1948 Unbound. Unleashing the technical present

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SWITCHES: **4 CASES OF UNDOUNDING**

UNBOUNDING 1

In 1959, Edward Oakley Thorp walks into a casino for the first time. In contrast to most other gamblers, he is a mathematics professor at the MIT with a knack for applying theory in practice. He is in Las Vegas to earn some money but actually to proof a point. He uses an IBM 704 computer and codes in Fortran to quantitatively calculate his winning chances; and in the wake, becomes a pioneer of probability theory and statistics. Besides, he constructs the first wearable computer (1961) together with his colleague at MIT, Claude Shannon, the father of information theory (1948). At a time when computers were room-size at least, Thorp, Shannon and his wife wire up to improve their odds at Roulette.

Computers weren't banned from gambling venues simply because no-one expected something that would have had to be shipped and installed by a host of experts. It took another decade until computers were banned due to a proliferation of 'experiments' performed by a generation influenced by mavericks like Ed Thorp: in 1961, Thorp had published *Beat the Dealer*, a book that became an instant bestseller, as it proved mathematically for the very first time that the house advantage in Blackjack can be overcome. He published his research forays into gambling openly because he considered it an academic exercise.

However, Thorp was looking for an even bigger haul and found it in a much larger ecosystem, global finance. So, he left academia and started to develop and exploit his scientific findings in financial markets. As a result, the hedge fund he co-founded in 1969 became the first quantitative hedge fund in financial history, and the job description inspired generations of mathematicians and physicians that have been flocking to finance ever since: The man who built the first wearable computer together with the father of information theory became the father of quants.

Thorp switched from producing knowledge shared publically to producing knowledge for the profit of a select few. He claims to have devised the model and formula most known in finance but as he did not publish in order to protect shareholder interests, Black, Scholes and Merton become known for changing finance for goo. Donald MacKenzie, for instance, speaks of "performativity" to designate the influence of the economic model to the practice in finance.

This is the neoliberal condition; and Thorp is its crystal image, a scientist-entrepreneur-philantropist engaged in information markets who exploits probability in order to make use of risk as a productive force. This condition sets off from the idea of post war progress, cold war cybernetics and game theory, Keynesian welfare politics and an international interdependence between western nations headed by the USA. The terms and conditions for the neoliberal era are about to assert themselves with the collapse of the Bretton Woods world.

UNBOUNDING 2

The year of the sea change is 1973. Amongst others, it is the year when the Bretton Woods agreement was abandoned and as a result the $-gold fix collapsed as well as the quasi-fixed international currency rate system. Markets entered a much riskier environment. In the same year, Fisher Black and Myron Scholes proposed a theoretical model and formula based on volatility that was expanded by Robert Merton (the latter two won the Nobel Prize, as Black had died before). The model allowed the pricing of options – the pricing of derivatives. As volatility means risk, this new approach (that Thorp claims to have

applied beforehand) answered to the new uncertainty and already in the same year, the trading of derivatives was institutionalised by the founding of the CBOE (the Chicago Board Options Exchange).

This "switch" is not to be underestimated: While before '73, derivatives were considered pure gambling and thus an immoral and corrosive activity (and in the US even an unpatriotic one because short selling could damage a US corporation), technological innovation and the scientific research channelled into mathematical formulations by people like Black, Scholes, Thorp, and Merton turned the gamble into what was now regarded a scientifically sound technological application. Microchip switching meets Brownian stochastics meets probabilistic valuation regimes.

In a risk environment, market swings are either a threat or an opportunity. Within abounding uncertainty, risk is the crucial difference that can be formulated quantitatively. We don't know what the future will be (no oracle manages to do that, not even a mathematical one) but we can formulate anticipations and expectations, describe them in conversational environments. In financial markets, math is the language of pricing – in finance, value does not exist (even if we speak of value all the time); only price exists.

Hence, the mode of production in finance is the production of risk: the production of quantitative propositions about the future from a data archive called the past (and from stochastic data) at any moment in recalibrated cascades – derivative on derivative, expectation on expectation, incessantly recalibrated to accommodate every adaptation, every swing, every contingent move. Hence, the massively higher notional amount of derivative market value in contrast to underlying assets, as the former implicates anticipations written on anticipation as well as on underlying priced in the market.

