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Money as tool, money as drug: The biological psychology of a strong incentive

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Abstract: Why are people interested in money? Specifically, what could be the biological basis for the extraordinary incentive and reinforcing power of money, which seems to be unique to the human species? We identify two ways in which a commodity which is of no biological significance in itself can become a strong motivator. The first is if it is used as a tool, and by a metaphorical extension this is often applied to money: it is used instrumentally, in order to obtain biologically relevant incentives. However substances can be strong motivators because they imitate the action of natural incentives but do not produce the fitness gains for which those incentives are instinctively sought. The classic examples of this process are psychoactive drugs, but we argue that the drug concept can also be extended metaphorically to provide an account of money motivation. From a review of theoretical and empirical literature about money, we conclude (i) that there are a number of phenomena that cannot be accounted for by a pure Tool Theory of money motivation; (ii) that supplementing it with a Drug Theory enables the anomalous phenomena to be explained; and (iii) that the human instincts that, according to a Drug Theory, money parasitizes include trading (derived from reciprocal altruism) and object play.

Keywords: Economic behaviour; evolutionary psychology; giving; incentive; money; motivation; play; reciprocal altruism

1. Why are people interested in money?

This paper seeks to provide a biological explanation for one of the strongest motivations of humans living in modern societies, the desire to obtain money. We start by establishing some definitions. What do we mean by a “biological explanation”? What do we mean by money? And what do we mean by the motivation to obtain money?

1.1. Biological explanation

By the 1950s, the “grand theories of everything” that had emerged in early twentieth century psychology seemed to have become extinct. But from the publication of Richard Dawkins’ (1976) book *The selfish gene*, the strongly Darwinian approach that has been called, with slightly varying nuances, sociobiology or evolutionary psychology emerged as a new and potentially universal way of addressing the Why questions about human behaviour. If people do something, the sociobiological argument runs, it must be because:

- (a) doing it confers a selective advantage; or
- (b) although doing it does not now confer a selective advantage, it did at some period in our evolutionary past, most likely in the early history of *Homo sapiens*, within the Environment of Evolutionary Adaptation; or
- (c) the tendency to do it is a by-product of some other tendency, which does or did confer such an advantage.

Biological explanation does not imply that human behaviour is “innate”, “hard-wired” or will inevitably take a particular form. Humans are social and cultural animals, and any observed human behaviour is the product of a particular social and cultural environment interacting with human nature: genetically adaptive instincts are always manifested in culturally specified ways. Selective advantage is not an alternative kind of explanation to social and cultural factors, but if an explanation is to be classed as “biological”, selective advantage must be part of it – even if the behaviour currently being explained, in current circumstances, confers no such advantage.

1.2. The nature of money

In talking about money, we mean just that - money itself, money as a distinctive economic institution and its physical embodiments in particular kinds of money stuff. We are investigating the psychology of money, not using it as a metaphor for property and possessions (for which see Rudmin 1991) or economic activity generally (for which see, e.g., Lea, Tarpy & Webley 1987; Webley Burgoyne Lea and Young 2001). It may well be that someone who seeks out money is seeking it out for the sake of what it can buy. Indeed, one of the two theories that we are going to consider in this paper supposes that this is always the case (we will call this the Tool Theory). But the point of our paper is that this is not the only conceivable theory, because although the desire for money is undeniably closely connected to the desire for the things that it can buy, the two are logically distinct and need to be investigated separately. Part, but only part, of that investigation is to establish whether and how the psychology of possessions, and of other human motives, lead to a psychology of money.

Although we are talking about money in a narrow, concrete sense, our notion of money stuff is broad. We include the coins and notes that are at the core of people's concept of money in present-day societies (cf. Snelders, Lea, Webley & Hussein 1992), but also both the so-called "primitive" moneys (Einzig 1966) and more modern ones, such as cheques, credit cards, marks in bank ledgers, and memory states of bank computers. Any substance or medium is within the scope of our discussion if it fulfils or appears to fulfil the three basic functions of money, as a medium of exchange, a unit of account and a store of value (discussed further in Section 3.1 below).

1.3. The motivation to obtain money

By saying that people are motivated to obtain money, we mean that when people live in a culture where money is used, money enters into human behaviour in some of the same ways as commonly recognised motivators such as food or sex. In particular,

(a) money acts as an incentive: if people can perceive or understand that a particular action is likely to lead to them obtaining money, they are more likely to perform that action (though they will not inevitably do so, since there may be constraints from conflicting motivations);

(b) money acts as a reinforcer: actions that in the past led to a person receiving money are more likely to be repeated (though again they will not inevitably be).

We treat these effects of money as "stylised facts". They could be questioned, but in this paper we accept them without further discussion. Our aim is to explain them, by reference to other known human motivations, known features of human nature, or particular features of the socialization of children.

1.4. The problem

Most strong human motivations have two characteristic properties, which make them easy to explain in evolutionary terms:

(a) **Adaptiveness:** They direct people towards, or away from, stimuli of obvious significance for the survival of individuals or the propagation of their genes. This is true not only of motivations, such as hunger and thirst, that are related to individual tissue needs, but also of such motives as the need for social companions, sexual drives, and parental care.

(b) **Darwinian continuity:** They are either exact homologues of motives that exist in all or many related species of animals, or (more commonly) they are obviously derived from such motives. Continuity does not require that human motives should be identical to those of other animals. Humans hunger for a wider and more culturally defined range of foods than other apes (cf. Mennell, Murcott & van Otterloo 1992); human sexual motivations are unusually independent of the biological need to reproduce (e.g. Symons 1979); human curiosity takes us into scientific explorations that are unparalleled by the exploratory motivations shown by many other species (cf. Berlyne 1960); human politics are much more complex than the socially motivated behaviours of, say, chimpanzees (cf. de Waal 1982; 1996). Many of these variations on motivational themes are informed by, and informative about, cultural differences. But we have no difficulty in understanding where these complex human motivations come from,

evolutionarily speaking, and we can speculate in sensible ways about how they have become more complex over the five million years or so since the divergence of the ancestral lines that led to chimpanzees and bonobos on the one hand, and humans on the other.

Most human motives show adaptiveness and Darwinian continuity in an obvious way. It is therefore reasonable to talk about people as displaying a “hunger instinct” or a “sex instinct” or even a “political instinct” – though we must always recognise that the way in which those instincts play out in actual human behaviour is a function of culture and individual experience; they are not instincts in the sense of being inflexible, hardwired micromechanisms. The motivation to acquire money, however, is not directly adaptive, and has no obvious parallels in the behaviour of other animals. Furthermore, it cannot be imagined to result from some evolutionary process that has occurred within the hominid period: money has emerged only within the last 3,000 years or so (Davies, 2002), too short a time for significant genetic adaptation to its existence; besides, individuals born into cultures that have never used money quickly come to use it if they move into a money-using culture. Money, therefore, is a problem for a biological account of human motivation. We cannot reasonably talk about a “money instinct”.

It is possible that there is no biological basis at all for our attraction to money, that it is a pure creation of culture, with no connection to human nature at all. That would make it an exception, perhaps even a unique exception, among strong human motives. We do not consider this “pure cultural” hypothesis directly in this paper, but indirectly it is under test, since our task is to offer the best account we can of the biological origins of the money motive. If that account fails to convince, the pure cultural option would be all that remained. However, we cannot leave culture out of account, because human instincts are always manifested in a cultural context. Much empirical and theoretical work on the human interest in money has been done within the culture-dominated sciences of sociology and anthropology. We will draw on data from these sources throughout the paper, and in particular we will return to those analyses when we come to offer a synthetic account of the money motive (section 5).

1.5. Previous work

Despite the obvious power of the money motive, money has been given little attention by psychologists writing about human motivation. There are no chapters devoted to it in general textbooks such as those of Mook (1987) or Weiner (1992), though extended accounts of specific psychological theories in relation to money can be found (e.g. Bornemann 1976). Conversely, although economics naturally deals with money, it has been so little influenced by evolutionary ideas (at least until fairly recently – cf. Boulding 1981) that economists have not recognized the problematic nature of the money motive. The questions we are interested in have mainly been addressed by writers who have crossed disciplinary boundaries and considered money from an economic but also from a more general point of view: these include economists (e.g. Scitovsky 1976; Maital 1982), but also anthropologists (e.g. Crump 1981), sociologists (e.g. Simmel 1900/1978; Zelizer 1989), cultural historians (e.g. Seaford, 2004) and literary theorists (e.g. Shell 1982), as well as psychologists (e.g. Van Veldhoven 1985; Lea, et al 1987, chapter 12; Furnham & Argyle 1998). However, these sources offer general, comprehensive accounts of the psychology of money. The present paper addresses a single more specific question: is there a biological reason why it is such a powerful incentive? The question necessarily assumes that there is coherent set of behaviours that we can class as human reactions to money as an incentive, and that they have a single explanation. To the extent that we are able to find a biological reason for the strength of the money motive, we will be giving support to that assumption.

2. Tool Theory and Drug Theory

Although money is unusual among powerful human motivators in having no immediate adaptive origins, it is not unique. There are other examples, and between them they furnish two classes of theory that can be applied to the problem of money motivation. We argue that between them these exhaust the possibilities for a biological psychology of that motivation.

