

INSTINCTS AND INSTITUTIONS: THE RISE OF THE MARKET

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‘There is a transformation which is antecedent to Marx’s Rise of Capitalism, and which . . . looks like being even more fundamental. This is the Rise of the Market, the Rise of the Exchange Economy.’

John Hicks (1969, 7)

Abstract

How did cooperation emerge in large-scale, fluid societies? Standard theories based on direct and indirect reciprocity between *self-regarding* agents cannot explain the high level of impersonal exchange observed in developed market economies. Drawing upon recent research from across the behavioral sciences, we attribute the *emergence* of cooperation in early trade to an evolved characteristic of human *psychology* which makes revenge sweet: people are willing to pay a price to punish those who betray their trust. Once cooperative expectations became fixed, institutions such as the law merchant and ethnic trading networks, as well as certain ‘bourgeois virtues,’ helped sustain and extend trade during the Medieval period. Our argument continues the tradition begun by F.A. Hayek in *The Sensory Order* (1952), by providing an integrated explanation for the rise of the market based upon the coevolution of human psychology, culture and institutions. In our conclusion we revisit Hayek’s (Hayek 1976, 1978, 1988) analysis of the conflict between our instincts and the institutions that have created the market order.

I Introduction

The Rise of the Market and the Problem of Exchange

The rise of the market was a gradual process: ‘It takes us back to a much earlier stage of history, at least for its beginnings; so far back indeed that on those beginnings

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(or first beginnings) we have little direct information’ (Hicks 1969, 7).¹ From an evolutionary perspective however, this process: the emergence of impersonal trade, large-scale cooperation between strangers, and a world-wide division of labour, is a recent phenomenon. But it is a topic we understand only dimly.² Market institutions were ‘stumbled upon,’ inadvertently; they were not the product of design or even of conscious choice.³ It was only after the event that we realized what had occurred, or as Hayek put it, the developments that ‘contributed greatly to the growth of an extended order, were little understood at the time, or indeed for centuries afterwards, even by the greatest scientists and philosophers’ (Hayek 1988, 38). In this paper, we provide an integrated explanation for the rise of the market based upon the coevolution of human psychology, culture and institutions. In this way, we continue a tradition which Hayek initiated in *The Sensory Order* (Caldwell 2004).⁴

The rise of the market is closely connected with what Avner Greif has called the *fundamental problem of exchange*. Exchange is universal, rooted in the human desire to ‘truck and barter,’ it has always existed. Impersonal exchange however, is quite different. It is anonymous: traders do not personally know each other, nor is there a promise of repeated engagements. Thus there exists little threat of punishment for cheating, in terms of ostracism or non-cooperation in the future. As a result, absent the requisite institutional framework, impersonal exchange is beset by problems of commitment and coordination. A coordination problem arises because it is costly to match buyers and sellers. When transaction costs are high, markets are thin and the rewards to investing in market exchange are small. Similarly there is a commitment problem because exchange is almost always sequential ‘namely, some time elapses between the *quid* and the *quo*’ (Greif 2002, 169).

¹Markets pre-date written history. We do not subscribe to the views of Karl Polanyi on early trade (Polanyi 1944, 1957). The ‘Rise of the Market’ refers to the slow transition from societies in which trade between strangers was a rare occurrence to societies in which daily life would be inconceivable without our dependence on trade with individuals we do not know personally.

²‘We know surprisingly little about the institutional foundations of exchange in past societies’ (Greif 2000, 252).

³As Hayek put it ‘We have never designed our economic system. We were not intelligent for that’ (Hayek 1978, 164).

⁴Butos & Koppl (2007) make the case that the *Sensory Order* occupies a crucial role in establishing the cognitive basis for Hayek’s critique of scientism, the theory of markets as discovery mechanisms, and his perspective on institutions. Here we focus on Hayek’s explanation of institutional development.

Therefore, impersonal exchange resembles a *trust game*, or a one-sided prisoner's dilemma game, in which the player who moves first must decide whether or not to trust the second player before giving the second player an opportunity to cooperate or defect. The game is typically modeled as follows: player 1 is given $\$x$. She can transfer a proportion $p \in [0, 1]$ of her endowment to player 2. In the process of transfer the amount is multiplied, say by a factor 1.5, so that player 2 receives $1.5p\$x$. In other words, there are gains to trade. Player 2 can then choose to transfer proportion $q \in [0, 1]$ of the amount she receives back to player 1. Every efficient strategy profile involves player 1 transferring all of her endowment to player 2, i.e. $p = 1$. However, in a one-shot setting, a purely self-regarding player 2 would return nothing to player 1. So player 1 would not trust at all, setting the most socially inefficient level of 'trade' $p = 0$. Similarly, in a real one-shot setting, what reason would a trader have to trust a stranger?

