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Financial innovation: frame, conjuncture and bricolage

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Abstract

This is a paper about how financial innovation is constructed in different discourses, in financial journalism and official reports as much as in mainstream academic finance or social studies of finance. Written just before the bank bail outs of October 2008, it observes the weakness of popular and official concepts of financial innovation and the tendentiousness of academic concepts from both the market theorists and the social constructionists. From this point of view, *financial innovation* is a powerful and convenient metaphor for progress which has been appropriated in the 1990s and 2000s by those with an interest in the further development of financial markets; and it is not surprising that some of the cheerleaders for innovation, like Robert Shiller, now claim that more (not less) innovation is what is required. The paper then challenges these preconceptions by developing a new concept of financial innovation whose three main elements, frame, conjuncture and bricolage are indicated by the title of this paper. The importance of this problem shift is that it highlights the inherent fragility of this type of intermediary led financial innovation where things will often miscarry.

Keywords

Financial innovation, bricolage, conjuncture, intermediaries, financialised capitalism, financial markets.

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“People really believed that the world was different,” recalls Larry Fink, head of BlackRock investment group. “There was this huge trust in the intellectual capital of Wall Street – and that appeared to be supported by the fact that the banks were making so much money”,’ Financial Times, 4 August 2008 (Gillian Tett, ‘The Big Freeze Part I: how it all began’)

[W]hilst financial innovation and securitization have brought real benefits and allowed for risk dispersion through the system, it has come at a cost’ (John McFall quoted in a press release to accompany publication of the UK Treasury Committee inquiry ‘Financial Stability and Transparency’)

1. Introduction¹

This is a paper about how financial innovation is constructed in different discourses, in financial journalism and official reports as much as in mainstream academic finance or social studies of finance. It observes the weakness of popular and official concepts of financial innovation and the tendentiousness of academic concepts from both the market theorists and the social constructionists. From this point of view, *financial innovation* is a powerful and convenient metaphor for progress which has been appropriated in the 1990s and 2000s by those with an interest in the further development of financial markets; and it is not surprising that some of the cheerleaders for innovation, like Robert Shiller, now claim that more (not less) innovation is required. The paper then challenges these preconceptions by developing a new concept of financial innovation whose three main elements, frame, conjuncture and bricolage are indicated by the title of this article. The importance of this problem shift is that it highlights the inherent fragility of this type of intermediary led financial innovation where things will often miscarry.

We started by being provoked by financial journalism and establishment response to the unfolding crisis of financial innovation which began in the summer of 2007. In the collective post mortem at the end of the credit bubble, innovation in financial markets, especially securitization, is blamed for what is widely considered to be the rise of a giant ‘shadow banking system’. This was inaccessible to market regulators and no longer subject to the normal ‘laws’ of financial gravity so that it distorted financial realities and invited reckless lending and borrowing thereby endangering households, firms and even nation-states. But for a decade or more before 2007, the same media and establishment sources were praising financial innovation for its apparent ability to create liquidity, democratise the availability of credit and conjure away risk. In an academic frame, innovation was a good thing because it improved the allocation of capital, making market pricing and risk more accurate and enhancing aggregate welfare. How was it possible for all this to go wrong? As we demonstrate in this paper, the gap between ex ante preconception and ex post realisation is bridged with the argument that the innovation of the 2000s was ‘too much of a good thing’ which reassuringly implies that innovation per se is not the problem if we have the right form and amount of innovation. Of course, by the end of September 2008, the ‘too much of a good thing’ reasoning was not only less convincing but has been engulfed by the succession of problems at major financial institutions and the requirement for radical political response. The dominant narrative of the crisis has very rapidly shifted from a cautious view that financial innovation was basically good, but had been taken too far or inappropriately applied, to a more uncompromising emerging consensus that what is now required is a ‘new financial architecture’, with stronger regulation of the banks to prevent dysfunctional financial innovation in the future. Nevertheless the defence coming from mainstream finance still is that the failings of the financial system are caused by insufficient or poorly designed regulation and that the solution hence is more and better markets rather than more state. This

line of argument is nicely captured in Robert Shiller's *The Subprime Solution*, where it is argued that a true democratization of finance would have saved us from today's disaster (Shiller 2008).

However, it is true that political and popular commentary is, at this stage, running ahead of well-developed academic argument, but if we are interested in the idea of financial innovation before the crisis the insights from several academic discourses fail to provide any convincing analysis of the innovation process in finance. Mainstream academic finance represented financial innovation in circular and teleological terms as that which perfected the market. We found more sophistication in the social studies of finance or the burgeoning financialization literatures, both of which covered the absence of any concept of innovation with (implicit and explicit) moral judgements, for and against. Social studies of finance tended to present the innovators as heroic scientists, while the financialization literature consistently deprecated the redistributive outcomes as elites benefited when the picture was much less clear for the masses. If these discourses presented innovation differently in black or white terms, they share a common rationalist assumption that innovation (one way or another) involved the projection or realisation of the categories of knowledge in the world. The idea of performativity unites almost all the academic writers on financial innovation, including those like finance professors who prefer to use the language of financial engineering.

Any interest in financial innovation, both in its uncontrolled form before the crisis and in whether and how it can be tamed by regulation afterwards, requires us to understand the innovation process. Hence the need for a different concept of innovation, which we put together by combining macro, meso and micro elements of analysis. Like most others who have written on finance since 1979, we recognise the importance of the breakdown of Bretton Woods plus the 1979 entrance of Reagan, Thatcher *et al.*, which together inaugurated new structural conditions. But in our view these are necessary but not sufficient to explain financial innovation in our time which also requires analysis of the conjunctural conditions of financial innovation plus a micro perspective on innovation as bricolage. We have borrowed and combined Braudelesque ideas about different temporalities and the Levi Straussian opposition between science and bricolage. Like Cavafy's furniture, these concepts have been knocking around for some time and are not unknown in social studies of finance. For example, in a MacKenzie (2003) article where bricolage features, it is assimilated into a rationalist frame as theoretically guided (not 'random') bricolage. Our interest is rather different because we would emphasise that bricolage in a rapidly changing conjuncture produces fragile chains of innovation which is bound to miscarry. The problem is this current form of innovation (not too much innovation of the wrong kind).

The paper which develops these arguments is organised in a relatively straightforward way. In the second section we give some examples of how financial innovation was represented positively before the 2007 credit crunch; and also show how the embarrassment of unexpected crisis was explained away in media and official reports with the alibi that sub prime and all that was 'too much of a good thing'. The third section deals with academic representations of financial innovation in mainstream academic finance, as well as on the progressive and critical periphery of social studies of finance and financialization. Behind the concepts of 'financial engineering' and 'performativity' are a set of rationalistic assumptions which financialization rejects without finding a concept of innovation. Sections four and five provide this alternative concept of the art (not science) of creating novelty out of the ordinary. Section four outlines our ideas about a macro frame of structural conditions; while section five outlines the changing field of conjunctural opportunities within which innovation is a work of bricolage. We aim to develop these arguments further in a number of projects over the next few years and the concluding section outlines issues and questions that take us towards a future research project. This paper is deliberately conceptually minimalist. It does not aim to present some kind of general theory of financial innovation but instead uses some borrowed concepts like conjuncture and bricolage to throw sand in the cogs of the dominant conceptual

apparatus. The paper could and should be more empirically resourceful because in this version our empirics are only vignettes and illustrations. If empirical work has yet to be done, our first priority is to challenge prevailing conceptions of innovation and its role in the current crisis.

