

Introduction

Mrs. Doyle: "...and speaking of cake: I have cake!"

Father Ted: "I'm fine for cake, Mrs. Doyle."

Mrs. Doyle: "Are you sure, Father? There's cocaine in it!"

Father Ted: "There's what!?"

Mrs. Doyle: "Oh no, not cocaine! What am I on about... No, I meant, erm – what do you call them – raisins."

(from 'Father Ted', Series 2, Episode 1, "Hell").

Sadly, Mrs Doyle's cocaine would be a poor choice of cake adulterant. It would taste bad, and have very low bioavailability – when swallowed, cocaine is swiftly broken down in the liver before it gets into the general circulation, so has greatly reduced effects when consumed orally. Hence the practices of snorting, smoking or injecting various preparations of the drug, to bypass the stomach and get it straight into the bloodstream, with increasing potency. So cocaine would be a bad baking choice for these reasons, not to mention its expense or toxicity. Ideally, Mrs. Doyle's stimulant-laced cake should incorporate a different drug, one which is more widely available, and cheaper; a substance which also produces a 'high' or subjectively improved mood when orally consumed, and may improve sociability if eaten regularly; a drug which tastes good, has low toxicity, and benefits health so much that it may even extend the human lifespan. In other words, she should have used chocolate.¹

Chocolate is made from the toasted seeds of the tree known by the botanic name *Theobroma cacao*. In common with other psychoactive cash crops like tobacco, nutmeg and opium, wars have been fought for control of the regions where this plant can be cultivated. Chocolate, in one form or another, has been historically associated with contracts and celebrations, with medicinal virtue and poisonous vice, and at least as much with slavery and sacrifice as with sex and romance. Actually Mrs. Doyle's drug of choice, tea, has a similar back story in many respects, both chocolate and tea being caffeine-containing stimulants over which (amongst other reasons) nations brawled, and whose traditional reputation for possessing health-enhancing properties are now being ratified and defined by experimental science. But tea just doesn't have the sexy reputation that chocolate has. The words which occurred to a sample of people to describe chocolate included "delectable", "luscious", "intoxicating" and "delicious", but also "guilt producing" and "sinful"! My summary of the two main themes chocolate elicits for people would be first: pleasure, and second (sometimes): guilt - in that order. See what I mean? Sexy.

So why is Mrs. Doyle's improbable cocaine / raisins mix-up amusing? It's probably because of the extreme contrast between the illegal stimulant cocaine, a notorious chemical isolated from the leaf of the generally rather benign Andean shrub *Erythroxylum coca*, and the innocuous raisin, dried fruit of the grape

¹ It should however be pointed out that cake is not the best medium for delivering drugs which are sensitive to heat, oxygen, or the presence of protein, as many of the compounds in chocolate are. Chocolate cake, even more than tablet/bar chocolate, sacrifices pharmacological potency for the sake of flavour and texture; the stimulating compounds caffeine and theobromine survive, but most of the antioxidant polyphenols will not. Which admittedly is a sacrifice many are willing to make.

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monkeys, which are known to be natural agents of the tree, as they eat the fruit pulp in Cacao pods, scattering and distributing the seeds in the process. It's surmised that the original human use of *Theobroma* may have been consuming the sweet pulp and/or using it to make alcoholic beverages (this is still done today), and the Peruvian vessel may have been a container for a type of Cacao fruit beverage or 'wine'. But the seeds appear never to have been made into sophisticated Cacao drinks in the southern continent as they were in central America. The Olmecs are thought to have greatly influenced Mesoamerican cultural development, and although nothing is currently known about their use of chocolate, the Maya – known Cacao users - adopted big slices of Olmec cultural and religious influence, including their word for the plant. Significantly, the humid, verdant lowland climate of the Olmec area is a perfect natural habitat for *Theobroma cacao*, and parts of the region, such as the modern state of Tabasco, are Cacao-growing territories to this day (see Figure 1 below).



Figure 1. Traditional Cacao cultivation zones in Mesoamerica.

ii] The Zapotecs, Teotihuacan, and the pre-Classic Maya [600 B.C.E. – 200 C.E.]

The Zapotecs were the real new kids on the block in Mesoamerica back in the day (around 600 B.C.E.) Their society coalesced from several small villages in Mexico's Oaxaca valley around 500 B.C.E., when they built a city, which has been named "Monte Alban". The Zapotecs also had complex systems for recording time; their grasp of astronomy can be seen from the orientation of many of their temples toward stars or constellations at specific (and presumably ritually significant) times of year.ⁱⁱ The Zapotec capital became a political power for a thousand years, before finally being abandoned in C.E. 600. Monte Alban was Central America's first true imperial power – it commanded a 10,000 mile empire, had a caste-based society in the Olmec mould, and a population of between fifteen and thirty thousand. Helpfully, they also labelled their monuments using the Olmec-derived trick of hieroglyphic writing, so archaeologists could discover that Monte Alban is older than the ruined Maya cities. Monte Alban is also the source of the oldest record of the Mesoamerican 260-day ritual calendar, to be discussed in chapter 10. The calendar itself is likely to be even older, perhaps dating back to Olmec times, as some of the animals and plants

which are used as day names are of lowland originⁱⁱⁱ, and wouldn't be found in the sierra of the Zapotec heartland.

Theobroma species don't grow in the relatively arid environment of Oaxaca valley, despite the fact that modern Oaxaca City is famous for its chocolate in food (such as *moles*, the generic name for a wide variety of complex sauces, some of which contain Cacao) and drink. It's likely that the Zapotecs imbibed Cacao-based beverages too, perhaps trading for the ingredients using the exchange networks that had existed across Mesoamerica since the so-called archaic period. While the Olmecs and Zapotecs were inventing Mesoamerican city living, the Maya were a large and disparate group of country bumpkins, affectionately known as the "pre-Classic Maya" (1500 B.C.E. to 200 AD) by archaeologists. They used *milpa*-style agriculture in the forests of the Yucatan peninsula adjacent to the Olmec heartlands, and they began building villages and adopting Olmec ideas about social order, emphasising kingship, nobility and caste systems (albeit on a smaller scale). The Maya obstinately continued to not build any of modern Mexico or Guatemala's tourist attractions throughout the rise of the Zapotec empire, but they did develop the most complex system of time reckoning in Mesoamerica, the 'Long Count' (detailed in Chapter 10), and a shared foundation of myth and ideology^{iv}; burials in the caves at Loltun in Yucatan may date back to 6000 B.C.E., suggesting that the origins of the Maya civilization may be older than was previously thought.^v

In order to leave no large gaps in this outrageously condensed history (as no one wants a chocolate advent calendar with open doors and missing pieces), we must mention the great city Teotihuacan (population 200,000 in its heyday) in central Mexico, north of present-day Mexico City. Teotihuacan grew up from 50 B.C.E. and flourished until a great fire razed the city in around 725 C.E., and it never fully recovered, although it limped on for another quarter century.^{vi} Unlike the Maya, the Teotihuacanos appear to have adopted a more democratic or community-based rather than dynastic rule, and – in common with other Mesoamerican peoples – viewed time as cyclical rather than linear.^{vii} They were also the first group known to have worshipped the "feathered serpent" central to later Mexica ("Aztec") theology, who evolved into the deity known as Quetzalcoatl, who the Mexica deemed responsible for the discovery of Cacao and many other foodstuffs.

The Teotihuacano feathered serpent god was less human than later iterations, a water-sky deity (an uncanny combination of sea snake and bird, denizens of both domains) more akin to ancient Chinese dragons, an elemental being of great power. This entity eventually came to be known as the *waxak-lahun-ubah-kan* or 'feathered serpent of war' of the Classic Maya, a god who was ritually 'housed' in special battle standards which could be carried with the army, bringing the potent force of a portable war god onto the battlefield. The magical Teotihuacan battle standards were a feather-rimmed disc on top of an orb or globe, mounted on a staff. Often a war-owl was depicted, the owl being a messenger bird of the underworld; the disc at the top of the standard may have been made with a flayed human hide stretched over a wooden frame. The Teotihuacanos either invented or elaborated older beliefs into this new, potentiated ritual warfare, which they bequeathed to the Maya and subsequent cultures. This has been described as the "Venus-Tlaloc" style of war, because it was calendrically determined by the phases of the planets Venus and Jupiter and the end of the rainy season – Tlaloc being the name of a rain god from the much later Mexica (Aztec) pantheon.^{viii}

Teotihuacan formed the centre of many of the trade networks in Central America, and is now famous for its spectacular ghost-town ruins, an awesome parade of monumental temple pyramids. Cacao distribution was a major part – or even *the* most important part – of Mesoamerican merchandise, being a high-status, high-demand product, which only grew in select regions, often distant from major centres of

consumption such as Teotihuacan, situated in the dry heartland of Mexico. Cacao was both trade and tribute, and tithes of Cacao were paid to the pre-eminent city by vassal states from Cacao-growing zones. The Cacao trade was dominated by Teotihuacan for a couple of centuries, before the Tlaxcalans assumed control of the supply when the declining Teotihuacan civilisation eventually collapsed, for reasons unknown, in around 750 C.E. Eventually their monopoly would pass to the Mayan polities in the Chontal region, in present-day Tabasco in Mexico. At all times, pre-Colombian ownership of Cacao-growing regions was a coveted prize, and the areas from which the best Cacao beans came were hotly contested; the contemporary regions of Chiapas in Mexico and Suchitequepez in Guatemala, where *criollo* Cacao is grown, were a perpetual focus of skirmishes and territorial disputes.^{ix} But the acquisition of rich Cacao-growing land was merely another sign of favour from the gods, who were to be repaid with sacrifices. It may be that Teotihuacan's ascendancy magnified the importance of ritual warfare and sacrifice in Mesoamerica, and consolidated the template of trade, ritual warfare, and tribute-based expansionism which shaped Mesoamerican culture for the next thousand years.

iii] The Classic Maya [200-900 C.E.]