For precisely these reasons, before the rise of the market, trade between strangers was difficult and rare. Trade still occurred, but most of it was small scale, personal exchange between individuals who knew each other. The exceptions to this prove the rule: in many early societies small and easily transportable luxury goods could also be exchanged between strangers and non-market rituals and customs arose to formalize and sanctify these exchanges. Commerce was concentrated in the hands of particular ethnic minorities who specialized as middlemen. But these customs could not generalize; they were not scalable because under such arrangements only a small subset of goods had value-to-weight ratios high enough to be worth trading.⁵ The markets that did exist were flea markets characterized by high transactions costs. In these types of markets the costs associated with inspecting quality, deterring theft, and avoiding trades with strangers greatly reduced the volume of trade and additionally distorted the types of goods that were traded (Fafchamps & Minten 2001). A distinct set of institutions were required for the emergence of generalized impersonal exchange and these institutions are those associated with the market economy. Market societies are governed by innumerable instances of impersonal exchange yet cheating or defection

⁵In their archeological study of the ancient Maya for instance, Tourtellot & Sabloff (1972), found that most artifacts were exchanged only within a community. Only prestige items were traded across different communities.

is extremely rare. What institutions make cooperation on such a large scale possible? And how did they emerge?

An Outline of the Paper

This is the fundamental problem with which this paper is concerned. Hayek (1952) initiated a research program in which mind and society are produced by the perennial *coevolution* of cognition, culture and institutions. We argue that the rise of the market and the transition to impersonal exchange is the outcome of this same coevolutionary process. Relatively recent research in evolutionary psychology, experimental economics and economic history broadly supports Hayek's theory, while filling in the details of his framework (see Rubin & Gick 2004). To explain how large-scale cooperation is sustained, we develop a synthesis of the theoretical literature on cooperation in repeated games, historical evidence on medieval trade and the revival in cultural argument among economic historians of the growth of impersonal exchange in Europe.⁶ However, we point to a deficiency in the literature: we still do not understand how early trade could have *emerged* where institutions were poor and the level of trust among strangers was low. In this paper, we attribute the *emergence* of cooperation in early trade to an evolved *psychology* that supports *strong reciprocity* (Gintis 2000, Bowles & Gintis 2004), under which agents sacrifice resources to reward a kind act and punish those who betray their trust. Specifically, we draw upon the experimental work of deQuervain et al. (2004) to argue that instinctive preferences for punishing cheaters enabled merchants to credibly commit to cooperative trade in the absence of formal contracts or state protection. Feuding in Medieval Germany is one example of how strong reciprocity can lead to the emergence of trade where institutions are poor and levels of trust are low.

We proceed as follows. Section II draws on Hayek's (1952) theory of the mind to distinguish between instincts shaped by evolution, cultural beliefs or morals, and the economic institutions they support. In section III, this framework is used to examine the emergence of cooperation, first between relatives and within small groups, and

⁶See Landes (1998), Lal (1998), Jones (2006), Greif (2005, 2006) and Clark (2007) for recent attempts to refine Max Weber's famous claim that a gradual change in values precipitated the emergence of capitalist institutions in Europe (Weber 1930)

then in larger, more fluid societies. We argue that direct and indirect reciprocity on their own are unlikely to sustain cooperation in large, fluid societies. In such societies, evolved human instincts and formal institutions for enforcing contracts play a crucial role in supporting trust and cooperation. Section IV reviews the historical and experimental evidence on the psychological and institutional mechanisms supporting impersonal exchange. In section V we return to Hayek's argument that institutional change has been so rapid that our instincts have not caught up. We conclude by considering some of the economic and political implications of this insight.

II The Framework

We begin by outlining a framework for analyzing the mechanisms which help solve the fundamental problem of exchange, and thereby contribute to the rise of the market.

Hayek's Tripartite Theory

Beginning with *The Sensory Order*, Hayek (1952, 1960, 1973, 1978, 1979, 1988) develops a framework for understanding the rise of the market, by distinguishing between the evolution of instincts for cooperation, the cultural transmission of morals and the emergence of institutions supporting cooperation. These three distinct (but interdependent) mechanisms are as follows:

1. Evolution and Development of Mind.
2. Cultural Transmission and Evolution.
3. Evolution of Informal and Formal Institutions.

These processes operate at different levels (and time-scales), from the infra-individual level of neural architecture, to the level of kin and cultural groups, to entire societies and collections of interlinked societies.

The Evolution and Development of Mind.

Human psychology was largely shaped during the Pleistocene period 1.8 million to 11,500 years ago (Cosmides & Tooby 1992).⁷ A central question in this paper is: how are individuals who evolved primarily in small, kin-based, hunter-gatherer groups able to sustain large-scale, technologically advanced societies that support anonymous trade? What *instincts* or *institutions* make this possible? We present evidence in section III that evolved human instincts are “scalable” in the sense that they entail neurophysiological and cognitive adaptations for supporting cooperation among strangers in large-scale societies. In particular, we argue that the taste for exercising violence against those who violate our trust was imperative in the emergence of trade among strangers.

According to Hayek (1952) the mind can be interpreted as an evolved organ for classifying and filtering sensory data. Particular neural networks map this raw data onto mental states.⁸ This mapping is itself partly inherited and partly shaped by experience, particularly during development. The strength of synaptic connections evolve in response to new sensory stimuli. New sensory data are interpreted based on existing mental categories. So cognitive processes are always path dependent; the historical context always casts a shadow on cognition and decision making. As such, the social and institutional forces shaping experience create the possibility of variation in mental models and rules of behavior across cultural groups. The mind is shaped by its environment.

Cultural Transmission and Evolution.