2. ‘Too much of a good thing’: a crisis for financial innovation

The result of the last 20 years of financial innovation is that we can insure virtually anything and engage in activities we would not have undertaken in the past. As a result growth has been more stable and business cycles have been less frequent and severe.

While we need to clean up the present mess – aligning the incentives of securities issuers and ultimate investors and providing the information they need to price the risks they face – the fundamental innovations should remain. As we think about how to adjust the financial regulatory system, it is important that we do not stop what is going on, just that we do it better.

Stephen Cecchetti, *Financial Times*, 22 June 2008

The current financial market problems are, at the most obvious level, a *crisis of financial innovation*, where securitization represents the archetypal innovation carried to what are now regarded as extreme and unreasonable levels. Thus, there has been increasingly intense (though not always illuminating) media commentary about the nature, causes, likely duration and probable outcomes of the ongoing credit crisis: for example, the *Financial Times* marked the first anniversary of what it calls the ‘Big Freeze’ with a four-part series. In the first of these, Gillian Tett notes that ‘over the past decade, western banking has experienced an extraordinary burst of innovation’ but that there now has arisen a ‘growing concern’ about risk management practices around securitization which first fuelled, and then undermined, the credit bubble. Just as significantly, however, current events are also a *crisis for financial innovation* with many commentators and regulatory organizations questioning the ability of banks and other institutions to manage innovation in ways that do not also undermine the stability of markets and institutions. For example, *Business Week* journalist Michael Mandel writes in military terms of the ‘war of financial innovation’ (Mandel 2008) in discussing the early attempts of the US Federal Reserve to stabilize the markets.

It took some time for organizations and commentators to register the full seriousness of what was originally termed a temporary and limited ‘credit crunch’ but is now recognized as a more comprehensive crisis for financial markets, the banks and the wider economy. Major institutions concerned with financial stability and financial market regulation, as well as the financial and business press, have issued updated reports and analysis about the situation. Two things are particularly striking in all of this. First, though there was much (repetitive) description and commentary about sub prime, CDOs and all that in media and official reporting up to and during summer 2008, such description substituted for analysis about the nature and origins of the crisis (let alone about the need for and nature of reform of the financial system). Second, there was an emerging broad consensus about how financial innovation, which had previously contributed to risk pooling and management, (and which had increased the availability of credit to households and firms and improved management of the global financial system), could in retrospect be seen as having gone too far and become a contributory factor in the ongoing credit crisis. The necessity of deploying large sums of public money to underwrite the financial markets by supplying liquidity and capital to banks and other organisations now means that some kind of new regulatory framework is inevitable. Yet, because financial innovation is not new (it pre-dates the credit-fuelled boom up to 2007),

there is no reason to think that financial innovation will not occur in some form in a re-regulated banking system.

The current debate obviously needs to be set in the context of the pre-crisis verdict on financial innovation, which was presented as a largely positive phenomenon with many official bodies concerned to encourage more innovation which would bring social benefits. Consider, for example, the following views and positions all taken in the first half of 2007, weeks before the crisis started. The Financial Services Authority in the UK was concerned that regulatory reforms should ensure that ‘the UK continues to be Europe’s recognised centre of financial innovation’ (FSA press release 29 June 07), while the Japanese Financial Services Authority tried to play catch-up in discussing measures that would encourage more innovation in its domestic financial services industry. Speaking in 2007, Ben Bernanke argued that ‘in some respects financial innovation makes risk management easier’ because it can be ‘sliced and diced, moved off the balance sheet and hedged by derivative instruments’, while in general ‘financial innovation has great benefits for our economy’ (Bernanke 2007). Similarly, a paper by Bank of England authors gives a flavour of the benefits of financial innovation, highlighting the way that ‘in recent years, there has been much greater scope to pool and transfer risks, potentially offering substantial welfare benefits for borrowers and lenders’ (Hamilton *et al.* 2007, p.226), including increasing ‘the availability of credit to households and corporations’ through a wider ‘menu of financial products’ (p. 230). According to the First Deputy Managing Director of the IMF in his comments on Germany, ‘financial innovation has played a role in promoting this unexpectedly good economic performance’ (Lipsky 2007). While for Adrian Blundell-Wignall of the OECD, ‘sub prime lending is a new innovation... the big benefit is that people who previously could not dream of owning a home share in the benefits of financial innovation’ (2007, p.2).

Since August 2007, there has been an accumulating pile of reports on the sub-prime crisis and related events which contribute to a new emerging consensus about financial innovation. This consensus is not triumphant but reconciles the current crisis of financial innovation with earlier praise by putting more emphasis on the negative impacts of *too much* (or the wrong kind of) innovation. The IMF’s *Global Financial Stability Report* of October 2007 was initially cautious in suggesting that ‘while securitization and financial innovation more generally, through enhanced risk distribution, have made markets more efficient, there is a need to understand how they may have contributed to the current situation’ (IMF 2007, p.xi). The BIS has been more forthright and in its 2008 annual report criticizes the irresponsible use of financial innovation in a very extensive report on what went wrong. For example, the first chapter’s overview of the crisis notes that: ‘the recent innovations associated with the extension of the originate-to-distribute model have had a major impact. Recent innovations like structured finance products were originally thought likely to produce a welcome spreading of risk bearing. Instead, the way in which they were introduced materially reduced the quality of credit assessments in many markets and also led to a marked increase in opacity’ (BIS 2008, p.8).

The policy implication of ‘too much of a good thing’ is that we should aim for the right kind and amount of innovation. Thus, the standard regulatory response as outlined by the IMF and others is that care needs to be taken to avoid damaging the environment and reducing the flow of future (good) innovation: ‘in general, the current regulatory systems have proven resilient to date, and regulators must be continually mindful that households and firms have benefitted greatly from the financial innovation and solid growth and stability of recent years’ (IMF 2007, p.xii); ‘regulators should seek to strike a balance between protecting consumers and facilitating innovation’ (IMF 2007, p.37). Or, ‘while recognizing that financial regulation needs to catch up with innovation, some Directors emphasized that actions to strengthen regulation should not stifle the creativity and dynamism of financial markets’ (IMF 2008, p.126). If the credit crisis represents too much or the wrong kinds of financial innovation, care

must now apparently be taken to prevent too little innovation being the outcome of an overly-hasty regulatory response.

Maybe embarrassed silence might be more dignified, but what we had from the IMF and other commentators, practitioners and regulators is some awkward rewriting of history which salvages the previous permissive, laudatory position on financial innovation where these figures behaved like bishops blessing battleships. It is not pedantic to ask some hard questions. How can there be too much of a good thing and how can such good things suddenly (and largely unexpectedly) turn sour? Is the consensus view a matter of making minimal interpretative concessions after the agreed facts have changed? By September 2008, the 'too much of a good thing' line had largely disappeared. The need for political intervention to underpin the banking system has led to populist attacks on the irresponsibility and greed of senior bankers. But, where did ideas about financial innovation come from and why did the phenomenon enjoy such a positive reception for so long? What we find is that media reports and the publications of official regulatory reflect or at least are coherent with academic understandings, whose prestige has been built up over decades. These academic discourses are analysed in the next section.

3. Current concepts of financial innovation

Some of the innovations associated with the sub-prime crisis – notably option-ARMs, when extended to borrowers who couldn't handle them – seem to have little redeeming value. But others – those involved with the securitization of mortgages – were clearly important long run innovations, because they can help spread risks better around the world.

