation was crucial to the acceptance of the new foods. This appears to have parallels in other cultures and historical contexts as well. Gentilcore observes a similar process of indigenisation in his analyses of the early use of the tomato in Italy: "Native American uses [of the tomato] had

[12] In the May 2015 issue of the journal *Temperature*, there appeared an editorial about tree farming. This piece discussed, among other topics, the role of capsaicin as a big-game repellent. In conclusion, the author Romanovsky, asked the question "while herbivores avoid capsaicin, why do people living in hot climates consume large quantities of it (in chili peppers)?" A series of letters to the editorial board and article comments in a following issue published in 2016 (*Temperature*, 3, 1)] discuss at length, the question as to why chillies are more often consumed in the tropics. Views varied widely, with some arguing that the hypothesis proposed by Billing and Sherman is inadequate. For reasons of space, it has not been possible to provide an in-text citation of all letters and comments that appeared on this topic in the 2016 issue of *Temperature*. A full enumeration is given in the list of references below.

little impact on European perceptions and uses. Because Europeans regarded native societies as inferior, the various roles of their plants were not passed on except in a very superficial way" (Gentilcore 2010, ch. 1, par. 28, loc. 318). Gentilcore argues that colonial European perceptions of Latin American societies impeded the adoption of their culinary methods. Instead, Europeans incorporated the new vegetable into their cuisines by cooking them in familiar ways. It may well have been the case that European colonial perceptions did indeed have such an impact. But it seems that such processes were not limited to a situation where a colonial power borrowed foods from a colonised region. When the Europeans brought New World vegetables to South Asia, Indians did not merely emulate European ways of preparing and eating them. Instead, they sought to find familiar and indigenous ways of cooking them, and to locate a place for the new food in their cuisines. Even where some elements of cooking methods may have been borrowed, this occurred only when these were found to be in harmony with current culinary practice.

The processes by which a culture perceives and incorporates new foods may be condensed to certain fundamental questions, as per Gentilcore's (2010 ch. 1, par. 36, loc. 367) interpretative paraphrase of Madeleine Ferrières's (2006) analysis: What do you resemble? What do you taste like? What do you replace? The unfamiliar was always rendered familiar by a process of comparison and incorporation. People sought to locate the new ingredient within a familiar cosmos of foods, so that it could be incorporated into their world. They sought to find something familiar that the new food resembled (*what do you resemble?*). This is the impetus behind the *Qūt-i Lā-yamūt*'s introduction of the biscuit. The novel food was familiarised by describing it as being similar to the *nān ḵẖaṭāʾī* (MS SJML Ṭibb 183: 125). Potatoes were compared to yams, taro or sweet potatoes. Chillies played the role of pepper, only more potently. Tomatoes probably fulfilled the role of souring agents, as tamarind and yoghurt may have previously (*What do you replace?*). In this way, the flavours of these new foods were sought to be understood (*What do you taste like?*) and brought into play in well-known recipes. Tastes do change, and these new ingredients profoundly altered the flavours and textures of South Asian foods. The route through which this occurred was by way of *cultural translation*, a rendering of the unfamiliar in terms of the familiar. It was through such processes that new foods were indigenised and incorporated into local culinary traditions. This may be characterised by the progression *translation-incorporation-transformation*: when a new food enters a culture, it is first understood in terms of the familiar (*translation*). If it finds a place within the cultural and sensory universe of the new host culture, then it is successfully *incorporated* into it.

Through this process, both the food and the culinary culture into which it is amalgamated are irreversibly altered (*transformation*).

The Roles of Ecology, Socio-Economy and Nutritional Environments

The assimilation of new crops into the agricultural cycles of their new home enables a steady supply at affordable prices. This is particularly important in the early modern context, given the constraints of cost and speed on the transportation of perishables over long distances. Members of the *Solanaceae* family are generally well suited to tropical conditions, and thus their incorporation into the agricultural cycles of the subcontinent would not have been difficult, especially once local cultivars had been developed. Chillies do well in the tropics with moderate rainfall, while tomatoes can tolerate a fairly wide array of climatic conditions. Potatoes are not strictly speaking ideally suited to the tropics, yet they succeeded in becoming ubiquitous in South Asia as a vegetable (Purseglove 1974: 523–563). Ambient conditions for cultivation are an important aspect of a food's dietary acceptance and incorporation. However, this is only moot when the food finds cultural acceptance, and when other political and economic conditions collude to aid its propagation.