The “mind is embedded in a traditional impersonal structure of learnt rules.” Human beings are dependent on learnt rules because our “capacity to order experience is an acquired replica of cultural patterns which every individual mind finds given” (Hayek 1979, 157), and “abstract concepts are a means to cope with the complexity of the concrete which our mind is not capable of fully mastering” [Hayek 1973, p. 29]. This means that mind itself is partly a product of cultural evolution: ‘What we call mind is not something that the individual is born with, as he is born with his brain, or

⁷It was likely also shaped by evolution during the preceding Pliocene period (5.3 to 1.8 million years ago) (Foley 1996).

⁸As Butos & Koppl (2007, 23) put it, the brain is a structured organ and it is the structure of the neural connections within the mind that creates the classification system.

something the brain produces, but something that his genetic equipment helps him to acquire, as he grows up' (Hayek 1988, 22).⁹

The categorization function of the human mind plays a major role in human cultural evolution by enabling the generalization of abstract rules learned in a particular context, through vertical, oblique or horizontal transmission (Cavalli-Sforza & Feldman 1981), to a range of new and unfamiliar contexts. Cultural evolution at this level operates through a process of social learning which is conditioned by preexisting instincts (e.g. Boyd & Richerson 2005). Cultural beliefs and values that support cooperation can therefore emerge over a comparatively rapid time frame. Hayek argued that it is this transmission of abstract rules that enabled a major departure from our evolved instincts, causing the transition from small-scale, collective, kin-based societies to complex, technologically-advanced, large-scale societies:

'This exchange society and the guidance of the co-ordination of a far-ranging division of labour by variable market prices was made possible by the spreading of certain gradually evolved moral beliefs which, after they had spread, most men in the Western world learned to accept' (Hayek 1979, 164).

The Evolution of Formal and Informal Institutions.

Cooperation can emerge within societies as a self-enforcing social norm. Due to the multiplicity of equilibria in social interactions, the same cultural transmission mechanisms operating within societies or groups can lead to the emergence of *different* social norms and formal institutions in different groups, and can thus support diverse forms of cooperation. Historically, trade is ubiquitous across very different societies and markets of some form have been supported by a wide variety of different institutions. There is no *a priori* reason to suppose that the institutions chosen will be optimal. In other words, many different institutional arrangements are capable of sustaining *some* limited level of impersonal exchange, but the institutional path a given society stumbles upon will not necessarily be the one that maximizes trade. However, Hayek

⁹By culture, Hayek refers to the collection of heuristics, customs and traditions, personal experience and socially transmitted information an individual uses to make a decision in a particular context. Cultural evolution can proceed either by changing individual preferences or instincts, or by shaping and selecting the institutional environment.

argued that selective pressure at the level of human groups acted so as to choose specific institutional arrangements and norms over others (see Andreozzi 2005). Over the course of centuries moral traditions or social norms that emerge within groups are subject to a group-selection process.¹⁰ Competition between different societies means that social norms and formal institutions which result in the greatest populations or the highest standards of living are more likely to persist.

III Social Cooperation: its basis in evolved psychology

In this section, we evaluate how cooperation is achieved, first between relatives and small groups, then in larger societies.

We can explain cooperation among genetic relatives. The theory of *kin selection* (Haldane 1955, Hamilton 1963) is the primary explanation in evolutionary biology for why individuals take actions which are costly in terms of their own reproductive fitness but benefit the group as a whole. If an individually costly action sufficiently enhances the reproductive potential of the individual's close genetic relatives, then the individual's genes can proliferate through her relatives' reproductive activity, despite the decline in the individual's reproductive fitness. Therefore, kin selection at the level of the gene might explain trust and cooperation within hunter-gatherer societies, which were composed of close genetic relatives. However, kin selection cannot explain the widely observed phenomena of trust and cooperation among strangers with weak genetical-relatedness; nor can it explain the emergence of an open society.

When the same set of agents interact repeatedly, cooperation among non-relatives can be sustained through *direct reciprocity*. This principle can be used to explain cooperation in small groups. Under an extreme version of this norm, players reciprocate trustworthy behavior by trusting their partner again in their next interaction, while punishing cheating partners by refraining from trade with them in all subsequent

¹⁰In his later work, it was precisely Hayek's emphasis on group selection that met the most hostile reception. The reason for this is that, as is well known, group selection mechanisms are subject to severe free-rider problems. Such incentives to free ride meant that 'group advantage, as such, simply cannot explain why the individuals within the group will actually exhibit such group-beneficial behavioural regularities' (Vanberg 1986, 86). Recent work however has reassessed this view. See Sober & Wilson (1998), Zywicki (2000), Andreozzi (2005), Gaus (2006).

interactions.¹¹ Therefore, a player who is trusted in an exchange must weigh up the cost of perpetual autarky with the once-off benefit from defection. The folk theorem shows that if the same set of players interact frequently enough and are sufficiently patient, then perpetual trust and cooperation can be supported as a subgame-perfect equilibrium of the repeated game (e.g. Friedman 1971, Rubinstein 1979, Fudenberg & Maskin 1986).¹² But, while direct reciprocity can explain trust and cooperation in long-run relationships formed in small communities, it hardly applies to large-scale societies in which a large proportion of exchange occurs between individuals who have not met before and will probably never meet again (e.g. Boyd & Richerson 1988).¹³ For example, a borrower not intending to repay a loan could relocate to avoid personal enforcement of sanctions by the lender or simply borrow from someone else in the future.