So, we should not slow down financial innovation. On the contrary, some of the fixes that result from the sub-prime crisis will probably take the form of still more innovation, further increasing the sophistication of our financial markets

Robert Shiller, 2008

Mainstream finance: functionalism and teleology

The idea of financial innovation is itself a leading metaphor because the coupling of the two terms, finance and innovation, connect developments in financial products and markets with standard economic ideas about innovation as a process with positive outcomes. Innovation can create losers (not least via Schumpeter's creative destruction) as well as winners, but the standard economic definition of innovation is as something that results in a higher level of economic welfare. An association with the theory of economic innovation imbues financial innovation too with positive outcomes. In that sense, the media and official reports and publications quoted above indicate that finance has successfully associated itself with innovation and positive social outcomes. This has been possible partly because different groups of academics explicitly and implicitly supported the casting of finance as an *innovative* project that brings economic and social benefits.

The heterodox economists who have contributed to the development of innovation studies have shown very little interest in finance. Interestingly, Schumpeter's 1934 text, *The Theory of Economic Development*, contains extensive discussion of credit and capital in the economic system and the growth of firms, as well as some discussion about money markets and their potential as a source of income. But, as O'Sullivan (2002) has noted, the links between finance and innovation have been 'largely neglected' in recent times, not least because of the intellectual gulf between financial economists and economists of innovation. There has been some contemporary discussion of the role of finance within innovative processes and systems, especially in the form of venture capital and its importance for innovative industrial districts

(see, for example, the review in Lazonick 2002) but also in the form of firm-finance relations which are seen to be nationally specific and hence as giving rise to 'national systems of innovation' (see, for example, Nelson *et al.* 1993, OECD 1997). In general, finance is seen as an (unproblematic) input into the entrepreneurial process and the issue of innovation *within* finance has been left to the financial economists. As will be demonstrated in this section, this has resulted in a generally narrow, self-contained and functionalist account of financial innovation by finance academics who have taken little from the more complex understandings of innovation studies.

In the 1980s some of the leading figures in financial economics such as Robert Merton (1986) and Merton Miller (1986) were interested enough to use the concept (or couple the terms) of financial innovation. As Miller observed, at the simplest level, there seemed to be a lot of it about. The association between innovation and economic growth is explicitly made in some of the financial economics literature: for example Miller (1986) defines financial innovation as something that produces economic growth in excess of what would otherwise occur. However, this connection is asserted rather than empirically explored with the result that for most authors, financial innovation is, tautologically, the acts that make markets (and hence economies) more efficient. Of course, there are exceptions such as Molyneux and Shamrouk (1999) but generally there is little application of concepts and understanding from empirical innovation studies. Instead, interest in financial innovation has been inward looking and relates more narrowly to mainstream concerns in financial economics about the efficiency of markets.

The explanations for financial innovation are similarly narrow in focus: Miller's early work applies a financial economics framework which highlights regulations and taxes as the 'impulse' to innovate (see also the idea of 'regulatory dialectic' discussed in Artus and de Boissieu (1988, pp.108-9)), while Merton (1995) adds computer and technological advances as well as finance theory to the list of causes. Silber's economics-based approach includes discussion of specific factors that can explain particular innovations (1983, p.91). But much of this discussion of causes is little more than a listing of factors. As noted by Tufano (2002) and Ross (1989), much analysis is dominated by the idea that innovations are optimal responses to either market problems or arbitrage opportunities and that, significantly, they are often 'institution-free' (Tufano 2002, p.9), ignoring the role and identity of the innovators (and their employers) as well as the conjunctural setting in which they operate.

Nor is there much discussion about the nature and distribution of outcomes. For some writers, the benefits are axiomatic, a natural progression of a functionalist understanding of innovation. For example, Merton states that: 'any surviving, successful innovation must have reduced deadweight transaction costs and expanded the reach of the market' (1986, p.463). Van Horne recognises that 'enthusiasm' may 'allow certain deals to be masqueraded as financial innovation' where aggressive 'promoters' earning 'handsome' fees can temporarily confuse markets (1985, p.626), but that on an ex post basis such products would not be deemed true innovations at all. Vināls and Berges (1988) denote these 'pseudo innovation'. While some writers depend on a tautological assertion of social benefits, which proceed from the correction of market inefficiencies or incompleteness, others have attempted to measure the benefits of innovation. According to Tufano (2002), it is possible to measure the (considerable) benefits of process innovations that reduce transaction costs like ATMs or smart cards but, more generally, the measurement of the social welfare effects of new instruments is often challenging. Where measurement attempts have been made, such as those collected in Allen and Gale's (1994) volume, the evidence suggests mixed effects at best, arguing that there may be welfare gains through limited use of activities like short selling, but that when used without limit the social outcomes may not be efficient. Others are not deterred, however, and Shiller (2004) asserts a heroic characterisation in his argument for the potential benefits of 'radical financial innovation' as 'the development of new institutions and methods

that permit risk management to be extended far beyond its former realm, covering important new *classes* of risk' (p. 2).

When was innovation? Writing in the mid-1980s, Miller posed the question, 'can any twenty-year period in recorded history have witnessed even a tenth as much new development?' (1986, p. 460). Later writers remind readers of Miller's assertion that innovation cannot continue at the same pace and argue that it has indeed done so (Tufano 2002). In explaining this, the notion of financial innovation as a heroic process capable of generating a stream of new products within an evolving financial market is implicit in much of the conventional discussion. Innovation is thus the result of a kind of modernisation of the academic finance discipline, which is celebrated in different ways by those outside as well as inside academic finance.

Bernstein's much lauded (1992) *Capital Ideas* highlights the contribution of leading finance scholars to making Wall Street 'vital and productive' (p.2). Bernstein's account is an explicit celebration of what is characterised here and elsewhere as a 'revolution' (see for example, White 1996, p.6), dwelling on the underlying theme of the academic genius that is at the root of it all. Such characterisations gives rise to classification of types of financial innovation according to what they are designed to do (BIS 1986, White 1996), as well as to shortlists of the most important innovations, with different advocates outlining their favourites (Miller 1986). Similarly, the notion of *financial engineering* used by some writers underlines an apolitical, mechanical view of innovation focused on solving what are essentially technical problems of markets around information, pricing and so on.

Overall then the emphasis is on wholly *new* kinds of products or instruments, designed by talented individuals to overcome technical problems standing in the way of efficient market clearing, rather than on any holistic view of the innovation process that has social, political and cultural, as well as economic, roots and consequences. This tends to lead to a functionalist account of financial innovations as a series of unproblematic developments that, for example, allow funds to be moved across time and place, or to be pooled, risk to be managed, or asymmetric information or moral hazard problems to be addressed (see, for example, Merton 1992).

Social studies of finance and financialization: heroes and villains

Of course, such teleological, functionalist views in finance have little currency in other branches of academia though the crudity of such views does not appear to have diminished their standing in official bodies which often find it useful to cite academic authority. Meanwhile, the rest of social science has taken up with new ways of understanding finance as with social studies of finance and new kinds of micro-sociological studies of financial 'laboratories'. Coming from the sociology of science, the sociology of finance brings an ethnographic viewpoint to the sites of financial innovation. The aim is not so much to criticize and unmask the activities of economists and their tribe, as was the case with earlier generations of sociologists of science, but rather to describe and understand what economists are doing (see, for example, Knorr Cetina and Preda 2004). Typical of this project is the title of a recent anthology, edited by Donald MacKenzie, which addresses the question *Do Economists Make Markets?* (2007). Another telling metaphor coming from one of MacKenzie's monographs is that of the 'engine': financial theorems are characterised as 'producers' of market behaviour and prices, instead of 'cameras' which merely depict what is ontologically given (MacKenzie 2006). The social studies of finance have drawn on and developed earlier notions of performativity so that economic theories and finance formulae are at the root of financial techniques and infrastructure, which has become the great facilitator of the recent development and spread of financial markets.