2.1. Tool Theory

Frequently, humans' advanced culture and technology provide us with biologically unprecedented means to familiar ends. For example, humans (and only humans) will go to trouble to acquire such modern artefacts as newspapers, radios, or television sets. The incentive value of newspapers is not biologically problematic. They are a means of gaining information about the environment, and most advanced animals can benefit from such information: dogs go to trouble to sniff lampposts, and chaffinches go to trouble to listen to one another's songs. The biological value of information has been formally analysed in studies of group foraging in many species of vertebrate (e.g., Ward & Zahavi 1973; Mesterton-Gibbons & Dugatkin 1999), and operant psychologists have shown that information may function as an effective reward in non-humans (e.g. Hendry 1969b; Catania 1975), though only when it is correlated with a reduction in delay to reward (Case & Fantino, 1981). Similarly, many mammals seek out shelter to spend the inactive period of their daily cycles, and to hide their developing offspring; many manufacture shelters for such purposes; badgers dig setts, beavers build dams, and chimpanzees weave nests. None use bricks, mortar and timber to build themselves houses, but we do not regard human house building as a biologically problematic activity, or the incentive value of building tools and materials as a biologically problematic motivation.

The Tool Theory sees money in the same light. Economists have argued since the earliest days of the discipline that when two people exchange scarce resources, the exchange can increase the wealth of both parties (e.g. Smith, 1776/1908). Money is the most efficient means yet discovered of making such exchanges possible. It is not the only means: among the other examples that have been analysed are the gift-mediated exchanges of Trobriand Islanders (Malinowski 1922), or the bartering systems by which tools were traded over quite long distances in New Guinea and Queensland (Sahlins 1974, chapter 6). But these do not circulate goods anything like so quickly, nor do they produce such a large social gain in wealth, as money-mediated exchanges. On this view, money is not an incentive in itself; it is an incentive only because, and only in so far as, it can be exchanged for goods and services. Those goods and services are among that majority of incentives that do demonstrate adaptiveness and Darwinian continuity, and if money is a strong incentive, it is because the goods and services it will buy are strong incentives. According to Tool Theory, we do not need a psychology of money at all, or only in a limited sense: we only have to understand the job that money does, and the human cognitive system that enables us to use it. Cognitive psychology may allow us to understand why a system of a hundred cents to the dollar has replaced Charlemagne's system of twelve pence to the shilling and twenty shillings to the pound, but such understanding hardly deserves the name of a psychology of money. In the same way as a literal tool like a screwdriver mediates between our need to connect pieces of wood and the limited strength and dexterity of our hands and arms, so money mediates between our need to exchange commodities and the limited evaluating power of our brains.

Obviously money is a tool only in a metaphorical sense. You can use money as a literal tool - as when you use a coin to undo the battery compartment of a bicycle lamp, or a hundred-dollar bill to

light a cigar. Flaunting a well-filled wallet as a means of social display is almost as crude. But such aberrant uses of money are not what we are talking about in Tool Theory. Tool Theory accepts the metaphorical extension of the idea of a tool inherent in the word "instrumental"; it sees money as a means to an end. As we shall discuss below, economic theory recognises that money has more than one function: it serves as a unit of account and a store of value as well as a means of exchange. But that does not undermine the notion of money as a tool – it means that, like a screwdriver, it is a tool with a number of uses. Similarly, the possibility that money is used for purposes such as social display, social communication (Buchan, 1997) or social protection (Doyle, 1998) merely extends the range of uses for money as a tool. Furthermore, it would be a mistake to describe money, or anything else, as a “mere” tool; the idea of a tool is a potentially powerful one, and has been used by philosophers such as Heidegger (1993) and Innis (1984) to provide an account of basic phenomena of cognition and perception.

2.2. Drug theory

Although Tool Theory is the obvious account of the motivation to acquire money, tools are not the only class of biologically unprecedented objects that can acquire strong incentive properties. A second class can be briefly described as Drugs. Just like the Tool Theory, the Drug Theory of money will depend on a metaphorical extension of the core idea, but we start with the most literal idea of a drug.

2.2.1. Drugs *sensu strictu*. Certain chemical substances, such as alcohol, nicotine, caffeine, tetrahydrocannabinol, cocaine and morphine, can all become strong incentives, but their incentive power does not depend on their ability to produce other goods and services. Instead, they produce distinct physiological states by direct action on some part of the body, usually the brain. The nervous system contains numerous receptors for natural substances that play a role in the body's normal functioning, and the existence of these receptors is readily explained as adaptive. Drugs in the strict sense usually act on such receptors, changing the person's nervous state. But we do not explain the existence of binding sites for drugs as adaptive. We do not envisage early humans, or our pre-hominid ancestors, gaining a selective advantage by smoking marijuana. Instead, a psychoactive drug is thought of as a substance that by chance or by chemical similarity acts in the same way as a body chemical, and which is therefore able to intrude upon the normal functioning of the nervous system. It produces an abnormal response, by mimicking the action of some natural substance without being part of an ordered, functional sequence. The Drug Theory of money motivation asserts that money, too, intrudes on the normal functioning of the nervous system. Clearly, however, money is not a psychoactive chemical, so to develop the Drug Theory we need a metaphorically extended concept of a drug, just as the Tool Theory of money requires an extended concept of a tool.

2.2.2 . Perceptual drugs. Alcohol, nicotine and the other substances listed above are all familiarly recognized as psychoactive drugs. There are other substances, however, that meet the essential definition of a psychoactive drug as having a non-functional, direct, effect on the nervous system that affects our mental state. An instructive example is saccharin, which produces much the same motivational effect as natural sugars like fructose or lactose, without being a nutritive carbohydrate. It differs from alcohol or caffeine in that it produces an instant, perceptual effect instead of a longer lasting effect on mood, and in the fact that the receptors it acts on are in our sense organs, not in our central nervous systems. But neither seems to be an important point of principle: we might reasonably call saccharin a “perceptual drug” to note that it has a drug-like action, but not directly on the central nervous system. The historian of sugar Sidney Mintz refers even to sucrose as a “drug food” (e.g. Mintz 1986), on the grounds that its psychological effects are disproportionate to those of the sugars found in unprocessed foods.

If we grant this extension of the notion of a drug, we can see that there are many other stimuli that produce the same perceptual effect as some natural motivator, but are not associated with any benefit to the perceiver. The early ethologists discovered many stimuli that resembled the Sign Stimulus for a Fixed Action Pattern sufficiently to trigger off a response: cardboard disks elicited sexual pursuit in Grayling butterflies, a striped knitting needle elicited begging in herring gull chicks, and an Easter egg elicited brooding in Grey-lag Geese (Tinbergen 1951). Although it is to a male Grayling’s evolutionary advantage to court a female Grayling, the butterfly gains nothing in fitness terms by pursuing a cardboard disk. Furthermore, many natural sign stimuli will act as reinforcers or incentives (e.g. Thompson 1963), and in all cases that have been investigated, the artificial sign stimuli discovered by the ethologists have the same reinforcing or incentive effects as the natural stimuli they mimic. They therefore constitute a kind of functionless motivator. Like saccharin, they could be called "perceptual drugs". Any "dishonest signalling" system exploits this perceptual drug action, and there are many such systems in nature. Well known examples include the chicks of cuckoos or other brood parasites eliciting feeding from the host parents by means of gaping behaviour and throat linings that resemble those of host chicks, or deceptive orchids eliciting copulatory probing from bumblebees and thereby achieving pollen transfer.. There are also situations within human cultures that seem to work in the same way. Visual pornography, or the exaggerated drawings used in cartoons and advertising, can elicit and in some sense satisfy sexual or parental motivations (Lea 1984).

Such stimuli are only functionless in the strict, evolutionary sense of function. Within the life of the individual organism, they provide the same kind of gratification as the corresponding fully functional stimulus. But unlike that stimulus, they are not associated with the increment of biological fitness that, we assume, drove the evolution of the motivational system in question.

2.2.3. Cognitive drugs. Pornographic pictures mimic natural visual stimuli that are instinctually sexually arousing, for functional reasons that are well understood in principle even if the details are open to much debate. But what about pornographic text? Such material can undoubtedly be sexually arousing, but it does not mimic any stimulus that could be supposed to have an innate effect. Pornography here serves as an extreme example of a general fact: we can be emotionally engaged by many kinds of text, and therefore motivated to read them. Any such text must be thought of as a "cognitive drug". Its effect depends on what we know and understand, not on what we perceive, but like nicotine, like saccharin, and like the knitting needle that Tinbergen showed to herring gull chicks, it elicits a response without delivering the effects that make it adaptive for the organism to make that response.

2.2.4. The drug metaphor and Drug Theory. It may seem that we have extended the concept of a "drug" unreasonably, so let us recapitulate what we have discarded and what we have retained. We have discarded the idea of a chemical with an identifiable locus of action in the central nervous system. But we have retained the idea of a drug as a deceiver: a stimulus that is of no biological significance in itself, but has motivational properties because it produces the same neural, behavioural or psychological effect as some other stimulus that is biologically significant. A drug in this extended sense is any functionless motivator, obtaining its motivational effect by a parasitic action on a functional, evolutionarily adaptive system.

