

# Convenient fictions? A critical communicative perspective on financial accumulation, autopoiesis and crisis in the wake of the credit crunch.

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## Abstract

*Recent turmoil in the financial markets following the sub-prime mortgage crisis and the credit crunch has repercussions in many other spheres of society. Governments have spent trillions of taxpayer dollars propping up the banking system in order to avoid systemic financial collapse. Significant public policy questions are being raised about the sustainability of the monetarist macroeconomic paradigm and the dogmatic neoliberal faith in financial deregulation. Media discourses have included open criticism of the finance sector. However, the right of private banks to create money through the issuance of credit and the generation of fictitious values through the securitisation of anticipated future revenue remain peripheral to policy debate, even though they lie at the heart of the recent crises.*

*Although Marx provided the seminal critique of capitalism's internal contradictions, his work on credit-money and financial accumulation processes were never fully developed. However, the more recent work of Hyman Minsky emphasises the role of credit systems in financial markets' endogenous tendency toward crisis.*

*This paper proposes to extend a Marxist critique of contemporary financial crises using Minsky's financial instability hypothesis. However, this requires emphasis on the reflexive communicative processes underpinning credit-money and fictitious financial values. In doing so, it will highlight the role of media and communication systems in accumulation regimes and the risks posed to the lifeworld as financial processes become increasingly self-referential and autopoietic.*

*Key words: political economy; financial crisis; communication; reflexivity, fictitious capital, autopoiesis; Minsky*

## Preliminary note

This paper is based on extracts from the author's doctoral thesis<sup>1</sup> which examines the political economy of communication in global financial markets with a particular focus on how institutional investors prioritise different forms of media and information sources. Theoretically, the work draws on a range of social theory to weld together insights from political economic and cultural economic into a communication-based account of financial

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<sup>1</sup> This was undertaken through RMIT University, Melbourne. The broad aims of the thesis were to:

- Develop an analytic framework that can be used to conceptualise and explain financial market phenomena in terms of communicative/informational processes and allow relevant theories and concepts from different sub-fields to be integrated.
- Provide an empirical description of media/information source prioritisation by institutional traders/analysts in making investment decisions across four major financial market areas (stocks/equities, bonds/ interest rate securities, currencies/forex, and derivatives).
- Measure and correlate trader/analyst meta-knowledge about media/information used in investment decisions; i.e. perceptions of the relative perceived *importance* and *objectivity* of media/ information sources and also the relative perceived importance of different *types* of information used in investment decisions.
- Identify convergences and divergences in perceptions of media importance and objectivity across different sectors of financial market trading.
- Assess the implications of the findings for theories positing a reflexive/constitutive relation between financial information and market reality.
- Assess the extent to which the findings generally support or confirm claims that financial markets have become more publicly accessible/ democratically accountable or become increasingly autopoietic/ decoupled from other spheres of society.

transactions and generation (or annihilation) of financial values. These arguments are necessarily abbreviated in this paper. The empirical study included a survey and a series of interviews with New Zealand-based traders and analysts and also periods of non-participant observation on the trading floors of Deutsche Bank, ANZ bank and the Reserve Bank of New Zealand. Again, space precludes presentation of the empirical data and analysis in detail, but the findings inform the arguments concerning the extent to which financial markets exhibit communicative reflexivity and respond to information/signals endogenously generated by the activities of financial markets themselves. The conceptions of communicative reflexivity are deployed to analyse the processes through which fictitious financial values are generated and annihilated (linking a neo-Marxist account of capital accumulation to Minsky's account of financial instability) and also to conceptualise the financial system's autopoietic tendency to become decoupled from the industrial economy and lifeworld, as recently illustrated by the global credit crunch.

## The context of contemporary financial markets

Money may make the world go round, but the global communications infrastructure and financial information systems are what allow money to go round the world. The convergence of computing, telecommunications and other electronic media since the 1970s, in conjunction with financial deregulation, has led to important shifts both in the scale and nature of international financial markets.

The total value of world financial assets increased from approximately US\$12 trillion in 1980 to US\$167 trillion by 2006 (McKinsey Global Institute, 2006, 2008). Of that US\$ 167 trillion, US\$54 trillion is represented by equities (company stocks), US\$45 trillion by bank deposits (monetary holdings), US\$43 trillion by private debt securities (mostly corporate bonds), and US\$26 trillion by government debt securities (treasury bonds). On top of this, by 2006, the global derivatives market was worth a further US\$10 trillion in gross market value, and US\$477 trillion in notional value<sup>2</sup> (McKinsey Global Institute, 2008; Bank of International Settlements, 2007a). By way of contrast, industrial market production, represented by World GDP, was a 'mere' US\$48 trillion in 2006 (McKinsey Global Institute, 2008).

Meanwhile, exponential increases in information processing capacity and the volume, velocity and extension of electronic financial transactions have seen the daily global market turnover of foreign exchange (forex or FX) derivatives expand from US\$880 billion in 1989 to US\$3.21 trillion in 2007 (Bank of International Settlements, 2005, 2007a). While forex markets generate the largest turnovers (see table below), other areas of the global financial markets also generate massive trading volumes. In 2006, US\$280 billion was traded daily in equities (GoForex, 2007) while US\$947.3 billion was traded in government bonds (SIFMA, 2007). Meanwhile, in 2007, the overall daily turnover in global OTC derivatives<sup>3</sup> markets was US\$4.2 trillion (BIS, 2007b, 2007c).

**Average Daily Turnover on Global Foreign Exchange Markets (US\$ billions)**

<b>Instrument</b>	<b>1989</b>	<b>1992</b>	<b>1995</b>	<b>1998</b>	<b>2001</b>	<b>2004</b>	<b>2007</b>
Spot transactions	317	394	494	568	386	621	1005
Forwards	27	58	97	128	130	208	362
Swaps	190	324	546	734	656	944	1714
Estimated gap in reports	56	43	53	61	28	107	129
Total 'traditional' turnover:	590	820	1190	1490	1200	1880	3210
<b>Total Forex turnover</b>	<b>650</b>	<b>880</b>	<b>1150</b>	<b>1650</b>	<b>1420</b>	<b>1950</b>	<b>3210</b>

Figures derived from Bank of International Settlements (BIS), (2005, 2007a)

These colossal flows are comprised predominantly of speculative investment capital controlled primarily by institutional investors working for investment banks<sup>4</sup>, pension funds, insurance brokerages, hedge funds and

<sup>2</sup> Derivatives are contracts whose value to the buyer or seller changes according to the price movement of another underlying asset within a specified time frame. On the most basic level, a simple futures or options derivative might entail an agreement to buy/ sell a commodity or other security at some price agreed today, thereby protecting the contract holder against the risk of unforeseen price movements. The cost of the derivatives contract is only a fraction of the capital value of the underlying asset in question, hence the 'notional' value is much higher than the market value of the capital exchanged between the counterparties. See later discussion for more information about how derivatives markets operate.

<sup>3</sup> Over-the-counter or OTC derivatives are private financial contracts between two counterparties, sometimes of a bespoke nature. Exchange derivatives are generic contracts which are standardised and routinely traded through exchanges or as securities in their own right, e.g. commodities or FX futures. The US\$4.2 trillion is in notional value, not gross market value.

<sup>4</sup> Note that some definitions of 'institutional investor' exclude banks, but the term here is used inclusively to refer to professional investors working for large financial organisations. In contrast, the term 'individual investor' refers to a private

other investment firms and brokerage houses (although transnational corporations are also significant financial actors and there is growing participation from individual investors). Global capital flows are an index of the essential agency of capitalism, i.e. to constantly seek new configurations of investment to maximise returns. Global financial markets operate around the clock (although major exchanges have set opening hours during the week) as do most major financial institutions (with trading desks in different parts of the globe opening as others close). Trading desks are packed with screen displaying real-time market updates. News from one major financial centre can generate real-time reactions in stock, bond and foreign exchange markets across the world (Anderson et al., 2007).