Cooperation in Close-Knit Societies

To explain trust and cooperation in large populations composed of close-knit groups we turn to *indirect reciprocity* (see Nowak & Sigmund 2005). The key idea here is that an individual's actions affect their *reputation* for trustworthiness. Since any two individuals rarely, if at all, interact more than once, punishment of a defector must be carried out by agents who were not directly cheated, but who can observe their current partner's reputation. Therefore, the shift from direct to indirect reciprocity coincides with a shift from personal to community enforcement (see Greif 1992). As such, the issue is not whether exchange is conducted in long-run relationships with fixed partners, but the extent to which information about reputation flows freely through the population.

If agents are only able to observe whether there was a defection by any player during the period, and all agents condition a trigger strategy on this information, a single erroneous defection can lead to the permanent breakdown of cooperation, and the punishment of many innocent cooperators. Clearly, a different institution for sharing

¹¹There is evidence that human beings have specialized cheater-detection cognitive programs for this purpose (Cosmides & Tooby 1992, Stone et al. 2002).

¹²Still, many other equilibria remain, including perpetual mistrust and defection.

¹³In his classic example of men draining a meadow, David Hume (1739) articulates how cooperation becomes geometrically more difficult as the size of the group increases.

information is required to enable individuals to target punishment. Kandori (1992) shows that *local information processing*, in which individuals carry a label that summarizes their reputation and is observed by their trading partners, can facilitate trust and cooperation, even in the presence of occasional errors.

Greif (1989, 1993, 1994) illuminates how ethnic trading networks sustain trust and cooperation by facilitating the flow of reputational information in the middle ages. Today credit rating agencies, clubs which monitor members' actions, social status markers and gossip networks can fulfill this information sharing function. However, amongst a fluid population in which individuals are sufficiently unlikely to observe the reputation of other players, indirect reciprocity will not sustain large-scale trust and cooperation (Nowak & Sigmund 2005).

Large-scale trade between strangers becomes possible once expectations of social cooperation have evolved, And this trade, once it gets going creates a positive feedback process that is self-supporting.¹⁴ But the existence of this positive feedback mechanism does not explain how trade gets started in the first place. Moreover, these institutions presuppose an existing system of impersonal exchange. Though their development can explain improvements in the efficiency of this framework, it cannot explain the emergence of this framework itself. It does not explain how traders converge on expectations of mutual cooperation.

A further problem with indirect reciprocity is that, in the absence of elaborate information sharing, punishment of defectors with non-cooperation is *costly* in terms of an individual's reputation. This creates a new social dilemma: who punishes? Trust and cooperation cannot be sustained among *self-regarding* agents by indirect reciprocity, unless 'justified' defection (i.e. punishing a partner for prior defection) can be distinguished from 'unjustified' defection (Nowak & Sigmund 2005, Ohtsuki & Iwasa 2006). For this, individuals need to have information not only on their partner's prior actions, but also on the actions of their partner's prior partners, the actions of the partners of their partner's prior partners, and so forth. This level of information

¹⁴For example, Henrich et al. (2004) present evidence from experimental games conducted in 15 small-scale societies spread over five continents, that people in more developed market economies exhibit more cooperative behavior.

sharing is unrealistic except in very close-knit networks.^{15,16} Therefore, direct and indirect reciprocity alone cannot explain the emergence of impersonal trade in large-scale societies. In the next section we consider some of the historical institutions that emerged during the medieval revival of trade and made possible the rise of market institutions and the beginning of modern economic growth.

IV How did Market-Supporting Institutions Emerge?

There is still no generally accepted theory of how trust and cooperation are sustained in *fluid*, large-scale societies. We address this problem in the following way: first, we examine the historical *emergence* of the institutions that made the market order possible; second, drawing upon recent work in experimental economics, we argue **that early trade was enforced by the socially-sanctioned threat of bilateral violence**. This argument suggests that the explanation for large-scale cooperation has its basis in human psychology.

We have established that the kind of personal-reputation based mechanisms capable of supporting trade amongst small groups or tightly-knit communities could not call forth an extended order of trade amongst strangers. ‘Yet somehow, however slowly, however marked by setbacks, orderly cooperation was extended, and common concrete ends were replaced by general, end-independent abstract rules of conduct’ (Hayek 1988, 31). There were a number of elements to this transition and we can only provide a cursory treatment here.

First there was the beginning of long-distance trade which though it pre-dates written history, chiefly concerned luxury goods with a high value-to-weight ratio, and thus could not itself form a basis for the later expansion of trade in basic commodities. Even this trade was always extremely vulnerable to the depredations of raiders, pirates, nomads or states. Nevertheless many of the institutional forms or organizational innovations such as the bill of exchange or the joint-stock company initially developed for use in long-distance trade later became the basis for a broader based

¹⁵See Young (1998, 101) for a formal definition of a close-knit social network.

¹⁶Accordingly, Putnam (2007) presents striking evidence that trust (even of one’s own race) and cooperation are lower in ethnically diverse neighborhoods in the United States.

and more general expansion of markets.¹⁷ Second, this transition was mediated by a variety of institutions that developed either in antiquity or in the period of the medieval commercial revolution. These institutions were not necessarily designed for the particular purposes they served, nor were they necessarily efficient.¹⁸

Some of these institutions created conditions under which the information required to sustain cooperation could be shared amongst strangers while others drew upon instincts for reciprocity. For instance Milgrom et al. (1990) detail how during the Champaign fairs of the twelfth and thirteenth centuries an institution known as the law merchant provided information on each merchant's trading history for a fee, thus sustaining a cooperative equilibrium even amongst a large and fluid population of otherwise anonymous merchants. But the geographical extent of the medieval law merchants was limited, and its historical significance has been questioned (Volckart & Mangels 1999, Boerner & Ritschl March 2002). In comparison to the work on the law merchant and on merchant guilds, less attention has been paid to cases in which market-supporting institutions seem to have emerged by exploiting the underlying human instincts that can support trade and exchange on a large scale.