Circumstance, opportunity and requirement constitute various kinds of positive and negative feedback mechanisms that also influence the integration of new foods into an exiting food system and culinary practice. In Italy, the tomato was eventually assimilated as a key element of the diet. But potatoes did not achieve the same iconic status in Italian culinary cultures. Following a chequered history of hesitant and temporary adoption as a famine staple, the potato eventually stabilised as a well-integrated part of Italian dietary traditions, albeit mostly as a vegetable, snack and occasional comfort food, rather than as a staple or bread substitute (Gentilcore 2012: 158–165). There was also scepticism towards the potato among Italian peasants, who often resisted their landlord's bidding to cultivate the unfamiliar esculent (Gentilcore 2012: 16–20). While in other parts of Europe, the potato was initially seen as a food of the poor, in Italy, it was often a feature associated with the tables of the elite Austrian aristocracy (Gentilcore 2012: 12). Here, there are some similarities as well as differences with the South Asian experience. In India, agricultural produce of staples such as rice, wheat and millets was usually abundant, such that the positive feedback mechanism of necessity was weak. Neither the pre-colonial state nor powerful intermediaries had either the incentive or sufficient power to coercively enforce the culture of specific crops. Instead, peasants appeared to have gradually and voluntarily adopted potato cultivation (Tennant 1803: 46). Even

in culinary terms, potatoes did not resemble any of the subcontinent's known staples.

An economic factor to be considered in the case of chillies is the fact that the fiery fruit lends itself to relatively widespread cultivation and therefore historically tended to be much cheaper than other spices (Ilyas 1976; Rozin 1990: 240, 245). In Hungary, for instance, chillies were adopted first by the poor (Rozin 1990: 240). In the context of India, both Āzād Bilgrāmī and Watt attest that chillies were consumed equally by the rich as well as by the poor (Bilgrāmī 1871: 48; Watt 1889, Vol. II: 137). However, economic logic as well as scattered literary references such as Purandaradāsa's reference to chillies as "saviour of the poor" suggest that at the very least, chillies were a more valuable flavouring agent for the poor (Achaya 1994: 227). Rozin draws attention to the following line from the novel *Nectar in a Sieve* (1954), which deals with rural life in South India: "…when the tongue rebels against plain boiled rice, desiring ghee and salt and spices which one cannot afford, the sharp bite of a chillie [*sic*] renders even plain rice palatable" (as quoted in Rozin 1990: 245). For the rich, the chilli supplemented and complemented a répertoire of spices. But for those of meagre means, it was probably the only affordable seasoning, apart from salt.

Conclusion

In the ultimate analysis, it was a congeries of multiple factors that contributed to the absorption of tomatoes, potatoes and chillies into subcontinental menus. First of all, the extensive maritime trading contacts that the Indian subcontinent had with Europe as well as other parts of Asia had long facilitated the movement of spices from peninsular India to western Asia and Europe. The same trading networks, as well as the presence of European trading factories in India, proved an impetus for bringing the new vegetables to Indian shores. This was especially true since the establishment of European trading colonies along the Indian coastline. In addition, it was possible for these vegetables to find a place in the agricultural cycles of the subcontinent. A further significant set of factors is however cultural: these vegetables managed to find a place within subcontinental culinary traditions.

The process of *translation-incorporation-transformation* that characterised the indigenisation of tomatoes, potatoes and chillies on the Indian subcontinent may not be universal. Assimilation processes may happen faster in other historical circumstances. Agencies such as the state may play a supportive or even coercive role in promoting the cultivation of new crops. Technological, socio-economic, ecological or nutritional circumstances may differ. Nevertheless, it is probable that elements of this process were or are mirrored in other cultures

and historical periods as well. Comparative research into processes of assimilation would shed some light on this question.

Abbreviations

BL	British Library, London, United Kingdom
BnF	Bibliothèque nationale de France, Paris, France
ch.	Chapter
fn.	Footnote
IO Isl.	India Office Islamic
loc.	Location of a passage on the Kindle Edition of a book
MS	Manuscript
MSS	Manuscripts
par.	Paragraph
RAS	Royal Asiatic Society, London, United Kingdom
SBB	Staatsbibliothek, Berlin, Germany
SJML	Salar Jung Museum Library, Hyderabad, India

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