The expansion of the scale of financial market trading has entailed not only unprecedented increases in the basic *volume* of monetary flows but also unprecedented increases in financial market activity as a *proportion* of global economic production (Wade, 2006; Pazarbasioglu et al., 2007; McKinsey Global Institute, 2008). The total value of global financial securities was roughly equivalent to world GDP in 1980 (109%) but by 2006, this ratio had increased to 348% (US\$167 trillion in financial market capitalisation compared with US\$48 trillion in world GDP). Many of the advanced industrial economies now have a financial 'depth' of over 400% GDP (McKinsey Global Institute, 2006, 2008). This has significant implications not only for the relations between financial markets and industry, government and civil society, but also for capitalism itself.

This expansion and extension of global financial market activity and increasing financial deepening has been facilitated by the development of communication and computing infrastructures through which flows of market information and capital itself are mediated. Communication infrastructures link trading desks around the world to major exchanges and specialised financial media systems such as Reuters and Thomson-Bloomberg which not only provide financial actors with real-time information but also with the interface through which most investment transactions are undertaken.

## **The context of global finance and communication systems**

The expansion of the financial markets since the 1970s is closely related to the development of new communication systems and information technologies deployed in financial markets. New communication/information technologies (NCTs) have been central to a number of significant developments in financial markets since the 1970s. NCTs have facilitated substantial increases in the velocity, volume and extension of financial market activity through providing the infrastructure for transborder capital and market information flows. They also play a role in bringing about spatial-temporal reconfigurations of the networks of interaction interconnecting the key spaces/nodes in which financial decisions/ investment transactions take place. Physical exchanges and pit trading have been gradually superseded by electronic brokerage systems and a global network of trading rooms interlinked through trading screens.

Meanwhile, the emergence of new financial models, new financial investment instruments and assets (NFIs) and new modalities of trading (such as the use of derivatives for leverage and to hedge risk) are also dependent on NCTs. The calculation (and securitization) of financial risk and the interlinkage between different financial securities across formerly spatially/ temporally discrete markets depends on systems of calculation and information processing that were in most cases not feasible prior to the development of computers and digital media. The potential for accelerating and amplifying returns on the financial accumulation circuits is a key driver of financial deepening both in terms of the ratio of financial market activity/values to the industrial economy (see earlier statistics) and the increasing proportion of financial sector revenue in company profits.

The expansion and acceleration of financial information production/ dissemination systems, (both public media such as CNBC, and specialist/ institutional media such as high-end wire services and electronic brokerage platforms such as Bloomberg and Thomson-Reuters) simultaneously facilitate and intensify the demand for real-time market monitoring across an increasing range of financial variables (reflecting new financial models and modes of trading). As information flows accelerate, so too do trading responses, increasing the rate at which prices change (volatility). The symmetrical and simultaneous distribution of market information compresses the time-frames in which trading decisions are undertaken and tightens price-spreads between markets and

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person who actively and routinely engages in financial investment activity for personal gain, and includes 'day traders', the semi-professional investors who engage in securities trading through electronic exchanges, buying and selling on a daily basis to seek profits from short term price fluctuations. The term 'individual investor' as used here generally excludes members of the general public who have financial assets managed on their behalf (e.g. in a pension fund) or who passively hold financial securities such as stocks or bonds for the purpose of gaining dividends, but who do not trade these on any regular basis.

securities, largely eliminating arbitrage opportunities derived from informational symmetry (Carey, 1995). In trading rooms packed with trading screens and awash in real-time flows of data, filtering and prioritisation is unavoidable. In turn this increases the importance of monitoring other financial actors to discern what variables and trading models/frames are currently driving capital flows. This meta-information is critical in maintaining a trading edge in an informationally symmetrical market. However, trading based on this kind of reflexive knowledge has the potential to become self-referential and decoupled from core fundamentals (such as company earnings, interest rates, and growth in the industrial economy).

Meanwhile, the pressure to respond in real-time to changes in information and prices intensifies volatility and decreases the predictability of markets (see Hope, 2006). This opens up new trading opportunities using NFIs to performatively calculate, securitize and exchange financial risk, but also increases the complexity, opacity, leverage and interlinkage of financial securities (particularly where OTC derivatives are traded between private counterparties). While these new modes of trading may sustain returns on investment and allow the hedging of some risks, the systemic effect can be to increase the potential for breakdowns in the models and reference points that allow risk and (fictitious) financial values to be calculated (Bryan & Rafferty, 2006).

The conjunction of symmetries of information, globally networked nodes of trading operating around the clock and systems of calculation that increases the risk of symmetries of meaning and agency. This may not only precipitate crisis but increase the risk of fictitious value annihilation in one market/security type being manifested across others. Transparency regimes intended to control financial risks, moderate volatility (due to market shocks) and increase efficiency (both informational and in terms of returns on investment over time) may increase information disclosure and hence symmetry of price sensitive information (Best, 2005). However, this can also have the effect of further tightening price spreads and necessitating trading strategies (such as increased leverage and complex securities) that engender more/different forms of risk in order to sustain returns. This further narrows the opportunities for arbitrage and the margins on returns and increases the use of leveraged trading NFIs to amplify profits. Importantly, it also requires new investment strategies and trading models underpinned by communication systems.

## **Theorising communication and finance**

The changes in financial markets related to new media and information systems are not merely technological in nature. They also involve significant shifts in the implicit conceptions of the nature of capital and the criteria that shape value. The nature of capital as a social relation was recognised by Marx (1859, 1885, 1894). However, The neo-Marxist foregrounding of social macrostructures does not lend itself readily to meaning-based accounts of symbolic exchange and the formation of the shared conceptual/interpretative systems underpinning financial values. Simmel (1900/1990), meanwhile, theorised monetary forms in terms of enculturated trust in symbolic forms. However, accounting for the cultural-symbolic processes underpinning contemporary financial exchange while maintaining a focus on the critical political economic implications of such developments is not simple. The symbolic ontology of contemporary finance is more easily analysed from a cultural economic perspective. However, the cultural economic emphasis on micro-level agency and ethnographic description can occlude the macro-level political-economic implications of these processes. Analysing contemporary financial markets therefore requires an integration of the insights from both political economy and cultural economy.

Several approaches in social theory have attempted to bridge or circumvent the tension between structural and agency-based accounts of social activity, including Giddens' (1979, 1984) structuration theory, Bourdieu's (1977; 1993) field/habitus framework, and actor-network theory (see Latour, 1993; Callon, 1999;). Although none of these had escaped criticisms of dualism, instrumentalism or determinism (sometimes all of these from different critics) the general recognition that social action required some form of coordination and mediation between agents and that actions would help reproduce structures is an important commonality. Another recent approach is *cultural political economy*, which includes the works of Sayer (2001), Jessop (2004) and Graham (2006). These all recognise the utility of emphasising symbolic/communicative processes in synthesising political economic and cultural economic analyses (Sayer emphasises Habermasian communicative action, Jessop emphasises intersubjectivity and semiosis, and Graham emphasises discourses and sociolinguistics). These all offer significant insights into the constitutive role of symbolic/communicative processes in economic/financial reality. However, all have limitations related to conceptions of systemic (dis)embedding (Sayer), the materiality of semiosis (Jessop) or the (over)emphasis on linguistic processes in economic activity (Graham). While accepting that all these approaches offer theoretically progressive insights, it was deemed necessary to develop a bespoke framework which would foreground symbolic/ communication processes and allow political economic and cultural economic analyses of financial phenomena to be transcoded (see Jameson, 1997).

The formulation of *intersubjective codification* borrows from the aforementioned approaches in conceiving of structure and action as mutually constitutive formations which demarcate the available channels and modalities of meaningful action within a given arena. The notion of intersubjectivity here emphasises the necessity of individual agents' mutual recognition of the channels/modes of action in order to coordinate economic exchange and the coherent ascribing of meanings to transactions. Thus, for example, for money to be used in purchases, transactors must agree on what counts as legitimate tender and commodity forms, recognise property rights and agree on valuations. This approach obviates the need to posit ontologically distinct social structures that function independently of social agents by recognising that the codifications operating within a given social arena both mediate and constrain action. Aggregates of social action condition the arenas in which individual agency operates, but it is those actions through which intersubjective codifications are reproduced (and renegotiated) over time. The formulation does not deny the objective ontology of the material world, but conceives the *relations* of economic agents to that material world (e.g. property rights or valuations) as constructed, mediated and reproduced through communication processes.