Centuries before the conquest, the Maya became the world's first archaeologically-certified society of chocoholics. Although, strictly speaking, they weren't chocoholics, because chocolate - as we know it - is a modern invention. Neither the Maya nor any other pre-conquest American society consumed *kakawa* principally as a sweet, although sweetened forms of the beverages made from it did exist. In any case, the Maya comprised various culturally similar but politically separate peoples who inhabited the Yucatan peninsula and its environs (Chiapas state in Mexico, and the modern nations of Guatemala and Belize) from 1500 B.C.E. onwards. The ancestral Maya's descendants live there today, but archaeologists and historians of the Maya get particularly excited about the period from 200-900 C.E., which they call the Classic Maya era, as during this time the Maya finally got round to building beautiful cities in the inhospitably vegetative terrain of the Yucatan.

This environment has been described as "geochemically hostile"^x due to low rainfall and very salty groundwater; essentially the Maya had to 'terraform' their environment before crops could be grown, making the "Maya heartland...a network of artificially habitable terrestrial islands."^{xi} The Maya adapted this environment by using crushed limestone to 'cap' sediments beneath their settlements and filter rainwater in sinkholes or natural wells called *dzonots* (or *cenotes*, in Spanish rendering of native dialect), thereby making it drinkable; in many of these wells, fresh water from above sits atop a layer of salt water at sea level. Towns and cities aggregated around these natural and modified reservoirs, which were sacred places. Each of the Classic Maya polities in the Yucatan were ruled by a patrilineally descended king and royal family, with a governing council of chiefs, priests and advisors. After each twenty year cycle, or *katun*, new governors were chosen by the ruling elites; so even though noble status was hereditary, positions of administrative power had to be decided by consensus amongst the ruling class. War commanders, or *nacom*, were chosen every three years, as the post carried a heavy weight of secular and religious responsibility: the *nacom* was expected to remain celibate and maintain a strict diet for the duration of his tenure.^{xii}

The Maya elaborated earlier technologies and discoveries such as writing, mathematics, astronomy, architecture, and the production of Cacao-based beverages. Classic era Mayan writing is a mix of phonetic and logographic^{xiii}, in other words a combination of symbols representing sounds and stylised picture-writing; so the word for 'tree' could be written as symbols which made the sounds for the Mayan word for

'tree', or a picture of a tree – or, more confusingly (for translators), a picture of another thing that reminded the Maya of their word for 'tree', such as an allegory, rhyme, or metonym. They also made use of many medicinal and entheogenic plants, including 'magic mushrooms'; even before the Classic era, sculptures of mushrooms have been found together with small grinding stones of the sort used by twentieth-century Mixtec shamans to grind *Psilocybe* mushrooms, indicating the great age of this practice.^{xiv}

Theobroma cacao doesn't grow particularly well in most of the Maya region due to low rainfall, although small quantities were cultivated around the *dzonots* with their fresh water supply, evidenced by murals and carvings depicting Cacao pods hanging from the ceiling of sinkholes. *Dzonots* were considered to be portals into the underworld, which was conceived by the Maya and later Mesoamerican peoples as a watery domain – not unreasonably, given that the entrances to the earth, to which all things revert in death, were filled with water. Inland Maya living in more arid regions traded for Cacao grown in coastal plantations by such groups as the Chontal Maya on the east coast, in present-day Tabasco, who also exported Cacao via the Tlaxcalan city of Cacaxtla, established on the trade route to the hub of ancient Mesoamerican civilisation, Teotihuacan. The Maya are the earliest native population known to have used Cacao beans as 'money': a small, portable exchange system whereby a set number of beans could be swapped for particular items. Offerings of counterfeit Cacao beans have even been discovered in an ancient temple in Guatemala; the beans are perfect replicas made of clay, though it's not clear whether the cache of painstakingly realistic fake beans is evidence of piety or forgery.

Vases from the Early Classic period (250-600 C.E.) depict feasts with large cylindrical pots of frothy *kakawa* drinks; other representations show liquid being poured from one of these vessels into another from a height for the purpose of creating a desirable head of foam on the beverage. By the Late Classic period (600-800 C.E.) the Maya began using spouted vessels for serving *kakawa* akin to the 'Cacao teapots' in use almost a millennium earlier, which does suggest that these vessels were used for frothing the drink in some way, as the Mayans liked their chocolate well aerated. The forms of *kakawa* also evolved: specific pottery vessels for serving different types of *kakawa* have been identified, often labelled with hieroglyphic inscriptions describing their contents, such as 'tree-fresh *kakawa*' (a beverage made from Cacao fruit pulp, perhaps) or 'honey *kakawa*' (a form of sweet chocolate drink!) Some inscriptions contain instructive descriptions or phrases, such as *takan kel* – to roast Cacao well, in order that beverages made from it would produce a lot of *yom kakawa*, or foam. Some of the storage vessels were of an ingenious 'lock-top' design, having a twist-on lid with a handle to enable the transportation and storage of pre-prepared *kakawa*.

The Maya usually drank from hemispherical clay bowls, and consumed both hot and cold *kakawa* potions; but, like cocoa-drinkers today, they mostly ingested Cacao in hot drinks. Moreover, although *mole negro* – a complex savoury sauce for turkey made in contemporary Mexico, in which Cacao is a key ingredient – is supposed to have been invented by 17th century Mexican nuns, there is archaeological evidence that the Classic Maya were using Cacao in food, too, and are the likely originators of this tradition. Plates and pots in royal tombs have been found with remnants of savoury dishes, such as fish and turkey bones, and traces of Cacao. The Spanish chronicler and early anthropologist friar Bernardino de Sahagún documented the culture and geography of the 'New World' after the conquest; he noted the Mexica (Aztec) use of a sauce called *chiltepitl molli*, among many other sauces and stews, in feasts that were typically rounded off with a cup of chocolate.^{xv} Unfortunately he didn't specify the ingredients of this sauce, although we know that *chiltepitl* is a variety of chilli. We also know that what the Mexica referred to as *atolli*, the generic name for a type of thin gruel made with boiled corn in water, is known in contemporary Mexico as *atole* – as *atolli* is to *atole*, so *molli* is to *mole*, perhaps. In any case, Cacao was

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popular and indiscriminate advocacy of vitamins, food supplements, the newest ‘natural miracle medicine’, or fad diets, usually touted in a caricatured, one-size-fits-all manner as a panacea to resolve or prevent health problems isn’t a viable alternative. The ultimate point of this introductory tangent is that oversimplification in the cause of ideology, or intellectual dogma – which partisans of both orthodox and complementary medicine, the political left and right, and religious and atheist perspectives (in fact, most humans) are guilty of – is not to our ultimate benefit. Applying things or ideas in isolation or oversimplified forms to treat or prevent chronic problems in a complex being, community, or ecosystem, will ultimately cause as many problems as they solve.

So, reviewing the historical uses of Cacao and its admixtures in medicine is more than a curiosity. The virtue of recounting old formulations and applications of Cacao, and their rationale, is that we might actually learn something. Sometimes, that may be to confirm that ‘we do it best’; but sometimes it may be ‘they did it best.’ We should attempt to understand the theoretical mindset of the era we’re examining before reviewing those uses and ‘claims’ through a modern, biochemical lens, being aware that a great many things we believe to be certain and true today may be regarded as almost comically absurd errors in a few hundred years – a mere handful of generations. If history tells any tale, it’s best described by Percy Shelley’s poem ‘Ozymandias’, where the inscription at the base of a ruined statue, a pair of colossal legs with no upper body standing in a desert, reads “My name is Ozymandias, King of Kings; / Look on my Works, ye Mighty, and despair! [...] Round the decay / Of that colossal Wreck, boundless and bare / The lone and level sands stretch far away.”^{xvi} While it’s impossible not to be creatures of our time, it’s a good idea to remember that ‘assume makes an ass of you and me.’ We’ll begin with an exploration of contemporary folk uses of *Theobroma cacao* in Central and South America, moving backwards in time through post-Colonial European applications to pre-Columbian applications, finally exploring how the other native plants used in Cacao-based beverages are paired with *Theobroma cacao*, growing through history with it, like a Vanilla vine winding its way up and around a shady tree trunk, growing towards the light.

Chocolate folk medicine

Theobroma cacao has many applications in contemporary Latin America and other Cacao-growing regions. All parts of the tree are used, from roots to leaves and everything in between. The uses of the whole seed – being the principal theme of this work - include stimulant, or anti-fatigue effects; to assist weight gain; as a prophylactic for general disease prevention, and - specifically – for snakebite.^{xvii} Cacao seeds are also used for calming or anti-anxiety effects – perhaps these could be generally described as ‘mood regulation’ – and to improve digestion, specifically elimination of wastes via bowels and kidneys.^{xviii} Cocoa butter, the fat extracted from the seeds, is also widely used to help heal and prevent damage to the skin. Add in the other parts of the plant, and these applications can be expanded to include treatments for urinary tract problems, menstrual disorders, diabetes, headaches, various aches and pains, stings in general, and several other medicinal functions when combined with other plants.