The switching engine turns into the pricing engine – an automated oracle brimming with contingent voices. The profit centre shifts as well, and not only once: from traders on the floor – to quants (quantitative analysts) – to developers (coders). Soon, coders will successfully implement artificial neural networks and A.I. that will take over their jobs in building trading algorithms. But this won't be the end of human interference and restructuring, as we will see in a second.

Here, at its peak, the neoliberal condition collapses and gives way to a new condition. Appreciation is less derivative to the entrepreneurial 'ethos' and the profit regime, it rather follows the market as such, moves along volatility to exploit risk options that relate future expectations with one another. Amongst other turning points, the speech of this new power changes radically: Financial markets, that is, derivative markets, do not care about representation. They don't care about telling us stories, defeating us with images, persuading us with branding. They have no use nor time for representation. Rather, the speech of power exercised by finance is performative – it not only attempts to control the swings, uncertainties, random walks, and contingencies of its own making; to the contrary it produces them and reproduces them in every 'particle' that gets caught up in its maelstrom. The UNBOUNDING of the derivative paradigm exits finance proper and spills over into other fields. It makes the world and everything in it act performatively; everyone/thing that still believes in representation is washed away and erased.

This is the DERIVATIVE CONDITION in which Volatility and Leverage reign. When we criticize neoliberalism and financialisation for instance on the example of debt, we only look at one side of the coin and, as I would argue, cannot see how this new order plays out. We need to look at the other face, at the debt that opens to the future, that expands lived presence as a possibility to recalibrate the future obligation vis-à-vis the contingent actualisations of price. This 'debt' is called leverage; it opens and proliferates options, expectations, exploitations. It rests on those in debt that it reproduces in order to recalibrate its open positions. This, in my reading, provides insight into the class relations today: upper class: the leverage class that creates its future by debts that it redeems with future profits and present exploitation of the debt classes; the middle class(es) who have access to some forms of leverage (not only financially but e.g. schooling – though same thing in fully capitalist societies) in decreasing tiers; the lower classes that are bound by debt, that is, past obligations they cannot or hardly redeem; the 'pariah'

classes that cannot even go into debt, that is, do not participate in the social order of the time – hence, for example, microfinance, a form of debt obligation that leverages people to move up into the lowest ranks of the lower class.

UNBOUNDING 3

In the late 1970s, the Eudaemons – a group of physics student and graduates taking their cues from Ed Thorp – experiment with wearable computers in casino games to beat Roulette. Taking advantage of technological advancement and computerisation, some of the leading members of the group start to establish hedge funds that merry computer technology and refined prediction concepts. In 1991, predication becomes the name of a hedge fund that pioneers black box trading – that is, fully automated quantitative trading. This first generation of mathematicians / physicians doesn't meet a fully developed career path for quants, they switch between science and finance – to name but one example, a founders of the Eudaemons group: J. Doyne Farmer (co-)established various hedge funds but also founded the Complex Systems Group at Los Alamos National Laboratory and is a professor at Santa Fe Institute for Complexity Science as well as a Professor of Mathematics and Director of Complexity Economics at the Institute for New Economic Thinking, both at Oxford University.

Artificial intelligence and other algorithmic practices find a rich field for experimentation in finance. And due to deregulation – which to a large extent actually means self-regulation of private enterprise of and within public and political spheres – and the availability of massive data – collecting financial and credit data is at the core of capitalist societies – automation and algorithmization can expand and start profiting, especially in a boom time like the early 1990s. Financial experts, like Haim Bodek, work on algorithms that can replace human traders. And in collaboration with data experts from other fields, they code massive data systems that not only analyse and evaluate data but make them available at instance – a crucial capacity for heralds what a decade later will be called big data prognostics.

Whole market structures are toppled by technological innovation. Creative destruction not only reigns in Silicon Valley but also on Wall Street and LaSalle Street.