In this regard, the processes of financial communication and mediation cannot be adequately understood as simply *representative* of external/ objective market events. Rather, they are *reflexively constitutive* of financial reality. Thompson (2003, 2009) identifies three basic forms of communicative reflexivity:

- The *implicit/performative* form concerns the need for mutual recognition of monetary forms, instruments, models and channels in order to facilitate meaningful transactions, and it is on this level that financial theory can be defined/performed into reality (including calculative processes of valuation, specification of fundamentals and trading frames/schemata and reification of complex new securities as tradable objects).
- The *explicit/transactional* form of reflexivity primarily involves the crystallization of prices through buying/selling (or enunciation of ask-bids on brokerage screens), and also the generation of price movements through high volume transactions that exceed current liquidity levels (note this also creates fictitious market values/returns by indexical extension of the ostensible value of recently-traded securities to all the other holdings of those securities). Other communicative market actions involving the deployment of specific symbolic forms (such as credit ratings or interest rates) are themselves intersubjectively coded as core fundamentals and thus directly constitute shifts in market reality. These can also be considered to entail explicit/transactional reflexivity.
- The *contingent/game* form of reflexivity involves extensions of trading schemata/frames to include the monitoring of other market actors' opinions/ motives/ positions and basing one's own investments not only on the market information available but on the anticipation of how other market actors will collectively interpret and respond to it. This includes self-referential. Importantly, this latter process also allows renegotiations of the intersubjective codifications by redefining new variables a variables that need monitoring and transforming trading models/frames/schemata.

## **Globalisation and financial accumulation**

There several accounts of globalisation that offer relevant accounts of finance (including Held et al, 1999; Appadurai, 1990; Castells, 1996; Sklair, 2001 and Sassen, 1996, 2006). These cannot be reviewed here, but a general argument can be made that globalisation can be broadly conceived in terms of a reconfiguration of the delineations and relations among the polity, economy and civic/lifeworld subsystems. Financial globalisation has been facilitated and accommodated by important adjustments in the relations among the institutions of state, capital and civil society (see Held, et al., 1999). This partly reflects an important shift in macroeconomic policy from the 1970s onwards away from the Keynesian paradigm toward the neoliberal/ monetarist paradigm. The former framework allowed governments autonomy over domestic borrowing and expenditure while using controls on currency pegs and restrictions on capital flows to maintain economic stability. In contrast, the neoliberal/monetarist framework regards free capital flows and currency stability as essential to market efficiency and therefore requires domestic spending and full employment goals to be subordinated to these fiscal priorities (Obstfeld, et al, 2003; Best, 2005).

From the late 1970s onwards, the Atlantic-Fordist mode of capital accumulation underwent an important shift (Jessop's, 1990, 2001a). Accumulation based on returns on investment in industrial production was eroded as the spatial and temporal inertia of commodity production/ consumption in inflationary environments led to diminishing returns. Meanwhile, the opportunities for accumulation offered by financial market investment were expanding and massive amounts of capital began to gravitate towards the financial system (Jessop, 1990; Sweezy, 1997; Harvey, 1999; Bellamy Foster, 2008). By 1980, the scale of global financial markets had begun to exceed world GDP. This shift in the primary mode of accumulation towards 'financialization' (Sweezy, 1997)

was facilitated by the new modes of trading made possible by new communication technologies (NCTs) and new financial instruments (NFIs), along with the relaxation of controls on international capital flows.

These shifts in the primary mode of accumulation can still be usefully informed by Marx's (1867, 1885, 1894) seminal critique of capitalism, particularly the internal contradictions that manifest in the industrial and financial accumulation circuits (M-C-M' and M-M' respectively). Hilferding (1910) develops this analysis, particularly in regard to the importance of bank-credit. The work of Harvey (1990, 1999, 2003) is likewise significant in explaining how capital accumulation regimes have been underpinned by a series of temporal-spatial 'fixes' which temporarily off-set the tendency for accumulation and crisis. The perpetual drive to realise surplus value and avoid diminishing returns/ overaccumulation helps explain the drive to extend capital investments across space (seeking cheap labour/resources and cultivating new consumer markets) while compressing the temporal lags between investment and returns (using technology to increase efficiency in production/distribution and capital allocation through provision of market information). However, the argument here is that the nature of the contradictions and the propensity of capitalist markets toward crisis cannot be fully explained without consideration of the symbolic nature of fictitious value. Marx's labour theory of value does not sit comfortably with this, although his well-known observation in *Capital* Volume 3, (1894: chapter 29) suggests he anticipated precisely the form of financial securitisation that underpinned the recent credit crunch: *'Interest-bearing capital, in general, is the fountainhead of all manner of insane forms, so that debts, for instance, can appear to the banker as commodities'*.

The problem of exponential growth of financial values out of proportion to the industrial economy was explicitly recognised by former Federal Reserve head Alan Greenspan (1996) in his 'irrational exuberance' speech. The generation of fictitious values that ostensibly sustain accumulation without commensurate increases in goods or services with use-value points to another type of symbolic accumulation 'fix'<sup>5</sup> on the M-M' circuit based on communicative ontology of monetary forms and generation of fictitious values related to communicative reflexivity. Indeed, this can be regarded as an extension of the role of media and communication systems in the different forms of spatial-temporal fix that Harvey discusses (see typology in the appendix).

Jessop's (2004) work on cultural political economy recognises the potential importance of incorporating an account of semiosis into accounts of global capitalism. Graham's (2006) analysis of 'hypercapitalism' likewise recognises the role of media/information technologies and language/discourse in the formation of fictitious values. However, these do not specifically address the role of communication and mediation processes in the specific context of accumulation fixes or crises. The framework of intersubjective codification and communicative reflexivity offers a way of extending these analyses in this direction, but to demonstrate this, there is a need to examine communication processes in relation to money.

## Communication and monetary forms

Dodd (1994) and Gilbert (2005) both point out that the definitions of money are contested and identify a theoretical tension between the structural political-economic analysis of monetary systems on a broad social level, and the ethnographic/ micro-social analysis of the manifold forms of monetary practices in specific socio-cultural contexts. One important seminal socio-cultural theorisation was developed by Simmel (1900/1990) who emphasised that money required a fiduciary network of institutionalised trust among market actors who mutually recognise its value and validity as payment. Simmel also emphasised the way money had become a generic form of social power and noted the potential for social relations to become depersonalised through monetary relations. Other ethnographic approaches to money have emphasised how the uses of money are inscribed with social rules for legitimate usage in different socio-cultural contexts, i.e. 'earmarking' (see Zelizer, 1994; Singh, 2001).

A limitation of emphasising money's potential for generic social action and capacity to be earmarked to serve the agency of the holder is that it risks underestimating the structural limitations of monetary forms and understating the significance of the institutional origins of money in capitalist society; i.e. securitised bank credit/debt issued

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<sup>5</sup> Note that there is a distinction here between the symbolic fix involving fictitious value on the M-M's circuit and the arguments of Bell (1973) and Castells (1996) concerning informational goods, Baudrillard's notion of sign-value (1993) and Lash & Urry's (1994) discussion of the symbolic economy, all of which are concerned primarily the commodity exchange circuit (M-C-M').

through fractional reserve banking<sup>6</sup> as interest-bearing capital on the M-M' circuit (see Rowbotham, 1999). This is essentially a process involving the securitisation of a promise of future payment by semiotically inscribing the expected value of that future payment into present frames of reference. So long as the transactors have confidence that a) the promised payment will be made and b) the denominated form it is made in will retain its purchasing power among other market actors, then the promise itself really is as good as gold, so to speak. Indeed, the origin of money as a fictitious form of capital in the circuit of accumulation underscores how deeply the financial system underpins the industrial economy and other subsystems which make use of money. Although money can indeed be used in manifold ways, on a systemic level, credit-money is always vectored back to the private banking sector from which it originated, and in the final instance, this will inflect its usage<sup>7</sup>.