The stimulant effects of the seeds require no lengthy explanation - we now know that Cacao contains caffeine, and this usage is common to all caffeine-containing plants. Their use as a mood regulating agent does require investigation, though – see chapters 5 and 7 for a pharmacological exploration of the possibilities. The Nahua in Mexico still drink chocolate as an aid to weight gain in wasting diseases, and as a supportive item of diet in Hot ailments such as fevers; they also use Cacao seeds as the smaller part of a prescription comprised mostly of *ollin*^{xix}, roasted Panama rubber tree (*Castilla*

elastica) gum, used to treat dysentery.^{xx} Cacao's role in the latter formula may be partly as a flavouring agent, but Cacao seeds frequently appear in folk treatments for digestive issues, suggesting it brings some particular properties of its own to the table. Cacao is generally perceived as a Cooling agent in Central America, beneficial in hot weather and when feeling overheated, hence its use as a tonic (often combined with other, more specific plants) in feverish ailments.

The use of Cacao in envenomation – the seeds against snakebite, in particular – perhaps also reflects its Cooling nature, as reactions to snakebite may include fever, fits, and local inflammation. The 'anti-venom' idea is a consistent theme in Central America, although the cultural memory of this usage appears to be waning. In post-conquest Nicaragua, it was thought that drinking chocolate in the morning would provide some immunity from the ill effects of snakebite in the afternoon^{xxi} - this hypothesis will be examined in Chapter 4. Other twentieth-century uses of Cacao seeds and chocolate from the Dominican republic include anti-anaemic properties, to improve kidney function, and to "ease the brain when overexerted."^{xxii} In present-day Oaxaca in Mexico, drinking chocolate is thought to help relieve symptoms in bronchitis, and even afford some protection from wasp, bee, and scorpion stings.^{xxiii} The use of Cacao or chocolate for lung ailments is controversial in some quarters, though: herbalist and teacher Mario Euan from Merida in Mexico's Yucatan peninsula described how Cacao's Cooling nature makes it inadvisable in coughs, as it may prevent phlegm from being "spat out" (expectorated, or coughed up).^{xxiv} But there's some scientific rationale for all of these uses, including for lung ailments, which will also be discussed in the following chapters.

Another application of Cacao seeds, recounted separately by two Guatemalan women, one of whom is a midwife of over twenty-five years' experience, is to encourage lactation in breastfeeding mothers, either taken as drinking chocolate or consumed in the form of *Pinole* made with maize and Cacao (known in Mexico as *Pozol*) for at least two months to increase the milk supply.^{xxv} An additional benefit of chocolate here, whether for new mums or not, is for 'wasting' or malnutrition, and drinking it is seen to "protect" a woman when "the body is wasting, [it] has nothing, no food"^{xxvi} – the consumption of Cacao as a beverage is reputed to prevent drastic weight loss. This is a very practical consideration in some parts of Guatemala, where inadequate nutrition is a real issue for many people, and becomes especially problematic when breastfeeding, as malnutrition can stop breast milk production. Because Cacao and maize are both dried products, they can be stored for some time, and may therefore be available when fresh produce or meat aren't. In the Mexican state of Morelos, drinking chocolate is also used on its own as a parturient – that is, to help a mother give birth – which makes sense, as a stimulant with some anti-anxiety and pain-relieving properties^{xxvii} could be quite useful!

For most gynaecological applications, Cacao is combined with other medicinal plants, some indigenous to the Americas, and some of Mediterranean or Middle Eastern provenance – many of which, after five centuries of cultural ferment, have been naturalized and fully incorporated into the Central American pharmacopoeia. While chocolate on its own may help a woman through labour, the addition of rue (*Ruta chalapensis*) creates a more active, contraction-enhancing brew to accelerate the birth; basil (*Ocimum basilicum*) and feverfew (*Tanacetum parthenium*) – all three are Old World plants - may also be added to enhance the effect. For a really potent accelerant, drinking chocolate is made with an infusion of the native herb known as zapoatl (*Montanoa tomentosa*) and a little cinnamon, or, alternatively, the chocolate may be spiked with *tlatlascametl* (*Montanoa frutescens*) and allspice (*Pimenta dioica*): these concoctions allegedly induce such rapid contractions that "no injection is required".^{xxviii} Intriguingly, chocolate is also infused with rue to *prevent* abortion, administered as a one-off dose to stop premature contractions, unless the bleeding is very heavy, in which case stronger medicine is required. But high doses

of rue have been used as an abortifacient – a remedy to *cause* abortion – in both the Old and New worlds, and in fact chocolate made with rue, lemon juice and cinnamon is a remedy to induce contractions and abort a foetus.^{xxxix} So the effects of the chocolate/rue combination appear to be very context-dependent!

Other chocolate-based remedies to assist lactation include an *atole* made with Cacao, maize, oats and peanuts – a slightly ‘beefed up’ version of standard *pinole*, in other words; but, rather more intriguingly, the froth from chocolate made with an infusion of Rue is to be regularly applied to the shoulders as well. So the idea for the internal use of rue’d-up chocolate seems to be that the chocolate itself is used as a general tonic and restorative – as well as a flavour-disguiser and vehicle for more bitter herbs – while rue, being a significantly Warming herb, can give a little extra Heat to a womb which is too Cold to hold on to a baby (as cramps were seen as a Cold symptom); but it could also be used to give more Heat to a womb which needs the energy to keep contracting, or even to over-Heat a perfectly well-functioning womb, and induce premature labour, or abortion! The reasoning behind the external application of rue-chocolate foam is a little more mysterious, but as Cacao is generally associated with female fertility, and Rue is perceived as a circulation-enhancing remedy with a reputation as a ‘holy’ herb, the rationale for the prescription could be magical and symbolic, or empirical, or some combination of the two.

In Cuba, raw *forastero* Cacao beans are mashed into alcohol or gasoline together with chilli and ginger – two notably Hot plants - and applied to arthritic joints.^{xxx} This is the only recorded instance of Cacao being used to treat arthritis, so the seeds may be present to help buffer or activate the other ingredients in this fiery liniment. The use of ethanol or petrol as a vehicle is understandable from the perspective of herbal pharmacy, as these solvents would extract many of the fat-soluble compounds with pain-relieving and anti-inflammatory properties in chillies and ginger, while drawing out much of the water (and, therefore, all of the water-soluble compounds) from the fresh plant material too. They would also dissolve the high quantity of fat in the Cacao seeds [see next chapter], which may protect the skin from the worst damage caused by applying neat ethanol or gasoline. But even the harshness of petrol or ethanol themselves could be useful in arthritis, creating what’s called ‘counter-irritation’ – artificially induced superficial tissue inflammation which may help to alleviate deeper pain in the joints, as in the rather robust ancient European prescription to relieve arthritic pain by whipping inflamed joints with fresh nettles. But the use of Cooling purple *forastero* beans in this prescription is interesting; perhaps the high antioxidant polyphenol content of the seeds may add anti-inflammatory properties of their own, or perhaps they are added to balance the extremely Heating nature of the other ingredients.

Cocoa butter is used both internally and externally. In San Antonio Suchitequepez, western Guatemala, it’s used in the treatment of stomach ‘infections’ or the folk disease called *empacho*, characterised by generalised gastrointestinal distress accompanied by nausea, diarrhoea or vomiting. After a two-day water fast, three tablespoons of liquid cocoa butter are administered with manna tablets (made from the desiccated sap of the manna ash, *Fraxinus ornus*, which contains the laxative sugar named mannitol) and half a cupful of olive oil, to promote a full bowel movement; a third of this dosage is used to treat children.^{xxxix} This quantity of liquid fat taken on a completely empty stomach in conjunction with a mild laxative (manna) would certainly stimulate digestion and cause the bowels to empty, which – following a fast to allow any gut trouble to subside, by giving the body an opportunity to ‘clean house’ – may well prove effective at clearing up temporary gut disturbances. Small quantities of liquid cocoa butter are also taken as a soothing cough medicine. Cocoa butter may be massaged into the scalp as a kind of ‘hair gel’, and is recommended as a good remedy for treating smelly hair.^{xxxii}

Another important use of cocoa butter is as a massage oil, specifically in the hands of a skilled midwife, to turn a baby: when a baby is in breach position, with its feet rather than its head pointing towards the exit, a traditional midwife can diagnose the problem by manual palpation. Once the baby's position has been determined, she greases the woman's belly with cocoa butter and uses deep abdominal manipulation to turn the baby around^{xxxiii} - an impressive procedure, demonstrating skills unknown to conventional medicine. These skills are passed down through generations of midwives in Latin America and must be taught directly – so don't try this at home! For all these uses, the cocoa butter must be in liquid form – and, given that it only stays liquid at temperatures above 25°C, this is only practicable at tropical latitudes.