It is from this metaphorical definition of a drug, that we derive our second biological account of the psychology of money, which we call Drug Theory. On this account, money acquires its incentive power because it mimics the neural, behavioural or psychological action of some other, more natural incentive. Obviously, we are not suggesting that there are biochemical receptor sites in the brain on which, say, chemicals released by used five-pound notes react. Nor are we suggesting that money has a direct effect via the sense organs, like saccharin or visual pornography. But we do suggest that money can "act like" natural incentives at a cognitive level, and its motivational power flows at least partly from this. In describing money as a cognitive drug, however, we do not mean to disembodify its action. Although the response to money must be mediated through the cognitive system, it is nonetheless an affective response, just as the response to pornography, or fiction, is not coldly cognitive. Cognitive drugs involve hot cognition (Anderson, 1981). Furthermore, cognitive processes do imply correlated brain processes. The rapidly expanding research field of neuroeconomics (Glimcher, 2003) has already shown, through brain imaging studies, that specific brain centres are activated in the presence of money (e.g. Zink, Pagnoni, Martin-Skurski, Chappelow and Berns 2004), and immediate monetary incentives stimulate parts of the brain that are associated with immediate reward, not delayed reward (McClure, Laibson, Loewenstein and Cohen, 2004). This is the opposite of the what would be expected from Tool theory, since on such a theory money is only interesting because of the biologically relevant rewards it can produce at a later time – a conclusion that is reinforced by the fact that in McClure et al's experiment, money was delivered in the form of tokens for an online bookshop, so the final reward could only be obtained after a delay of days.

Why should we use the Drug metaphor for money, rather than some other alternative to Tool theory? The core reason is that a drug is a functionless motivator, and that is what we want to assert that money sometimes is. But there are also other features of classic drugs that help make the metaphor persuasive. Drugs can be very strong motivators, they are often addictive, an attraction to them frequently has bad consequences for the individual, and they give immediate reward where "real" motivators can only do so over an extended period. As will be discussed below, all these have been alleged of money. But while these additional features of the money motivation make the idea of "Money as drug" attractive, they do not define it. Finding that money did not possess these

additional drug-like properties would make the Drug Theory less attractive, but not useless; finding that money never acts as a functionless motivator would undermine it completely.

2.3. Alternatives

Could there be other accounts of the incentive value of money, which do not fit within either Tool Theory or Drug Theory? Both assert that money gives access to biological rewards. Tool Theory covers cases where money gives real but indirect access to such rewards; Drug theory covers cases where it gives direct access to the systems that subserve such rewards, but in an illusory, non-functional way. Given that we are looking for a biological understanding of money motivation, and given that we are taking as unarguable that there has not been time for the evolution of a direct, functional, brain system to detect and respond to the acquisition of money, the two between them seem to exhaust the range of possibilities. Tool Theory covers the cases where acquiring money is motivated by a real underlying function; Drug Theory covers the cases of functionless money motivation. It remains possible that an alternative, completely non-biological, model could give a more economical account of the phenomena (see section 1.4). This means that only in a limited sense can we infer a role for Drug Theory from any failure of Tool Theory. If Tool Theory fails, Drug Theory is then the only possible biological theory, and vice versa. But that is not evidence that it is a satisfactory biological theory, only that there is no better biological alternative.

Money is neither literally a tool nor literally a drug. These are both metaphors, which we have used in an attempt to capture and contrast two distinct ways of explaining money within a biological approach to motivation. We believe that they do exhaust the field of human behaviour towards money between them, but clearly they are not the only conceivable way of partitioning that field. With sufficient sophistication, it is virtually certain that the tool metaphor could be extended to cover all the phenomena which we shall conclude are better explained by a drug metaphor, and vice versa. Our most fundamental aim in this paper, therefore, is not to establish the superiority of one of these metaphors over the other, but to deploy these metaphors in a relatively simple form to demonstrate the complexity of the phenomena of money psychology.

3. Theories of money and money motivation

Tool Theory and Drug Theory, as we have developed them here, are broad classes of psychological theories about the money motive. We now consider some particular theories that explicitly or implicitly specify psychological mechanisms for money motivation. We are not attempting an assessment of the plausibility of these theories, but rather characterising them as versions either of Tool Theory or Drug Theory. These categorizations are of course ours, not those of the original authors, who might well have disagreed with them.

3.1. The economic theory of money

A typical economic textbook account states:

"whether money is shells or rocks or gold or paper, in any economy it has three primary functions: it is a medium of exchange, a unit of account and a store of value. Of these three functions, its function as a medium of exchange is what distinguishes money from other assets such as stocks, bonds or houses" (Mishkin 1992, p. 21).

All that matters, for something to function in these ways, is that all members of the relevant society

should accept that it does so function. As Carruthers and Babb (1996) put it, money is a “self-fulfilling collective prophecy”. Economists (and others) have divided sharply on what enables something to be accepted as money. On the one hand there is the view, which as Schumpeter (1954/1994) shows goes back to Aristotle, that money must either have an “intrinsic” value, or must at least be backed by a reliable promise from the issuing authority to exchange it for something of intrinsic value. Money that has this property is called “commodity” money, signalling that the substance that is used as money, or that backs money, would be sought for its own sake even if it was not used as money. It is also referred to as “convertible” money, signifying that the money substance can be converted into the underlying commodity. Because in complex economies the source of intrinsic or commodity value has usually been gold, the view that money to be effective must be convertible is known as “metallism” or “bullionism”. It is by no means extinct; modern monetarist economic theory is its direct descendant (Bell 2001; Ingham 2001).

The alternative view claims that money becomes acceptable by government fiat, that is, by its designation as legal tender. Money with this property is called “fiat”, “fiduciary”, “chartal” or “nonconvertible” money. As Bell (2001) shows, this view, too, is ancient, but it first came to prominence with Adam Smith (1776/1908). Fierce political debates between bullionists and chartalists arose in Great Britain following a suspension of convertibility in 1797 (Perlman 1986), and in the United States after the end of the Civil War, during which both sides suspended convertibility (Carruthers & Babb 1996).

Both commodity and fiat accounts of money face difficulties. The well documented emergence of cigarettes as a money substitute in prisoner-of-war camps looks like excellent evidence for a commodity theory, but it poses two core problems: Why should people trade with a commodity instead of consuming it, and if they do use a commodity for trade, why does it generally circulate at a higher value than it is worth for consumption (Burdett, Trejos & Wright 2001)? To bullionists, on the other hand, fiat money poses two problems. First, why should people ever trust a purely arbitrary token? Secondly, if the value of money is created by the mere act of declaring it as legal tender, what is to stabilise its value – especially as the government may well be motivated to change the value for policy reasons, to the detriment of economic affairs? Bell (2001) and Ingham (2001) trace from Adam Smith, through Keynes and other twentieth century economists, the argument that government gives fiat money its value by declaring that it is acceptable in settlement of tax liabilities. Ingham extends the argument, suggesting (following Grierson, e.g. 1978) that the process of money creation has an older history in the use of money to settle other kinds of non-market debts such as bride-price and the compensations for injury (*Wergeld*) that were common in early Germanic societies. The creation of value through tax demands answers the metallists’ theoretical questions, and the historical observation that governments often do interfere with the value of money is good evidence that modern money is in fact fiat money.

The chartalist account of money is an obvious Tool Theory. However, from our perspective, the metalist notion that abstract money must be backed by real goods is a version of Drug Theory. Gold and silver make good coinage, because of their durability. But according to metalism, nothing can work as money unless there is a market for it for non-money purposes. Such a market requires the substance to be scarce (which is true of gold and silver) but also desirable as a result of some human motive, which must therefore ultimately have a biological grounding. In the case of precious metals, their ultimate incentive value is aesthetic: the desire for beauty seems to be a biologically-grounded motivation for our species, and gold and silver are useful in making beautiful and durable objects. According to the metallists, money backed by gold functions as a representation or symbol of that desirable thing, and though they were at pains to distinguish the symbol from the thing symbolised (see Carruthers & Babb 1996), they were clear that it is because of the thing

symbolised that money, the symbol, is desired. It is only because of this Drug-like, mimicking property that money is able to function as a tool.

3.2. Psychological theories of money

We review briefly here some historically important accounts of the psychology of money; they have been surveyed in more detail elsewhere (e.g. Furnham & Argyle 1998, chapter 1; Lea et al. 1987, chapter 12).

3.2.1. Depth psychology. Freud (1908/1959) commented explicitly on the question of money, and in his discussion of the anal character acknowledged that style of money management was one of the most obvious ways in which people differ. Like modern evolutionary psychologists, Freud recognized the need to provide a biological explanation of social behaviour. His explanation for the money motive was, characteristically, developmental. He suggested that psychological involvement with money must start with its most familiar form, coins, and that interest in these must derive by displacement from interest in faeces. Thus for Freud, and for later psychoanalysts like Ferenczi (1914/1976) who developed his ideas, the different individual behaviours and attitudes towards money, from the miser's hoarding to the spendthrift's self-destructive carelessness, represented varieties of anal eroticism. This is a basic Drug theory: money acts on the developing human brain in the same way as faeces, with the important difference that it is acceptable to parents and society at large for a child to take a close interest in it.