Here we can consider one example: late medieval Germany, where, in the absence of either a single overarching legal authority or anything analogous to a law merchant, impersonal trade appears to have been sustained by the informal institution of *feuding* (Volckart 2004). Feuds were a form of regulated violence that enabled merchants to commit to fulfilling their contractual obligations. Merchants who were cheated could punish the perpetrators through physical violence or by disrupting their trade. There are two important points here. First, this form of punishment usually imposes a significant cost upon the punisher, the cheated merchant. Knowing this, the trustee merchant in a trade would not face a credible threat of punishment by a cold, self-regarding agent. However, if a merchant derives sufficient satisfaction from punishing those who cheat him, then the threat of retaliation becomes credible, and trust and

¹⁷On the history of bills of exchange see de Roover (1946, 1967). The history of sea insurance is particularly interesting as many of the institutional innovations of antiquity were rediscovered in the later middle ages having laid dormant for hundreds of years (Hoover 1926).

¹⁸See for instance Ogilvie (2007). As the work of Acemoglu (2003, 2006) has indicated, geographical accident, military or political power or some initial distribution of resources can have a decisive effect on how particular institutions in particular regions developed.

cooperation can be supported even in a once-off, anonymous interaction (see for e.g. Rabin 1993). Therefore, feuds can be a ‘cheap’ way of supporting some level of trade if they draw upon instinctive preferences for punishing defectors.¹⁹ The second point is that feuding appears to have been a socially sanctioned response for an agent who is cheated. So not only must a cheated merchant experience emotions of anger and hate to cause him to feud, but the broader society must deem his retaliatory actions (and perhaps emotions) to be justified. We can now consider exactly what these instinctive preferences for punishing cheaters are and what role they have to play in supporting large-scale impersonal exchange in fluid societies.

Instincts for Trust and Cooperation in Large-Scale, Fluid Societies

Fehr & Gächter (1998) survey the extensive experimental evidence that individuals tend to reciprocate like-behavior for like: punishing defectors and rewarding cooperation even when such actions are costly. Human behavior is shaped by concern for the *intentions* of others. Positive reciprocity involves rewarding perceived good intentions, while negative reciprocity requires perceived bad intentions to be punished. There is strong experimental evidence for the widespread existence of negative reciprocity and its role in maintaining cooperation. The game played by subjects has the same structure as the (one-shot) trust game. Recall that the standard game-theoretic prediction, with self-regarding agents, is distrust and non-cooperation. In contrast, experiments indicate that around half of subjects trust their partners, and three quarters of those trusted do not violate this trust (e.g. Berg et al. 1995, Smith 1998).²⁰ Even higher levels of cooperation are supported when a third move is added to the game in which the first player can incur a cost to reward or punish the second player. A significant number of subjects incur costs to reward cooperators and punish defectors. The experimental evidence suggests that negative reciprocity reflected in informal institutions that support impersonal exchange, such as feuding in Medieval Germany, is deeply rooted in human psychology.²¹

¹⁹However, it is a relatively inefficient way of supporting trade, because it imposes significant external costs upon third parties, via the disruption of trade.

²⁰Hundreds of subsequent experiments generated similar results, in countries with different demographic characteristics and with stakes up to 2-3 months’ income (Fehr & Fischbacher 2003).

²¹In their experiments, Kurzban & Houser (2005) show that subjects divide into three groups:

These results are consistent with the presence of *strong reciprocity*, which is a predisposition to *sacrifice* resources in order to (i) reward a kind act, and (ii) punish perpetrators of unkind acts (Gintis 2000, Bowles & Gintis 2004). Fehr et al. (2002) claim that “the fraction of subjects showing strong positive reciprocity is rarely below 40 and sometimes 60 percent whereas the fraction of selfish subjects is also often between 40 and 60 percent.” In addition, Gürer et al. (2006) show that players who can choose between interacting in a regime with punishment and a regime without punishment, begin switching to the punishment regime as (costly) punishment boosts cooperation, while cooperation declines in the regime without punishment. By the end of the sequence of exchanges, all subjects have migrated to the regime with punishment and once there strongly cooperate. This demonstrates that institutions which leverage the influence of strong reciprocators can evolve via group selection.

Why do human beings engage in costly cooperation and punishment? What are the proximate neurophysiological mechanisms that lead to behavior consistent with strong reciprocity? Studies have shown that the striatum, an area in the midbrain, is a key part of neural circuitry which processes information on rewards, while the dorsal striatum processes rewards resulting from decisions. Using neuroimaging technology, deQuervain et al. (2004) demonstrate that subjects with higher activation in the dorsal striatum engage in more costly punishment. Subjects also tend to experience lower activation when they are only able to register disapproval using a symbolic token, rather than punish by deducting a monetary amount from partners who cheat. These observations suggest that human beings who are cheated find punishment satisfying. This explains the negative reciprocity component of strong reciprocity. Rilling et al. (2004) show that mutual cooperation with a human partner generates higher striatum activations than either mutual cooperation with a computer partner or earning a similar monetary reward in a trivial decision task. These observations suggest that human beings find mutually beneficial social exchange rewarding for non-pecuniary reasons. This explains the positive reciprocity component of strong reciprocity.

