

**DERIVATIVE
ARCHITECTURE**

JACK SELF

If debt is indeed central to understanding, and thus combating, neoliberalism, it is because neoliberalism has, since its emergence, been founded on a logic of debt [which] reduces the future and its possibilities to current power relations... The principal explanation for the strange sensation of living in a society without time, without possibility, without foreseeable rupture, is debt.¹

Maurizio Lazzarato

Credit must be viewed as far more than a financial arrangement, for it is nothing less than a fundamental dimension of our society, and in effect a new ethical system.²

Jean Baudrillard

In the spring of 1973 a catastrophic collapse in the property markets wiped three quarters off the value of the London Stock Exchange. Lulled into complacency by steady capital gains during the 1960s, financial institutions had been unscrupulously lending to practically anyone wanting to build a house. The bubble quietly grew for more than a decade because the banks only recorded mortgages as revenue and equity. This created a debt blind spot at the centre of balance sheets – risk they couldn't see, and a scale of exposure they couldn't accurately gauge.

To prevent a cascading chain of failures, the Bank of England bailed out three-dozen of the smallest (so-called 'secondary') banks, saving the sector but failing to control inflation, which rapidly hit 25 per cent. Within a year, Britain's GDP had contracted by 6 per cent. This was a significant event in the history of British property busts, but it was also significant for another reason in that it marked the statistical uncoupling of three previously interrelated factors: house prices, household debt, and wage growth.

Before the crisis, wage growth and house prices had risen together (associated with general increases in post-war production), while household debt had fallen to historic lows (linked to cheap social renting). After the crisis, impacts on industrial output (the 1974 Oil Shock), policy change (the abolishment of fixed rents), and ultimately the economic reform that accompanied globalisation (the transition from industrial capital to financial capital), permanently stalled western wage growth – which still hasn't recovered. Meanwhile, household borrowing started to go up, and by 1975 it had effectively replaced wage growth. This is the origin of the UK's debt addiction, the beginning of the long-term property bubble that ended in 2007, and the foundations

upon which a certain form of the neoliberal project was constructed.

For the past 40 years our 'lifestyle' has been funded by credit linked to household equity. The value of this equity is calculated by subtracting a home's total liabilities from its total worth. As property prices went up this number got bigger, since the debt on the property was still tied to its cost at the time of purchase. Banks issued personal loans based on a home's equity, believing that if the debtor defaulted they could sell the house and get back all of their money, which explains the connection between rising house prices and increased debt. However, in order to keep functioning, the system as a whole relied on infinite capital gains in the property markets, to perpetuate the extension of what was actually unsecured credit.³ If that gain were to slow or stop, making a home worth less than the sum of its debt, everyone would be in deep trouble. And that's precisely what happened.

By July 2007 the sub-prime mortgage crisis, which had been devastating poor black neighbourhoods in the US for at least five years, finally crossed a line in the sand and began taking a toll on the white middle class. On 9 August, officials of the French bank BNP Paribas issued a statement saying '...the complete evaporation of liquidity in segments of the US securitisation market [read: those incorporating mortgages] has made it impossible to value certain assets fairly.' In other words, who knew how much these home loans were worth, if anything. They concluded optimistically, 'The valuation of these funds will resume as soon as liquidity returns to the markets.'⁴

The liquidity never did return, in part because of the shockwave that rippled out from the press release itself,

which precipitated a global credit crunch. Even before the repossessions could begin, large banks started getting bailed out. Property-related debt had been so finely dispersed within other products that even calculating what you had lost became impossible. In turn, this indeterminate debt triggered a crisis of faith in inter-bank lending, which stopped the constant flow of capital needed to keep the banks running. In this way, the bailouts were not inherently tied to problems in the property markets at all, but to blockages caused by a profound lack of confidence in the very system itself. This clearly demonstrates how real estate as a physical asset is not *sine qua non* the cause of property market crashes. Rather, it is the fiscal armature *surrounding* property that is crisis-prone.

The nature of the bailouts exposed something deeply sinister about the power of the financial sector. Rather than allowing financial institutions to fail, as the rules of capitalism dictate, everything was done to save them. Perhaps the most obviously undemocratic solution to lack of liquidity took the form of 'quantitative easing', in which the UK printed more than £300bn of new money and gave it to the biggest banks. Rather than lending to small and medium-sized enterprises as asked, the cash was pumped back into the stock markets, which consequently became massively over-valued (because the extra money that flowed in wasn't tied to increased production) and extremely fragile.

In these moments, capitalism reveals itself as neither logical nor natural, but fundamentally flawed. It continues to exist only by periodically transcending itself, ruling by planned inconsistency, rather than rationality by planned rules.

