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Floating Medicine Chests

Steven Shapin

- *Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age* by Harold Cook [Buy this book](#)

In 1617, the governors of the Dutch East India Company placed an order for goods to be procured by their agents. The shopping list included a hundred thousand bags of black pepper and thousands of pounds of other sorts of pepper; as much in the way of cloves, ginger and cinnamon as the ships could carry; 1000 barrels of nutmeg and 300 of mace; 3000 pounds of cassia wood (closely related to cinnamon); 6000 pounds of camphor; and the same amount of the ginger-like galingale. That sort of cargo came from Asia: the pepper from Kerala, Java or Sumatra; the cassia probably from India or Sri Lanka; and the other spices mainly from the Moluccan (or Spice) Islands. They were extremely profitable goods: nutmeg sold for three hundred times more in Amsterdam than it cost Dutch merchants in the Spice Islands. And they were luxury goods: in Restoration London a pound of nutmeg went at wholesale for the present-day equivalent of £46; cloves for £76. Nutmeg was so valuable that the Treaty of Breda, ending the second Anglo-Dutch War in 1667, delivered the tiny nutmeg island of Run to the Dutch in exchange for another island colony in America then known as New Amsterdam. When Samuel Pepys inspected a captured Dutch East India Company ship, seized in 1665, he was amazed by its cargo: 'The greatest wealth . . . that a man can see in the world. Pepper scattered through every chink, you trod upon it; and in cloves and nutmegs, I walked above the knees; whole rooms full . . . As noble a sight as ever I saw in my life.'

From the seventh century, the spice trade was dominated by the Arabs, eventually in concert with the Venetian Republic. The *palazzi*

on the Grand Canal are the enduring artefacts of financial alchemy, Oriental pepper transmuted into orientalised marble. But by the late 15th century, the Portuguese had their long-sought-for sea routes to India and the Banda Islands, and were running the trade in pepper, cloves, nutmeg, mace, cinnamon and cardamom. The Dutch desperately wanted in: by the 1580s, merchants of the United Provinces were forming consortia, and the establishment in 1602 of the *Verenigde Oostindische Compagnie* (VOC), or Dutch East India Company, was the government's way of ensuring commercial co-ordination and organisational permanence. Previous merchant trading consortia were dissolved at the end of each voyage and re-formed for a new one. (The Dutch were following the creation of the British East India Company in 1600.)

The VOC did business over much of the Eastern non-European world, including the Cape Colony; it was a shared-risk public stock-issuing company; it sought to manage competition and realise economies of scale; it was a state creation but it exercised enormous, often brutal military power, functioning on the world stage as a quasi-state entity; and it was arguably the world's first multinational corporation, with stock held by foreigners as well as Netherlanders. So if you want to tell a story about the origins of the modern world – a story that centres on globalised practical action; networks of worldwide information exchange; property rights in knowledge; the power of multinational, quasi-state actors; and the development of technical and commercial standards – you could do a lot worse than start with the VOC, the ships it sent out to the East Indies, and the cargos those ships brought back.

Some narratives about the origins of modernity talk about new forms of governance, commerce and the projection of power; others talk about new knowledge, about the Scientific Revolution of the 17th century and the rise of philosophical rationality. It is one of the many virtues of Harold Cook's *Matters of Exchange* that it treats these as different aspects of the same story. So start with the VOC want-list and ask two questions: What were the goods good for? What did you have to know to get them, get them back home, get them rendered accessible on demand, and get them to do the jobs they were meant

to do?

VOC merchantmen were stuffed with all sorts of exotic Oriental goods – porcelain, saltpetre, indigo, civet musk, tea, sugar, sappanwood and sandalwood – but spices had pride of place. It's been said that pepper and other spices were used to mask the smell of rotten meat, but salt was always the preservative of choice. The currently accepted story is that spices denoted conspicuous culinary consumption – they were lavished on food and drink as an olfactory mark of opulence. Everyone knew how expensive they were, and the more evident spices were in the food you gave your guests, the more social capital you acquired. Spicy food smelt of success.