Some *curanderos* (healers) use *Theobroma cacao* leaves externally, and for a wide variety of problems. *Curandero* Don Antonio Xoc' of Ya'al Pemech, Alta Verapaz, recommends bathing children who "cry too much, and begin to lose their hair" in water infused with Cacao leaves.^{xxxiv} *Curandero* Santiago A'echis of Lanquin, Peten, makes a plaster from ten fresh leaves to be applied to the head every evening to treat chronic headaches, and prescribes a bath made from an infusion of dried leaves to cure dogs of mangy skin problems.^{xxxv} More generally, the fresh leaves may be pulped and applied to cuts and abrasions in Central and South America, as antiseptic remedies and to stop minor bleeding.^{xxxvi} Internal uses of Cacao leaves include a water infusion (what we call a 'tea'), taken as a "heart tonic" and diuretic in Colombia, and the tisane is given to "listless" children in Cuna, Panama.^{xxxvii} Unsweetened Cacao leaf tea is also taken as a remedy for type 2 (adult onset) diabetes in Guatemala.^{xxxviii}

Señor A'echis also recommends a decoction of Cacao leaves in a much lower dose of one cup for three successive days to treat "stomach pain" and loss of appetite.^{xxxix} (A 'decoction' is apothecary-speak for 'boiled in water', usually for a few minutes or a specified amount of time). Likewise, Don Xoc' uses Cacao leaves for digestive issues, recommending a cold water infusion made from "a handful" of fresh young Cacao leaf tips, bruised and squeezed so that their juice is expressed into the liquid, then taken with the juice of a whole lemon against persistent "heartburn" (reflux) – although this recipe is used for digestive issues accompanied by heart pain, so it's possible that it may also be for treating angina: heartburn and actual heart pain can be surprisingly hard to tell apart, as emergency room medical staff will attest. Don Xoc's regimen requires that two glasses of this lemon-fresh infusion be taken twice daily, for three days, and repeated if necessary.^{xl} Meanwhile *Curandero* Diego of San Antonio Suchitequepez has completely different uses for Cacao: he recommends a decoction made with five Cacao leaves boiled in half a litre of water for ten minutes, to be divided into three doses, drunk once every six hours, to reduce heavy menstrual flow and period pain. He also favours a very specific prescription for treating "weak vision", made by harvesting only the third pair of leaves on three branches, counting backwards from the growing tips – three being a number with magical significance. This gives a total of six leaves, to be sun-dried for two days, pulverised, and boiled in a litre of water, which is divided into several doses, with eight hours between doses (approximately twice a day).^{xli}

Curandero Diego also uses Cacao flowers to treat urinary tract infections such as cystitis, especially when such problems are chronic and resistant to other forms of treatment. Once more, the number of flowers used was ritually specific: eighteen fresh white Cacao flowers were to be infused in twelve ounces (355ml) hot water for six minutes – so the symbolism of this formula relates to the number six (eighteen flowers, twelve ounces, six minutes). The infusion is made in the manner of a *tisane*, appropriate to delicate flowers: they aren't decocted - boiling water is poured onto them and they are allowed to steep.^{xlii} (The other details of this prescription, such as how many times this is to be taken, and for how long, are missing

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5. Chocolate, love, and bondage (Part I)

Madam Pomfrey: “Well, he should have some chocolate, at the very least!”

Harry: “I’ve already had some. Professor Lupin gave me some.”

Madam Pomfrey: “Did he, now? So we’ve finally got a Defence Against the Dark Arts teacher who knows his remedies?”

(from *Harry Potter and the Prisoner of Azkaban*: Copyright © J. K. Rowling, 1999)

“People have often asked me whether what I know about love has spoiled it for me. And I just say, ‘Hardly.’ You can know every single ingredient in a piece of chocolate cake, and then when you sit down and eat that cake, you can still feel that joy.”

(Dr Helen Fisher, anthropologist and researcher into the neurobiology of love)

Chocolate is *the* classic food substitute for love in contemporary consciousness. A home remedy for heartache and loneliness, its roles in popular culture range from gifting Valentine’s day chocolates as a token of affection or desire, to a pleasant indulgence, a guilty pleasure, or an unhealthy compulsion. But how much is this public perception of chocolate reflected in the pharmacology of the Cacao bean itself, and how much is poetic license? Does Cacao really have any effects on the brain and mood above placebo, or any different from tea or coffee? Is chocolate inherently addictive - is ‘chocoholism’ a product of social or psychological complexes, an imaginary condition, or something else? To what extent do traditional non-confectionery chocolate drinks possess similar properties and attributes to our familiar ‘candy bar’ chocolate? And if chocolate *is* a psychoactive drug, with medicinal properties... could it also be harmful?

In this chapter we depart from the solid science of chapter four and set sail for the shores of a new world of scientific investigation into chocolate. We will look at the pharmacology of Cacao on a deeper level, gathering and connecting historical information, anecdotal experience and research evidence from various disciplines to construct more theories about Cacao’s effects on the human brain, social interactions, and society as a whole. As these patterns arise, new therapeutic uses for chocolate and Cacao will be proposed, all of which should provide a rich seam of possibilities for future exploration and experiment.

Chocolate, mind, and mood

For the most part, we are aware of only the grossest changes in our consciousness, because we constantly undergo shifts in mood and perception; we are all habituated to living in our own fluctuating mental landscapes. Some of these perceptual changes originate from within ourselves, in response to external events, such as the hormonal and neuronal cascades induced by angry shouting, or a flirtatious

exchange. Others are influenced by external agents, such as drink, drugs, or food. We inhabit an ocean of sensory stimuli conveyed and transacted by constant pharmacological activity in our bodies. The brain and central nervous system are the internal hub of all these interactions, the chief processing unit of perception and response, but in fact the molecular conversations which effect consciousness occur throughout the body, not just in the 'central computer' region of our anatomy. Psychoneuroendocrinology [PNEI] is the name given to the science of defining these interactions. It's the discipline of pulling threads from the five-dimensional living Persian rugs of our biochemistry and tracing their paths as individual molecular relays that weave through our cellular biology, influencing our feelings, thoughts, and behaviour.

Perhaps only Buddhist monks, shamans, mystics, prophets, yogis, or psychonauts² whose minds have been temporarily jemmied open by trance techniques or entheogenic drugs are more fully aware of the constant perceptual adjustments which comprise our daily lives - people who by one means or another become attuned by waking exposure to the outer (or inner) limits of human consciousness. For most of us, only the least subtle and most obvious inner shifts are noticed: the perspective-altering consequences of being extremely tired, drunk, sexually aroused, or the effects of people we love or dislike on our mood. Subtler influences, such as that of different types of food upon our temperament and bodily functions, or regular social interactions, may only become apparent with time and contemplation. Many pass by our notice completely, being the bedrock of our awareness which could only be remarked by their absence, like removing a colour from a picture, or a letter from the alphabet. We mostly discern the forms and feelings of our experiences, not the ground upon which they are based.

Any 'drug', therefore, is only a chemical product (or complex of chemicals, in the case of a medicinal plant) falling into the camp of external agents affecting our biochemistry in a more noticeable fashion. Relatively speaking, drugs are blunt instruments, fast-tracking physiological responses on a much grander scale than would otherwise usually occur. Psychoactive drugs are those which particularly affect our perceptions. It's arguable that all drugs affect our perceptions in the end, even non-psychoactive medicinal ones, because one thing leads to another. In other words, the consequence of any physical change may be a mental one, and vice versa. A drug which relieves constipation or lowers fever will by default also affect our mental state, both directly (as our symptoms change, so does our mood) and indirectly (emptying the bowel causes subtle changes in what is re-absorbed from the colon, some components of which may have mood-altering effects; lowering body temperature is accompanied by changes in the circulation, including the circulation to the brain.) Body and mind are one unit – that we live with this fact every day means we sometimes overlook its profundity.

The Mexica, as we have seen, used potable formulations of Cacao to reduce fear and timidity, for which purpose it was provided to their warriors to drink on campaigns, and to captives before they were sacrificed to the gods.^{xliii} This historical use of chocolate to increase courage is mirrored in modern-day South American Santeria (a religion similar to Haitian Vodoun or 'voodoo' as it's known in popular culture), where Cacao beans are used ritually "to remove fear"^{xliv}, and even in pop culture: in the Harry Potter books, chocolate is the best remedy for the after-effects of a Dementor attack. Chocolate is most definitely a psychoactive drug, though in latter years its effects in this category have been relegated by mainstream science to those of a caffeine-based stimulant, and a fairly weak one at that. Its devotees would dispute this on the basis of our perceptions and experiences: no other food or stimulant adequately

² The usual term is *psychonaut*, but I follow my fellow herbalists Karen Lawton and Fiona Heckels of Sensory Solutions in preferring the more accurate and less implicitly pejorative term 'psychonaut'. *Psyche*, meaning 'mind', originates from the Greek word *psukhē*, meaning 'soul'; and the suffix *-naut* comes from the Greek *nautes*, meaning sailor. Although the word *psycho* was originally synonymous with *psyche*, it's now the title of a Hitchcock film about a homicidal maniac.

replaces chocolate. What seems utterly apparent to consumers of traditional toasted, hand-ground Cacao drinks or even the 'chocoholic on the street' addicted to the bittersweet dark brown stuff is that the particular mood alteration experienced following the ingestion of real chocolate can't be attributable to caffeine alone, for the simple reason that neither coffee, tea nor any other caffeine-containing plant seems as desirable as chocolate.

Traditionally prepared drinking chocolate made from the best quality beans may have much greater effects on mood and perception than chocolate candy. Certainly Hernandez classified Mexica *cacahuatl* as psychoactive brews: he likened the effects of *cacahuatl* to the powerfully deliriant plant Jimsonweed (*Datura sp.*), and *Psilocybe* species of mushroom ('magic mushrooms'). What follows is a personal report compiled from subjective 'drug experience' notes written during and after the consumption of a traditional chocolate drink made with 39.5g hand-toasted *criollo* Cacao *fermentado* beans from San Antonio Suchitequepez in the old Soconusco region in Guatemala, with approximately 0.5g mixed traditional Mesoamerican spices per serving (*Vanilla planifolia*, *Capsicum frutescens*, *Quararibea funebris*, *Pimenta dioica*, *Magnolia mexicana*).