Recent studies have discovered a further neurobiological mechanism for trust. The neuroactive hormone oxytocin has been linked to prosocial behavior in non-human animals, cooperators, defectors and reciprocators. This is evidence of a stable polymorphic equilibrium of types.

imals. Oxytocin receptors are located in brain regions associated with behaviors such as pair bonding, maternal care, sexual behavior, and the ability to form normal social attachments. Therefore, oxytocin enables animals to overcome their natural aversion to proximity. In experiments conducted by Zak et al. (2005), subjects who receive a monetary transfer that reflects an intention of trust exhibit higher oxytocin levels than subjects who receive an unintentional monetary transfer of the same amount. Subjects who have higher levels of oxytocin also exhibit more trustworthy behavior. Evidence presented by Kosfeld et al. (2005) suggest that higher oxytocin levels cause higher levels of trust, but not trustworthiness. This suggests that the hormone oxytocin facilitates trust among strangers by making social exchange with nonrelatives feel safe and familiar, resembling interactions with kin or close acquaintances.²²

Positive reciprocity can also be supported by the desire for esteem. Adam Smith in *The Theory of Moral Sentiments* described how commercial society was founded on each individual's concern for how he was regarded by others (Smith 1759, 2002). Numerous experimental studies have suggested that human beings care about the welfare of others and about what others think of them (see Fehr & Schmidt 1999, Sobel 2005).²³ The desire for esteem can help to resolve the problem of trust and cooperation in the type of sequential exchange we have been considering. If the second player is sufficiently concerned with how the first player regards him, he will cooperate. Anticipating this, the first player will trust the second and trade will take place. If the second player does cheat, then emotions of anger and revenge may drive the first player to sacrifice resources to punish him, without any expectation of future benefit. In our example, the cheated merchant may go to great lengths to track down a cheating agent in order to ruin his reputation or otherwise impose a cost upon him. Anticipating this, even a self-regarding agent may prefer to cooperate.

Accordingly, Bowles & Gintis (2004) demonstrate that the presence of strong reciprocators sustains cooperation in large, fluid populations. Their simulations also indicate that under assumptions approximating likely human environments over the 100,000

²²In their experiments, 45 percent of human subjects who were administered Oxytocin through a nasal spray trusted their partners maximally, compared to 21 percent for the placebo group. There was no significant difference in trustworthy behavior between the two groups.

²³Brennan & Pettit (2000) assesses the role esteem plays in underlying market exchange.

years prior to the domestication of animals and plants, strong reciprocators could invade a population comprised of unconditional cooperators who cooperate but do not punish, and self-regarding agents who neither cooperate nor engage in costly punishment. Substantial frequencies of all three behavioral types can be sustained in a population. The experimental evidence therefore suggests that a significant proportion of human beings have evolved instincts that generate behavior consistent with strong reciprocity.

Human instincts which evolved in small kin-based communities of hunter-gatherers play a critical role in supporting trust and cooperation among nonrelatives in fluid, large-scale societies. Our instincts have in this sense made the market order possible. But this relationship is a contingent one. Both the historical and the experimental evidence suggests that a multiplicity of different institutional arrangements are compatible with our evolutionary heritage. The question is how or why have we stumbled upon institutions that have made capitalism possible? There is only one piece missing from the jigsaw and this is the evolution of culture and social norms.

The Evolution of Culture and Social Norms

Social norms and culture matter. In the early 1990s, economists supervising the transition to market-based economies in Eastern Europe and the former Soviet Union appeared surprised when the formal market institutions and legal system they had transplanted in these countries *ex novo* failed to function as they do in the west. They failed to appreciate that markets and the economic and legal institutions of market-based economies are embedded in, and supported by a wider network of social norms and moral beliefs (Boettke 2001). Furthermore, moral beliefs and social norms are themselves emergent phenomena, in turn, conditioned upon preexisting institutions and levels of market activity.

Hayek offered a theory of institutional or cultural selection according to which certain beliefs are favored over others via tradition, myth and religion.²⁴ This theory suggests why it was that beliefs favorable to market-based exchange could survive and spread

²⁴Thus in *The Fatal Conceit*, Hayek emphasized that ‘the only religions that have survived are those which support property and the family’ (Hayek 1988, 137).

over the very long run.²⁵ In this section, we argue that the growth of impersonal exchange in Europe, in the course of the Middle Ages, initiated a gradual process in which social norms themselves changed, and where circumstances were favourable, recognizably bourgeois values emerged. Commerce came to be esteemed. And this, in turn, created an environment in which the volume of trade could increase.

Hostility to commerce in antiquity and in the middle ages was almost universal.²⁶ This hostility manifested itself in the form of prohibitions on nobles involving themselves in trade, in sumptuary laws that restricted what kinds of clothes members of each class could wear, in usury laws that hindered capital markets, in guild laws that restricted the mobility of labour, and in widespread monopoly privileges. Aristocratic blood, ability in war, and religious devotion were admired; trade and market exchange denigrated. As Max Weber put it, the capitalist spirit of a Benjamin Franklin ‘would both in ancient times and in the Middle Ages have been proscribed as the lowest sort of avarice and as an attitude entirely lacking in self-respect’ (Weber 1930, 21).