But there is another sort of story to be told about the spice trade, and it's a medical story, a natural one to be told by the director of the Wellcome Centre for the History of Medicine. The typical VOC ship was, to a very large extent, a floating medicine chest. The 17th-century Dutch considered nutmeg a sovereign remedy for all sorts of ills, including diarrhoea, and pains in the head, muscles or uterus; in 1660, Pepys was instructed by his apothecary to take nutmeg and honey for a cold. Among other exotica brought back from the East, pepper (relief from fever and flatulence), cloves (for toothache and local anaesthesia), cardamom (for colds, fevers and inflammations), ginger (for dyspepsia), camphor (for mania), cassia and cinnamon (for diarrhoea) had notable medicinal uses and great value in the medical marketplace. The benefits of tea were widely advertised, and credited, from its first arrival in England (by way of Holland): 'It purifies the Bloud; Vanquisheth heavy Dreames; prevents the Dropsie; opens Obstructions; clenseth a hot Liver'; and much else. Many of the commodities that were eventually naturalised as normal European consumables were at first advertised and taken for therapeutic purposes, reckoned to have powerful drug-like effects. They might be feared as possible poisons – dangerous because they were exotic, not 'agreeing with' your constitution – or prized as medicines, healing because they 'corrected' the humoural imbalances induced by local conditions and diet.

One of the strangest, and at the same time most valuable, bits of *materia medica* in which the VOC traded was the bezoar. Bezoar

stones are concretions found in the guts of ruminants, including goats and gazelles, from a variety of sources, including islands off the Coromandel coast of India, and they were so greatly valued as a universal antidote to poisons and plague that in 17th-century England there was a thriving market in fake bezoars. The law had to take action – in 1603, this was the precise context for the legal ruling of *caveat emptor* – and one of the reasons Robert Boyle included bezoars in his experiments on determining specific gravity was to distinguish true from counterfeit stones. The British East India Company wanted bezoars so much that they were joined at the top of their shopping list only by diamonds, ambergris and musk. (Bezoars remain the stuff of legend, if not the object of Big Pharma research: in *Harry Potter and the Goblet of Fire*, Harry screws up his potions class practical by forgetting to add bezoar to his antidote, and in an episode of *Buffy the Vampire Slayer* something called a bezoar monster is laying seriously nasty eggs underneath Sunnydale High.)

The ships of the VOC carried trade goods, but they also carried the embodied skills and knowledge needed to get to where these things were and then to get safely back, to protect their continuing business interests against threats native and foreign, to tell others how to make the trip, to find and secure the goods they wanted, to differentiate them from similar goods of lesser value, to recognise their powers and virtues, and to learn about all sorts of other valuable and useful new things of which they had previously been unaware. Put another way, practically every aspect of early modern science, and many other forms of knowledge, were pertinent to the VOC's global trade. Knowledge travelled, and accumulated, along the trade routes. *Matters of Exchange* isn't specifically about the VOC and the East Indies; it's about all sorts of exchange relations during the Dutch Golden Age. And it's about goods: all sorts of goods, but with special attention to those connected with maintaining, extending and enjoying life. And, finally, it's about what happened to early modern scientific knowledge when it was mobilised towards those ends.

Sailing a ship over long distances with any accuracy required cartographic knowledge, and in the open ocean this involved a range of astronomical, instrumental and practical mathematical

competencies. Into the 18th century, the determination of longitude remained a great prize, and clock technology vied with astronomy in winning that prize. But the great 16th and 17th-century voyages of discovery were undertaken without the benefit of a precise solution to the problem, and *Matters of Exchange* has little to say about the physical and mathematical sciences that were used onboard a VOC ship and helped it achieve its goals. Instead, Cook wants to draw attention to the cargo of natural historical and related medical knowledge, neither of which usually springs to mind when one thinks about science as an engine of modernity.