The rise of the arguably most known trading automation in finance in recent years, HFT, however, was unwittingly sparked by regulation – a model case for how ambiguous and intricate regulation is in complex, massy and entangled systems; and that regulation authorities are to be deeply rooted in both technological and legal expertise to appreciate how powerful players leverage their stakes and strategies. After decades of self-regulation (deregulation), regulation policies cannot simply establish, or force through, 'moral' behaviour in amoral and hypercompetitive fields; it needs to be aware of the bag of tricks that takes advantage of regulation arbitrage; and over and over again in such cases, collusion and fraud are not far, as we will see a bit later.

To give but one example, Regulation NMS in 2005 boosted the rise of HFT more than any other measure or technology. Implemented to warrant fair prices to all investors in the USA, it introduced consolidated price discovery for all exchanges on American soil. What it didn't take into account is latency, i.e. that consolidation takes time. Even though this only means microsecond delays, undercutting this operational lag neutralizes risk and thus means harvesting profit for free. This caused HFT to boom.

For the last years, however, the competition for speed advantage has become massive. This has led to shrinking margins and, as a consequence, intensified pressure for cutting out edge wherever possible. As substantial profits can hardly be made by speed / latency advantage and order book exploitation, regulation is manipulating directly in the framework of the market center. As exchange places in the USA are profit-oriented corporations owned by stockholder, rather than public institutions, their leverage depends on attracting big players to increase trading volume and liquidity. And with Hedge funds buying shares of exchanges to press their agenda, the interests of market centers and HFTs coalesce in toxic

ways, giving rise to collusion and other forms of fraud. The 'knowledge' that makes the difference is information asymmetry on how the regulation of the exchange framework can be exploited directly.

UNBOUNDING 4

Underlying the sea change in data-driven automation is a turn from representation to performance. Those in the position to exploit this new speech of power affirm randomness and contingency, shift between spaces and temporalities and use them to leverage their claims in the future at present. And as derivatives are meta data par excellence, this turn has not only affected finance and the economy, but also social relations, media and politics. Long before Google and Facebook appeared on the world stage of proprietary digitization, the introduction of scientifically brokered derivative models prompted waves of ever more massive schemes of data capture and exploitation. This rise not only constitutes a main source of what was later termed Big Data; in fact, derivatives performatively prestructure the very modes how the capitalist system makes use of the unknown (future) and volatility (risk). Thus, firms like Google and Facebook are not simply Big Tech; rather, they are Hedge Funds that speculatively capture, capitalize, recalibrate and *make* (future) individual behavior and social patterns at any present moment.

In politics, these schemes are even more obscured. Mainly, because we usually look at them from the social media perspective and its criticism, which is to a large degree blind to the derivative logic. To exemplify this, let us look at a history unfolding that we are all aware of:

A self-proclaimed real estate tycoon and staunch capitalist enters the stage of media to capture the political scene. Seemingly writing alphabetic text, he in fact recodes the proprietary writing platform, unbounding once more the Technosphere, this time around as automated escalation. Donald Trump redesigns Twitter as a Dark Pool in which the fabrication of waves of noise turns into competitive advantage; and escalation – that is, the production of volatility – sounds the bell for the probability paradigm. The "progressives," the left in the USA whose faith is still with fact, are unwittingly turned into "losers" – to use the US-president's word – who do not (want to) grasp that information pivots on pretense rather than truth; that noise has taken over fact as the productive vehicle which triggers affect and thus leverages attention. Noise is the master of information.

Trump writes fat tails on Twitter. He produces noise events that push beyond the probabilistic sets of worlds. He and his mob (partly right-wing pundits and hedge fund owners already active in the Brexit campaign) figured that much can be gained gangster-style by exploiting what finance knows as the "volatility smile." Instead of hedging risk in the face of contingent outcomes, they invert the gamble by incessantly releasing noise. "Surfing the volatility wave" they escalate what emerges outside the realm of the probable, in other words, they subvert truth. The financial methodologies that backed the neoliberal condition, such as probability theory and mean distribution, are left under bare poles when confronted with DDoS-style black swan attacks. These events are usually assumed to be extremely rare; but now, in the derivative condition, they rattle down in electronic speed, leveraged by fake news and other malignant information asymmetries. Hence, the fabrication of extreme microevents has become a power tool in which the probability paradigm collapses, giving way to sociopathic, authoritarian symptoms.