While the ethnographic approach is a useful counter to the theoretically-asserted world of financial economics, the social studies of finance literature is, in a curious way, just as devoid of agency and institutional surroundings as is the functionalist finance literature. Firms, markets and traders are depicted as the ‘medium’ or as the causal effect of models and theorems, but they have no independent agency. Hence, the social studies of finance implicitly reproduce the heroic view of theory-led financial innovation that is adumbrated by the finance literature more generally. This is not to suggest that performativity does not occur and that such occurrence is not of significance, but performativity does not provide a sufficiently broad explanation of financial innovation which incorporates both the significant developments in product and process and the many (unnoticed) incremental changes of a much more mundane nature.

In contrast, the critical cultural political economy literature that has arranged itself under the rubric of ‘financialization’ generally takes a much more negative view of the consequences of financial innovation. While highly diverse in topicality, approach and perspective, this literature shares an emphasis on the unequal distributive effects of the rise of financial markets (see for example papers in a recent special issue of *Competition & Change* – vol.12 no.2). As such, this body of literature shares an underlying view of capitalism in which inequality and power are important drivers. While in some versions this normative viewpoint is draped in the post-structuralist cloak of Foucauldian capillary power, in others it sticks right through the skin of the analysis. In some accounts, financial innovation is depicted as a new (but at the same time old) instrument at the service of the elites. In others it takes the form of more aggregate narratives about the workings of the capitalist system per se and the spatial and temporal articulations of the drive towards capital accumulation that is the engine of the faceless process. The latter suffers from a strong dose of functionalism and as such is burdened by similar failings as mainstream economics and finance. The only difference is the normative assessment. Whereas finance explains innovation as functional answers to real world deviations from neoclassical market models, (which ultimately make markets more similar to those models and hence more efficient), critical narratives on capitalism as a system instead stress the accumulation of capital that is at the root of capitalist transformations and emphasize the increasingly unequal distribution of wealth and income.

In the former type of critical narratives, the moral dimension of the rise of finance and its self-serving nature is not so much an afterthought but at the core of the tale which now becomes a tragedy, as the influence of finance engulfs a previously innocent productive world. While seemingly bringing agents back in, in fact intentions and motives are too often read off from either behaviour or postulated class position. In both cases, the assumption is an actor, who possesses heroic agentic powers. Investment bankers and other intermediaries are seen to possess full knowledge of the workings of the financial system and their place in it, full awareness of their interests, as well full information about their ‘action space’ and the long term consequences of each of the action courses in front of them. As a consequence, financial innovation is purposeful and heroic, as it is in some of the glorifying literature on finance, but instead is seen as self-serving and devoid of any greater public good.

For the reasons given above we are not satisfied that these analyses can provide a satisfactory account of the current phase of financial innovation. Both in their negative and positive guises, the discourses on financial innovation share a number of assumptions which are at odds with the empirical picture that emerges from some of the less-theoretically informed descriptions. As is suggested by a number of debunking accounts recently published by insiders, the picture that arises both from the glorifications of finance as well as its detractors overplays the rationality of agents as well as the role of the new ‘technologies of finance’ in the actual practice of finance (Knee 2007; Taleb 2007; Augar 2001, 2005). The heuristics used by traders are of a much less sophisticated nature and suggest a much weaker break with the days of ‘gentlemanly capitalism’ than is sometimes claimed by the new sociology of finance. Moreover, the quotidian way in which bankers identify profit making opportunities

and continuously adapt themselves and the organization for which they work to changing conditions suggest a picture of financial innovation that is based much less on the heroic rationality assumptions underlying mainstream finance, while simultaneously indicating that agents do possess differentiated and continuously changing freedoms to exercise their limited powers (see, for example, Bookstaber 2007; Dunbar 2007). If financial innovation involves agency (of a non-rational kind), opportunity and motive in a dynamic context, we need to develop some understandings of the conditions under which it takes place, and that is the task of the next two sections.

4. The macro frame: structural conditions of financial innovation

Almost everybody who writes about financial innovation since the 1970s includes a descriptive list of conditions which enabled financial innovation. The idea of a kind of epochal change after Bretton Woods certainly animates much International Political Economy writing. But, right across the policy and discursive spectrum there is some agreement about the general structural conditions of the kind discussed in this section, which collectively help to explain the rise of 'finance' in economic and political terms. In our view the changing structural conditions are relevant because they provide a kind of macro frame around innovation and hence we describe them below before we go on to argue that such lists of facilitative conditions can only be part of an explanation of innovation.

The first condition has to do with the long-term process of state restructuring in response to the crisis of Keynesianism in the late 1960s/early 1970s. States lifted earlier restrictions on cross-border financial transactions, resulting in the gradual development of a truly international market in Foreign Exchange (FX) contracts. This has subsequently transformed itself as an international interbank market, providing banks and other financial agents with sufficient liquidity and serving as the main supplier of the raw commodity out of which financial innovations were moulded (Helleiner 1994; Grahl & Lysandrou 2003).

Moreover, the unevenness of deregulation, as well as the continuing relevance of the state and national regulatory traditions, opened up numerous opportunities for regulatory arbitrage, especially to those most nimble of players, the hedge funds, private equity funds and other capital-containing vessels domiciled in off-shore financial centres. Periodic attempts to reregulate financial markets, mostly in response to high profile crises, were quickly undermined by the use of new techniques and instruments or by playing off different jurisdictions against one another. A case in point is the Basle I capital adequacy requirements, which have driven banks to develop the very same 'originate and distribute' techniques that are at the root of the current credit crunch (see Singer 2007), suggesting a widening chasm between the knowledge and expertise of public regulators and those of private financial firms.

Second, financial pressures and ideological attractions have from the 1970s onward forced governments to retrench the welfare arrangements they had set up to make amends for the sufferings of their populations during the great European wars of the 20th century (see Judt 2005). As a result, households across the Western world have seen state-backed guarantees eroded and have increasingly been obliged to turn to financial markets to gain access to 'goods' such as housing, higher education and protection against unemployment, ill health and so on (Hacker 2006; Manning 2000). This 'Big Risk Shift' has provided banks and other financial agents not only with an increased demand for financial debt instruments (credit cards, mortgages, loans) but also ensured a steady supply of new and stable income streams (Leyshon & Thrift 2007).