This would seem to invite a neo-Marxist analysis but as noted earlier, Marx conceived of money as a commodity form and regarded fictitious values on the M-M' circuit as inconsistent with the labour theory of value. Several theorists have attempted to resolve this issue: Ganssman (1988) and Goux (1990) both argue that the labour theory of value must be discarded. Meanwhile Kennedy (2000) and Fine and Lapavitsas (2000) respectively attempt to reconceptualise money in terms of abstract labour value and specialised commodity forms. The argument concurs with the former two theorists that the labour theory of value must be superseded in order to account for its symbolic ontology. However, in contrast to Goux and Ganssman, this is not necessitated by contemporary shifts in the symbolic ontology of capital; rather, Marx's labour value and commodity-based conception of money *never* adequately accounted for the shared codes underpinning money's fiduciary origins. On that point, Goux's psychoanalytic approach leads him to assert the need for shared social meaning in monetary forms but *reject* intersubjectivity as a basis for theorising this. Ganssman, meanwhile, recognises the symbolic/codified form of money, but correctly argues (contra Graham, 2006) that language is an inadequate basis to understand monetary codes. He also rejects Luhmann's (1984) account of money as a communicative system, suggesting that this overstates indeterminate agency and fails to account for its role in the maintenance of structural power relations in society. However, this assumes (rather like Jessop's [2004] reservations about a semiotic account of economic structure) that communication/ symbolic processes are *referential* rather than *constitutive* and cannot provide an account of structurally delimited behaviour.

The intersubjective codification framework resolves precisely such objections by emphasising how the demarcation of legitimate channels and modalities of action simultaneously embody and constrain monetary agency. In this regard Zelizer's (1994) notion of earmarking applies, but in the context of institutionally demarcated channels (which is why the even the traders responsible for the trillions of dollars'-worth of daily capital flows are constrained by the options on the brokerage screens and their institutional parameters of risk-tolerance). In conceiving of money as *abstract purchasing power*, the framework also allows Simmel's emphasis on institutionalised networks of trust and generic social power (within the parameters of the available institutional channels) to be transcoded. The framework also helps explain how the deployment of monetary symbols within a network of market agents whose codifications recognise them as money (implicit/performative reflexivity) constitutes a shift in social relations (e.g. property rights or the transfer of liabilities) and crystallizes market prices (explicit/transactional reflexivity), also sending a signal to other market actors about changes in valuation/market expectations (contingent/game reflexivity). This then serves to link the conception of money and financial action into an account of reflexivity in financial markets and the generation of fictitious values that underpin the 'symbolic fix' to accumulation.

### **Fictitious values, symbolic fixes and crisis**

The credit/debt-based origins of monetary form in capitalist economies and the determination of their buying power through exchange on the global forex markets presupposes intersubjective recognition of their form, function and value to enable the coordination of financial activities and the mutual recognition of financial values. The private creation of money through fractional reserve banking is possible because of the indiscernibility of any distinction between the issued monetary simulacra and the reserve, performatively making an electronic

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<sup>6</sup> Through FRB, private banks are able to issue credit on a scale far greater than their actual currency reserves (a ratio of around 10:1 is common). States are responsible for the issuance of physical currencies (M0) and reserve banks usually set default interest rates. However, this is a small fraction of the overall money supply. Insofar as the banking (and, since financial liberalisation, shadow-banking) system operate as private businesses, the control of the monetary system is essentially controlled by financial corporations.

<sup>7</sup> In the sense that borrowed money is issued with the obligation to repay, meaning it cannot simply be expended as payment for use-value commodities if this precludes possibility of repayment. Hence businesses borrow money to invest on the expectation that the investment will generate returns from which the interest can be repaid. Consumers who use credit for consumption soon find that increasing proportions of their disposable income are demanded by the bank.

credit dollar just as functionally 'real' as a physical dollar coin/bill (see Baudrillard, 1975, 1981; Rotman, 1980). The contracted expectation of future repayment allows the issuance of the credit symbol to the borrower who can then use it in market transactions. As Rowbotham (1999) points out, so long as the bank creditors maintain their confidence that their money is redeemable on request, the bank can continue to issue credit far in excess of its actual reserves. The notional/fictitious value of financial securities is generated in an analogous fashion. Financial securities are priced on the basis of the expectation of the future revenue they will generate for the owner (Golding, 2003). However, the incorporation of future expectations into current prices necessarily involves processes of calculation and mediation of information about the market (or other investors). This is a key reason why shifts in investor perceptions, the frames/schemata used to inform trading decisions or new information indicating a need to modify expectations will trigger trading and move prices.

As previously explained, trading in a volume that exceeds the current level of liquidity will move prices in the direction needed to attract the buyer/seller. As Golding (2003) and Muniesa (2007) point out, trading even a small proportion of the total shares of a particular company type can affect the notional value of *all* the company shares<sup>8</sup>. The trading generates a constitutive symbolic commensuration between the listed price and fictitious capital value. The notional price of a financial asset is fictitious precisely because it is based on *current* market expectations of the value of the *future* returns and the surplus that can be realised if the asset is liquidated<sup>9</sup>. In the same way, the mortgage debt underpinning the collateralised debt obligations (CDOs) implicated in the credit crunch was securitised and valued based on the expected revenue streams (including, as it turned out, erroneous indications of the risk of non-repayment). In the case of derivatives futures, the future valuation of the underlying asset can be performatively inscribed into present frames of reference.

As Bryan & Rafferty (2006) suggest, derivatives *bind* the financial future to the present (also see Pryke & Allen, 2000; Best, 2005). This can be conceptualised partly as contractual obligation, but the trading of futures contract on exchanges also provides an important signal about future expectations which can feed back into market expectations and hence the prices of underlying assets they denote<sup>10</sup>. An important process underpinning such calculations involves the quantification, securitization and transfer of financial risk. Although this takes historical price volatility (price movement over time) into account, it also involves calculations of risk which are performatively built into present prices. Prices are therefore sensitive to shifts in the perception of risk, and consequently, so too are fictitious values. Indeed, in regard to securitised debt, whether mortgage securities or government bonds, the ratings agencies (notably Moody's, Standard & Poor's and Fitch) play a key role in issuing investment grades which guide investment decisions and have a potentially significant effect on valuations<sup>11</sup> (see Kunczik, 2002).

These are the basic mechanisms of the symbolic fix to accumulation. However, it is simultaneously the mechanism that predisposes the financial system toward crisis, because the fictitious value that crystallizes in the semantic matrix of investor calculations and expectations can be annihilated in exactly the same manner and with a disproportionately small volume of trading.

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<sup>8</sup> Thus if buying 100 shares of a public company with 10,000 shares on the market pushes the price of a share up a dollar, then within the semantic matrix mediated by globally interlinked trading screens, the fictitious value of the company increases by \$10,000, not \$100 (albeit possibly only temporarily).

<sup>9</sup> Of course, if all the stock holders collectively tried to cash in on a sudden increase in an asset's notional value then their aggregate attempts to sell the assets might exceed the level of market liquidity (i.e. willing buyers at the current price) and collapse the asset's fictitious value.

<sup>10</sup> Other interviews noted that trade in derivatives would often affect prices in the underlying securities, not so much because of self-fulfilling expectations, but because the counterparties exposed to the risk of price movements if they were 'short' would buy the asset in question to hedge their position. This might still move the price, but it stems from institutional decisions about risk and portfolio structure, not self-fulfilling prophecy in any simple sense.

<sup>11</sup> Many financial institutions have a specified risk threshold under which securities cannot be bought and/or must be sold. BBB is the common investment-grade threshold, although some institutions will be more or less risk tolerant.

## Fictitious value and Minsky's Financial Instability Hypothesis

Minsky's Financial Instability Hypothesis<sup>12</sup> (1977, 1982, 1992, see also Bellofiore & Ferri, 2001) identifies the central role of money and credit in financial pricing systems and links these to financial market's endogenous propensity toward financial bubbles/ crises. Importantly, as Keen (2001) and Pineault (2001) both observe, Minsky's recognition of the intrinsic instability of financial accumulation is also suggestive of its potential for it to be transcoded into a neo-Marxist account of accumulation crises (although this requires that the labour theory of value does not apply to the M-M' circuit). Minsky (1977) differentiated between two systems of pricing in the economy, which as Keen (2001) suggests, identifies a disjuncture between Marx's circuits of commodity production and financial exchange:

*'The money wage rate is a dominant determinant of the supply price of investment output [i.e. commodity production]. The price of a capital asset is a determinant of the demand price of a comparable investment good. Given that the price level of capital assets [i.e. M-M'] and investment output [i.e. M-C-M'] are based upon quite different principles, it is not surprising that, at times, they can and do get out of 'alignment'. This is especially so when [...] positions in capital assets as well as the investment output in the process of being produced are debt financed, so that changing in financing terms affect both the supply price of investment outputs with significant gestation periods as well as the market value of capital assets.'* (Minsky, 1977, p.142).