With the turn from representative to performative speech of power, the production of volatility and the recalibration of leveraged claims has become paradigmatic for success. Future potential, recognition and credit are increasingly the domain of the corporate legal entity. And as the other face of debt is leverage, we are confronted with a shift in the class system based on *social asset classes* in which the *leverage class*, which has access to the wealth of future potential, dominates and absorbs the tiers of *debt classes*.

EXIT

There is an urgency to learn how to 'read and decipher' the performative semiotics of power. And there is reason to imagine that it is more directly grasped by the body rather than the mind, as it is in the former that affective violence acts and unfolds is toxic cargo. What if we needed to develop "sensory organs" with our bodies to catalyze cognitive capacities – just as societies learned to decode and recode

representational power figures and myths over the last centuries? While singularity fantasies and A.I. progress want to rid us from this burden, the body as a sensory, imaginative and active sensibility in and between other bodies might be the "instrument" for regaining performative agency.

The figure of the artist would arguably become a collective of human/non-human *sensual technowledge* that shifts along contingent becomings; swings within and between digital and non-digital bodies; makes the black box speak from inside by collaborations with *renegades* (those who cannot but become traitors of their system); and shares risk as embodied and collective forms of moving along the volatile sphere of contingent becoming. What this might produce, for example, is an *aesthetics of resolution* in which we take the term's whole semantic field as a postdisciplinary counter-strategy. Such *renegade* activism could move beyond critique towards new modes of insurrection.

TOKENS: **MOVEMENT, EXPANSION, QUERY**

From wherever I enter this space, it is movement. A void permeating all solids. Circling, it appears brimming with swings that emerge, interconnect, and dissolve. Swirling, it resolves the denser and more massive accumulations, immediately weighing on me from every shifting side. The pressure I feel does not originate from an outside; its drift is visceral, crawling and banging about inside, affecting my mental as well as my physical chemistry. Where is the leverage that allows me to not only survive but to surf that wave of volatility? To create the performative flow of a future saturated in presence?

The Unbound's release is not simply an accelerated expansion, but a swing, a wave, a contingent move. As a manifestation of volatility that performatively collects, demands, and often coopts the relations of what it inundates, it follows a derivative logic. The derivative, we argue, is the metadata of uncertainty, the first borne risk that at instance proliferates into *all* expectations of what can be conceived by quantification.

But the derivative is not a principle per se; it is the move of moves, the logic of escalation that creates jumps without swinging, that speaks within the swing. It consolidates matter (data) without being matter – it is the meta-matter (meta-data) of any underlying and at the same time the virtual epiphany of their very potentials. While (what) matter(s) is to accelerate in the Technosphere – and with every leap the new speed becomes the new norm(al) – the derivative as *technowledge* permeates *all* manifestations (even those that have not yet manifested), decapsulating the linearity of speed into multifarious movements of non-directional, non-linear, fleeting entanglements.

In the Derivative Condition, where solids are prone to drift, power shifts from representational to performative speech, evoking the *alt*-reign of the relative, the precarious, the contingent. The incessantly recalibrated cascades of derivatives generated on derivatives and so on form a volatile grid of anticipation in which bounding and unbounding switch at the *moment*; as moments of the nearest future, they annihilate the present, annihilate the bond between past, present and future.

Confronted with the creation of extreme volatility as a scheme to leverage power and profit, the paradigm of probability snaps – normal distribution is speechless in the mob face of fat tail events. Unbounding (what) matter(s), the derivative paradigm introduces a *non-order* of contingency – an instance at which we can learn how to leverage the optionality ingrained in the derivative (instead of attempting to hedge what cannot be secured); and understand volatility as *techne*, as a performative risk practice by which we might unleash potentialities of present futures.

The question is: where is the leverage that allows us to not only survive but to surf that wave of volatility? To create the performative flow of a future saturated in presence? What is the token in this infrastructure, in this stateless state, this shifting maze of interconnections and disconnections that the derivative spawns, recalibrates and dissolves incessantly?