

Games and the Subjugated Knowledges of Finance: Art and Science in the Speculative Imaginary

ABSTRACT

The spasms unleashed in the financial crisis of 2008 are just the latest in a longer series of episodes which have marked deeply unstable globalized financial markets. As these episodes have underscored liberalized financial markets now seemingly shape the very contours of global political-economic life and the forms of self and citizen most common to our political present. It is in this context, however, that the culture of finance is often depicted in overly expansive, all-encompassing or reified terms. Are there limits to finance and the “financialized imagination” as it has taken hold over the past century? Are there borders to the kind of reach and influence finance now exerts on our political economy? This paper addresses these questions by reviewing the ways in which recent public art has attempted to reclaim what, following Foucault, I refer to as the “subjugated knowledges” of finance: — forms of knowledge, such as gaming and game-play, — that which were removed as from the discourse of finance when it was recast as rational and scientific over the 19th and 20th centuries as a rational or scientific object. The paper considers several public art interventions that engage with have used the sign of the game (in references to gaming, game culture or game-play of various forms, in order) to disrupt financial practices and or the forms of financial abstraction. If limits are to be (re)imposed on finance, I conclude, we need critical strategies which can reclaim the subjugated knowledges of finance and which can, by extension, question the self-image of finance as a rational domain.

RÉSUMÉ

Les marchés financiers libéralisés semblent aujourd’hui dessiner les contours de la vie politique et économique globale et les formes de soi et de citoyen les plus communes dans notre présent politique. Pourtant il est dans ce contexte que la culture de la finance est souvent représentée dans des termes trop expansifs et réifiant. Y a-t-il des limites à la finance et l’« imagination financiarisée » telles qu’elles se sont installées au cours du dernier siècle? Y a-t-il des limites à la portée et l’influence que la finance exerce maintenant sur notre économie politique? Cet article répond

à ces questions en réexaminant les façons dans lesquelles l'art public récent a tenté de récupérer ce que j'appelle, selon Foucault, les « subjugated knowledges (savoirs assujettis) » de la finance : les formes de savoir telles la ludification et la jouabilité, qui ont été enlevé du discours de la finance lors de sa transformation en domaine rational et scientifique au cours des 19e et 20e siècles. Cet article considère plusieurs interventions d'art public qui touchent sur le jeu, la culture du jeu ou la jouabilité dans des formes diverses, afin de perturber les pratiques et abstractions financières. Afin que des limites puissent être (ré)imposées sur la finance, je conclus, il nous faut des stratégies critiques capables de récupérer les savoirs assujettis de la finance et qui peuvent, par extension, interroger l'image que la finance a de soi comme un domaine rational.

KEYWORDS: Finance, subjugated knowledges, gaming, cultural economy, adversarial design



They played each hand in a glazed frenzy. All the action was somewhere behind their eyes, in naive expectation and calculated deceit. Each man tried to entrap the others and fix limits to his own false dreams, the bond trader, the lawyer, the other lawyer, and these games were the funnelled essence, the clear and intimate extract of their daytime initiatives...They used intuition and cold-war risk analysis. They used cunning and blind luck...They tossed the chips and watched the eyes across the table. They regressed to preliterate folkways, petitioning the dead. (DeLillo 2008)

By subjugated knowledges...I am referring to historical contents that have been buried or masked in functional coherences or formal systematizations...a whole series of knowledges that have been disqualified as nonconceptual knowledges, as insufficiently elaborated knowledges: naive knowledges...knowledges that are below the required level of erudition or scientificity...And it is thanks to the reappearance of these knowledges from below, of these unqualified or even disqualified knowledges...that made critique possible. (Foucault 2003)

In the spring of 2007, on the eve of the global subprime crisis, the *Financial Times* marked the launch of its redesigned paper with an advertising campaign punctuated by striking images that displayed finance as a ubiquitous and expansive force. One of the ads in this *We live in Financial Times* campaign features a stylized financial island populated by global financial district buildings: the New York Stock Exchange, the Oriental Pearl Tower in Shanghai, and IFC 2 in Hong Kong. Con-juring fantasies of global time-space compression, the image gestures at a world that rotates around finance in ways that are global but condensed, or even local, in

effect. Are there any meaningful limits—cultural, geographic, economic—to the reach and ambitions of finance? Does *living in financial times* entail a culture of finance so ubiquitous and coherent that it is without obstacles?