3.2.2. Operant psychology. A very different kind of biological psychology provides a further example of a Drug theory. Skinner (1953, p. 79) accounted for money within his radical behaviourism as a generalised, token reinforcer. It is well established that stimuli paired with unconditioned reinforcers can acquire reinforcing power, and are then called conditioned (or secondary) reinforcers; if the stimuli are tangible objects, they are called token reinforcers. Skinner (1953, p. 77) argued that if a single kind of conditioned reinforcer was paired with many different kinds of unconditioned reinforcers, its reinforcing effect would become independent of deprivation of any of them. Operant psychologists have seen this process as providing a good account of the reinforcing power of money. To a cognitive psychologist, the token reinforcement would be seen as a means to an end, and a conditioned reinforcement theory of money would be a version of Tool Theory. But within a radically behaviourist account, the incentive power of tokens, and hence of money, derives from mere association with the goods and services it can buy; behaviour is not to be explained by supposing that organisms understand causal relations. Skinner is deliberately agnostic about the brain mechanisms of reinforcement processes, but it is clear that, however unconditioned reinforcers act, conditioned reinforcers must act in the same way, marking Skinner's theory as a pure Drug Theory. Skinner's is not the only behaviourist account of secondary or conditioned reinforcement (see the collections edited by Hendry 1969a, and Wike 1966), though it is the one that has been applied most explicitly to explain behaviour towards money. However other accounts share the essential feature of Skinner's, that the attraction to money develops through mechanistic principles of conditioning, and they too are therefore Drug theories.

3.2.3. The functional autonomy of drives. A similar approach to money comes from social and personality psychology. Allport (1937) coined the phrase "functional autonomy" to describe motives that emerge from antecedent systems but become independent of them, so that the link with the original motive is historical and not functional and "Young' systems may become stronger than the older systems" (p. 363). Money can be seen as a good example of this process. This too is a kind of Drug theory: though the motive to acquire money is a self-sustaining system, its origins are in more basic motives and it presumably acts on the brain in the same way as the

comforts that it procures.

3.2.4. Cognitive development and money. As Webley (2004) explains, Piagetians have proposed that children's understanding of money passes through a series of stages. The number of stages proposed has varied, but in all cases the notion is that children are, step by step, learning how to operate within the economy of adults, and how to use its institutions, especially money. This approach clearly focuses on the instrumental use of money, and thus qualifies as a Tool Theory.

3.3. Money in other social sciences

3.3.1. Classic sociology of money. The classic social science view of money was shaped by Weber (1904/1976, chapter 5) and Marx (1867/1932, volume 1 chapters 1-3). Both linked the psychology of money to the capitalist mode of economic production. In Marx's view, tradable economic commodities are the products of human labour appearing as "independent beings endowed with life" (Marx, 1867/1932, volume 1 chapter 1, section 4) through a process he describes as "commodity fetishism", in which certain compelling images come to eclipse the objects they portray. The conversion of labour into money requires a double transformation (chapter 3 section 2), and therefore a double alienation (of labour into the commodity produced, and of the commodity into money). For Marx, this abstraction, or alienation, of perceived value from its origins in human labour is a necessary step in the historical development of a modern capitalist economy. Although lacking technical psychological input, Marx's account is plainly a theory about the psychology of money, and in our terms it is a clear example of a Drug Theory; a "fetish" is a very reasonable description of a "functionless motivation", and incorporates well the notion of deception that is at the core of the drug metaphor. Weber also saw the accumulation of money as essential to the development of capitalism, though in his account accumulation flows not from desire, but from the paradoxical way in which Protestantism equated working at worldly callings with virtue while disallowing consumption. This view leads to a Drug Theory more by default: since the Tool use of money is disallowed, money can only be sought for its own sake, even though as Weber recognises, it is not within human nature to do so (cf. Needleman, 1994, pp 143-144).

These classical views are capable of wider application than the specific economic historical settings in which Marx and Weber deployed them. The idea of commodity fetishism continues to be used in modern sociological and anthropological analyses (e.g. Carruthers & Babb 1996; Desforges 2001; Snodgrass 2002), and the Protestant Ethic has acquired new significance in the psychometric analysis of behaviour towards money (Furnham 1990). But long before the recent period, a wider view of the sociology of money had been taken by Simmel (1900/1978) in his major work *Philosophie des Geldes* (Philosophy of money). Simmel explored "just about every conceivable topic connected to money" (Deflem 2003). He agrees with Marx in seeing money as an instrument of alienation, but he does not see it solely in the context of the emergence of capitalism. For Simmel, it is money itself, not capitalism, that transforms goods into commodities. Money is both the means and the symbol of the process by which in modern society impersonal, quantitative social relations between autonomous individuals replace the determinant relations imposed by traditional society. Simmel is specific about money motivation: normally money is not a purpose in itself, but it has infinite capacities of application in exchange relations, and so it becomes desired for itself. In our terms, we can see here both an assertion of Tool Theory and an assertion of its inadequacy, and the need for some kind of Drug Theory. This is most obvious in the extreme case: "For the miser, all other goods lie at the periphery of existence and from each of them a straight road leads to the centre, to money. The whole specific sense of enjoyment and power would be misinterpreted if one were to reverse this direction and wished to lead it back again from the terminal point to the periphery" (Simmel, 1900/1978, p. 245).

Although Simmel was a significant figure in the history of sociology, he had relatively little immediate influence: for example *Philosophie des Geldes* was not translated into English until nearly 80 years after its first publication. The major development of social science thinking about money in the early twentieth century came instead from anthropology, with the work of Malinowski and, in particular, Mauss (1925/1954) on gift exchanges in non-Western cultures. These ethnographic studies supplied an empirical basis, lacking in the classic sociologists' work, for assertions about what exchange might be like in the absence of money. They showed that exchange can take place without money – but also that it is distinctly different from exchange in a modern economy. They thus tended to confirm that money was not just a neutral tool, but an institution with a transformative potential.

Even from this brief survey, it can be seen that there are many different nuances within the classic sociological and anthropological analyses of money. However, they share a rejection of a purely economic account – not necessarily as wrong, but certainly as inadequate. In different ways, they see its invention or introduction as corrupting or transforming previous patterns of exchange; but even if it diminishes the social content of exchanges, it does not abolish it. As a result, money is sought for reasons that go beyond its instrumental function. To varying degrees and in differing ways, therefore, these classic sociological accounts are versions of Drug Theory.

3.3.2. Modern sociology of money. Recent decades have seen a revival of interest in the sociology of money, often involving a fusion of ideas from classic sociological theory (especially Simmel) with more recent anthropological data. Important contributors to the modern sociological theory of money include Carruthers (e.g. Carruthers & Espeland 1998), Dodd (1994), Doyle (e.g. 2001), Ingham (e.g. 1996; 2001), Singh (e.g. 1996) and Zelizer (e.g. 1994). Less strictly academic accounts such as those of Buchan (1997), Millman (1991) and Needleman (1994) have also contributed to the modern view of the place of money in society.

These writings cover many aspects of money other than the motivation to acquire it, so a full review of them would be beyond the scope of the present paper. A recurring theme within them, however, is the social interactionist perspective, resulting in a tension between two pervading ideas. On the one hand is the notion that money anonymizes social interactions, and on the other is the recognition that money is imbued with social meaning and thereby links things and people together (Newton 2003). Zelizer, who takes a less hostile and pessimistic view of money's role in society than many other modern social theorists, has particularly stressed how money retains meaning beyond the particular transaction in which it is obtained or used (e.g. Zelizer 1989; 1996). Conversely Ingham (2001) argues that the fundamental nature of modern money is the abstract recognition of a debt, so that its representation by a commodity is merely contingent; for him, money stuff always symbolises abstract money. But he is at one with Zelizer and other sociologists of money in rejecting the simple economic view that “money is what money does”. From a different background comes the striking hypothesis of Seaford (2004) that it was the invention of coinage that enabled pre-Socratic Greek metaphysicians to conceive of impersonal universal forces: on this view, money can actually be said to give birth to abstract symbolic thought (see also Shell, 1982).

The sense that money is essentially a symbol, perhaps multiply symbolic (cf. Lea et al. 1987, chap 12), seems hard to reconcile with any kind of biological analysis of money motivation; it leads, furthermore, to a cognitive rather than a motivational analysis of behaviour towards money. We will return later (section 5.2) to the question of whether there is a fundamental conflict between this kind of social-cognitive theory of money and our attempt to construct a biological account. Within

the confines of our current account, however, we need to classify the modern sociological theories. Clearly they go beyond the simple notion of money as a tool for economic exchange, but they do not align in an obvious way with what we have called Drug Theory? Rather, modern sociology tends to see money as a tool, but as a tool for more than exchange, and as we have already noted, that idea is explicit in several modern social accounts of money function, e.g. Buchan (1997). In the final section of this paper (5.2), however, we shall argue instead that the modern sociological account should be classified as a Drug theory, because its conclusions parallel those of the specific version of Drug theory we develop there. At this point, we merely note that if money is sought for the meanings it carries, that allows for a disconnection between those meanings and the reality that is believed to underlie them, and thus creates an opening for the deceptive processes that characterize Drug theories.

3.4 Summary

This brief survey has shown that a number of leading theories of money in psychology and other social sciences are, in terms of the metaphorical dichotomy we have drawn up, best classified as Drug theories. However, we have not found a simple economics vs. psychology opposition. Surprisingly, the most conservative economic theory of money (metalism) appears to be a Drug theory, while at least one much-used psychological theory is clearly of the Tool type, and modern sociological approaches may be best described as “sophisticated tool” theories.