As Hummel (2002) notes, Minsky's analysis highlights a tension between the industrial economy and financial system whereby returns on investment come to depend not only on consumption of commodities but on the perpetual expansion of revenue streams from financial investment. Indeed one form of 'temporal fix' is based on credit (see appendix). By creating present purchasing power on the promise on future repayment (with interest) the accumulation contradiction that arises in the M-C-M' circuit when the level money is insufficient to purchase all the available commodities can be off-set. Of course once the level interest repayment equals the borrower's income, this temporal fix becomes unsustainable. A parallel problem arises in relation to the M-M' circuit, where the perpetual growth of capital investment is needed to sustain fictitious values (explicit/transactional reflexivity). Credit expansion can help ensure there is sufficient money in the system to allow surplus exchange value to be realised. However, this source of liquidity depends on the availability of bank credit which is shaped by risk calculations and expectations of future returns. These expectations are influenced by endogenous market cycles and self-referential (and self-reinforcing) feedback loops within the financial circuit of accumulation.

Importantly, Minsky's (1977, 1982) analysis points out that periods of financial market stability generate the conditions for future instability. A perceived investment opportunity (such as the development of new financial instruments promising attractive returns, e.g. CDOs) generates demand for credit from the investment sector. The ensuing investment fuels market activity and an expansion of fictitious financial market values. This growth encourages market optimism and minimises risk perception both among investors and bank creditors. Consequently, there is an expansion of low-interest credit due to high confidence in borrower's ability to repay debt from future returns (which is partly attributable to the growing value of securities, which moreover, provide collateral for further loans). This allows a positive feedback loop to form, whereby financial market growth engenders euphoria among investors and banks, generating further cheap credit expansion on the expectation that further market growth will continue and ensure debts are repaid. The current returns constitute a signal confirming the validity of future expectation of further growth.

Thus the risk of future defaults on loans is calculated on the basis of currently (over)optimistic perceptions of future market growth, shaped by the expansion of financial values in the recent past. Minsky (1977, 1982, 1992)

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<sup>12</sup> Hyman Minsky's Financial Instability Hypothesis was marginalised by mainstream economic theory, partly because it rejected a core premise of the dominant neoliberal/monetarist paradigm, namely the assumption that market instability and inefficiency stemmed primarily from exogenous attempts to interfere with market processes (such as government regulation). The applicability of his theories to recent crises has led to a posthumous interest in his work, however, it is interesting to note that Minsky's ideas have long been recognised within elite investment circles, as evidenced by repeated references in top analyst newsletters and online forums (e.g. John Mauldin's *Outside the Box* and *Thoughts from the Frontline* newsletters and blog). The fact that his work has often gone unacknowledged in media discourses, policy thinking and mainstream economics textbooks does not seem to have prevented its recognition in investment circles. Note also that Keen (2001) argues that while Minsky is often regarded as a neo-Keynesian, his analysis can be used to usefully extend Marx's anticipation of capitalism's intrinsic tendency toward crisis.

suggests that this entails two structural transitions in the quality of the credit-debt relations underpinning investment. Initially, 'hedge finance'<sup>13</sup> allows borrowers to fulfil all their payment obligations from current cash flows, so if the investments made with the borrowed capital did not produce the expected returns, the debts could still be repaid. However, as credit levels expand, the continued expansion of market values becomes underpinned by 'speculative finance', meaning that the interest on the debt used to fund investments can be covered by current cash flows, but the principle debt repayment must be deferred, pending as-yet-unrealised increases in investment earnings.

Although this means that increases in interest rates or reductions in earnings may place the investor in a default scenario, continuation of the positive feedback loop may lead to investment becoming underpinned by 'Ponzi finance'<sup>14</sup>. This means that the repayment requirements on the borrowed capital can only be serviced if the investor can liquidate the assets in which they have invested the loan, or by borrowing even more money either to cover short-term interest obligations or invest in the hope of making quick returns (none of which are probable in a cycle of declining expectations, credit and liquidity). In other words, the symbolic creation of fictitious value ends up depending on a pyramid scheme of credit. Crucially, the points of inflection from hedge to speculative to Ponzi finance are not discernible during the expansionary phase of the credit cycle because continuing returns/market price increases appear to confirm the validity of continued optimism and low risk estimates.

As Perelman (1987) points out, the expansion of fictitious financial values is erroneously interpreted as an indicator of a robust economy. However, the increasing structural fragility of the underlying debt-finance eventually leads to crisis when, returns on investments fail to meet market expectations. Because asset prices already factor in price expectations and risk calculations, this triggers downward revisions of asset values which reduces the collateral holdings of borrowers. This leads the banking system to re-assess the risk of maintaining their loans to investors. Interest rates increase and creditors may require assets be liquidated to provide an increased collateral 'margin' or 'haircut' (see Thompson's [2003] discussion of the LTCM meltdown). This can shift hedge-financed investments into speculative or Ponzi forms.

As Minsky (1977, 1982, 1992) suggests, the positive feedback cycle that generated the boom is now primed to reverse and turn negative. A shock to market expectations such as a debt-default, a ratings downgrade, and interest rate hike, or weak returns in a growth sector leads to securities being sold, driving down their market values (see later discussion of pricing mechanisms), amplified by the panic of investors who find that their Ponzi-type exposure means debts can only be serviced if securities are sold off. However, the required returns cannot be realised in a market panic where everyone is trying to sell. Defaults on loans accumulate, which not only reduce the expected returns and market value of the creditor institutions (which are themselves subject to shareholder expectations), they also implode the value of any assets based on the securitization of the debts (i.e. future revenue streams) they have created. As Dodd (1994) observes, *'Economic expectations are formed on the basis of perceptions of stability and instability [...] In this sense, expectations can on aggregate resemble something of a self-fulfilling prophecy in which the rational assessment of information plays an integral and constitutive role.'* (1994, p.132).

Kindleberger (1996) points out that although financial crises can be manifested in different ways and their proximate triggers can vary, Minsky's account of how market stability can lead to instability explains a wide range of financial phenomena. His framework is directly applicable to the recent credit crunch (see Whalen, 2007), the dot-com bubble, and the SE Asian currency crises (see Saqib, 2001). Moreover, its emphasis on endogenously-generated market signals also offers a way of extending Marx's recognition of capitalism's tendency towards accumulation crisis to contemporary financial markets. Although Minsky's framework recognises that credit cycles and crises depend on institutional-level market perceptions and (mis)interpretations of key indicators, it does not explain the symbolic processes involved or the role financial media might play in such phenomena. This is precisely where a communication-oriented framework is helpful, not only in extending Minsky, but also in transcoding his analysis onto a (revised) Marxist framework that can take account of the

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<sup>13</sup> Hedge finance in this context has nothing specific to do with hedge funds, except that it suggests risks/liabilities are evenly balanced by other investments/ revenue streams, i.e. current interest obligations.

<sup>14</sup> Ponzi finance refers to a kind of pyramid scheme notoriously pioneered by Charles Ponzi in 1920. This involves investment in a fund whose earnings depend on cash-flows generated by selling more and more shares in the scheme. The South Sea bubble involved an early example of this kind of scam. More recently in 2008, former NASDAQ chairman Bernie Madoff was found to have operated the largest Ponzi scheme in history, scamming \$65 billion from duped investors. However, as Minsky demonstrates, there are far larger Ponzi systems operated routinely in the financial markets.

informational reflexivity and the symbolic dimension of capital on the M-M' circuit. These processes are central to both the 'symbolic fix' to the contradictions of accumulation and the development of financial crises and bubbles.