Third, as a result of pension reforms (the gradual replacement of Pay-As-You-Go systems by pre-funded pension systems), international trade imbalances and rising commodity prices (especially oil), there is a growing 'wall of money' facing global financial markets that is

looking for investment opportunities. The total amounts are truly staggering. IFSL estimates total pension savings under management by pension funds to be \$28.5 trillion. Mutual funds and Insurers manage a further \$27.3 trillion and \$19.1 trillion respectively. Private equity and hedge funds have assets under management totalling \$0.8 trillion and \$1.9 trillion respectively. The fastest growth in assets under management, however, is booked by so-called sovereign wealth funds. They now manage assets in the order of \$6.1 trillion, most of it deriving from rising commodity prices and the rest from foreign exchange reserves that are caused by global current account imbalances (IFSL 2008). In a recent report, McKinsey Global Institute estimates that the size of these assets may reach over \$15 trillion in 2012 (MGI 2007). As a result of this abundance of capital, the price of capital has globally decreased, allowing an increasing roster of actors (pension funds, private equity funds, hedge funds and sovereign wealth funds) to multiply their return on investments by using highly leveraged investment strategies. Moreover, in combination with a dearth of mainstream investment opportunities, the rise of new investors (or ‘power brokers’ as they are called in the MGI report) has resulted in a quest for new investment opportunities, generating the demand that has driven much of the financial innovation. The rise of proprietary trading by investment banks provides the opportunity for such institutions to do more than earn fees on the products and services they develop and sell to clients.

Fourth, technological developments have been key for the growth and dispersion of modern financial products and markets. In wholesale as well as retail markets the introduction of new information and communication technologies (ICT) has spawned new products and services, new modes of distribution and new techniques of pricing and risk management. No matter whether it is ATM’s, ALM-models, remote access to the mainframes of exchange platforms, option price theory, the use of optic fibres to enhance transaction speed, automated or logarithmic trading, credit scoring, real time information services (Bloomberg and Reuters) or the new HP Blade Workstation designed for hedge fund use. In all instances, ICT has allowed the rapid and radical transformation of the world’s financial markets. In a general sense, it has been the virtualization of trade and the digitization of financial data that have been the precondition for broadening and deepening of the financial markets. Only when the trade in claims on (future) income streams was decoupled from its physical carrier (the ‘coupon’ of Hilferding’s time) could upscaling take place.

Finally, the development of new theoretical paradigms within economics has added substantially to the construction of a standardized set of techniques that allow anonymous traders, seated behind batteries of desk top screens, to legitimate their activities to an easily impressionable outside public and to recognize each others expertise in the blink of an eye. The rise of Finance as an economic subdiscipline, as described by MacKenzie (2006), has not only spawned a number of Nobel prize winners but also a large number of mathematical formulae, models and theorems (Black-Scholes theorem; Capital Asset Pricing Model; Option Pricing Model; value at risk), which can quickly be adopted and deployed in the new digital environment described above. While we do not subscribe to the idealism implied by the notion of performativity, it is incontrovertible that these symbolic equations have increasingly become embodied in the financial technologies that surround modern traders, bankers and analysts, even though they may not have the heuristical monopoly that some impute to them (Haug and Taleb 2008).

Taken together these developments, which betray a complex mixture of intended policies and unintended consequences, have resulted in a financial world in which funds are plentiful, capital is mobile, trading can be extended and there is a perpetual search for the next ‘new, new thing’. These conditions are framework setting and broadly irreversible but they provide only limited leverage over what we aim to understand, that is, the variable form, direction and amount of financial innovation in the context of deregulated, virtualized and border-crossing financial networks. These facilitative conditions are too general to explain the varying forms and periodicity of financial innovation in successive periods since the early 1980s. In order to

engage with this issue, the next section presents an analysis of financial innovation which stresses ‘bricolage’ as well as ‘conjuncture’ in order to do justice to context as well as agency, without falling prey to the traps of functionalism and heroism.

In the light of the current crisis and the popular discourse that it has spawned, it is worthwhile to stress that many of these facilitative conditions will be with us for a long time to come. As such, it is striking that the ‘solutions’ currently being broached deal mostly with the epiphenomena of financialization and fail to address the underlying, structural conditions, in particular the global ‘savings glut’. Given these facilitative conditions it seems safe to say that in the post-crisis era there will be huge amounts of savings to process and hence that there will be a new conjuncture for well-situated agents to practice their bricolaging skills. A case in point is a recent piece on a hedge fund blog, which discussed different strategies to make money from the US TARP bail out plan. While policy makers are prone to present themselves as the prophets of a new global financial order, it is not hard to predict that this ‘new order’ will contain much that is well-known from the excesses of yesterday and that many of the household names of the financial markets of today will have morphed themselves to suit the new conjuncture of tomorrow.

5. Meso field and micro agency

as long as the music is playing, you’ve got to get up and dance. We’re still dancing

(Former CEO of Citigroup, Chuck Prince, interviewed in the *Financial Times* 9 July 2007).

Within this general frame of facilitative conditions, the questions are about what happens, where and how. In answering these questions, we could start from Chuck Prince’s now infamous remark made a few weeks before the start of the credit crunch in the summer of 2007. If we add the qualification that the music is not strict tempo and the dance movements are improvised, we have most of financial innovation in one image as a dance to the music of the time. But if we want a more intellectual understanding of the form and outcome of financial innovation, we need to borrow and rework some more formal concepts which we do in this section by returning to Braudelesque ideas about conjuncture (between events and the *longue duree*) as the relevant space of time and to Lévi-Straussian ideas about bricolage as the unscientific process of improvisation. Together these concepts help us to understand financial innovation as a response to opportunities created by specific sets of asset market conditions and retail identities, in ways where the results of innovation at one node depend on a long chain, and where there may be several, overlapping chains on innovation in any conjuncture. If, as we argue, financial innovation is therefore contingent, resourceful and context dependent, it cannot be explained away as a kind of rationality between objectives (eg marketising risk), products or instruments and market outcomes.

Conjunctural opportunities

If facilitative conditions like deregulation, digital technology and changes in welfare provision constitute a sort of semi-permanent background frame to financial innovation, it also operates within a (more rapidly changing) conjunctural foreground whose field provides a distinct set of conditions around, for example, asset prices or retail products. Our argument is that the conjuncture is important because it drives innovation by structuring the immediate possibilities for and limitations of innovation.

Conjuncture can be understood as a distinctive but unstable combination of circumstances within which events and episodes happen. It is typically a four to seven year period partly defined by a capital market configuration of asset prices and flows of funds. It is, in turn, supported by grand narrative and enacted by performance of key actors and then charged by

mass subjectivities in societies like the US and UK where half have stock market savings and 70 per cent own houses. The narrative and performative elements ensure each conjuncture typically runs through a cycle of exuberance and asset price bubbles which fits with Keynes' and Minsky's perceptions about how sentiment and behaviour determine changes in liquidity and asset prices so that the decision/outcome connection is very variable and the decision makers include the masses as well as the elites.

Thus the new economy period up to 2000, or the period of excessive liquidity of 2000-2007, were characterised by specific sets of emerging conditions which were distinctive from those in an earlier (or later) phase. For example, the 2000-7 period of excess liquidity came after a two year fall in the public markets, followed by a subsequent steady rise in the markets for all kinds of assets, against a backdrop of low interest rates and readily-available funds. The accompanying narrative emphasised the marketisation and dispersion of risk through originate and distribute models which involved massive unregulated credit creation; as well as the superior returns from alternative investment strategies (such as private equity and hedge funds) over and above traditional long investment in publicly-traded equity. In the new conjuncture, these alibis rationalised and informed the actions of intermediary groups and conglomerates operating out of the major financial centres in London and New York. Scepticism was largely silenced by the proof of rapidly rising profits and bonus pools for elite intermediaries (and house price appreciation for the masses) even though the whole process was circular and cyclical because it depended on rising asset prices which validated rashness.