First, the beans were ground on the *metate*, then the spices were pulverised in a mortar and pestle and incorporated into the cocoa mass, which was re-ground on the *metate*, then allowed to set in the form of chocolate discs. The solid chocolate was refrigerated for around four months in this form before being made into a beverage with the addition of 10ml maple syrup (a concession to my sweet-addicted contemporary palate) and 55ml hot water, well frothed with a molinillo and consumed at around 9pm in the evening, two to three hours after eating a light meal, whilst home alone. I wrote down the following impressions:

"an almost immediate sense of pleasure and anticipation from the bitter-sour, rich and slightly sweet taste of the drink. An amplification of feelings of pleasure and comfort in my own skin, first appreciated at 30 minutes and peaking at 2 hours after ingestion [*note*: these times correspond to the peak plasma levels of caffeine and theobromine respectively following chocolate ingestion in pharmacokinetic trials.] There is small but intense literally heart-felt joy, similar to but much less strong than that felt with MDMA, with a paradoxical undertone of bittersweet sadness akin to nostalgia, like that produced by daydreaming of a past romance or indulging in a happy childhood memory. Also on looking into a mirror or thinking about life I perceive myself as more attractive, relationships are considered in a more positive light, and life overall seems more full of potential than before. This subtle euphoria lasts around 4-5 hours with a gradual dissipation, but I am aware of an elevated mood for the rest of the night until I go to bed at around 4am. But the following day, after 6 hours' sleep, I am less motivated to work, and feel a little 'flat'.

When the dose is repeated on the second day, the effects are similar, but with less euphoria. I have previously noted that the effect of a high-quality chocolate drink after a week of daily use, apart from the not inconsiderable pleasure of its consumption, appears to lack the marked comforting, euphoriant and confidence-enhancing effects initially perceived, and may even enhance a feeling of sadness or hollowness felt in the heart region. It seems from my own experimentation that a gap of 1-3 days may be necessary between 'doses' of strong drinking chocolate to fully conserve its unique mood-altering effects, preferably – for maximal effect - abstaining from other sources of caffeine in between.

These unique effects of real chocolate drinks, at least in myself, are reminiscent in some respects of a low dose of MDMA, and are only produced by 40g or so of the best quality Cacao

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Lust for chocolate

Nitric Oxide also has other important functions in the brain chemistry of Love. When administered directly to cells in the amygdala, the limbic system's 'emotional response drive', NO facilitates conditioned sexual arousal. This means that NO is one of the brain's main signals for learned or habitual pleasure responses. It works like this: the amygdala may have its switches tripped by the brain chemicals of excitement, desire or relaxation – noradrenaline, dopamine, or serotonin - giving rise to sexual arousal. This arousal triggers the release of NO from neurons in the amygdala, which cause recall of sensations from previous sexual encounters. So NO is the messenger for powerful sense-memories in sex, which develops and ingrains what we find pleasurable and arousing (in this case, NO could be spelt Y-E-S). So Cacao may facilitate or enhance a state of arousal and Lust.

The sex steroids ('hormones') produced by the gonads, such as testosterone and oestrogen, also influence brain development in the womb, during childhood and throughout adolescence. Changes in the brain's neural wiring that hormones effect during growth and development are likely to alter adult behavioural predispositions in the three modes of 'love' (Lust, Infatuation and Bonding). Among many other actions, gonadal hormones affect the distribution and density of receptors in the brain for oxytocin and its 'partner hormone', *vasopressin*. Physically, vasopressin helps to retain water and raise blood pressure, but behaviourally – in the brain - it works alongside oxytocin to enhance social behaviours and attachments while reducing anxiety; but, unlike oxytocin, vasopressin tends to increase territoriality and may also increase aggression, particularly in males. As we've seen, Cacao may modulate oxytocin and vasopressin release via its effects on anandamide, serotonin, NO, dopamine and endorphin receptors – so, hypothetically, Cacao taken during pregnancy may re-wire the developing brain by changing its sensitivity to these neurohormones.

This web of chemical interactions gets very complicated. In short, a lot of the brain chemicals which may be influenced by Cacao and chocolate appear to be intimately involved in the control of areas of the brain which govern our sexual behaviours. Essentially, as anyone alive who has been in relationships can testify, there aren't three neat categories of Love. Lust, Infatuation and Bonding are convenient labels, grouping certain behavioural responses and hormone-neurotransmitter cascades for the sake of dissecting a phenomenon which constantly crosses boundaries. Ask Romeo and Juliet. (They were Infatuated).

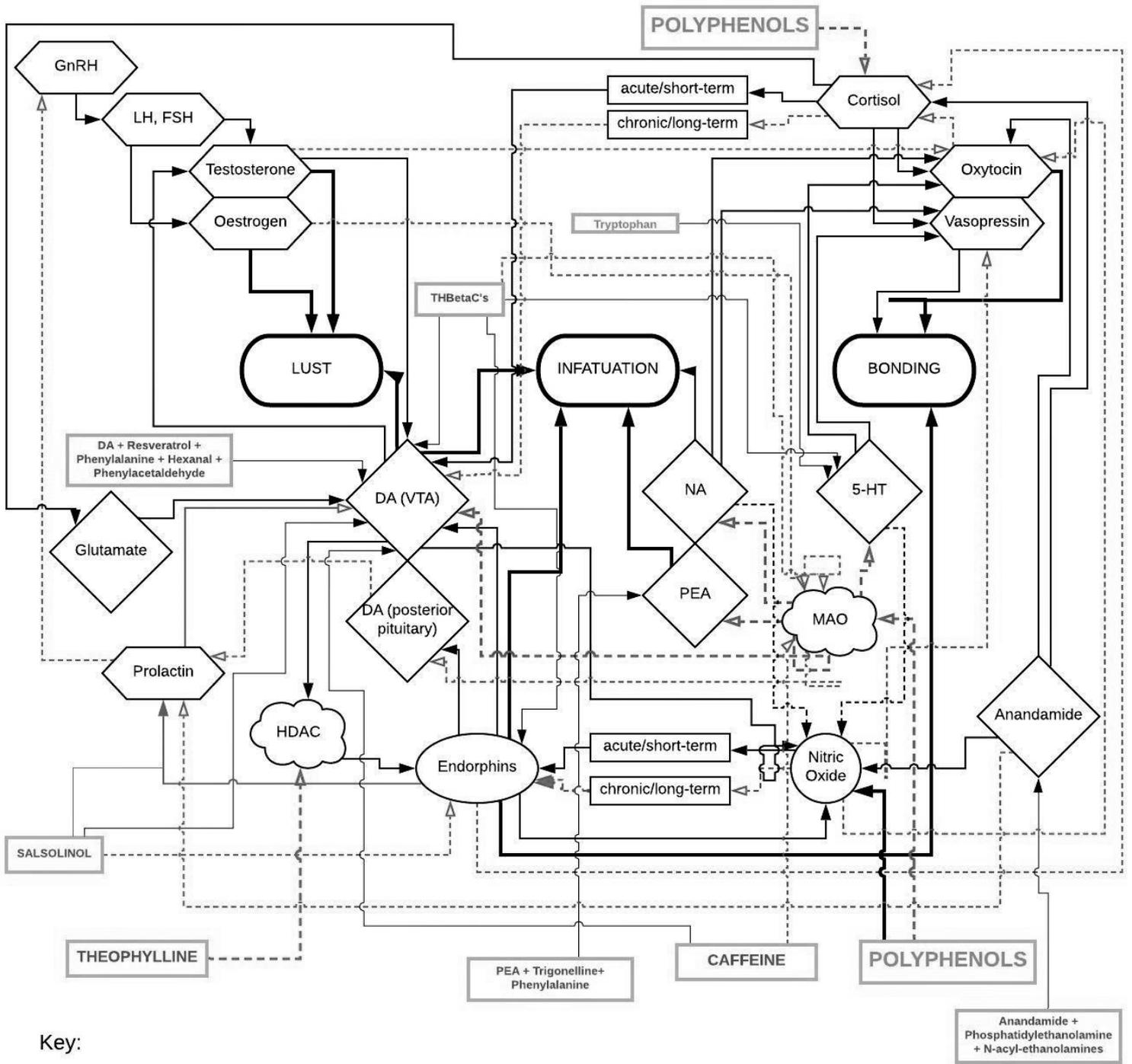


Fig. 2: A map of known neuro-hormonal influences on Lust, Infatuation and Bonding, and the hypothetical influence of Cacao's phytochemicals on these categories of 'Love'. [Constructed at www.lucidchart.com]

Chocolate for a better personality (Part 2)

Higher pre-natal levels of the 'stress steroid' cortisol are also linked to altered behaviour patterns and sexual behaviours in adult offspring^{xiv}, tending to decrease Bonding and increase aggressive or avoidant behaviours. Counter-intuitively, cortisol enhances oxytocin release, which we would expect to have a calming, pro-social effect, particularly because oxytocin suppresses cortisol release in a negative feedback loop. But it may be that without enough hugs and friendly human contact, we don't produce enough oxytocin to shut down the cortisol. So, given the self-replicating nature of good (well-Bonded, attentive and caring) or bad (poorly-Bonded, abandoning or unstable) nurturing, and the long-lasting effects of how happy, safe and cared for we feel during our formative years, even from *within the womb*, these findings have far-reaching ramifications for adult social interactions, relationships, and even the function of society as a whole.

In other words, hormones in the pregnant mother's blood and in one's own system during childhood have profound effects, as does the nature of the bond between parents and children. Thus a low-stress childhood environment with securely bonded child-parent relationships would increase the child's baseline β -endorphin levels and μ -opioid receptor stimulation in the brain, and lower their cortisol levels. These chemical changes would positively influence the way those children experience relationships during adulthood; and the reverse, a stressful childhood with a low-opiate, high-cortisol neuro-hormonal profile, tends to produce adults with more insecure attachments. So a pregnant mother-to-be involved in an unhappy sexual relationship will have an entirely different neurochemical profile from a new mum in a stable but relatively asexual relationship, and chemical differences in these mothers' systems will influence their offspring's 'brain wiring' even from before birth, as hormonal changes in the mother's bloodstream influence the unborn child's brain development.