4. The empirical psychology of money

Modern approaches to the psychology of money have been strongly affected by the emergence of the specialised subdisciplines of economic psychology and behavioural economics. A number of lines of investigation have proved fruitful within the empirical economic psychology of money, and these shed some light on the issue of Tool Theory versus Drug Theory. Several of them overlap with recent empirical work in the sociology and anthropology of money. Not surprisingly, these lines of investigation have shown that quite a lot of human behaviour towards money can be accounted for in terms of what we are calling Tool theory, because this is the “obvious” account. In this section, we will review several lines of evidence showing that something beyond the rational use of a tool is involved. We shall argue that many of these exceptional findings are well accounted for by a Drug Theory.

4.1. *Perceiving coins*

Bruner & Goodman (1947) found that children tended to overestimate the sizes of coins relative to other, physically similar, stimuli. This report caused considerable controversy, and a series of experiments by other authors clarified the result, without however shaking the basic claim that there is something special about money objects at the psychological level (Saugstad & Schioldborg 1966). More recent research has supported that claim by looking at how the perception of money is changed by historical changes in the money system and the value of money. Lea (1981) found that pre-decimal British coins were remembered as larger than the identical coins under their decimal names, devalued by a decade of rapid inflation. Furnham (1983) found a similar effect for an obsolete design of pound note, and further research along the same lines has been carried out in other countries by Leiser and Izak (1987) and Brysbaert and d’Ydewalle (1989). A Drug theory can account for these phenomena by asserting that the value of money gives it a special status, which interferes with normal perceptual/cognitive processing. It is not obvious how a Tool theory can accommodate them.

4.2. Money illusion

In the presence of inflation, economic events and choices that take place over time can be denominated either in terms of nominal values – the actual money amounts – or in terms of real values – purchasing power. If people are influenced to some extent by nominal rather than real values, they are said to be suffering from “money illusion” (Fisher, 1928). Although the possibility of money illusion was for decades dismissed by theoretical economists, it is readily demonstrated in economic experiments (Fehr & Tyran, 2001) and survey studies (Shafir, Diamond & Tversky, 1997). It is also ubiquitous in ordinary economic life. At the population level, consumers demonstrate money illusion in relation both to the entire economy (e.g. Dowd, 1992) and to individual commodities (e.g. Franke, 1994). Consumer money illusion can also be seen at the individual level, for example in price estimation in different currencies (e.g. Gamble, Garling, Charlton and Ranyard, 2002), and in the effects of the currency change on charitable donation (Kooreman, Faber & Hofmans, 2004). Money illusion can also be demonstrated in producers, for example in the borrowing behaviour of small firms (Machauer & Weber, 1998), or in the response of independent professionals to changes in state-mandated fees (Mayer & Rozier, 2000). Investors, too suffer from money illusion (e.g. Modigliani & Cohn, 1979; Miller & Schulman, 1999). The downward trend in the value of non-resident fathers’ child support payments in the United States seems to be in part attributable to money illusion on the part of judges, lawyers and parents (Hanson, Garfinkel, McLanahan & Miller, 1996).

Money illusion disconnects the psychological impact of money from what money can do. Shafir et al (1997) argue that the disconnection is only partial, and that money illusion in fact arises from people’s struggles to work with both real and nominal values. But even a partial disconnection of the motive for money from its instrumental effect is evidence that a pure Tool Theory could not be adequate.

4.3. Money conservatism

People frequently resist new forms of money, even when the innovation is quite trivial. When the UK pound note was replaced by a coin in 1983, reaction in the press was absurdly hostile, and Hussein (1985) showed experimentally that people did indeed behave differently with the coins, spending them more quickly than notes. In the US, the introduction of the Susan B. Anthony dollar coin in 1979 largely failed because of public rejection (Caskey & St Laurent 1994). Current attempts to introduce a dollar coin are again meeting with hostility and very low levels of usage: the coins barely circulate, except for a few special purposes such as the purchase of subway tickets in slot machines, while dollar bills remain in widespread use. The reaction against the euro in countries such as the UK (see Routh and Burgoyne 1998) is similarly disproportionate to any economic facts. Indeed, people are more agreed about their dislike of the euro than they are about the reasons for that dislike, a strong indication that their hostility is rationalised rather than rational. That is not to say, of course, that it is unreasonable: the euro is recognisable as both a means and a symbol in the ongoing project of “Europeanization” (Borneman & Fowler, 1997) to which many people in the UK remain opposed. Its rejection is the rejection of an institution that is literally foreign to them, and thus incapable of supporting the trust that money is required to elicit.

At first sight, money conservatism seems to give strong support to a Drug theory. However, it is not an unlimited phenomenon, and its limitations tend to support a Tool Theory. Caskey and St Laurent (1994) produce an entirely instrumental analysis of the rejection of the US dollar coins. When currencies lose their value because of economic or political change, people lose interest in them precipitately, as a Tool Theory would predict. Furthermore, not all new forms of money are

rejected. Credit and debit cards have won wide acceptance quite quickly, though penetration varies greatly between countries (Snellman, Vesala & Humphrey 2001; Humphrey 2004). Nevertheless, some of the phenomena of money conservatism do seem to call for a Drug theory. The loss of interest in superseded forms of money is rarely total. Anecdotes of people hanging on "irrationally" to foreign or devalued currencies are common, suggesting that money does not lose quite all its power when it loses its function. Furthermore, while dramatic devaluations certainly do cause people to lose confidence in a particular currency, they have much less effect on their confidence in money in general. The high inflation that has characterised many Latin American and African countries for decades has certainly caused their citizens to lose interest in acquiring their local currencies, but they remain very interested in acquiring dollars (e.g. Guidotti & Rodriguez 1992; De Boeck 1998). The collapse of the ruble following the end of the Soviet Union caused a return to barter in many sectors of the Russian economy (Woodruff 1999), for lack of any alternative. But in Central Europe, where other forms of money (dollars, Deutschmarks and now euros) were more readily available, it was they rather than barter that filled the gap. Moreover, although some forms of "plastic money" have spread successfully, others have failed spectacularly. A number of high profile attempts to introduce "electronic purses" have failed, despite apparent technical advantages. New forms of money are in general not less functional than old forms, indeed the reason for introducing them is that they will be better tools for exchange, but they seem to need to show a substantial advantage over old forms before people will adopt them. The reaction to them is often emotive rather than calculative. We conclude the people become attached to money objects themselves, as predicted by Drug Theory.

4.4. Money attitudes

Economic psychologists have developed a number of psychometric scales that assess attitudes towards money, for example the Money Attitudes Scale (Yamauchi & Templer 1982), the Money Beliefs and Behaviour Scale (Furnham 1984) and Love of Money scale (Tang 1995). These scales are always multifactorial, yielding anything from three to eight factors. While the details vary between scales and studies, the common experience is to find more or less orthogonal factors relating to power and prestige, to distrust and anxiety, and to retention and other temporal issues. Tang and his colleagues have found separate and virtually orthogonal factors for an affective component (assessment of money as good or evil), a cognitive component (money seen as an indicator of achievement, respect, and freedom or power), and a behavioral component relating to practical budgeting. Furthermore these factors enter into different relationship with other variables of both economic and psychological interest, such as job satisfaction, business ethics, work motivation and life satisfaction (Tang & Gilbert 1995; Tang & Chiu 2003; Luña-Arocas & Tang 2004). These results demonstrate a dissociation between the instrumental and affective aspects of money. In our terms, therefore, they do not suggest that either Tool theory or Drug theory is correct and the other wrong; they suggest that money has both tool-like properties and drug-like properties, and the two are psychologically dissociated, so that neither kind of theory could give a complete account on its own.

4.5. Restrictions on money use

The primitive moneys of non-western societies often could only be used for certain kinds of exchange, or there might be several different money systems, each confined to a particular class of commodities or a particular group of people. Such restrictions on use represent a failure of the Tool function of money. It might be argued that special purpose moneys correspond to special purpose Tools, which are after all common in most kinds of technology. But money is, specifically, a tool for exchanging. Any limitation on its exchangeability is a restriction on its Tool use. Economic

psychologists have shown that money in modern society, like primitive money, has restrictions on its use, particularly in connection with gifts. In Britain, young adults do not feel it is appropriate to use money as a gift for their mothers (Webley, Lea & Portalska 1983), and identifiable social rules prohibit or allow using money as a Christmas gift, depending on the relationship, relative age and status of the giver and recipient (Webley and Wilson 1989; Burgoyne and Routh 1991). For example, the person giving money as a gift must be of higher status, if only by virtue of being older (cf. Motel & Szydluk 1999). Furthermore, the evaluation of gifts, whether by the giver or the receiver, does not depend only on their monetary value (Pieters & Robben 1999). A related phenomenon is the partial taboo on the use of money to repay neighbourly help (Webley and Lea 1993a). These particular social rules are not universal: there are cultures where to give money is a sign of respect (e.g. in Ghana: van der Geest 1997) or is socially required in certain contexts (e.g. in Cyprus: Hussein 1985). Whatever form it takes, however, there is a general tendency to maintain a distinction between market and gift exchanges, to the point where some market-motivated exchanges may be given the outward form of gifts in order to appropriate a different social meaning (Offer 1997).