Parallel to these factors, the fourth parameter in the property-debt process is social inequality. In the early 1970s,

Britain was more economically equal than ever before. Several decades of targeted taxation on the very rich, coupled with middle- and working-class welfare stimulus, had not so much redistributed *existing* wealth, as directed new wealth to the lower socioeconomic bands. Understanding why social inequality has since spiked upwards necessitates analysing where the credit came from: centralised financial institutions, controlled by a wealthy elite. In effect, the servicing of debt channelled any popular capital surplus to the top of society.

Some of this money might have come back down again in the form of benefits, if taxes on corporations and the rich had remained high. But they did not. In 1979 Sir Geoffrey Howe cut the top rate of tax from 83 per cent to 60 per cent, citing the ‘trickle down’ effect. This suggested that lowering taxes for the rich would incentivise them to be more productive and drag up the standard of living for the less wealthy. As Thatcher maintained in her final address to the Commons in 1990, if we would give more to those who have the most, we will all have more on the whole. There has never been any economic evidence to suggest this is the case, nor is it a morally justifiable position. It’s not even an argument found in neoliberal philosophy – it’s pure plutocratic invention. In 1988 Nigel Lawson delivered the mortal blow to Britain’s social democracy, by cutting the top rate of tax to 40 per cent, from which it has not much moved. The effect is stark: in 1979 the top one per cent of society controlled seven per cent of all the wealth⁵. Today that figure is 21 per cent.⁶

We can understand the era of austerity as an epoch defined by the *management of debt*. And we know that a lot of this debt stems from the financial infrastructure surrounding real estate. In fact, most personal debt stems from mortgages. We also know that the two biggest impediments to future

growth are the housing shortage and the sluggish construction industry.

British architecture’s *specific goal* must be, simply, to build more housing, but not at any cost. Current government incentives – the so-called ‘right to buy’ policy – assist first-time homeowners with a deposit, and use taxpayer monies to underwrite a portion of the loan. All this does is transfer the risk of default to the citizenry, leaving profits in the hands of the banks. (There is also evidence that the scheme is fuelling a new property bubble). The ambition of building more must not interfere with the aim of liberating people from the soul-crushing burden of debt, which ‘reduces the future and its possibilities to current power relations.’

The more *general goal* must be to extract property from the chaos and danger of the market cycle, in which the decisions of a few dictate the fortunes of the many. We must examine how architecture might be used to reverse the historical trends of social inequality and disenfranchisement. Could the way we finance buildings act as a barrier to wealth accumulation and promote spatial (socioeconomic and geographical) justness?

There are a number of preconditions that already narrow the scope for possible answers to these questions. Foremost, this is not an intellectual thought experiment, nor an invocation for more paper architecture. Accordingly, we must operate within the bounds of reality as much as possible. This means that proposals for any post-neoliberal architecture must come from within the existing ideological, juridical and fiscal frameworks of neoliberalism itself. In essence, architecture of this sort must emerge from latent conditions that are already suitable for manipulation.

If the premise for an architecture capable of these things

precludes ideological regime change (revolution, mass protest, dissolution of national and global order), then it must also preclude the gewgaws of ‘participatory’ architecture. I’m profoundly sceptical of anyone with such limited vision as to think ‘grass-roots’, ‘community’, or ‘crowd-sourced’ design could be agents for meaningful social change in the face of such a venerable, hyper-stable opponent. Nor should this architecture be based on charity, political exceptions or fragile litigious loopholes. It must simply exploit, or re-deploy pre-existing financial conditions for social ends. The only indisputable requirement, of course, is that this architecture, which is capable of restructuring power relations, must be financially profitable.

This might seem like a contradiction. Is profitability enough to force neoliberalism to unwind itself? Very possibly, as long as none of the conditions that let this architecture exist are construed as excuses for transcending its own rules. After all, global capitalism often paints itself into corners that later turn out to be in conflict with its ruling elite (hence the bailouts) – undesired results caused by pursuing the absolute logic of neoliberalism to its most illogical endpoints. As Žižek notes, ‘Wherever the globalist system is forced to violate its own rules, there is an opportunity to insist that it follow those rules. To demand consistency at strategically selected points where the system cannot afford to be consistent is to put pressure on the entire system.’⁷

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When volumes of mortgages are traded in the markets the entity being bought and sold is not, strictly speaking, property. Rather, it is a financial abstraction with no intrinsic

worth, whose value is *derived* from estimating the asset value of the underlying real estate. This is possible because market agents ‘trust’ that the institutions issuing the loans have taken due diligence in minimising the risk of default. Of course, it’s not faith alone that permits this; there are diverse regulatory requirements as well as other means of independently calculating the integrity of the mortgages.