We know that Cacao, taken regularly, lowers levels of cortisol and adrenaline in adult humans, and that Cacao contains compounds which modulate the brain's sensitivity to endorphins, and some compounds that bind to μ -opioid receptors. And we know that Cacao was traditionally prescribed as a 'galactagogue' or milk-promoting agent during breastfeeding, and that through its content of salsolinol Cacao may – possibly - affect prolactin release. We may speculate that Cacao's content of 'buffered anandamide' may be sufficient – if mum drank or ate enough chocolate - to reduce the territoriality-promoting hormone vasopressin during infancy. We also have a batch of pre-natally chocolate-marinated Italian babies who appear to be happier than their chocolate-naïve gestational cohorts. So there is some foundational evidence that chocolate or Cacao ingested during pregnancy and breastfeeding may modify hormonal influences on personality development, and perhaps even adult sexual behaviour and pair bonding, although this speculation is yet to be investigated.

But even if regular Cacao intake is found not to affect oxytocin, μ -opioid receptor binding, prolactin and vasopressin in living humans, or not to modify other neuro-hormonal developmental influences after all, its scientifically validated properties of lowering blood levels of cortisol, modulating serotonin metabolism and increasing NO levels in the brain strongly suggest that Cacao could alter developmental factors which influence adult personality. These effects may provide retrospectively rational, non-religious reasons for the Mexica taboo on women and children consuming chocolate. Aztec society was predicated on aggressive imperialist expansion fuelled by the powerful deific magic of human sacrifice. A perk for men in the warrior and merchant classes - in exchange for regularly putting themselves in mortal danger - was permission to drink *cacahuatl*. Cacao beans were universally available as common currency, but preparing and consuming them as beverages was legally restricted to the emperor, and male members of

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Toast the Cacao, and shell the beans. Crush the *mamey sapote* seeds and toast on the *comal*; cut up the vanilla pods into small segments. Lightly toast the *muc'*, then grind the toasted *muc'*, *mamey*, and vanilla to a paste, and set aside.

Grind half the Cacao beans to a coarse, gritty consistency, and set aside. Grind the rest of the Cacao to a smooth paste, then add the ground-up *mamey-muc'*-vanilla paste, and the *achiote* paste (if using), and re-grind. Mix the smooth, aromatic cocoa liquor with the coarsely ground Cacao to produce a gritty paste, and mould or pour into small blocks or roundels on greaseproof paper to cool. Store wrapped in greaseproof paper in airtight, odour-proof containers in a cool dry place or in the refrigerator.

To make the drink, take a teaspoonful or two of the paste (or melt pieces of the solid tablets to make a paste) and add to a medium-sized bowl or calabash (breakfast cereal-size). Add a little warm water – must be warm enough to melt cocoa butter, so think ‘blood heat’ – about a mugful. Stir with the hand until the paste is melted, then continue to beat gently with the hand until cocoa butter or globules of white fat start to separate and appear on top of the liquid. This manual method is also used to separate cocoa butter, and was described to me by Señora Aurelia Pop in San Luís, Peten, Guatemala; she attempted to demonstrate it using room-temperature water. But she used cold water, and the weather was unusually cool that day (around 17°C / 63°F), so the cocoa butter failed to materialise; it’s important to make sure that the water is sufficiently warm. Once the paste is well mixed into the water and the fats have separated on top, the *batido* is ready to drink. Popenoe says “after drinking the liquid, the coarse fragments of Cacao which remain in the bottom of the *guacal* [calabash, or bowl] are tossed into the mouth and eaten...it is a murky, slightly oily liquid having a strong flavour...occasionally it is sweetened with cane sugar.”^{xlvi}

Back to the Old School

The pre-Colombian Mesoamericans were masters of Cacao-based drinks; the *atoles* above preserve only a handful of their techniques and ingredients. Bernardino de Sahagún listed a few of the Mexica Cacao preparations in the 16th century ‘Florentine Codex’^{xlvii}:

- “blue-green, made of tender Cacao”;
- Chocolate made with wild honey;
- Chocolate made with ‘flowers’;
- Chocolate made with ‘blue-green’ Vanilla;
- Chilli-red chocolate;
- Pink chocolate;
- Black chocolate, and
- White Chocolate.

It’s anyone’s guess what some of these are. “Blue-green” (i.e. turquoise) doesn’t mean literally blue-green, though – it’s a Mexica metaphor meaning ‘highest quality’, this being the colour of valuable jade or quetzal feathers. ‘Black chocolate’ may simply be a plain Cacao beverage, and the ‘chocolate’ made with wild honey, Vanilla or flowers will likely follow the basic procedure outlined below, being sweetened with honey or made with added Vanilla or other floral enhancements such as *Rosita de Cacao* or Ear Flower. ‘Chilli-red chocolate’ is likely made with chilli and *achiote* to give it a bright red colour. But pink or white chocolate are a mystery; for Westerners, ‘white chocolate’ may conjure up images of some

sort of sweet, creamy drink, like the candy, but the Mexica had neither dairy nor refined sugar. It may have been a fermented drink made from Cacao fruit pulp, or even a sort of unfermented pre-Hispanic *refresco*, produced by mixing the pale fruit pulp in water; or perhaps it was an off-white beverage, made with *cacao blanco*, although a drink made entirely from these fermented *pataxtle* seeds would taste chalky and strange. Or maybe it was a filtered white corn *atole*, topped with Cacao-flavoured foam, like modern-day *chocolate atole*. Or perhaps it wasn't even white, and the name was metaphorical - maybe it referred to the white mould that grows on re-fermented Cacao, as in Diana Kennedy's *Popo* recipe above. Perhaps 'pink chocolate' was a white beverage, tinted with a little *achiote* or some chilli, giving it a pink hue.

When interviewing Señora Lopreto and her daughter, manufacturers of *panecito* and *pinole* from Suchitequepez in Guatemala, mention was made of an *atole* they called *pusum* or possibly *atole de ceniza* ('*atole* of ash'), made with whole immature Cacao pods. I went looking for this *atole*, but when I found someone who knew what it was, the recipe they gave me was rather different – a much more standard combination of toasted Cacao, toasted *pataxtle* and corn, made into a foamy drink.^{xlviii} (I didn't recount this recipe in the previous section as my informant wasn't able to give enough detail about quantities, and I didn't have enough time in the town to pursue it – if this book runs to a second edition, then, perhaps). I'm still intrigued by the idea of an *atole* made with stone-ground immature Cacao pods, as that may be behind the reference to 'blue-green, tender' Cacao in Sahagún's list of Mexica Cacao-based beverages; such a drink would certainly be expensive, as it would use up entire pods like other recipes used up seeds! On the other hand, the only other reference to a drink made from 'green Cacao' in the codex is where Sahagún states that drinking too much of it "makes one drunk",^{xlix} so it may refer to an alcoholic beverage made from fermented and slightly caffeinated Cacao fruit (see Chapter 2).

A consistent feature of the surviving recipes for the highest quality pre-Colombian Cacao-based beverages is that foam was raised separately or set aside, and replaced on the finished beverage. Plain Cacao and water in the correct ratio can be frothed, and does produce a moderately stable foam, but a huge head of detachable bubbles imputes the use of foaming agents. Several contemporary *atole* formulas given earlier in this chapter include several such additives, so I've adapted these recipes using traditional ingredients to model possible procedures for making *kakawa* or *tlaquetzalli cacahuatl*. From Sahagún's accounts, water was "added sparingly" to ground Cacao – most likely little by little, and mixed in at each stage to emulsify it, much as *Tejate* is made. Then the liquid was filtered, aerated and poured "back and forth to make foam", following which the head was removed and set aside. The remaining liquid was "thickened", and more water was stirred in, before being served and topped with the foam.^l

So, putting Hernandez' instructions together with processes used in making contemporary foaming *atoles*, one procedure [Template 1] for reconstructing the classiest ancient Cacao-based beverages might be:

1. Two batches of Cacao are prepared (toasted, shelled, and ground on the *metate*): one is plain, or made with the addition of whichever spices are required to make the body of the drink; this batch (A) is set aside.
2. The other batch (B) to be used for making the foam is ground with spices and foaming agents, so that they are fully incorporated into a paste, to which water is added.
3. This liquid can then be filtered through a fine sieve or even squeezed through muslin or linen cloth in the manner of *popo*, or simply well mixed and allowed to sit and infuse for a while. This liquid is then frothed to produce the foam.^{li}
4. Hot or tepid water is then incrementally mixed and stirred into the first batch (A), sweetening if desired. This is then frothed, and poured into individual gourd-cups or *jicaras*.