A second sphere where money is often an unacceptable medium of exchange is within sexual relationships. Historically, cultures have generally provided ways of legitimising the exchange of money or money's worth for sexual access, whether through bride price, bride service, or the convention that husbands should be the "breadwinners" for their wives and families. But it is not socially acceptable for the exchange to be made too starkly, or in other than the conventional forms: to do so incurs the stigma of prostitution. The exchange has to be cast within the rhetoric of gifts and giving rather than payment. Millman (1991) argues that this social convention acts to mask real financial exchanges that do take place within close relationships, and are exposed when relationships break down. Simpson (1997) takes a slightly different position, arguing that on relationship breakdown there is a shift of transactions from the non-monetised gift sphere to the monetised sphere, and this causes many extra difficulties between divorcing couples – even as they seek that shift, to symbolise the social distance that now exists between them. Zelizer (1996) documents some of the ways in which people in Western cultures try to keep spheres of exchange distinct, using sex as a leading example, while Wojcicki (2002) describes the ways in which South African women, with a very different cultural background, camouflage money-for-sex exchanges as social relationships, and Knauff (1997) reviews how the monetisation of extramarital affairs in both Amazonia and Melanesia has resulted in increasing stigma for the women involved. Converging evidence for the convention of separating sexual from monetary exchanges comes from situations where the monetisation of the transaction is actually sought, precisely because it removes sexual acts from any affectional context. Thompson, Harred and Burks (2003) document how topless dancers in the USA use the fact that what they are doing is paid to help distance themselves psychologically and emotionally from it, and from their clients. Prasad (1999) shows that prostitutes' clients use similar mental strategies to distance themselves morally and emotionally from the women they use.

The sense that there may be exchanges that should not be conducted in money goes wider than gifts or sex. Developing ideas from Simmel (1900/1978), Holt and Searls (1994) list the consumption of religion, high art, education and the family among the areas where people resist "the market's commodification of the good" that is mediated by money. Even this list is not exhaustive: Desforges (2001) documents how Western tourists sometimes feel that any monetary transactions at all between them and local inhabitants in "exotic" travel destinations render their travel experiences inauthentic. Fiske and Tetlock (1997) make the point that people do not just find it difficult to estimate the value of their children, their loyalty to their country, or acts of friendship: they find it morally offensive even to be asked to try. Zelizer (1996) makes similar points about

bonuses given by firms. Thus there are many situations where money is not the preferred Tool for exchange, or even is not acceptable at all. Surprisingly, it is often much more acceptable if money is replaced by something that is clearly money's worth, even something with a precise monetary value such as a book token (Webley et al. 1993).

These data suggest that money has special properties that are not captured by the Tool theory. But do they give any direct support to the Drug Theory? What seems to lie at the root of these social rules is a perhaps unformulated belief: that to give someone money is to move the transaction out of the realms of ordinary social exchange into a different, economic, sphere, so that what should be a gift or a means of thanks becomes payment, and that is something different. The prevailing rhetoric of most societies is that gifts are given, and sex is shared, for reasons other than material benefit. Gifts and sex are the currency of the moral and romantic economy, and to confuse them with the currency of the material economy is somehow to contaminate them. These social rules restricting money use could be taken to suggest that money is different from "real" incentives, such as "real" praise, "real" affection or "real" gratitude, and therefore that money is a mere Tool, different from the real objectives it subserves: that though you can in a sense buy love, happiness and truth, there remains a love, a truth and a happiness you cannot buy (Needleman, 1994, pp 237ff). We argue, however, that these results show precisely that money is not, or not just, a Tool. If it was a Tool, it would always be an acceptable surrogate for other objectives. From an instrumental point of view, money is the best gift of all, because the recipient can use it to buy exactly what s/he wants. The empirical results show that this point of view cannot be complete. Money-mediated exchanges are different from other exchanges, and under at least some circumstances, people avoid them. Under a Drug theory, this avoidance is easy to explain: such a theory asserts that money is psychologically special, and acts on us in other ways than as a neutral medium of exchange. It might be argued that the restrictions on money use can also be reconciled with a Tool theory, by taking the tool metaphor more seriously, and pointing out that tools do not have to be universally useful. But the problem with exchanging money for sex, for example, is not that it cannot be done, but that it is not socially acceptable for it to be done, because the effects of doing it are socially and psychologically destructive. It appears that money exchanges have side-effects, and that these give it drug qualities.

4.6. Money in relationships

Sociologists and psychologists have shown that money often has as a special status within relationships and a special impact on them (e.g. Pahl 1989 1995; Burgoyne 1990; Millman 1991; Simpson 1997). Within families, access to and influence over money is rarely distributed equally, and this inequality is frequently a focus for dissatisfaction, strain, and dispute. Money issues are reliable predictors of divorce (Amato & Rogers 1997), and as Millman shows, divorce courts (and also courts adjudicating disputed wills) provide many illustrations of the money problems that arise in close relationships.

Family financial disputes are not only about money. In part, they are about the real power that money gives to buy real goods and services, and in part they are about more general issues of freedom and constraint within the relationship (Vogler 1998). But they are also about money as such. Disputes about money within the family can concern the distribution of limited financial resources (e.g. Zelizer 1994), but they can also be triggered when one partner acquires new resources, disrupting the previous distribution of power: James, Jordan and Redley (1992) record how wives of unemployed men in Britain might withdraw from the labour market to avoid the marital strain that went with their acquiring the powerful position of the major earner. Money is a potent symbol and channel of the power relationships within a family, and because this is a direct

impact of money rather than one mediated through what money can buy, we argue that it has a strongly Drug-like quality.

4.7. Sacred and profane uses of money

The most systematic recent approach to the psychology of money is that of Belk and Wallendorf (1990). Using anthropological data, they draw a distinction between "sacred" and "profane" uses of money. In many ways this parallels our distinction between Drug Theory and Tool Theory. Belk and Wallendorf's profane uses are the mundane, functional uses of money that fit easily into a Tool theory. But they put forward the hypothesis that even modern money can be sacralized precisely in order to explain "some of the more puzzling ways in which people behave towards money". Among such money puzzles they include the social bar on the direct use of money to buy slaves, brides, political office, or children; the distinction made between earned and unearned income; the restrictions on the use of money as gifts; gender and class differences in the uses of money; and the paradoxes and contradictions in the ethics of money use. In Sections 4.4 to 4.6, we construed many of the same money puzzles as evidence in favour of a Drug theory. Like the data on money attitudes, therefore, Belk and Wallendorf's analysis supports the need for a dual theory.

Related research includes Oliven's (1998) examination of the social functions of money in the USA from the standpoint of an anthropologist from a less financially developed society, Brazil. Oliven argues that in America, money is what Mauss called a "total social fact". He argues that whereas in a society like Brazil's money is seen as polluting, in the mature capitalist society of the United States it pervades all social relationships and takes over all metaphors, being associated with love, death, blood, semen, food and God. Again in our terms, it is hard to see how money can be regarded only as a tool when it has become so involved in a society's expression of itself, though the dramatically extended conception of the importance of tools found in philosophers of technology such as Innis (1984) might provide a viable approach. We argue, however, that it is easier to take these wide-ranging social phenomena as evidence of a drug dimension to the motivation for money.

4.8. Money and social status

Both classic and recent sociologists and social psychologists have stressed the importance of money as a marker of status within modern societies. To some extent money here serves as shorthand for general wealth, possessions, and consumption: Veblen's (1925) original development of the idea of a status symbol was much more concerned with things that money can buy than with the possession of money itself. Status is established through consumption in non-monetised, or weakly monetised traditional societies as well as in modern economies (e.g. in the potlatch ceremonies of Northwestern Native Americans, see Aldona 1991). Nevertheless, statements of people's wealth or income, in numerical money terms, are a common part of discourse about status; nineteenth century English fiction is rich in examples. People differ in the extent to which they interpret wealth as a sign of status, and indeed the extent to which they attribute value to objects on the basis of their financial cost; the tendency to do so is referred to as "materialism" and, from Belk (1984) on, reliable and valid scales to measure it have been developed (see Richins 2004 for a recent review). People high in materialism seek happiness through wealth and possessions (and tend not to achieve it, e.g. Burroughs and Rindfleisch 2002). This self-defeating nature of materialism might lead us to claim this area as one that is well explained by a Drug theory of money. However it is probably better seen as calling for an elaborated Tool theory, in which money is used as an instrument to assess or obtain social status and happiness. This is not among the functions of money conceived of by economic theory, but it is different from the pursuit of money

for its own sake.

4.9. Money work

Even in societies that are not as money-dominated as that of the USA, the ubiquity of money means that many people work directly and continuously with money that they do not own. Jinkings (2000) explores some of the ambiguities that this produces in the lives of low-paid Brazilian bank employees, who face deteriorating pay and conditions under circumstances where the money they are processing is increasingly powerful. Given the contradictions inherent in their situation, it is not surprising that he finds the Marxian concept of money fetishism useful in describing their psychological processes. More commonly, people's work has a direct financial dimension which can be given more or less psychological prominence. Schweingruber and Berns (2003) analyse the behaviour and attitudes of US students recruited as door-to-door commission booksellers, and shows how they have to both involve themselves in and distance themselves from the financial rewards that would be associated with a successful sale. The idea of money acquires an almost magical content for them.