The power of abstracting property loans into revenue streams is namely this: the separation of creditor (investor) and debtor (homeowner) by some managing institution liberates the anonymised occupant from certain ethical assessments. The investor has no interest or say in the aesthetic qualities of the home, its manner of occupancy or the lifestyle of its inhabitants. Their only concern is fiscal – that a given sum be paid throughout a given period. The moral dimension of debt is instead the concern of the financial institution, which, like a capitalist Ammut, is charged with weighing the debtor’s heart against a feather. The source of agency in the perpetuation of neoliberal power relations is almost exclusively the financial institution. This is what makes the architect so impotent as a figure of social change; they do not even negotiate the terms of debt directly with the source of the capital, but through several tiers of bankers, developers and other corporate bureaucrats.

In order for architects to exercise the kind of agency required to pursue our *general goal*, they must directly mediate between ‘end-user’ (occupant/client) and ‘investor’ (free market equity) – they must leverage the power of property in such a way as to become both the monetary fixer of debt and its moral evaluator. This vision does not at all correspond with that of the architect-as-developer. Quite the contrary, rebuilding at this level demands a bypassing of the entire

development profession – eliminating its greed and monopoly and operating in parallel. This is the image of the *architect-as-financier*. The Ingot, a project for a tower in the City of London, might be considered a first attempt at this prospective ‘derivative architecture’ characterised by a total separation between financial form and social function.

The *specific goal* of the Ingot project was to find a way to make high-quality, generous apartments affordable for living wage workers in or close to the City of London⁸. Regardless of where on the political spectrum one sits, this is a desirable ambition – even hardcore neoliberals recognise that macro-economic growth depends on low-paid workers living close to their places of work, and maximising their disposable income for increased consumption. A site was selected adjacent to London Bridge, directly on top of the ruins of the ancient Roman forum. This colossal structure, that for 400 years remained the largest building north of the Alps, was the civic heart of the provincial capital and the main reason why London became, and remains, a global economic centre. The desire was very much to minimise occupation at ground level and open up a terrain that could be the City’s only truly public square.

Subversion of a system first requires mastering an understanding of how it works. For this reason the starting point had to be an imitation of how a standard developer would approach the project: by conducting a ‘surplus land value assessment’ to determine the potential profit on a building at market rate. This process is not so dissimilar from calculating the surplus equity in a normal home – add up all the costs (price of the land, demolition and construction) then subtract this from the maximum value of a potential structure. Unless developers can extract 20 per cent profit, they rarely

bother and sites go undeveloped.

Property development is a constant negotiation between three critical factors: time, space and money – to get closer to the required profit figure developers are always working towards the highest feasible density at the lowest possible cost in the shortest turnaround. The result of the land assessment showed that a 20 per cent profit margin was achievable, making the land viable⁹ for standard redevelopment.¹⁰ There was a major problem with this, however: no fiddling of the factors could reduce the *purchase* price very much below market rates – the developer’s profit precluded it – making it several fold too expensive for workers on the living wage (who lack equity to buy in any case).

In order to make an impact on end price, a parametric algorithm was developed to manipulate these factors individually.¹¹ One important financial precedent for the algorithm was how universities raise equity for constructing new buildings (specifically at UC Berkley and Queen’s College Cambridge). These institutions issue long-term bonds, often 50 years or longer, to fund new dorm rooms or science blocks, while the interest on the bond is secured against future tuition. The university ends up paying quite a lot for the investment capital, but does so over such a long period that the repayments are manageable. Schemes like this are highly attractive to entities looking for stable and predictable returns, and investors often include insurers, banks and sovereign or pension funds. If we replace tuition with rent and dorms with housing, the basic model holds, and the developer as a source of finance becomes unnecessary. Of course, in theory almost any company can issue a long-term bond – in practice, the rate of interest on such a bond is relative to the trust the markets have in that company. A

well-respected international university has leverage where an architect certainly does not. To address this trust issue, the building itself becomes the security underwriting the bond, which can be sold at market rate if at some point the mechanism fails. The market wager then becomes whether the architect is capable of delivering the building on time and budget (although popular perception of architects' tardy extravagance might prove problematic).