## The Credit Crunch

The sub-prime mortgage crisis in the US stemmed from the issuance of credit to borrowers who were at high risk of default, who had only the property they were purchasing as collateral. As top US analyst, John Mauldin (2008) explains, the mortgages were then pooled and securitised into CDOs (collateralised debt obligations) to spread the risk of non-repayment evenly, and these were divided up into 'tranches', prioritising repayment for holders of the top tranches, while the bottom (and cheapest) tranches would incur the brunt of any losses. This allowed the higher-tranche securities to be awarded investment-grade accreditation from the ratings agencies. Meanwhile, the riskiest tranches were subject to a secondary round of pooling and securitisation, prioritising repayment for the top tranches and again rendering them eligible for investment-grade ratings and thus palatable to institutional investors. Thanks to this financial alchemy, nuclear waste became effectively transformed into what seemed like gold (Mauldin, 2008). Consequently, banks continued to issue credit and CDOs. Institutional investors, including the banks themselves (both in the US and overseas) took on billions of dollars' worth of these securities. Not surprisingly, when interest rates increased, defaults on the sub-prime mortgage debt began to accumulate, and as houses were repossessed by the banks (again in line with the Minskian model of crisis) the bubble in the housing market that had been driven by availability of the cheap credit began to deflate. The lower-tranche CDOs based on these mortgages began to lose money, but this was largely factored into their prices. As Mauldin (2008) points out, the discount on the investment grade assets based on the secondary securitisation (the nuclear waste) were sold at around 70% of their face value. In practice, this meant that the holders not only had relative priority for repayment, they could also suffer defaults of up to 30% before incurring any actual losses. Unfortunately, the ratings agencies' systems of risk calculation were based not on the discounted market price but on the full 'par' price. Crucially, this meant that even minor losses relative to face value constituted default, and triggered immediate downgrading even though the CDOs were actually still generating returns.

Many financial institutions are obliged to operate within quite rigid parameters of risk exposure. Common models include Value-at-Risk (VaR) and Mark-to-Market which require current portfolio values and potential losses to be indexed to *current* market prices. Moreover, many investment institutions are required to off-load any asset with a credit-rating below a set threshold (usually BBB). Consequently, as viable securities were listed as junk-status, many institutional investors were obliged to sell them off, collapsing their price and evaporating the value of these assets. Increasing market uncertainty and volatility increased the perception of credit-risk, so margin calls and VaR adjustments exacerbated the trend. This meant that mark-to-market systems were signalling massive de-valuation of assets that were in many cases actually still generating profits in line with expectations; thus potentially robust 'fundamentals' could be performatively obscured by the very analytical systems and abstract metrics intended to facilitate accurate interpretation/evaluation. The complexity of the CDOs and their tranches meant that many financial institutions and analysts did not comprehend them well enough to assess the level of risk they represented (Mauldin, 2008). In effect, the fact that the financial community's intersubjective codifications incorporated metrics such as VaR, mark-to-market calculations and ratings agency grades as criteria for trading decisions predisposed investors classify the entire class of CDO securities as either worthless or dangerously risky. Although there were some potentially lucrative CDO assets, in an environment where even AAA-grade securities could not be trusted not to become junk overnight, the prevailing intersubjective codifications provided no adequate frames to differentiate the 'gold' from the 'nuclear waste'.

The ensuing climate of mistrust and confusion over CDOs and the uncertainty over the validity of the key models and indicators as a guide to the risks entailed was a significant vector through which the sub-prime crisis translated into the global credit-crunch. Institutional risk control systems required investors holding the securities to offload securities rapidly losing value into an illiquid market that was no longer certain how to value them. This is confirmed by a candid statement from BNP Paribas, a European bank which had taken on significant CDO holdings in three funds it managed: *'The complete evaporation of liquidity in certain market segments of the US securitisation market has made it impossible to value certain assets fairly regardless of their quality or credit rating. The situation is such that it is no longer possible to value fairly the underlying US ABS assets [...]. We are therefore unable to calculate a reliable net asset value ('NAV') for the funds.'* (BNP Paribas, 2007, no page)

Underpinning both the sub-prime crisis and the credit crunch was a break-down in the market models deployed to calculate financial values and risk. Once these ceased to produce coherent meanings among market actors, fictitious market values could not be sustained. Particularly in regard to the CDO credit ratings and the calculation financial risk, by a break-down in the coherence of the relation between key market indicators (such as credit risk ratings) and variations in monetary value, thereby rendering standard investment valuation models invalid. This might be regarded as a break-down of semantic symmetry among market actors; despite all the available information, there was no way to determine the validity of any frame that would allow investors to be sure what it all meant. This nevertheless led to important symmetries of agency, because as the potential responses of other market actors became increasingly uncertain, risk aversion developed, with the result that everyone wanted to off-load potentially toxic securities and nobody wanted to extend credit when there was no way to be sure that any borrower would not be the next to collapse and default. Essentially, then, financial crises can be linked to a break-down in the intersubjective codifications that underpin the meaning of financial signals and actions. The annihilation of value that occurs in a crisis can be understood as a semiotic rupture in commensuration between the symbols denoting future monetary values inscribed into securities so as to frame them as present values, and the monetary values currently being realised when those securities are liquidated (i.e. that capital accumulation in the M-M' circuit is failing such that the expectation that  $M' > M$  becomes  $M' < M$ ). This semiotic incommensuration breaks down the intersubjective codifications and matrices of shared meaning needed to sustain the validity of fictitious values, crystallising the contradiction in the relation of capital accumulation.

### Financial Autopoiesis

The concept of autopoiesis has been adapted from its biological origins (Maturana & Varela, 1980) by several social theorists to help explain processes in self-reproducing social systems. Jessop's (2001a, 2001b) approach was informative here, particularly in regard to accumulation regimes, although several recent adaptations of Luhmann's (1995) work were also considered. Hessling & Pahl (2006) suggest that self-reference and positive feedback loops in the financial system's operations, evidenced by markets responding to signals generated in/by the financial markets themselves would confirm this autopoietic tendency. Hernes & Bakken (2003), meanwhile, usefully suggest the need for a theory of social action based on reflexive/recursive processes in order to account for social autopoiesis. Graham (2006) duly outlines such an approach and identifies the importance of communicative reflexivity in financial markets, suggesting that language and media discourses both demarcate system boundaries and help extend the system logics of accumulation into other social systems. Leydesdorff (2007) similarly notes that shared epistemologies/codifications constitutively demarcate the boundaries of social systems and points to the potential for communicative processes to extend these across system boundaries.

A key distinction is drawn here between *embeddedness* in the sense of systemic interdependence (such as the state-based governance regimes underpinning global financial activity) and *autopoiesis* in the sense of the asymmetrical/ non-reciprocal extension of one subsystem's codifications into those of another such that events and signals demarcated as meaningful/significant in the former become codified so as to become significant in the latter. Thus for example, because financial markets pay attention to credit ratings and have thresholds below which major market actors will be institutionally obliged to offload securities, governments become sensitised to these ratings, even modifying social policy to avoid negative repercussions for their bond-issues and currency stability (Kunzick, 2002, Soederberg, 2002). Financial markets nevertheless depend in part on state-based systems of governance for their operations (even when these are supranational in scope), so they remain embedded in important respects. Although global networks of finance will certainly respond to events and actions by governments, the relation is not a reciprocal one. The spatial-temporal configurations of financial markets and the transborder mobility of capital means that any unilateral effort by a government to regulate financial trading or restrict accumulation can usually be circumvented. Meanwhile, any non-financial negative repercussions for the state, industrial economy or lifeworld incurred by accommodating accumulation imperatives are typically coded as externalities irrelevant to trading frames/schemata (in system theory terms, this does not count as negative feedback for the financial subsystem).

In this regard, communicative/informational reflexivity can be considered indexical of an autopoietic tendency within the financial markets. The self-referentiality of the relation between financial information and financial market activity has been noted by several authors including Stalder (2001), Knorr-Cetina (2005) and Graham (2006). Hessling & Pahl (2006) note that financial trading practices presuppose a highly specialised microculture (consistent with Knorr Cetina & Bruegger, 2002,), pointing put that investors are sensitive to the price signals that trading activity generates and that the models assumed in guiding trading may have a performative/ self-fulfilling influence. Other research into the effects of financial media on investors (Sant & Zaman, 2006; Busse &

Green, 2002; also see Davis, 2005) does suggest they can be influential where there is an anticipation of an announcement or influential commentator liable to move the market.