The conjuncture matters because it creates a meso financial field of possibilities (we use meso because the term macro is better applied to understanding the trajectory of the economy which is influenced by finance and many other considerations). The key point is that the possibilities of one period are different from the next so that intermediary activities, business models around the markets and retail subject behaviours need to be revised with every conjunctural change. For example, IPOs and technology stocks were the thing to be in or associated with in the late 1990s with equity prices booming, just as cheap money, excess liquidity and rising asset prices encouraged all kinds of leveraged operations including private equity and hedge funds in the 2000s. On this basis, the focus of financial intermediary activity shifts from venture capital and IPOs in Silicon Valley in the late 1990s, when we move partly to leverage, private equity and purchases from the German Mittelstand in the mid-2000s. In a corollary way, at the semi-professional retail end, day trading in the 1990s shifts to house flipping in the 2000s.

Looking back, of course, a conjuncture is an unstable configuration with changing opportunities to realise gains or to avoid loss. A group of intermediaries active in one field of operations will usually have to adapt or adjust to each new conjuncture, even if they can retain the fundamentals of their business model. Thus private equity's activity of choice and core activity is leveraged buyouts but the activity is cyclical and at various points the LBO deal flow and exit opportunities dry up because of difficulties in credit and asset markets. Hence the requirement for its 'chameleon character' (Tony Jackson, *Financial Times*, 9 June 2008) which allows private equity to adapt to the conjuncture. For example, from 2002 to summer 2007 private equity was about more and larger highly-leveraged acquisitions and returns of companies by trade sale or IPO onto a public market. Holding gains and high returns to private equity general partners were underwritten by cheap debt and rising asset prices. After the credit crunch the frozen debt markets required new approaches which include buying stakes in public companies, buying their own (deeply discounted) debt and entering into new kinds of alliances. Similarly, investment banks and hedge funds develop new products for new times.

In understanding these dynamic processes, we would argue against any general view that innovation drives the conjuncture, which is implicit in the conventional view of non-financial technical change in the broader economy which supposedly slowly realizes the benefits of

major innovations like electrical power. The ‘too much of a good thing’ view of financial innovation represents a variant on that because innovation supposedly first helps to price risk and complete markets, then serves to undermine certainty and paralyse credit markets. Rather, in our view, conjunctural opportunity structures the possibilities and limits of innovation and in emphasizing this point we endorse Schumpeter and others who emphasise the role of environment and context in innovation. However, it is also the case that the conjuncture can be brought to a abrupt halt by the effects of financial innovation. A period when the specific forms of innovation and the conjuncture are mutually reinforcing can come to an end with crisis, as has become clear in 2008. Just as innovation has helped to shape the previous conjuncture, as well as its end, so the form of the next conjuncture will in turn help define the opportunities and constraints for new kinds of financial innovation. It is also the case that in the next phase, as in previous ones, the conjuncture is shaped by narrative and politics as much as by finance and economics.

It should be clear that we are not arguing there is a functional, mechanical and automatic link between the conjunctural context and outcomes but think that, in a preliminary way, innovation could be defined as the attempt by financial intermediaries (within a given frame) to find profit by exploiting a conjunctural opportunity and to stop loss by recognising conjunctural change in real time. The necessary qualification is that this is done under specific meso technical and political conditions which together give innovation its distinctively financial character and together define two kinds of collective imperative for senior intermediaries. First, they must mobilize resources and upscale quickly to capture high margins before commodification sets in later in a short product cycle. Second, they must organize a political division of labour or ownership which diverts cash to well positioned elite intermediaries.

Technically, rapid upscaling is crucial in the absence of property rights in most financial products (it is difficult to patent an instrument or formula), which means that doing the same thing year after year will not produce high profits for the institution and high bonuses for the individual. While newness in itself is no guarantee of success, novelty matters within each conjuncture which incidentally also limits collective memory and respect for the established amongst intermediary groups. More exactly, what matters is scalable differentiation because the high margins on financial innovation are generally taken early in the product cycle. In a world where profit arithmetically equals margins times volume, the intermediaries of the financial sector (just like big pharma) need not have striking originality but can instead pursue differentiation and mass sales through a succession of blockbuster innovations. The last conjuncture was defined by the technical innovation of securitization in the wholesale markets which spawned umpteen differentiations that could be scaled up, generating large volume and fees, above all because they connected with retail feedstock from mass saving and borrowing. Securitisation may have been the epitome of the previous conjuncture but it has been around for several decades, having been first used in the US housing market in the 1970s. In the 1980s the BIS identified securitisation as a key financial innovation (1986) yet it took more than another decade until its use became widespread. Thus the existence of the technique on its own does not lead to significant use. As Erturk and Solari (2007) emphasise, adoption and diffusion of securitisation was associated with institutional change as the banks reinvented, with retail banks exiting intermediation and shifting into the selling of mass financial products which generated retail feedstock, and investment banks shifting into proprietary trading around the wholesale market in (new) instruments like derivatives.

But the conditions here are as much political as technical because elite intermediaries operate partly by targeting high returns in new upscaleable activities and partly by constructing political divisions of labour and ownership which redistribute rewards to those like the head of the dealing room or the private equity general partner who position themselves to capture a substantial share of the returns. The political division of labour is emphasized by Godechot (2008) in his seminal article which represents the head of the dealing room as someone, like

the putter out in the industrial revolution, who creates a division of labour from which he benefits because the head makes himself indispensable as the only person who understands the whole business. In a related kind of argument, our own work suggests that the general partner in private equity organizes a hierarchy of claims with returns to debt capped so as to benefit equity holders and subordinate outside equity investors disadvantaged under the '2 and 20' fee structure which generates handsome cash returns for the general partner regardless of success. In a second attempt at definition, financial innovation could be described as a political game of positioning played by well situated and well adapted elite intermediaries.

Bricolage (not rationality)

If we are trying to find a new way of thinking about innovation and the innovators, the second part of our argument is that the work of financial innovation in each new conjuncture can be considered as a kind of bricolage which involves flexibility, creativity and opportunism. In common usage bricolage associates with do it yourself bodging and making things from junk but we would use bricolage in a more precise Lévi-Straussian sense where, in terms of thought process, bricolage is opposed to the scientific mode of thinking. This in turn raises the question of who or what is the bricoleur and we will discuss this in the second half of this section.

In emphasizing bricolage we are challenging the dominant perspective on financial innovation in mainstream finance, social studies of finance and Marxist political economy which, all in different ways, argue or imply that that science (represented by finance theory) or some other form of rationality can explain financial innovation. Instead, we are aligning ourselves with a second heterogeneous group, including Marieke de Goede (2001, 2005), who question the model of science-dependent financial innovation generating universal truths which first produce their own tools and then create a structure using those tools. The scientific model is implicit in the mainstream finance concept of 'financial engineering' which of course puts the finance theorists self-importantly at the centre of the recent history of finance, understood as a process whose outcome can be understood as delivering the disembodied social objective of market efficiency. The social constructivists like MacKenzie who have transferred from history of (natural) science to finance would not of course endorse this technicist, positivistic concept of science but have pressed concepts like performativity which in some sense involve the intrication of the categories of knowledge and structures through some kind of projection of models into the world.