I read these images here alongside a striking passage from Don DeLillo's post-9/11 novel, *Falling Man*, which describes a weekly poker game once hosted by the novel's protagonist, a Wall Street trader. This game is not separate from the financial world the players inhabit, but "the clear and intimate extract of their daytime initiatives" (DeLillo 2008: 97). The narrative suggests a more complex way of understanding the kind of instrumental and calculative rationality associated with the financial world. In this space the world of finance is inextricably tied to, and confronted by, its own irrationality: "calculated deceit" is brought directly into contact with "naive expectation," intuition with risk analysis, and the cold logic of finance with the realm of superstition. The game becomes not so much opposition to the rational world of finance, but a site where finance is intimately entwined with the "folkways" it has supposedly overcome.

What gives finance much of its weight and power—what, in some ways, authorizes its expansive reach across our global political economy—is a technocratic narrative which frames financial practice as inherently rational, scientific and, by extension, legitimate. The widespread acceptance of this image of finance as a rational body is a relatively recent historical development. Historically, finance was conceived not as a rational pursuit but as a politically contested and dubious undertaking associated with gaming, greed, chance, moral ineptitude or panic. Genealogies of finance demonstrate the emergence of contemporary financial markets out of various sorts of games, gaming cultures, gambling and lotteries, as well as the protracted historical processes through which finance was separated from games of chance in popular culture and law (de Goede 2005; Mackenzie 2006). Thus gaming is one of the *subjugated knowledges* associated with finance. As Michel Foucault notes, subjugated knowledges are the "disqualified" knowledges that are buried or displaced when a body of formal science is constituted. The recasting of finance as a rational science in the 19th and 20th centuries was accomplished, in part, by displacing gaming. This involved the formal separation of the "normal science" of finance from game and chance (de Goede 2000).

As DeLillo's narrative underscores, however, subjugated knowledges remain inextricably tied to those forms of knowledge and practice from which they are displaced—a kind of "funnelled essence" that can be mobilized. Knowledges that are disqualified as unscientific remain intimately connected, albeit in complex ways, to the very "sciences" from which they are disassociated. This involves two often contradictory sets of relationships: On one hand, subjugated knowledges are purged in some formal and explicit manner from the body of science they might contaminate, such as through 19th and 20th-century regulatory and legal means which established strict rules of separation between finance and gambling, investment and chance;

On the other hand, subjugated knowledges are *constitutive* of the very categories of science from which they are displaced. Gamification has been key to the ways in which financial institutions experiment with the “rational” but virtual worlds they occupy, suggesting that finance and its subjugated knowledges are relational, rather than separate categories. Emphasizing this complexity opens a useful space in which to challenge finance, question its claim to rationality or invoke limits to its expansive appetites. To emphasize this point I draw on a wave of tactical art from the past fifteen years, which has mobilized game-knowledge to destabilize finance and provoke questions about its reach. By drawing on the knowledge or practices associated with games, and by resituating finance in relation to its own subjugated knowledges, this tactical art entails an adversarial design aimed at “making finance strange,” in order to disrupt its peculiar claim to calculative rationality.

To make this case, this paper is divided into two broad sections. In the first section, I suggest that as finance became recast as a form of rational and legitimate science, it was purged of any associations that tainted its claim to scientific parsimony: whimsy, irrationality, emotion, panic and, most importantly, gaming. This section traces some of the key ways in which financial exchanges and institutions attempted to distance themselves from the irrational worlds of chance, whimsy and gaming. It also signals the ongoing constitutive role of subjugated knowledges by highlighting some examples of financial practices that remain inextricable from gamification. The second section of the paper assesses subjugated knowledges as resources that might inform a critical strategy. It reviews recent tactical art that has mobilized the knowledge, practices or design principles of games to disrupt finance and its claim to be an insulated rational science. A concluding section frames this art, and the subjugated knowledges that make it possible, as a critical strategy usefully organized around agonistic and adversarial commitments.

Finance and its Subjugated Knowledges

Although they are now commonly framed as scientific and legitimate, financial exchanges were, contested, dubious spaces in the 19th century and as recently as the 1930s. As Marieke de Goede has noted, nascent financial institutions in Europe, and later, in the United States, were tainted by association with “irrationalities” of all sorts, including coffeehouses, gambling, and lotteries (de Goede 2005). Formalized financial institutions emerged from practices that prevailed in “less legitimate” spaces where risk was debated and traded, including spaces occupied by lotteries, gaming and lending. To disturb the rational image, de Goede documents the earlier contestations that marked finance as a socially controversial practice, and the complex, often ambiguous steps that resulted in the reframing of finance as a scientific domain. This process entails “the historical struggles, debates, controversies, insecurities, and ambiguities that had to be purged from nascent credit practices in order to produce the image of today’s coherent and—largely—rational global