The sorts of thing you needed to know if you were concerned with culinary or medical plants were where to find them, how (or whether) you could cultivate them, whether you could transplant them to environments other than those in which they naturally grew, and what their powers were. Among the valued productions of 16th and 17th-century Portuguese, Spanish and Dutch science were lavishly printed herbals documenting the plant life of the East, books which belonged as much to the worlds of commerce as they did to natural history and medicine. The Dutch merchant and traveller Jan Huygen van Linschoten secured a position with the Portuguese archbishop of Goa. On his return to the Netherlands, with the assistance of a stay-at-home Dutch naturalist, he published not only accounts of the Portuguese trade routes to Africa, India and the Spice Islands, but also descriptions of their flora and fauna, including highly detailed observations on the cultivation and virtues of nutmeg. The *Herbarium Amboinense*, by the German botanist Georgius Everhardus Rumphius, who worked for the VOC from the 1650s, was produced after many personal disasters: he went blind from glaucoma, his wife and daughter died in an earthquake, and he lost decades' worth of botanical research in a shipwreck and fire. But none of this stopped Rumphius's work, and his herbal contained so much commercially sensitive information that the Company apparently blocked its publication until long after his death in 1702. The books of exotic botany generated, in turn, an increased interest back in the Netherlands in botanic gardens, where exotic plants might be tested for their adaptability to local conditions and where

they could be used for making commercially and medically useful products. As late as the 19th century, European botanic gardens were a power-centre of empire. The new University of Leiden, founded in 1575, made it a priority to establish an anatomical theatre and a botanic garden. The curators of the university tried, and failed, to attract the well-travelled naturalist-physician Bernardus Paludanus, who went on to become Linschoten's collaborator, before settling on Carolus Clusius, a French lawyer-gardener who had laid out a medical garden in Vienna for the Holy Roman Emperor Maximilian II. After he arrived in Leiden in 1593, Clusius made advances in tulip-breeding and formed a collaboration with the artist Jacques de Gheyn II, whose minutely accurate watercolours of plants in the Leiden *Hortus Academicus* had a role in the emergence of the Dutch flower-painting tradition. Clusius also urged merchants travelling to the East Indies to bring back botanical specimens, thus forging links between four of the great modes of Dutch Golden Age culture – gardening, painting, medicine and business.

Travel to the places where exotic plants grew was, of course, an enormous advantage, and bringing them back home to botanic gardens (if you could) was even better, but first-hand experience was not sufficient to find out all the things you needed to know. And so the Dutch and other colonialists inevitably relied on native informants for much of the knowledge that was ultimately published under the names of European authors. VOC natural history was a creole concoction. The Moluccans knew all about nutmeg trees and the virtues of their fruit, and Dutch naturalists and merchants depended on local knowledge, even if, from time to time, thousands of natives had to be slaughtered to secure VOC property rights. In 1621, the infamous governor-general Jan Pieterszoon Coen – acting with the assistance of Japanese mercenaries – killed or transported most of the native population of the Banda Islands, women and children included. The few survivors, reinforced with slaves imported from the Celebes and Ceram, were compelled to work in the new nutmeg plantations or were sent to the Dutch capital of Batavia (Jakarta). Only later did the Dutch realise that they still needed Bandanese expert knowledge in nutmeg cultivation and small numbers of the original inhabitants were returned to the islands.

One of the necessary conditions for creating and validating creolised forms of natural knowledge was knowing whom to trust. In 1627, the VOC sent Jacobus Bontius to the East Indies as a physician, apothecary and supervisor of Company surgeons, with the understanding that he would explore the causes and treatments of indigenous diseases and put together a natural history of all the VOC's Asian holdings. The two tasks were related: it was assumed that local diseases had not just local causes but local remedies. God punisheth and God giveth. And for these therapies Bontius relied substantially on native botanical knowledge.

The East Indies 'discovered' by the Dutch was already a creolised culture: Chinese, Arabs, Indians and others were already there, pursuing their own commercial and military interests. Like all good 'moderns', Bontius thought you ought to see and experience things at first hand, but, as Cook notes, most of his information 'came from things heard rather than observed'. His sources were 'not only learned Hindus and Muslims but merchants, sailors and ordinary people, even slaves'. Existing European written accounts were seamlessly woven with testimony from trusted 'Javans' and 'Malays': 'I often marvel,' Bontius wrote in his posthumously published text on tropical medicine, 'at the carelessness of our people, who without respect call these people barbarians . . . [The natives] sagaciously distinguish between medicinal, edible and poisonous herbs better than the most expert botanist in our country.' (The urge to mine indigenous knowledge was a powerful spur to mastering local languages and even to the development of proto-anthropologies. The human sciences too were part of the VOC's intellectual return cargo.) So long as the Dutchman got to judge who was indeed expert and who trustworthy, he was happy to find expertise and trustworthiness among the natives – and to make himself a credible spokesman for native knowledge.