Security also lies in the fact that if this architect-bank were providing apartments at 46 per cent of the market rate (which is what would be necessary to make it affordable for the living wage worker) there would have to be a 54 per cent drop in London property prices before it would become unfeasible. The worst housing slump in British history (1914–22) was caused by a combination of the First World War and the introduction of industrial manufacturing techniques in construction (oversupply in the markets), which saw prices fall by around 35 per cent. Given the current climate of unprecedented shortage, probably only a cataclysmic environmental disaster could produce such an effect. To insure against this event, we can also add security into the material of the building itself. There is a direct correlation between economic instability and global gold prices, because of its perceived international fungibility. The Ingot's facade would be electroplated with some 170kg of gold. In a worse case scenario, the Ingot itself is a fungible commodity, a hedged bet against crisis, functioning outside the property market.

In order for the Ingot to be funded by a 50-year bond, a number of parameters have to be true. The building certainly cannot be sold within the period of the bond, which means inhabitants must accept the idea of never owning the

property, but nonetheless retaining usufructuary rights. To amortise the debt at the bond's maturity, the annual payment (interest plus 2 per cent of the principal) must be equal to or less than the income gained from rental. In other words, there is a fixed ratio between construction cost and rental revenue that will determine what the annual surplus from a living wage apartment would be, in turn dictating the massing of the building and its total rentable space. Since the debt is issued and held by a company also responsible for the construction, maintenance, letting and management of the building, the company itself is the location of the moral dimension of the debt obligation (thereby liberating the renter). Needless to say, there are more than several complex interrelations to this calculation.

Resolving these parameters required working backwards – starting at the face value of the bond and thereby determining the rate of return. This figure was estimated at 4.5 per cent per annum, which included 2.5 per cent in interest and 2 per cent in principal repayment. For comparison, over the last century the mean capital gain on a property was just 2.4 per cent per annum. The interest dictated how much surplus an apartment had to generate in rent each year, which fed backwards into how big it could be, or how much it could cost per square metre.

Once the viability of the scheme had been established, the next process was to maximise the possible density of the building. To do this, the Ingot exploited the same planning rule (Section 106) that allowed the Shard to extend its maximum height envelope from 65 metres to 310 metres. Section 106 was originally intended as a form of tax on new development. If a developer were to build 100 new homes on a green field site in a small town, the added pressures on

local infrastructure and public services would be considerable. So the developer would negotiate a one-off sum to be put towards specific projects (new school buildings, improvements to police, fire, health, new roads, etc). Over time, this concession became flipped into a type of local governance bribe by developers to permit increased density.

The total construction cost of the London Bridge Quarter was about £1bn (of which the Shard tower made up £350m). In exchange for an added height of 245 metres, the developers contributed £50m (5 per cent of the construction cost, or 2 per cent of the final market value) to the refurbishment of London Bridge Station. Since Section 106 (s106) is negotiated individually in each case, it wasn't an easy factor to include parametrically. Expressed as a ratio it became: every 1 per cent of construction cost translated to a 49-metre height extension. This was converted into floor area within the tower, so that rather than a cash injection, the City would simply receive an allotment of rent-free space (intended to relieve pressure on local services, which suffer from space shortages). Because there is no intention to profit from the Ingot, this produced something of a recursive feedback loop, in which added height gave higher s106, which gave higher envelope. The scheme was capped at 350 metres, based on the moment at which building height and foundation cost for the London clay became fiscally untenable (not for any reasons of governance, which would have likely seen a cap around 320 metres). The final optimised concession to s106 was 15 per cent of the building's floorplate, or 43,000 square metres.¹²

This, in a nutshell, is how the optimised form and volume of the Ingot was arrived at, and how it redeploys commonplace financial mechanisms to achieve its *specific goal*. It has

been described as form following finance, although it might be more accurate to say that it is function following finance, where the form is not intrinsically relevant.

The Ingot answers the *general goal* of derivative architecture in a number of ways. A long-term bond is a self-contained financial instrument, since once the principal has been raised no new funds are required and the repayment rate is fixed. This insulates the building and its residents from the boom and bust of the markets, as well as fluctuations in property values – it amounts to rent control.

However, one could say that the most important aspect of the Ingot's social function occurs after the bond has matured – when rental revenue might be further lowered until it matches only the operational costs of the building, or maintained at a low rate and the surplus that was paying off investors redirected towards welfare and amenities to residents. As a debt-free asset it might be refinanced to fund the construction of other buildings (thereby creating a network of low-cost housing), or sold for a symbolic sum to the residents themselves.

This is just one scenario of one particular model, motivated by what I see as a general poverty of aspiration in architecture today (a reluctance to position the architect as a figure capable of meaningful social change) as well as a lack of pragmatism (inasmuch as our utopian vision for urban transformation surpasses our actual political influence and economic power). If architecture is to exist as anything more than the ornamental resolution of facades, or the sculptural expression of domesticity, it must clearly articulate a new position with regard to the role of property and ownership in the global economy.