5. Finally, the voluminous froth from (B) is scooped out and dispensed on top of the individual servings of (A).

This method of keeping the two preparations separate – the body of the drink and the foam – is borrowed from the way that contemporary *chocolate atole*, *chaw popox* and *bu'pu* are served, with a separate *atole* and foam topper. While it doesn't strictly follow the historical procedure outlined above, making the foam-producing portion of the drink separately allows us to incorporate more foam-facilitating additives so that foam may be generated more easily; and, using this two-batch process, we can create drinks with a cool head of foam and a hot body of liquid, or vice versa, as well as being able to serve the liquid and foam portions of the drinks more easily and evenly than if the drink is mixed in one vessel. Moreover, both batches can be set as tablets and stored separately, which is much more suitable for drinks using *cacao blanco* as a foaming agent, as larger volumes of these seeds are required (a 1:2 or 2:3 ratio of *cacao blanco* : Cacao), so it makes sense to make the foaming part of the drink separate from the non-foamy body of the drink. The only drawback of this method is that when using fresh plant material such as *n'ched* (*Gonolobus barbatus*), *chupipe* (*Gonolobus niger*) or *cocolmeca* (*Smilax aristolochiifolia*) for the foaming agents in batch (B), the resulting foam-making paste must be frozen in order to keep it for anything more than a few days. But, for traditionalists, a more purist, one-batch approach [Template 2] might be:

1. Grind the toasted and shelled Cacao once, then re-grind with the spices and foaming agents to create a smooth liquid or paste.
2. Place or pour some of this into a jar or jug and add hot or tepid water little by little to produce an emulsion, mixing thoroughly every time water is added.
3. This liquid can then be filtered through a fine sieve or even squeezed through a muslin or linen cloth in the manner of *popo*. The filtered liquid is then frothed (with a *molinillo*, or by pouring back and forth from a height) to produce a head of foam.^{lii}
4. The foam is skimmed off and placed in a separate bowl or high-sided jar, while the body of the drink may be thinned with the addition of more water, or thickened with the addition of more Cacao, and mixed again.
5. Pour the body of the drink in a thin continuous stream from on high into the middle of the foam. The final product should be a vessel filled with liquid, with a tall foam topper.

1. Basic drinks

These recipes are adapted from Hernandez' accounts of Mexica Cacao-based drinks. The descriptions are sketchy, lacking precise quantities or clear instructions, so I've replicated the original quantities as far as possible and filled in the blanks with educated guesswork where necessary.

i) Atextli

This is a pre-Hispanic *atole* recipe with a much higher Cacao-to-maize ratio than later *atoles*. Like contemporary *tiste* or *panecito*, it appears to rely solely on only Cacao's fats and emulsifiers in combination with maize starch to produce a foam, but contains too much fat to produce a dry powder, making a sticky and highly aromatic dough. It also utilises the three most popular Mexica Cacao spices, which Hernandez claimed would "increase lust and excitation" when combined with Cacao, whereas plain Cacao "refrigerates"; he declared that this recipe "combats all poisons, and alleviates intestinal pains and colics".^{liii} Hyperbole, but with a grain of truth: the spices may be carminative, and as we saw in Chapter 4,

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Venerable chocolate

Chocolate is a balm for life's slings and arrows; along the way, it's become symbolically associated with love, sex, romance, and the things of Venus' domain. Chocolates are a Valentine's day gift, paired with roses; chocolates are a guilty snack, or a compulsive one; chocolate is synonymous with comfort, pleasure, and solace, as well as a Puritan awareness of the dangers of the primrose path – 'moderation' is the keyword. Rubens' Venus would have disagreed: she advertises a capitalist's approach to expansion. Here, in a consumerist economy, chocolate is a growth industry – it's big business. And Big Chocolate employs more slaves than the Mesoamerican Cacao-lords ever did. Like the Mexica and their steady supply of Cacao and captives for heart-sacrifice being cultivated or culled from remote regions by the *pochteca* and the armed forces, vassals and serfs in distant lands labour to supply today's lucrative chocolate and beauty industries with their raw materials, often in extreme poverty or joyless indenture.

As recounted in the last chapter, both the midnight sun and the 'wandering star' we call Venus were mythologically linked to Cacao in Mesoamerica. But while Cacao's traditional associations with luxury and celebration were retained when Cacao came to Europe, its folkloric and ceremonial links with death and rebirth, blood sacrifice, and the ancestors were replaced by a reputation as an aphrodisiac. Chocolate became an exotic New World potion that cured melancholy and provoked venery. A dash of sugar, a drop of milk, and by some sleight of hand the Mesoamerican war gods were replaced by the Roman goddess of love and pleasure. Yet the scorpion-tailed and spear-wielding skeleton gods of the Mesoamerican Venus never fully disappeared; Cacao's reputation has always had a darker edge. The voluptuary heathen drug, the disguiser of poisons, the insidious harm of excess - as if, when assuming symbolic ownership of Cacao, Venus surreptitiously appropriated some attributes from her astrological alter ego across the Atlantic. So how did this symbolic shift happen? And what do these transformations imply about the cultures that use Cacao, or the nature of the drug itself?

The death star

A *criollo* Cacao tree can live for between a hundred to one hundred and fifty years^{liv}, or two to three fifty-two-year calendar cycles, two of which (102 years) neatly synchronise the cycles of the moon, sun, and Venus with relation to the earth. Cacao pods have a pentacle-like cross-section, a five-lobed star reminiscent of the pentagram which Venus traces in the night sky over an eight-year period. In contemporary Guatemalan folk medicine, curandero Diego's uses of Cacao leaves and flowers (described in Chapter III) in prescriptions for menstrual and urinary tract issues prompted me to ask him if he used Cacao to treat ailments of the throat, breasts, urinary tract and reproductive system specifically, as these were all body parts affiliated with the planet Venus in Old World medical astrology. He replied "exactly"^{lv} – which may indicate either a coincidental local tradition of using Cacao to treat these parts of the body, or that his classification system has been influenced by Old World astrological thinking. Perhaps Diego or one of his predecessors categorized Cacao as a tree ruled by the Old World Venus, and therefore appropriate for tonifying 'venerable' parts of the anatomy. But this use may be ancient, as it's also congruent with some Mesoamerican personifications of Cacao as a female deity, and its associations with fertility, sexuality and reproduction (see last chapter).

The mythical links between Cacao and several deities were described in Chapter 9. The Mayan Underworld deity God L, the prototype of Ek' Chuah ("Black Scorpion"), was a Venus god^{lvi}, depicted with black face paint and carrying a war shield. In calendar divination, as we've seen, the first appearance of Venus as a morning star in the dry season was used to time the onset of the 'star wars' season, and God L

was calendrically associated with this event.^{lvii} Such wars were intimately linked to the activity of merchants – of which God L and Ek' Chuah were patrons - who not only acted as unofficial spies and recon parties for their polities, but whose trading activity was a secular incentive for military campaigns^{lviii}, because the defeated state had to pay tribute, particularly in the form of Cacao or other valuables.

The Mexica associated the astronomical venus with the serious crime of adultery, and dangerous biting or stinging animals.^{lix} The mural at Cacaxtla described in Chapter 9 depicts a blue-skinned scorpion-tailed venus deity standing between a Cacao tree and a maize plant, and the Mexica associated the evening star venus with their fearsome spear-hurling warrior god Tlahuizcalpantecuhtli, a god of coldness, stone, and punishment; the first appearance of venus as an evening star in the sky promised “stabblings and destruction”, disease, and death.^{lx} In short, there is an almost complete inversion in the Old and New World astro-mythological venus attributes, with New World venus deities depicted as spear-wielding or poison-bearing war gods. Even Quetzalcoatl, the Mexica’s “patron saint of Cacao”, is a post-Classic reinvention of the Classic era Teotihuacan-Mayan *waxak-lahun-ubah-kan*, or feathered serpent of war.^{lxi}

Temples of the post-Classic wind god Ehecatl-Quetzalcoatl in the Yucatan face west, the direction of the evening star venus and the setting sun.^{lxii} A variant of the myth of Quetzalcoatl’s deposition in Tula had a different explanation for his public disgrace: in this account, instead of getting drunk, Quetzalcoatl had sex with Xochiquetzal, the young flower-goddess, who is also, it turns out, the patron of prostitution. Evidently this was a misstep, as he was punished by being burned alive, at which point his heart (his *teyolia*, perhaps) ascended to the celestial realm and appeared in the pre-dawn sky as the morning star.^{lxiii} The more conventional tale of Quetzalcoatl’s self-imposed exile into the east, when he departs into the sea, is also consistent with rebirth as the morning star venus, which rises from the ocean in the east before the sun.^{lxiv} The creation account in the Popol Vuh has their feathered serpent creator-god floating in the primordial sea with “shining and brilliant” feathers before the first dawn – much like the morning star venus emerging from the sea and heralding the sunrise.^{lxv} So Quetzalcoatl, Cacao’s patron deity, was consistently associated with venus in the post-Classic era.

In the K’iche Hero Twins myth, the cycles of death and rebirth of the twins have been interpreted as the phases of venus; the decapitation of Hun Hunahpu the elder and Hunahpu the younger may represent venus’s direct and retrograde conjunctions with the sun. Hun Hunahpu’s head being placed in “a tree in the west” may signify the appearance of venus as an evening star,^{lxvi} an ill omen in Mesoamerican astrology, whereas venus’s morning star appearance signifies the younger twins’ rebirth and emergence from the underworld.^{lxvii} In Mesoamerican lore, venus was sometimes described as an underworld god who “carried the sun on his shoulders” overnight through the underworld,^{lxviii} much as the merchant god Ek' Chuah would have borne his bundle of Cacao beans.