Against this, our argument is that the radical complexities and uncertainties of the conjunctural world around financial innovation ensure that the world escapes all such rationalistic schemas. Thus, intermediary individuals and groups can be surprised as so many were by liquidity failure and the correlation of asset prices in the credit crunch despite the warning of LTCM almost a decade earlier in 1998. At the same time, individuals and groups can learn pragmatically, as in MacKenzie's (2006) example of how prices deviated from Black-Scholes prescriptions after the 1987 stock market crash because traders were pricing in the possibility of a crash which was not in the model. From this point of view, the Black-Scholes equation can hardly be the calculative centre of financial innovation in our time. It is possible to conceive of an alternative innovation path involving derivatives without knowledge of Black Scholes because, as Haug and Taleb (2008) argue, market knowledge and practice provided a basis for valuing derivatives long before Fisher Black's algebra. In the world as it existed from the 1980s, the algebraic formula did matter but maybe only like the trade price guide at the local car auction where any trader both needs to know the guide price and also know whether prices for specific kinds of stock are 'off book' with product recently selling above or below guide price. Hence also the complications of stock market trading, as discussed so brilliantly by Keynes, who realized that the task is often not to make an informed individual judgement about price but to anticipate the ignorant judgement of others (thereby dealing another fatal blow to any idea of the economy as a rationalistic edifice).

At this point in the argument, the idea of bricolage becomes important because Lévi-Strauss distinguishes rationalistic science from bricolage as a ‘parallel mode of acquiring knowledge’ (1966, p.13). Bricolage involves ‘build(ing) up structures by fitting together events, or rather the remains of events, while science, “in operation” simply by virtue of coming into being, creates its means and results in the form of events, thanks to the structures which it is constantly elaborating and which are its hypotheses and theories’ (Lévi-Strauss, 1966, p.22). Lévi-Strauss distinguishes between the scientist and the bricoleur ‘by the inverse functions which they assign to events and structures as ends and means, the scientist creating events (changing the world) by means of structures and the “bricoleur” creating structures by means of events’ (1966, p.22). Lévi-Strauss stresses that there is no implied value judgement or inferred inferiority compared with ‘science’. From this point of view bricolage has a double relevance to the process of financial innovation because it both describes the result of innovation which in recent conjunctures has become a series of fragile long chains and it also describes the activity of innovation by the bricoleur at one nodal point in a chain.

If we look back at the past conjuncture, the process of innovation could be defined holistically as a kind of supply-side bricolage to escape demand constraints through devising products which are either expansible or universal at the retail level and which connect the most mundane transaction to wholesale markets in the ‘capitalization of everything’ (Leyshon and Thrift 2007). The universal financial product for the firm is the hedge because as long as exchange rates, interest rates, fuel and commodity prices fluctuate, most firms will want to do some hedging. Meanwhile, at the retail level, consumers (hope to) escape the tyranny of earned income through taking out universal products such as pensions, revolving loans, mortgages and other financial products. The technical nature of the innovations after the mid-1980s was that, on the basis of this demand, in the last conjuncture it was possible to tier wholesale financial transactions one upon the other. Hedging transactions lead to an almost infinite number of further derivative contracts of different kinds, just as retail loans to households provide the feedstock for CDOs and so on. In this way, finance feeds finance in long chains on a basis of precariously self-acting retail subjectivities and consequently wholesale inventiveness and finance is not constrained by lack of demand until the conjuncture ends as the long chains collapse. On the upswing in the last conjuncture, the boosters celebrated the capacity of long chains to disperse risk without understanding the fragility of such chains because they had many points of disruption. If it had not been retail sub-prime mortgages and wholesale mortgage-backed securities, it would have been something else. In effect financial innovation did not produce a system but a ramshackle series of chain connections between heterogeneous *objets trouvés* by a multiplicity of individuals and groups whose conduct was only temporarily aligned. Thus securitisation of home loans and private equity, for example, were part of different long chains of financial innovation but they inter-connect in several ways. Both are dependent on credit as the emblem of the conjuncture and the continuing willingness of over-lapping buyers in these markets to take up the unbundled debt products; moreover any crisis of confidence associated with financial products in one chain has contamination effects in others.

If financial innovation is this kind of bricolage, it cannot represent any kind of ex ante or ex post rationality and its outcome is radically uncertain. The relevant point for intermediaries is that a long chain micro activity has a multiplicity of points or nodes where well-placed intermediaries are confronted with ever changing conditions in each new conjuncture. The bricoleur is then the individual or group who turns the nodal possibility into a profitable position by using whatever instruments are to hand to create a business model from product or process:

The “bricoleur” is adept at performing a large number of diverse tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with ‘whatever

is at hand', that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destructions

(Lévi-Strauss 1966, p.17).

This concept of innovation is radical because it implies that the work of financial innovation does not have a one-on-one correspondence with any necessary basis in a specific knowledge; new instruments are less central than they seem to be in much obsessive recent discussion of the credit crunch because instruments are only part of the process and often conjuncture specific. Not all acts of bricolage have the same outcomes: some bricolage involves and implies a conceptual shift in the nature of products or a redefinition in the relation between products, parties and markets. These more radical acts allow further innovation across many firms, which may be more technical or quantitative in nature and implies incremental distinctions and variations on existing products. But it is worthwhile to remember that bricolage is an agentic concept, whereas innovation is a term of praise used by third parties to denote the valued qualities of a new product. As such, whether an act of bricolage represents a radical or incremental innovation is not determined by the intentions or motives of the 'inventor', but is in a very true sense 'in the eye of the beholder'.

In the last conjuncture, of course, the dealing room needed quants to develop new coupon products but these only became important to the head of the dealing room if they could be turned into volume product by traders who might at one desk be identifying anomalies in efficient markets and at the next desk trading on the basis of chartist patterns. Each new conjuncture typically focuses on different coupon instruments. The early 1980s saw the rise of the so-called secondary debt market, a newly constructed market for financial products where debt papers from sovereign debt holders were being recycled, generating great profit maximization opportunities for many of the worlds' largest banks. In the second half of the 1980s that was replaced by the junk bond craze and the leveraged buy out-madness that ended with the battle for RJR Nabisco between KKR and a number of other investment teams. The early 1990s saw the rise of telecommunications and media as a new node for financial speculation which increasingly focused on equity, especially tech stock new issues which gradually became the internet bubble in the late 1990s. The early 21st century gave rise to a new conjuncture which was linked to derivatives with the securitization boom and the simultaneous rise of new actors - hedge funds, private equity funds, and, in their wake, sovereign wealth funds. But, if the last conjuncture had one driver it was leverage (or borrowing to increase gains over an asset price cycle) and leverage was not invented in year 2000 because it had previously figured as driver in the late 1980s period of junk bonds. The pursuit of leverage by private equity found a larger field of application in the 2000s through selling debt to banks using originate and distribute models; but the advantage of the PE general partner also depended on the use of limited liability partnerships to create two classes of equity holders and this was actually an innovation of the 1980s carried forward into the 2000s and tied into new forms of debt.

If innovation is a kind of assembly put together by a bricoleur as individual or team, context remains important because the kinds of innovation which concern us in this article are only possible in major financial centres and usually take place inside a firm. The activity of financial innovation can only operate in a few global centres where a small cadre of heavily incentivised intermediaries can invent by devising product or process for new conjunctural conditions and then innovate by upscaling business model and thereby position themselves for enrichment (for a time). Prior location (by network or organisational position) within a major financial centre is absolutely necessary because only a major centre has the infrastructure, services and personnel to allow easy, rapid, upscaling to create blockbusters without patents.

It is unfortunate that the geography of financial innovation has (with exceptions) been widely regarded as a secondary matter for geographers, while other social scientists fixate on instruments and calculative formulae which are likely to be less important than the forms of co-location and networking which sustain continuous innovation.