The direct consequence of this was that from the perspective of a modern historian: ‘Most of the wealth produced under the old order was simply squandered’ (Doyle 1992, 33). It was spent on conspicuous consumption, on servants, expensive clothes, and ostentatious entertaining rather than reinvested. The nobility were distinguished by their ‘obsession with maintaining existing status’ and their ‘aggressive pursuit of wives of superior status’ (Hurwich 1998, 178). Aristocratic status involved great expense, particularly as Adam Smith argued, through the maintenance of a large number of retainers (Smith 1776, 1976, Book III, Chapter IV).

The moral values which upheld impersonal exchange were slow to emerge because they differed dramatically from those that had been favored during most of mankind’s evolutionary history. These new moral values involved ‘withholding from the known needy neighbors what they might require in order to serve the unknown needs of thousands of unknown others’ (Hayek 1979, 165). These moral norms comprised a

²⁵The evolution of social and cultural values is faster than biological evolution but it is still gradual in a historical context. As Boyd and Richerson describe it: ‘the wheels of cultural evolution roll on the time scale of millennia, even though, when we look closely at any one society over short periods of time, change is often readily perceptible’ (Richerson & Boyd 2008, 109).

²⁶See Finley (1999, 1973) for evidence of the widespread contempt for trade in ancient Athens and Rome.

learnt web of ‘non-instinctive rules of conduct that enabled mankind to expand into an extended order’ (Hayek 1988, 12). These rules survived and slowly spread precisely because they made possible larger and more successful societies.

This was the essentially Mandevillian insight that what had previously been considered private vices were in fact public benefits. This notions spread slowly through the acquisition of new ‘bourgeois values.’ Sociologist Benjamin Nelson (1969 1949) argued that commerce and religion eroded traditional beliefs over the course of the Middle Ages. The clannish distinction between “brother” and outsider or “other” had been eroded by Christianity, so that:

‘The ground was thus cleared for the establishment of a new sort of “brotherhood,” universal rather than tribal, competitive rather than cooperative, which we have here been lead to call “Universal Otherhood,” a distinctive society, wherein - if we may anticipate - all men are “brothers” in being equally “others.”’ (Nelson 1969 1949, xxiv)

This new form of society emerged first and in a partially developed form in the commercial republics of Italy and in the Low Countries; in Venice and then later in Genoa, Pisa, Florence, Bruges, and Ghent (Pirenne 1925). From there, itinerant merchants traveled all across Europe stimulating trade and commerce (Hunt & Murray 1999). Italian traders and bankers, in particular, were active across Europe: they ‘founded a kind of hegemony over European commerce and finance’ (Bergier 1979, 107) and the ‘Italian business-man made his influence felt from London to Peking’ (Tawney 1955, 291). With the rise of a merchant class commercial mores spread slowly and unevenly through Europe with the growth of cities and towns (McCloskey 2006). Where the volume of trade was large enough, itinerant merchants settled down and became sedentary, forming merchant colonies in the cities located along important trade routes (Spufford 2002). These cities made possible the existence of a flourishing merchant class, for whom trade and active participation in the market was a way of life.

Unlike those peasants, laborers or craftsmen whose engagement with the market was incidental or insulated by guild law, merchants, in general, and those involved in finance in particular, had to embrace the new values of commercial society. These

bourgeois values, which privileged patience, prudence and probity, in turn helped to make market institutions self-enforcing. This improvement was gradual; and as Smith observed it radiated through society slowly. Successful merchants who exited commerce in order to become country gentlemen raised agricultural productivity as they applied the habits they learned in commerce to farming (Smith 1776, 1976, Book III, Chapter IV).

But commerce, cities and city states which were vital to commerce, were always vulnerable to predation from larger princely states.²⁷ From the tenth to seventeenth century, market institutions, bourgeois values and the freedom and prosperity they brought were only possible so long as ‘political anarchy’ divided Europe (Baechler 1975, Jones 1988). Only once the ethics of the mercantile city state had been transferred to a nation state were the institutions supporting market exchange truly and permanently entrenched. Only then was the rise of the market complete and irreversible.²⁸ This occurred most successfully in the Netherlands and in England in the seventeenth and eighteenth centuries, paving the way for an industrial revolution. The transition was not however, truly completed, nor can it be, because we retain many of the moral beliefs and values that regulated life in small-scale societies. In the final section of the paper we explore why money, finance and capitalism ‘remain unremittingly suspect to moralists’ (Hayek 1988, 102).

V The Conflict Between Instincts and Institutions

‘The rise of the Great Society is far too recent an event to have given man time to shed the results of a development of hundreds of thousands of years’ (Hayek 1976, 146).

We can see that *The Sensory Order* plays a vital role in Hayek’s overall research project because it offers an explanation of how experiences are categorized (Hayek 1952). If the filtering/ordering process the theory outlines remains relevant, it is

²⁷Notable examples of this are the Norman conquest of Sicily and Southern Italy in the eleventh century under the d’Hautevilles, the invasion of Italy by Charles VIII of France in 1494, and the subjugation of the German city states during the Thirty Years War.