4.10. Money addiction

If money is to be thought of as a drug, we might expect to find addictive processes associated with it, though evidently they would constitute a "non-substance addiction" in the same way as compulsive gambling. The concept of non-substance addiction remains controversial, but it has been widely used. The idea of money addiction has been put forward to explain some of the oddities of people's financial behaviour (Goldberg & Lewis 1978; Boundy 1993; Forman 1987; Cameron & Bryan 1992; Slater 1980; Needleman 1994 e.g. pp 115ff). Most of these sources are popular or semi-popular rather than academic, and the idea of money addiction has found little use in sociology or clinical psychology. Furthermore, many of the references to it in fact deal with more specific addictions or supposed addictions, such as "workaholism", compulsive gambling, or compulsive buying (see Harpaz & Snir 2003, Dickerson 1984, and Black 1996, respectively). It is an interesting possibility that all these are manifestations of a broader addiction to money, but there is as yet no evidence to support that proposition; and given our interest in understanding the motivation to acquire money as such, rather than the things that it can buy, compulsions to spend in various ways are not relevant to our argument.

Slater (1980) does consider one case that is more specifically relevant to our argument, the hoarding of money per se, or miserliness. Hoarding in Slater's sense is distinct from the accumulation of money for precautionary or investment purposes, though of course it is possible that at the mechanistic level there is overlap between these motivations, or indeed the many other recognised motives for saving (see Lea et al, 1987, Chapter 8). As we have seen above (section 3.2.1) miserliness was historically a particular concern of psychoanalysts. Clinical and psychometric work gives some support to the Freudian notion that miserliness and hoarding is a component of obsessive-compulsive disorder, and both seem to have some connection to compulsive shopping (Grilo 2004; Frost, Steketee & Williams 2002). As such, there does seem to be some support for a Drug Theory of money motivation from the evidence on money pathology. More recent clinical psychological approaches, such as cognitive behaviour therapy, have also been applied to money pathologies, and as these too would see the pathological interest in money as disproportionate the money's actual usefulness, they would also favour a Drug over a Tool account.

4.11. Summary

A consistent theme emerges from these very different kinds of empirical research on money. The evidence is not that Tool theory is wrong, but rather that it is inadequate, and inadequate in specific ways. In a range of situations, money is found to have a value and an emotional charge that is not predicted by its economic use. In some situations this leads to only marginal effects, such as the sentimental clinging to a few outdated coins. In other, closely related situations, the effects are strong enough to determine the economic policies of nations.

It is one thing to accept that money is not just a tool for carrying out the functions that economic theory prescribes for it. It is another to accept our suggestion that its additional psychological effects can be captured by categorising it as a cognitive drug. We argue, however, that this analysis is fruitful, on two grounds. First, because it captures the parasitic, functionless quality of money motivation that characterises many of the situations we have described. Second, however, it leads on to an evolutionary account of these phenomena, and of the incentive value of money in general, which we will set out in the final section of this paper. If that explanation is accepted the importance of the drug metaphor fades; it will have done its job in linking together phenomena and rephrasing the question about money motivation in a form that can be more readily answered.

5. A synthetic theory of money

5.1. The need for synthesis

Lea et al. (1987) tried to accommodate what was then known about the psychology of money within a loose theoretical framework in which money was seen as multiply symbolic. In evolutionary terms, this account is vague and under-specified: what is meant by a symbol, and what selective pressures does it respond to? What that analysis did capture was the notion that money in modern society has more forms, and more functions, than the simple economic Tool Theory would allow. Section 4 showed that modern research in economic psychology is uncovering an increasing range of money phenomena that Tool theory cannot account for. We have argued here that they call for some version of the Drug account: money seems to act on the human brain in ways that mimic more natural incentives, not just by being an instrument for access to them.

It would be foolish to deny the force of the Tool Theory. Money does have functions, and new forms of money are constantly being invented to fulfil those functions in new ways. The range of new forms that money has taken in the last few decades, and the speed with which people have adopted some of them (see Section 4.3), show that the instrumentality of money is fundamentally important: the only thing all forms of money have in common is their function (cf. Ingham 2001). But not all tools for a given function come equally easily to human hands or minds. All computer operating systems perform roughly the same operations on stored information, but the menu and pointer system used in modern operating systems is more efficient than a command line interface for all but the most skilled users (Card, Moran & Newell 1983), because it relies on recognition rather than recall memory. The good tool always comes with overtones of drug, whether it is a tool for data processing or exchanging. Thus we argue that, though money certainly is a tool, it is too successful a tool for the Tool Theory to be entirely right.

But the Drug theory is not without problems. First, the phenomena that we have identified as requiring some kind of Drug theory are not a coherent set. They could easily be regarded as a mixed bag of marginal, second order phenomena that all have different explanations. This argument, however, only carries force if we are implicitly persuaded that Tool theory must be the

correct explanation for most money motivation. If Drug theory covers any phenomena at all, then it may also cover some of the phenomena that could be accommodated by a Tool theory. It need not be confined to the margins.

More seriously, Drug theory is feeble unless we can specify what the natural incentives are that money mimics, and in this final section we therefore seek to do that. For convenience, we refer to the incentive systems concerned as “instincts”, though as explained in Section 1.4, we mean that term only in the sense of a motivational system so widely observed that it can be taken to be culturally universal, like hunger or parenting. Those examples are sufficient to remind us that even when motivations are universal, the way they are manifested will vary greatly between cultures and periods of history. Here, we suggest two motives that we believe are universal among humans, and argue that they manifest themselves in modern cultures as a desire for money. These are certainly not the only possibilities, but we are seeking to establish that there is at least some plausible means by which the drug-like effects of money could have evolved.

5.2. Reciprocal altruism, trade, and money

A prime use of money, considered as a Tool, is to facilitate trade. Could trade itself be the incentive that money mimics? At first sight this seems an unhelpful suggestion, since it simply moves the problem from the evolutionary origin of money to the evolutionary origins of trade, which is also a uniquely human behaviour (see Lea 1994). Division of labour occurs in other species, but there is little doubt that its integration into a system of trade is uniquely human; chimpanzees may be induced to barter in the laboratory (Hyatt & Hopkins 1998), but there is no evidence that trade forms any part of their natural social life. The problem of the evolution of a motivation for trade, however, may be tractable in a way that the problem of the evolution of a money motive is not. Ridley (1997, chapter 10) has argued, from the archaeological evidence, that though trade originates with *Homo sapiens*, it must have done so early, in fact it must be as old as the species itself; he sees trade as one of the distinguishing marks of our species. So whereas the use of money is too recent to allow the evolution of a money instinct, trade could be a human instinct, on which the money motive might be built through Drug action. But Ridley concedes that most anthropologists have thought of trade as a late development in human prehistory; and even if he is right in assigning it an early origin, we would still have to specify the more widespread instincts from which it could have evolved, because it does not occur in other apes.

The most obvious such instinct is reciprocal altruism. Sociobiological theory came to prominence because it managed to reconcile the existence of altruistic behaviour with the neo-Darwinian concept of the selfish gene. Most altruism can be explained by kin selection – indirect selective advantage to an individual achieved through benefits to his or her kin (Hamilton 1963). Humans, who have long periods of juvenile dependency and tend to live in groups of related individuals, should show such kin altruism instinctively. But in addition, Trivers (1971) showed that there were circumstances under which instinctive altruistic behaviour between unrelated individuals could be favoured by evolution, because of the possibility of reciprocation. Humans fit precisely Trivers’ specification for a species within which such reciprocal altruism could evolve: we are long-lived, intelligent, and live in permanent social groups. But what Trivers and other sociobiologists describe as reciprocal altruism would usually, if it occurred in humans, be referred to as trade, because it depends critically on exchange: it is only sustainable if an organism that gives up fitness at one moment can expect to gain fitness in the future. Trivers’ argument can thus be restated as implying that it might be adaptive for humans to trade with unrelated individuals. And if trade is adaptive for humans, and has been over a substantial period of time, it is reasonable to suppose that natural selection will have equipped humans with a motivation to trade, and ensured that we will enjoy

doing it – in a word, that we might have an instinct to trade, in addition to our instinct for unreciprocated giving towards kin. Although this may sound an odd idea, there are both theoretical and empirical arguments in its support.

At the theoretical level, Trivers' (1971) argument sets minimum conditions under which reciprocal altruism can emerge. But once it is established, reciprocation has adaptive value over and above the goods or services a particular trade makes available, because it makes it possible to have with strangers at least some of the kinds of interactions that normally only occur between kin. Long before money came on the scene, humans developed networks of social relationships, involving individually known and at least partially individually trusted individuals, that were larger than those of any comparable animal. In the Environment of Evolutionary Adaptation, a person whose extended social network was larger had many advantages: he or she was safer against both social and environmental threats. This added adaptive value should strengthen the instinct to trade. The implication is that there is not just a human possibility to engage in reciprocal altruism in case of need, but a motivation to do so whenever a reasonable opportunity presents itself. Margolin (1978/2003, pp. 89-102) gives a graphic description of the motivation for reciprocal altruism and trade, and its adaptive value, among the Ohlone peoples of the Californian Central Coast. Studies of informal transactions in modern society, within the "black economy" (Henry 1978) or in consumer "swap meets" (Belk, Sherry & Wallendorf 1988), show that this social function of trade remains strong. Interestingly, such informal transactions are often imperfectly monetised.