The empirical research that has informed this paper was intended to examine the evidence of reflexivity in investors' media/ information usage<sup>15</sup>. One general finding was the very limited evidence of any correlation between the perceived importance of media/sources and their perceived objectivity (where these were significant, they were only weak: <0.3). This suggested that what made an information source valuable to trading decisions was generally not related to whether it was considered to be providing factual, accurate information. The study also identified a distinction between two broad categories of media; *Public Media* (consisting of regular print, broadcast and online news media and other publicly accessible media sources) were generally regarded as less important than *Institutional Media* (consisting of high-end financial information services, private analyst reports and networks of professional contacts). Meanwhile two broad categories of information were identified: *Market Information* (consisting of fundamental and technical data) was regarded as marginally more important than *Reflexive Information* (comprising of factors such as market mood, rumours, and other market actors' opinions). Moderate significant correlations were identified between the importance ascribed to Public Media and Market Information and between Institutional Media and Reflexive Information. There was no correlation between the importance ascribed to Public media and Reflexive Information or between Institutional Media and Market Information. This is interesting because it suggests that any trading advantage conferred by professional financial information systems was not primarily derived from providing market facts and figures (although observation and interviews showed real-time pricing information was constantly monitored on the wire services and electronic brokerage systems). This can be explained by the recognition within the professional investment community that all the basic market data is symmetrically distributed, so any trading advantage stems more from discerning which data is currently most salient and spotting emerging trends ahead of rivals. This kind of meta-information is accessed through institutional networks and helps traders discern the investment frames/schemata currently driving price movements and the positions/trading activity of other investment institutions that are liable to move the market. Use of institutional networks allows privileged access to professional analysts' views and unofficial 'whisper numbers', detection of market flows, identification of shifts in market drivers and validation of prevailing trading frames. This also underlines the difficulty of identifying independent variables and indeed, indicates that investment models and fundamentals themselves evolve over time depending on the prevailing codifications (see also Beunza & Garud, 2005; Knorr-Cetina & Preda 2007). In line with Minsky's FIH, the findings would suggest that the monitoring of other actors will tend to increase during periods of instability or at times where shifts in a market cycle are anticipated. Where this leads to a shift in focus from Market Information to Reflexive Information there is potential for self-referential feedback loops to form, and it is here that financial media may play a role in amplifying feedback loops.

However, this should not be interpreted as confirmation that investors are in a perpetual state of irrational herding or as confirmation of a radical autopoiesis whereby financial markets become *completely* self-referential and respond *only* to endogenous noise generated within the financial markets themselves. Market information, including core fundamentals such as company earnings, interest rates, GDP, and inflation remains central to most investment models and several interviewee respondents who readily acknowledged the potential for informational reflexivity also suggested that prices over the long term would tend to converge toward an equilibrium around fundamentals. Although fundamentals may undergo transitory shifts in priority, some core variables do not appear to disappear from trading frames, and most have external referents in the industrial economy and polity. This would seem to anchor (however imprecisely) the intersubjective codifications underpinning the financial system to events and conditions in other subsystems.

The financial system's periodic tendency towards over-expansion of unsustainable fictitious values and subsequent collapse suggests that (in line with Minsky, 1977, 1982) there are shifts between the intersubjective codifications driving trading and prices during stable periods and those driving prices when markets become volatile and generate bubbles or crashes. The positive feedback of prices during growth periods feeds back into credit risk calculations and expectations of further growth, leading investment decisions to be based increasingly on the endogenous signals investors themselves have generated. The financial media do not cause these cycles, but as Davis (2005) suggests, they can help to amplify consensus opinion, and during periods of instability, this may increase the propensity for herding and self-fulfilling prophecy. If the intersubjective coherence and validity of the models/schemata emphasising fundamentals break down, valuations become dependent on self-referential opinion from key opinion leaders and signals such as price momentum. This would

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<sup>15</sup> The quantitative survey generated this data using semantic differential scales which were then analysed using SPSS, but these were supplemented by interviews and periods of observation of trading floors.

suggest that financial autopoiesis is itself cyclical in nature and ontologically inseparable from informational reflexivity.

Although the primary causes of periodic financial instability and crises are endogenously generated, their consequences are not restricted to endogenous implosions of fictitious value on balance sheets. The exogenous impacts may include capital flight, currency devaluations, pension fund losses, corporate bankruptcies, defaults on sovereign bonds, home repossessions, unemployment and increasing hardship in the lifeworld. Financial crises are not subject to any form of civic accountability and the citizens whose lives are ruined in the wake of such events have no recourse to compensation or legal protection. On the contrary, they will often end up footing the bill for restoring financial instability. The securitization of risk through new financial instruments has increasingly resulted in an transfers of financial liability from markets onto the polity and lifeworld.

Indeed, as the unfolding credit crunch indicates, when banks stop lending to each other, the cash-flows to the entire economy are affected. The banking sector has called upon state/taxpayer support to stabilise both the banks and the entire financial system by injecting liquidity into the market. The trillions of dollars invested by governments in Europe and North America to bail out the banking sector and revive credit creation are funded largely by the issuance of government bonds payable to the very banking system being rescued. No sooner had bail-out packages been negotiated than the financial markets began to exert pressure on the benefactor governments to reduce their debt levels by cutting spending on public services. Failure to do so will doubtless result in financial trading driving up interest rates and destabilising currencies. Thus the banking sector is not only being bailed out by the taxpayer, the public debt incurred by the bond issue is also payable to the banking and finance institutions which bought the government bonds used to fund the bail-out.

As Thompson (2009) has noted, the media's response to the credit crunch was somewhat ambivalent, exhibiting both criticism of financial irrationality and fat-cat bankers' bonuses and criticism of governments either for failing to prevent the crisis or not doing enough to remedy it. However, there has been relatively little attention paid to the more fundamental problems of the private credit-based monetary system. As Josiah Stamp, director of the Bank of England at the time of the Wall Street crash wryly observed:

*'The modern banking system manufactures money out of nothing. The process is perhaps the most astounding piece of slight of hand that was ever invented. Banking was conceived in iniquity and born in sin. Bankers own the earth; take it away from them but leave them with the power to create credit, and with the stroke of a pen they will create enough money to buy it back again [...] If you want to be slaves of the bankers and pay the costs of your own slavery, then let the bankers create money'* (Stamp, quoted in Rowbotham, 1998, p.36).

## **Concluding Observations**

Although this discussion has been necessarily abbreviated in places, and there is scope for far more detail and refinement, the overview provided identifies several potentially useful angles of analysis a communication-based framework emphasising intersubjective codifications and reflexivity can bring to the analysis of contemporary financial phenomena. These include-

- Highlighting the constructed nature of market fundamentals and the performative aspects of the trading models/frames (and thus risk calculations and market expectations),
- Providing a fuller account of the constitutive symbolic ontology of monetary forms, financial transactions and fictitious value creation on the M-M' circuit.
- Extending a neo-Marxist political economy account of accumulation contradictions and spatial-temporal fixes with a socio-cultural account of fictitious value and the potential for a 'symbolic fix'.
- Integrating Minsky's account of financial market endogenous tendency toward crisis to communicative processes implicit in the endogenous feedback loops that generate bubbles and crisis
- Conceptualising the boundaries of social systems in terms of intersubjective codification and the financial systems' autopoietic propensity to communicative reflexivity.
- Suggesting a potential avenue for the integrating of political economic and cultural economic insights.