The role of the firm raises interesting and equally important issues. Generally, firms like large investment banks or small hedge funds appear to be weak organizations because they are full of individuals working for themselves under explicit profit sharing arrangements. Hence the importance of contractual arrangements and bonuses which tie senior staff to the firm and often fail to do so as staff migrate to another firm. But the firm does have a possible role because most innovations result in position-taking by individuals or teams against which the firm can set limits or hedge exposures. There is therefore scope to secure advantage through organisational intelligence. Campbell's (2004) arguments about institutional bricolage are useful here in thinking about how organisations develop and provide the context for what individuals do, though there is an interesting question about the relative agency of the firm vis a vis the individual or team that it employs. Thus one line on recent events is that the investment bank losers like Bear Stern, Lehmann or Merrill Lynch had ineffectual risk committees; while the investment bank winners like Goldman Sachs, Deutsche Bank and Barclays had organizational intelligence from a strong fixed income culture plus a controlling committee or chief executive with judgement who prudently hedged at the top. Others argue the winners were just lucky so that Goldman, for example, allowed some maverick traders to short MBS indices in anticipation of a downfall in housing prices, earning the firm more than \$4 billion, in offset on the \$1.5 to \$2 billion it lost on mortgage investments (Kelly, *Wall Street Journal* 2007).

The social consequences of this bricolage are important. On the wholesale side, fee earning intermediaries can enrich themselves by developing upscalable products (which may or may not temporarily and incidentally achieve social objectives like repricing risk or democratising access to credit). On the retail side, the expansion of credit allows consumers to escape the tyranny of earned income, even if under a new conjuncture the consequences of buying the house or new car may look altogether less positive. Some traditional Marxists (eg Dumenil and Levy 2004) would understand this as a capitalist plan or at least the result of an alliance between capital and a new group of the 'working rich'. But here again, the financial players are being credited with too much rationality. We doubt whether the financial innovation of the last conjuncture was in social terms a well-thought out Ponzi scheme intended to enrich the elite intermediaries and cheat the poor (even though that was broadly the outcome by mid 2008). None of this represents a grand scheme for promoting finance capital because finance activity is heterogeneous and not organised in any conventional sense, at the same time as it threatens many established firms. Instead, financial innovation could finally be defined as an improvised work in progress for engaging the changing conjunctural rationalities of a mobile capitalism which is full of half-understood opportunities and unintended consequences.

Interestingly, this academic understanding of innovation fits with elite intermediary self-knowledge of what they do as a kind of skills-based practice of a non technical, not entirely rational sort, carried on in a small world where relations and reputation are important. Thus one elite private equity partner told us in 2008 that the key competence required in his job was 'the ability to add together heterogeneous information' and then act decisively; another elite investment banker endorsed the common elite view that the answer was never in the spread sheet, admitted his maths was limited and then said 'you can always get somebody else to do the math'. The practical skills here do not fit with the image of economic man so much as that of the game player incarnated physically as the soccer forward or more cerebrally as the chess player. Players must 'read the game', using information which is bodily, emotional and tacit, and their information processing capacities are severely restricted by the need to improvise (often unexpected) moves which contribute to strategic objectives. Their partial solutions are adequate for the time being but often have unintended, negative or positive side effects that, in

themselves, set in motion a new chain of events to which agents must subsequently adapt. Whatever innovation is or is not, the innovators emphasise it requires nimble flexibility with continuous adaptation to create opportunities out of little, cover downside risk and uncertainty and avoid mistakes under pressure. Because these qualities are not granted to many individuals or groups, innovation will often miscarry.

6. Conclusion: things to do

Financial innovation, so we have argued, is not what it seems. It is not the functionalist answer to real world deviances of financial markets from the neoclassical market model, nor is it the product of heroic theorists or entrepreneurs. Instead, it is the outcome (or the emergent property) of the accidental coming together of structural preconditions, conjunctural situations and a repository of techniques, heuristic devices, and skills that together form the resources of the successful bricoleur. As such, this view of innovation looks strikingly similar to the picture painted by the early Schumpeter. According to Schumpeter, there was nothing heroic about innovation, nor could it be predicted or facilitated. It was merely a bringing together of different elements of the everyday, while stumbling across a novelty which, under happy conditions, was valued by others as a true innovation. This is the famous ‘new combinations’ definition of innovation given by Schumpeter in his 1936 classic, which stressed the cognitive limitations of human agents and highlighted the unintended information processing capacities of collective arrangements such as markets. The entrepreneur, in Schumpeter’s view, likewise was ‘lucky’ rather than ‘smart’, and in many instances was more likely to be a social outsider (the maverick) than a member of the elite.

The failure to recognize that this is what innovation looks like is at the core of the normative misunderstanding of contemporary capitalism(s). For at the level of the individual agent there is nothing that distinguishes financial intermediaries from other agents. They are all dancing to an irregular tune and are striving to win the next round of the game of musical chairs in which they find themselves. Of course, when the long chains of innovation fall apart there are real losers and an entirely natural question arise of who (be they individuals, financial and regulatory institutions or disembodied system) is to blame. The immediate result is often a ‘naming and shaming’ exercise led by media and politicians which taps into and encourages public backlash against the bonus culture, short selling or whatever actor or act can be identified as easy target. However, this ignores the inherent fragility of bricolage in a changing conjuncture. Put more directly and in quasi moral terms, it is this whole form of innovation which is to blame, which is why it will be difficult to find regulatory ‘solutions’ to financial innovation.

In our view, what is urgently required is a more systematic empirical study of the origin, nature, manifestations and distributive consequences of practices of ‘financial innovation’, and in particular to relate this to classic understandings of other kinds of innovation. Given the veil of glorifying discourse that has overlain modern financial markets, an alternative analysis requires critical discourse analysis, focusing on the emotional and political values of the metaphors used to describe the current crisis, its causes and its aftermath, with multi-locality ethnographic research, which focuses on the practices that are being enacted at these localities as well as the discrepancies between talk and walk. For now we can only list the types of questions we would like to pose. What are the boundaries of the conjunctures, and what does it mean to speak of conjunctural *cycles*? Does that imply the need to bring back models of a political economy that have gone out of fashion with the political demise of Keynesianism? What does bricolage imply about our conceptualization of agency? How rational can we suppose bricoleurs (as individuals and/or groups) to be? Which theoretical approaches are most adequate to conceptualize a(not ir-)-rational man? What does that suggest for the current talk of individual and corporate responsibilities? And finally, as the conjunctural take suggests, how do we analyse the organization of innovation in firms and

how do we perceive spatial variation in financial innovation? Can we identify different institutional configurations that are at the root of some forms of financial innovation and not others? The length and diversity of this wish list, is itself an indication that our non-functional, non-heroic take on financial innovation can define a fertile new research agenda which will be relevant in the next conjuncture.

¹ This paper was written in the summer of 2008 and presented at the University of Warwick workshop on the Political Economy of the Sub-Prime Crisis on 18-19th September 2008. The paper has not been fully updated to reflect events since mid-September 2008 because the objective of the paper is conceptual in its attempt to understand the process of financial innovation; it is not an attempt to provide a comprehensive analysis of the ongoing financial crisis. However, this modified version of the paper (from October 14th 2008) does note the escalation of the crisis and the unprecedented political response since the paper was presented at Warwick. The authors acknowledge the very helpful comments from Martijn Konings and readily admit that they have not (yet) taken up all of his suggestions for improvement.

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