Empirically, much evidence supports the idea that there are two different motivational systems underlying human giving and receiving. Economic anthropologists such as Sahlins (1974) have shown that in societies without money, there is a continuum of exchanges. At one extreme are truly altruistic exchanges within households, where reciprocation need not be exact or immediate, and may indeed never happen at all; at the other are exchanges with members of other villages, where reciprocation must be immediate and exact or no exchange will take place. Conversely, in modern societies, where there is repeated trading between the same individuals, for example in a continuing employment relationship and particularly where employer and employee live together, the language of trade tends to be replaced by the language of kinship; for example we hear of "paternalistic" employers - particularly where the reciprocation is in fact unbalanced.

The idea of a trading instinct allows for a much more precisely specified version of Drug Theory. Considered as a tool, money is used extensively to serve the trade motivation. In this role, it multiplies the reasonable opportunities for exchange, by making it more instant, more sure and easier: it removes the need for an exact reciprocal return of action for action, good for good. Considered as a drug, however, it seems to be capable of giving the illusion of trade and reciprocation even when it is absent. If trade is a human instinct, we would expect there to be a specific region of the human brain that has an innate tendency to be active when the opportunity for trade arises – a suggestion that once would have seemed outlandish, but in the light of recent developments in neuroeconomics seems merely obvious (cf. Glimcher 2003). Money, we argue, acts like a drug on that centre, activating it even when there is no real possibility of trading, or no real advantage in it. And just as an artificial sweetener like saccharine can stimulate our sweetness receptors far more than the natural substances it mimics, so money can overstimulate our trading receptors, with the effect that as Wordsworth put it, "getting and spending we lay waste our powers".

This specification of Drug Theory fits perfectly with the social rules that constrain the use of money as a gift. The data surveyed in sections showed that money is, in a range of ways, socially awkward. The idea that money is a trade-based drug explains that awkwardness from the fact that

trade is socially awkward, because it is in tension with a different but overlapping instinct. Within the circle of close kin, reciprocation need not be insisted on, indeed to insist on it would be to label the interaction as taking place outside that circle. Within the circle of slightly less close kin, where some reciprocation is needed, too speedy reciprocation is equally a solecism. While it might be advantageous to mislabel a trade relationship as kinship, to mislabel kinship as trade could be a biologically fatal mistake, since it would be to relinquish the claim of kinship, a much more powerful and reliable source of altruism than reciprocation.

As would be expected from its close fit to the data on money as a gift, the idea of money as a trade-based drug also fits well with modern sociological and anthropological accounts. From a theoretical perspective, Newton (2003) has argued that modern money and credit create increasingly extended “dependency networks” of the sort implicated in the civilising process by Norbert Elias (e.g. 1994). Much modern empirical sociology of money has aimed to uncover the social meanings it acquires, from the exchanges by which it is obtained and in which it is spent, and the social meanings that are created when money is used to facilitate an exchange that might have taken place by other means. Thus Granovetter (1985) insists on the “embeddedness” of economic action within social structure and social relations, Offer (1997) argues that where it is important to establish mutual “regard”, money is avoided even when reciprocation is needed, and Zelizer (e.g. 1989; 1996) shows how money from different sources is used in different ways because of its different social meanings. From the symbolic interactionist point of view, money has symbolic value that it derives from and that helps construct the social interactions in which it is used – sometimes helpfully, and sometimes destructively (Schweingruber & Berns 2003). The nature of its symbolic value varies between societies, and van der Geest’s (1997) cautionary reminder that in West African societies money can be a symbol of happiness and security, and a vehicle of love and respect, needs to be set against the generally corruptive symbolism of money in European-derived cultures. Knauff (1997) similarly emphasises that in previously non-monetised societies, money often symbolises modernity, undercutting earlier cultural values – a tendency that can be so extreme that dollars are animised as wild, undomesticated items that behave in unpredictable or even demonic ways (De Boeck 1998). There is also theoretical dispute about exactly what money symbolises in the modern economy: Ingham (2001) argues that previous sociologists of money, such as Zelizer, have paid too little attention to money’s symbolisation of the promise to pay. But the idea of money as a vehicle of some kind of symbolic meaning, and therefore as more than a neutral tool in the economy, is universal among both theoretical and empirical sociologists of money. The language of sociology differs from the sociobiological approach we have taken here, but in different terms both are saying that money has value – which may be positive or negative – over and above its usefulness.

5.3. Play and money

A second human instinct on which money might act as a drug is object play. Considered as mammals, and even as primates, humans are remarkable both for the length of time we spend in a juvenile state, and the strength of the motive to play among juveniles (and even adults). Object play is particularly well developed, as the extraordinary scale of the toy market testifies. Lea and Midgley (1989) argued that this might be one of the factors that have allowed the evolution of money use. We agree with Freud in seeing the interest in money developing first out of the instinct to play with objects that can be held in the hand, though we reject the Freudian belief (see Bornemann 1976, p. 17) that faeces constitute a privileged class of such objects. The plausibly instinctive human liking for carrying around a few easily handled objects provides a natural setting within which a money system can develop. Money may be a drug partly because it provides something of the same kind of stimulation as a plaything.

The trading and play accounts of money motivation are not in competition, but complementary. If playthings are valued because of an instinct towards object play, they would make natural props in our first hesitant steps onto the stage of economic exchange: having learned to manage playthings as children, we are better equipped to manage plaything-like money as adults. We have argued elsewhere (Webley & Lea 1993b; Webley & Webley 1990) that playground exchanges of toys are a more realistic scene of economic socialisation than the limited exposure young children have to the formal economy of adult shopping. Money might be an especially potent drug because it can mimic the satisfaction both from the instinct to play and from the instinct to trade, as children first begin to play at trading or to trade their playthings.

5.4. Synthesis

We explained at the beginning of this paper that there cannot be a “money instinct”. If we are to fit money motivation into the framework of biological explanation that applies to other strong human motives, we must therefore explain how money gets its incentive power through its action on other instincts. If we cannot do so, we would be faced with a situation that would be scandalous within the terms of a biological psychology – a powerful human motivation, perhaps even the most powerful, with no real biological roots.

Reviewing a range of phenomena and theories of human behaviour towards money, we have reached three conclusions.

(i) Although money is an efficient Tool, and so gains incentive power by enabling us to fulfil a wide range of instincts, a Tool theory of money motivation is inadequate. The majority of non-economic accounts of money (and even some economic accounts) either take this view, or require a more elaborated Tool theory than is usually assumed. Modern empirical work has uncovered substantial evidence in favour of this conclusion, and we believe that it would be widely if not universally accepted.

(ii) The inadequacies of Tool Theory can be overcome, and the phenomena that it fails to explain can be integrated, by asserting that money also acts as a Drug. That is, we conclude that money derives some of its incentive power from providing the illusion of fulfilment of certain instincts. This argument has formed the core of the present paper, and although we believe it is well grounded in the data we have reviewed, it will inevitably be more controversial. In particular, the alternatives of a more elaborate Tool theory, or an entirely different way of partitioning the possible kinds of theory, cannot be ruled out at this stage, and perhaps they never could be.

(iii) The incentive power of money depends partly on the illusory fulfilment of the human instincts for reciprocal altruism and object play, though there may well be other instinctive systems that money can also parasitize. This conclusion is more speculative, and is likely to be the most controversial of all. However in so far as it is persuasive, it would provide the best evidence in favour of the Tool/Drug analysis, since it would show that the analysis had been deployed fruitfully.

Thus we are arguing that the scandal of a non-biological motivation for money can be avoided, but not by the most obvious means, which is a Tool Theory. We are not arguing that Tool Theory is wrong, but that it needs to be supplemented by Drug Theory, and a Drug Theory of a particular type. This is not a sloppy “much to be said on both sides” argument. Rather, we argue that the extraordinary effectiveness of money depends on a synthesis between its two modes of action. One of the striking facts about money is its cultural dominance: it is taken up irresistibly by any human

society that encounters it. Other equally functional social inventions are much less immediately attractive. In both developed and less developed countries, governments have to engage in extensive, expensive, promotional campaigns to get beneficial health, education, or birth control practices widely adopted, because those practices are not so readily compatible with human instincts and therefore with perceived immediate self-interest.

A prediction follows from this analysis. If, in the future, money is presented in forms that fit less well with the instinctual structure of the human brain, it may be a less effective tool. An obvious example is the representation of money by abstractions such as the totals in bank or credit card accounts, or the amounts in microchips on smart cards. Such abstractions would not stimulate humans' instincts towards object play, and therefore our management of them will not benefit from our early learning, through play, of how to manage objects effectively. It is consistent with this view that each new form of money seems to bring in horror stories of people who cannot control their spending with it (see Schor 1998; Prelec & Simester 2001). Our argument, therefore, is that if money had not been an effective Drug, it might never have emerged as an efficient Tool. It is because it is both Tool and Drug that it is such a strong incentive.

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