The Yucatec Maya associated venus with the constellation of the Pleiades, which they called *Tzab*, or “the rattlesnake’s rattle”.^{lxix} The Ki’che later referred to the same asterism as the “four hundred boys”, the gods of alcoholic intoxication, who attempted to save the Earth by capturing the giant crocodile Zipacna but were later crushed by him while drunkenly celebrating. The Yucatec Maya referred to the evening star venus as the “fire” of the Pleiades, which they used to time the onset of the coming rains for tending their crops, as for more than a thousand years venus’s appearance as an evening star here heralded the onset of the rainy season. By contrast, venus’s appearance in Scorpio preceded the dry season, and the season of war^{lxx} – perhaps one reason for the depiction of scorpion-tailed venus gods? Coincidentally, the Pleiades are placed in the venus-ruled zodiac sign of Taurus in Old World astrology,

where they signified ambition, wanton behaviour, peacefulness, “success in agriculture ... [with] disgrace and violent death”.^{lxxi}

While such metaphysical overlaps may not infer any links between the Old and New World versions of venus, they do suggest an interesting duality in the nature of Cacao’s mythological links with the astronomical venus. Venus’s appearance as a morning star or preceding the wet season was linked to gain from agriculture, trading, and tribute, in the manner of Ek’ Chuah or the armed *pochteca* who fought for their wealth and status, or Quetzalcoatl’s theft of Cacao from the gods or the Mountain of Sustenance. By contrast, it seems that the evening star or dry-season venus – the Mexica death god, the Mayan scorpion-tailed venus-god at Cacaxtla, or Hun Hunahpu’s severed head in the fork of a tree – was inimical to human happiness, an omen of misfortune, war and pestilence. So it may be that the Mesoamerican venus as a planetary symbol had some affiliation to Cacao, and that Cacao, in turn, embodied some themes which overlap with the European astrological venus such as luxury, value, acquisition and esteem when associated with the morning star, but inverted these meanings when appearing as an evening star. The overall complex of Cacao’s symbolic meanings in Mesoamerica and its associations with planetary deities is most accurately reflected by an Old World version of venus with an additional retributive or acquisitive agenda; in astrological terms, venus with grim saturn, the lord of Karma, or venus ruled by furious mars, perhaps.

So Cacao’s Mesoamerican venus-deities could be heroic benefactors, or harbingers of doom. But it’s in the post-conquest culture clash that we find many of the most interesting seams and abutments in the reshaping of Cacao’s cultural identity. Almost as if *Theobroma cacao*, having found its hosts overrun by an alien tribe whose ideology threatened to literally demonise everything of value in the native culture, including – and perhaps especially – its sacramental currency, seized the opportunity to expand its territory. In a few scant decades, Cacao had been insinuated into the new dominant culture; a new thought-chrysalis was spun from the threads of imported Judaeo-Christian mythology, and the old, heathen “bitter water” emerged transformed, as chocolate: palatable, fashionable, and – as ever – highly desirable.

Post-colonial venus

After the conquest of Mexico, chocolate became especially popular among women and monks in the colonies of New Spain.^{lxxii} This connection is intriguing: perhaps, in an age when women’s freedom to choose sexual partners was often severely curtailed, both groups appreciated the strong, evocative flavour of thick sweetened chocolate for their own reasons. Nothing amplifies sensuality more than its curtailment – hunger is the best sauce, as the saying goes, and chocolate is a classic love-substitute (the possible pharmacological reasons for this were discussed in Chapter 5). This was also an era in which chocolate was made more widely available in the colonies, and as it was sugared, it became more popular, and gained a reputation as a vehicle for women’s sexual witchcraft. This was a spin-off from Cacao-based beverages’ traditional functions as flavour-disguisers and medicaments, often with distinctly magical attributes (see Chapter 3); a few drops of menstrual blood, regarded in European witchcraft as a powerful magical fluid, could be discreetly added to chocolate without any perceptible alteration of flavour, as could other sorcerous ingredients of a botanical or anatomical nature.^{lxxiii}

Chocolate was used as a base for administering potions of seduction, compulsion, and repulsion, or poisons. These potions were sometimes one-off, sometimes repeated prescriptions; a pretext for administering them was easy enough to find, as chocolate was drunk as a daily article of diet, and served to

[missing pages]

Conclusion

“Hearts live by being wounded. Pleasure may turn a heart to stone, riches may make it callous, but sorrow – oh, sorrow cannot break it.”

(Oscar Wilde, *A Woman of No Importance*, 1893.)

Toma chocolate, paga lo que debes.

[Drink your chocolate, pay what you owe].

(Cuban proverb, from Grivetti & Shapiro, 2009.)

Every drug is a doorway. Where it leads depends not only on the drug, but on the disposition of the person receiving it, the context in which it is taken or administered, and the attitudes or intentions of those who control it. This book has told the story of the pre-modern development and use of *Theobroma cacao* seeds as a drug, and built a case from historical, pharmacological, and mythological perspectives that they are entheogenic: a word which ethnopharmacologist Jonathan Ott defined as meaning

“realizing the divine within”, the term used by the ancient Greeks to determine states of poetic or prophetic inspiration, to describe the entheogenic state which can be induced by sacred plant drugs.”^{lxxiv}

It may seem strange to class Cacao alongside powerful mind-altering organisms such as *Psilocybe* mushrooms, *Peyote*, or tropane-alkaloid-containing botanicals such as *Datura* species, but Cacao’s historical uses in ritual and ceremony, the tree’s mythic association with death and rebirth, and the pharmacology of the seeds all suggest that Cacao is a subtle modifier of consciousness and perception. It’s possibly more accurate to call Cacao a proto-entheogen, or an entheogen-enabler, as the evidence presented in Chapter V shows that it may act as a poly-drug potentiator, and an amplifier of intention.

A central hypothesis of this book is that Cacao is a *hedonic modifier*, an *anti-phobic*, stress-modulating agent which facilitates and stabilises positive changes in mood and perception. But as with any psychoactive substance, its widespread consumption may be expected to both reflect and affect the cultures which consume it, and not all those interactions need be for the good. As Dale Pendell wrote in his wonderful chapter on chocolate,

“If we accept the world as a playground, sometimes a battlefield, of poisons [psychoactive substances], history becomes a story of shamanic alliance and conflict, a story of magic spells and their dissolution by new spells. We can say that all governments are in the business of enchantment, to keep the sacrificial victims from rising up and overthrowing those who sacrifice and eat them.”^{lxxv}

Class cannibalism isn’t generally regarded as desirable (unless you’re a Marxist who takes the slogan ‘eat the rich!’ at face value), but it’s possible that Cacao may amplify the desire nature, which in imbalanced persons or societies – those who have a dearth of stable Bonding in their individual or cultural background

– could aggravate habits of destructive consumption. On a personal level, this could just be an increased proclivity to gorge on chocolate-flavoured junk food; but on a societal level, there may be an association with affluenza, an obsession with material possessions. This expansionism may arguably be seen in ancient Mesoamerican societies and our own, although a case may be made that this is simply a sign of cultural dominance and success, with which Cacao has always been associated. The word ‘spoil’ springs to mind: to the victor the spoils, you’re spoiling us with these chocolates, a spoilt child.

But Cacao’s pre-Colombian patrons Quetzalcoatl and K’awil were benefactor-gods, and, similarly, Cacao has been identified with Christ in Central America. Chocolate consumption seems to be predominantly associated with beneficial epidemiological and social outcomes such as significantly reduced risk of heart attack or stroke, more well-adjusted elderly people, and happier babies, so this “spoiling” may be imaginary – or simply displaced onto impoverished workers in distant lands, toiling to grow Cacao for the international market. Just like Cacao’s effect on mood, its interactions with individuals and cultures may be partially state- and intention-dependent: the health-conscious person may benefit from good quality chocolate, but the binge-eater may eat even more if the biscuits are flavoured with cocoa. As the Cadbury family demonstrated, the business of chocolate need not be intemperate or unethical.

It makes sense that K’awil, the Mayan god who gifted Cacao to humankind, was a “god of spiritual force in material objects”^{lxxvi}, because Cacao’s venerated status may have depended on precisely this property: its perceived embodiment of spiritual power, and an ability to enhance processes of self-transformation and manifestation. Metaphysically, Cacao was used to augment magical and ritual action, and to communicate with the ancestors. How different from the sticky-fingered, compulsive consumer of cake, biscuits, truffles, and confections: the palliative “chocolate” of today, the mass-market methadone of a purpose-starved society. Contemporary Cacao is so heavily sugared that the real thing tastes too complex, too bitter, too sour; like mortality, like hard work, like responsibility. But this is slander: surely chocolate’s current identity is a more suitably sweetened persona for a modern age, where “ancestral responsibilities” such as ritual murder and theocratic magic are, thankfully, things of the past?

Cacao still sings its flowery song in the blood of those individuals and societies who consume it, but we live in such a stimulant-saturated world that its heady “intoxication” could almost be missed, even if it weren’t attenuated and transformed and bound to that other magical slave-farming substance, sugar. As it is, we see evidence of its nature in the scientific literature, such as the effects on the heart, the blood. We may perceive its cultural associations, as a “treat” and a pleasure, rarely consumed by those who toil at the base of an economic hierarchy to produce it, where the revenue streams run mostly uphill. Canvassing opinions from its devotees, the self-identified “chocoholics”, we find that it is a guilty pleasure, highly regarded for mood adjustment, yet oddly strongly correlated with depression; consumed by the privileged and well-adjusted, yet regarded as an addiction by the neurotic.

If Cacao had a motto, it would be “every pleasure has its price”. Buy a chocolate bar, indulge yourself, you’re worth it; the slave child starves in Africa, the waistline expands. When one speaks of “the heart’s desire”, Cacao may be used to assuage its absence or, perhaps, to attain it; Cacao mitigates fears and soothes the heart, so the ills of old age and the terrors of death may be staved off and reduced, but the nature of any drug used to palliate existential angst is the danger that the issues underlying the troublesome appetites and anxieties it allays remain unassuaged. Cacao’s nature seems to be truly benign, but if the myths have any truth then the spirit of Cacao will benefit only those who are willing to visit the underworld; as a desirable substance, it speaks to unvoiced emotional, survival-level cravings for appreciation, for safety, for dominance. If our hungers and horrors are unacknowledged, Cacao may assist

[*excerpt ends*]

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