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## Appendix: Typologies of Accumulation 'Fix' and Related Role of Media/ Communication

Mode of Accumulation Fix	Functions and Institutional Forms	Role of media/ information/ communication processes
<b>Spatial- global extension (imperialism/ dispossession)</b>	<ul style="list-style-type: none"> <li>• Generation of surplus value on M-C-M' circuit.</li> <li>• State backed-imperialism (sometimes military) in collusion with public joint-stock corporations.</li> <li>• Transnational corporations with operations dispersed globally.</li> <li>• Sourcing of cheap overseas labour and resources</li> <li>• Avoidance of domestic taxation through</li> <li>• Cultivation of new export markets to absorb surplus production.</li> <li>• Supranational trade forums broker removal of domestic trade barriers.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination/ control of international operations by state and capital.</li> <li>• Media promotion of investment opportunities to the public as well as private investors.</li> <li>• Communication of commodity prices across different national markets, (especially after development of telegraph).</li> <li>• Cultivation of consumer demand through market research and advertising.</li> <li>• Promotion of free market norms of economic growth (and national development in emerging markets).</li> </ul>
<b>Spatial-colonisation of state sector/ public services (dispossession)</b>	<ul style="list-style-type: none"> <li>• Extend generation of surplus value on M-C-M' circuit.</li> <li>• State adoption of monetarist policies and privatisation of public assets/state services.</li> <li>• Break-up of state sector monopolies and opening up of markets to competition (e.g. telecommunications).</li> <li>• Reduction of welfare provisions to decrease state spending and drive down wage demands/ maintain unemployment levels/ decrease inflation.</li> <li>• Private corporations extending or diversifying holdings into public services.</li> <li>• Establishment of international governance regimes (e.g. IMF SAPs) require removal of domestic trade barriers and opening up of markets to private competition.</li> </ul>	<ul style="list-style-type: none"> <li>• Legitimation of monetarist policies through policy discourses in public media and economic publications.</li> <li>• Legitimation of neoliberal norms concerning personal financial responsibility and private pensions.</li> <li>• Legitimation of private/ foreign investment as being in the public interest.</li> <li>• Selective media (mis)representation of economic issues in developing/ emerging markets (including Russia and SE Asia).</li> <li>• Promotion of new investment opportunities in public services.</li> <li>• Coordination of foreign investments for TNCs buying up state assets overseas.</li> </ul>
<b>Spatial-Symbolic: cultural colonisation (cultural dispossession)</b>	<ul style="list-style-type: none"> <li>• Extend generation of surplus value on M-C-M' circuit.</li> <li>• Extension of TNC operations including media corporations.</li> <li>• Mass production of consumer goods marketed globally.</li> <li>• Co-option of forms of cultural expression/ identification and transformation into commodity forms.</li> </ul>	<ul style="list-style-type: none"> <li>• Normalisation of commodity fetishism and consumerist identities through public media.</li> <li>• Commercial advertising for specific brands and commodities to generate artificial demand for products and services.</li> <li>• Fetishisation of brands with sign value that have minimal connection to productive economy (e.g. Nike)</li> </ul>
<b>Spatial-Temporal-long-term FDI</b>	<ul style="list-style-type: none"> <li>• Extend generation of surplus value on M-C-M' circuit.</li> <li>• Extension of TNC and Finance investment into long-term capital projects, especially infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination/ control of international operations by state and capital.</li> <li>• Media promotion of investment opportunities to the public as well as private investors.</li> </ul>

<b>Spatial-Temporal-long-term FDI</b>	<p>development in emerging economies.</p> <ul style="list-style-type: none"> <li>• Establishment of international trade and financial governance regimes to open up markets to private/foreign investment.</li> </ul>	
<b>Temporal-productive efficiency</b>	<ul style="list-style-type: none"> <li>• Extend/accelerate generation of surplus value on M-C-M' circuit.</li> <li>• Use of industrial/ information technology to increase productivity, reduce wastage, and increase logistical efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>• Information technology/ computing used to coordinate TNC activity and operate just-in-time systems.</li> <li>• Use of IT for real-time market information and investment efficiency.</li> </ul>
<b>Temporal-credit extension</b>	<ul style="list-style-type: none"> <li>• Create money through the issuance of credit/debt and financial assets through the securitization of that debt.</li> <li>• Generate surplus value on M-M' circuit (interest).</li> <li>• Use of debt as leverage to impose market liberalisation on emerging economies.</li> <li>• Extend generation of surplus value on M-C-M' circuit.</li> <li>• Increase rate of retail consumption through borrowing to accelerate accumulation.</li> <li>• Increase business investment and economic growth by encouraging borrowing to support business ventures, including borrowing for financial speculation.</li> <li>• Deregulation of banking/ credit sector allows convergence of commercial and investment banking and formation of shadow banking system.</li> </ul>	<ul style="list-style-type: none"> <li>• Shift to symbolic monetary forms with values inscribed in market confidence not material commodity value (e.g. gold).</li> <li>• IT and computing facilitate new electronic forms of money/ payment and paperless credit systems.</li> <li>• Cultivation of consumer demand through advertising and promotion of commodity fetishism.</li> <li>• Cultivation of neoliberal norms in regard to credit/debt and demand for major borrowing to fund mortgages.</li> <li>• Maintenance of confident investment climate through media reports (NB: the media may also play a role in reversing that confidence)</li> </ul>
<b>Symbolic-fictitious values</b>	<ul style="list-style-type: none"> <li>• Generation of financial values on M-M' circuit.</li> <li>• Deregulation of capital flows and 'big bang' wiring up of financial exchanges promote growth of finance in relation to GDP.</li> <li>• New financial architecture and governance regimes oblige transparency/ disclosure to increase market efficiency.</li> <li>• Creation of economic value to sustain accumulation through the securitisation of revenue streams from companies stocks), credit/debt (bonds and interest rate securities) and currency speculation.</li> <li>• imposition of market discipline on industrial economy and state through free capital flows and price responsiveness to earnings, debt and policy.</li> </ul>	<ul style="list-style-type: none"> <li>• Symbolic generation of fictitious values through coordination of meanings ascribed to economic actions based on specific intersubjective codifications that permit financial symbols to become constitutive of value.</li> <li>• NCTs provide real-time market information systems and facilitate interlinked exchanges to create a global financial market.</li> <li>• Provision of electronic platforms for global trading activity.</li> <li>• Governance regimes emphasising transparency increase symmetry of market information.</li> <li>• Financial media provide the key interface between traders, analysts and reporters and permit intensification of market surveillance/monitoring.</li> <li>• Financial media also facilitate symmetries of information across markets and may at times engender reflexive/ self-referential</li> </ul>

<p><b>Symbolic-fictitious values</b></p>		<p>feedback loops which allows market bubbles to be sustained (but can potentially lead to crisis).</p> <ul style="list-style-type: none"> <li>• Media discourses legitimate and valorise financial markets as a key driver of the new economy.</li> <li>• Financial media also disseminate and legitimate prevailing theories/ models/ schemata which are then performatively manifested through trading practices.</li> <li>• Financial advertising and NCTs, along with increased financial content of public media promote expansion of financial participation to non-institutional investors.</li> </ul>
<p><b>Symbolic-Temporal-fictitious values through new forms of securitisation</b></p>	<ul style="list-style-type: none"> <li>• Extend generation of financial values on M-M' circuit</li> <li>• Development of NFIs through the securitisation of future contingencies in revenue streams and price movements in other securities (derivatives).</li> <li>• Securitisation and transfer of risk exposure allowing hedging practices and closure of price spreads, reducing arbitrage opportunities (derivatives)</li> <li>• Intensification of market discipline and efficiency through enabling commensuration across different capital forms.</li> <li>• Amplification of financial earnings through leveraged trading using derivatives to take advantage of narrower spreads/ arbitrage opportunities.</li> <li>• Intensification of M-M' temporal cycles upon other forms of capital.</li> </ul>	<ul style="list-style-type: none"> <li>• As above (with less non-institutional investor participation), plus:</li> <li>• NCTs combined with financial theory produce new modes of trading and complex NFIs.</li> <li>• Performative aspect of NFIs and financial calculation practices manifests commensuration across different securities based on intersubjective codifications providing common notations for risk.</li> <li>• Performative binding of future price expectations to current valuations.</li> <li>• Commensuration of different securities and interlinkage of market agency across different portfolios reconfigures relations among different securities, creating non-natural (non-) correlations in price movements.</li> <li>• NFIs circumvent regulatory regimes especially in regard to disclosure/ transparency.</li> </ul>

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