²⁸There is consequentially an element of historical contingency in this story as Hayek put it: mankind chanced, inadvertently onto the path of development that led to the market order.

because it bears the important implication that the meaning we impart to our social experiences depends on their cognitive context. Hayek argued that when it comes to politics or economics, the first model in our heads that we reach for is essentially wrong. The immediate context we draw upon is that of the small-scale hunter-gatherer society: ‘We have not shed our heritage from the face-to-face troop, nor have these instincts either ‘adjusted’ fully to our relatively new extended order or been rendered harmless by it’ (Hayek 1988, 17). This has a number of important implications.

The sharing of meat is universal in hunter-gather societies because it is an efficient way to reduce the risks that face each individual hunter. But a communal sharing ethic cannot prevail on a large scale in an extended order because its imposition would cause its collapse. ‘If we were to apply the unmodified, uncurbed, rules of the micro-cosmos (i.e., of the small band or troop, or of, say, our families) to the macro-cosmos (our wider civilization), as our instincts and sentimental yearning often make us wish to do, we would destroy it.’ (Hayek 1988, 18). There is thus a mismatch between our evolved inclinations and the institutions that are responsible for modern society. And though, these two models are of course capable of coexisting, a psychological dissonance too often results.²⁹

In this paper, we have presented the argument that the emergence of large-scale cooperation cannot be explained on the basis of direct or indirect reciprocity alone. If this is the case then institutions like the law merchant or the merchant guild can only have played a limited role in explaining the rise of impersonal exchange.

We have further argued that trade was often supported by institutions that relied on norms of strong reciprocity. The moral rules which we have inherited and which hardwired into minds thus made possible the emergence of larger and more expansive networks of cooperation.

The subsequent rise of market, however, led to spread of new moral attitudes, of bourgeois values. The growth of these values made market institutions self-enforcing

²⁹: [D]espite the advantages attending our limited ability to live simultaneously within *two* orders of rules, and to distinguish between them, it is anything but easy to do either. Indeed our instincts often threaten to topple the whole edifice’ (Hayek 1988, 18).

and led to the demise of many of the rules and restrictions that had curtailed trade through the medieval period in particular. Usury laws for instance were first undermined by the repeated attempts of merchants to evade the strict letter of the law before interest below ten percent became legal in England, in the second half of the sixteenth century.³⁰ Furthermore, since the spread of commercial values lowered the cost of enforcing contracts it meant inefficient institutions like feuds were replaced by formal systems of enforcement. In other words, the spread of bourgeois values made Adam Smith's Great Society possible. But these values remain problematic because they are opposed to our inherited moral instincts.

We have argued that human sociability is scalable but it is not perfectly scalable. Cooperation between strangers is possible but relations amongst members of a large and dispersed and anonymous society characterized by a complex division of labor are *qualitatively* different to the kinds of relationships that comprise a small-scale society. This is necessarily true, as Hayek realized, because of the divided and dispersed nature of knowledge occasioned by the division of labor. The information required to achieve coordination between agents is never "given" to a single mind which could work out the implications, and can never be so given' (Hayek 1945, 519).

Individuals typically underestimate the benefits of the market order.³¹ One reason for this is that as Hayek noted, the market order is complex and intangible 'based on purely abstract relations which we can only mentally reconstruct' (Hayek 1973, 38). This is one of the marvels of trade. We do not see or know all of those who benefit from the exchanges we make; nor do we see how or understand how all the goods we consume are produced; the visible link between inputs and outputs is obscured.

This, however, is precisely what is alienating and discomfoting; markets seem chaotic, unordered, inequitable, even random. Their arbitrary nature offends and demands management or correction. Market-based societies are open-ended, vast yet disparate networks utterly unlike anything our Pleistocene ancestors would have known. Hayek

³⁰On the impact of usury laws in general see de Roover (1967), Goff (1979, 1988) and Koyama (2008). For an analysis of their demise in England see Jones (1989).

³¹Caplan (2007) provides statistical evidence that relative to economists, and controlling for income and education, non-economists are more pessimistic about the state of the economy in general, and systematically underestimate the gains associated with voluntary exchange in the marketplace.

located the atavistic longing Rousseau, Marx, Marcuse articulated in precisely this incongruity. It is often impossible to keep track of all the different agents involved in even a simple market transaction, to count who is benefiting and who is losing out. All we see is the overall pattern, how the system seems to reward winners and losers. Typically this will not match our evaluations of desert. It will seem unfair. Therefore it must be made fair; that is, they must be made to fit a pattern compatible with our moral intuitions. But this corseting is inherently corrosive of the properties that make markets valuable, their ability to convey knowledge, provide incentives, and coordinate human action. Hayek believed that the market order was inherently fragile for this reason. To the extent that it is a complex phenomenon, that is, a system characterized by non-linear relationships between a large number of variables that are capable of generating patterns that were not *ex ante* predictable, then attempts to manage or govern it that do not take this into account will fail. And attempts to impose preconceived patterns onto its outcomes will prove destructive. A market order cannot be reconciled with ‘solidarity’ and is thus constantly endangered by ‘the predilection for the concrete’ (Hayek 1976, 49).

This argument, if it is accepted has important consequences for political philosophy since according to Hayek: ‘Though our sense of justice will generally provide the starting point, what it tells us about the particular case is not an infallible or ultimate test. It may be and can be proved to be wrong’ (Hayek 1976, 41).

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