What kind of knowledge did the VOC need when it wanted to know about plants and other trade goods? It was supposed to be objective – knowledge of things as they are. These days, the objective is opposed to the subjective, but in this case the contrast is quite misleading. What you wanted to know about plants from the Moluccan Islands

was something about what they were – their shape, size and the circumstances in which they grew – and something about their virtues, what good they might do you. Moreover, these were goods that not only possessed virtues but might confer virtue on those who owned them and knew about them. The notion of ‘taste’, formerly a bodily attribute, was transferred onto material objects that you might display or consume, a transferral that, as Cook writes, ‘arose from instances such as demonstrating the ability to discern correctly on the palate the spices in a dish’. This kind of knowledge ‘is passed on by experience, example or imitation; it cannot be learned from the giving of reasons’.

And so, Cook observes, modern European languages other than English have words that distinguish experiential knowledge of things (the Dutch *kennen*) from the knowledge of general causal explanation (*weten*). What the Dutch valued – in their commercial, social, aesthetic and intellectual lives – was, therefore, something like connoisseurship, a knowledge of particulars, as experienced by knowing and tasting subjects: not the abstract idea of a lemon or a herring, but *this* lemon and *this* herring. While the dictionary definition of science commonly picks out its search for universal, general and abstract knowledge, *Matters of Exchange* makes an oblique case for a science of the particular. There are, in any case, two senses in which it might be said that scientific knowledge can be universal: first, it can give an account of how everything works in the whole world, as in the Galilean and Newtonian moment that has been central to historians’ appreciations of the Scientific Revolution; second, it can describe particular things and then circulate that knowledge of particulars more or less robustly around the whole world. This second sort of science is what *Matters of Exchange* is about.

What Cook is after – in his meticulously detailed and interpretatively restrained manner – is nevertheless a pretty basic re-orientation towards the making of modernity in both its practical and intellectual forms. He prefers edgy allusion to the ‘so-called Scientific Revolution’, and dodges recent debates about whether or not there actually was any such coherent and discrete intellectual movement in

the 17th century. He's in no doubt that something big and important happened, jointly in our ways of doing and of knowing. But he's also well aware that the happenings he describes aren't usually in the front of historians' minds when they talk about 'the Scientific Revolution'. And that's part of the shock-effect he evidently intends when he refers to medicine and natural history as 'the big science of the early modern period'. Instead of mathematical physics, astronomy and matter-theory, Cook offers the apparently down-to-earth and intellectually humdrum worlds of medical and economic botany, of anatomical dissection, of the cure of sick bodies, of therapeutics and dietetics, and those natural historical practices that Brian Ogilvie has recently called the 'science of describing'.

Descartes, who spent most of his working life in the Netherlands, gets a chapter here, but Cook is interested less in the Descartes of philosophical rationalism than in, so to speak, Descartes the doctor: a man who said that one of the ultimate goals of his philosophical reform was the cure of ailments and the extension of life; who reckoned that his scientific discoveries would prolong his own life to five hundred years or so; who spent vast amounts of his time dissecting animal parts he got from butchers; who attended public vivisections of dogs; who acted, in effect, as attending physician to Princess Elisabeth of Bohemia; and whose late work *Passions of the Soul*, directed at the headachey, melancholic and dermatologically challenged princess in exile, was a reworking of ancient dietetic advice to improve mental and bodily health through a temperate regimen and the rational management of the emotions. Descartes's advice: take some 'refreshing broths which contain nothing but known kitchen-herbs', and, above all, look on the bright side of life.

Cook needn't have been so coy: *Matters of Exchange* is both a considerable scholarly achievement and a largely implicit argument that a real and important set of changes in ways of knowing and doing that took place in the 17th century – for all that they took place gradually, diffusely and patchily – might as well be called revolutionary. It is a revolution in which the Netherlands, and the lands affected by Dutch power and commercial relations, take centre stage, a revolution whose seminal text isn't Galileo's *Dialogue* or

Newton's *Principia Mathematica* but one of any number of herbals or travel guides, whose crucial site is neither a philosopher's closet nor an astronomical observatory but a botanic garden or a cabinet of curiosities, whose heroes scarcely anyone has heard of, and whose characteristic practices are not experimenting and theorising but describing and reliably communicating the characteristics of particular objects on a global scale.

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