financial sphere.... finance as a legitimate, rational, and, above all, *natural* practice” (De Goede 2005; see also De Goede 2003, 2004, 2007). The financial world became sedimented as a set of distinctive institutions focused on questions of political legitimacy and preoccupied with a strategy directed explicitly at these irrationalities, particularly gaming (Aitken 2007; de Goede 2005, 2006; O’Malley 2003; Preda 2009). This purging of finance from its Others involved self-consciously moral campaigns that contrasted the older discourse of good fortune with modern scientific analysis and certainty. As Alex Preda notes, a slowly carved out distinction between the scientific practices of “investment” and the dubious pursuits of “speculation” was central to establishing the legitimacy of financial exchanges over the course of the 19th century (Preda 2009). This process involved a protracted attempt to distinguish between finance and gambling in jurisprudence and regulatory practice. The development of elaborate derivatives markets for foreign exchange in the 1870s was enabled by regulatory decisions that cemented the distinction between legitimate financial exchange and gambling (Mackenzie 2006). This distinction was key to the codification of insurance practices. The emergence of life insurance was met with widespread contestation partly because of the challenge it presented to existing cultural and religious assumptions regarding fate and chance, but also because it was associated with speculation on the lives and deaths of important figures, or even complete strangers; life insurance represented little more than a bet on human life itself (see Clark 1999). As Alborn notes, “more directly than any other enterprise apart from slavery, life insurance set a price on human life” (Alborn 2009: 11). To carve out a formal space for insurance as a legitimate practice, governments began to draw complicated lines between “insurance” and “gambling” throughout the 18th and early 19th centuries. Regulatory changes included the concept of “insurable interest,” constituted in 1774 in *The Act for Regulating Insurances on Lives*, more commonly known as the *Gambling Act*. As a legal device, “insurable interest” formally disassociated gambling from insurance, addressing widespread concerns that life insurance facilitated wagering on human lives. The legislation prohibited life insurance “except in cases where the persons insuring shall have an interest in the life of the persons insured” (Zelizer 1979: 71; Merkin 1980). Insurable interest sought to establish a legal space for insurance arrangements as contracts explicitly distanced from gaming or speculation—purposes that had long dominated the life insurance field. In the words of the legislation, “no insurance shall be made by an person... on the life or lives of any person... wherein the person or persons for whose use, benefit, or on whose account such policy or policies shall be made, shall have no interest, or by way of gambling or wagering: and the every assurance made contrary to true intent... shall be null and void (Quoted in Lobo-Guerrero 2011: 38; see also Alborn 2009: 308, 2008).

This purging of gambling discourse from finance was took place from a range of directions, including econometrics and statistics, and new techniques of visual display and charting borrowed from demographics and economics. Finance was

slowly transformed into an object that could be understood and visually represented through statistical analysis. Risk was codified as an object with properties that could be managed, known, charted and made visible, rather than as a random or uncontrollable force. One key step in this transformation was the 19th-century invention of financial averages and charting, through which financial prices were indexed and made visible as scientific movements. “The virtues associated with statistics,” De Goede argues, “provided one way in which the moral superiority of speculators became articulated in the face of political critiques” (De Goede 2005: 89; see also Preda 2009). In order for particular forms of knowledge to be codified as rational bodies of science, Foucault argues, they must first be represented as self-consistent and coherent systems. Any knowledge that claims the status of rational science must displace the parts of itself that might undermine its coherence and parsimony. Subjugated knowledges are bodies of practice or “know-how” that are “low-down” on the hierarchy and “beneath” the level of required scientificity.¹ They are “the historical contents that have been long buried and disguised in...formal systemisation...blobs of historical knowledge which were present but disguised” (Foucault 1980: 81).

Subjugated knowledges remain *constitutive* of the sciences from which they are formally displaced, shaping the meaning and identity of bodies of rational science in important ways. This constitutive role is visible in the long and complicated imbrication of games and finance. Although financial exchanges have long sought to distance themselves from gambling and games, game-knowledge has remained important to finance and has helped to constitute the forms that finance has taken over the past century. Perhaps the longest use of game knowledge in the financial world has been in the incorporation of game design principles in economic or business simulation games. Simulations consist of virtual, video or online game platforms explicitly designed as training tools. Financial institutions use simulation games to expose employees to complex trading episodes. Simulation games have become “a core tool used in the training of staff who will be involved in macro fiscal work such as trading on stock exchanges” (Rutter and Brice 2006: 227). Because much financial trading occurs through digital or virtual contexts, simulations provide valuable training devices capable of making the pressures common to finance work feel real. As a result, online simulations have become accepted in most standard business education programs. Harvard Business School now markets a complex series of online simulations ranging from *Working Capital*, which allows students to analyze the “unique financial profile” and effects of particular “improvement opportunities” on “working capital,” to *Finance: Capital Budgeting*, which allows students to learn “core principles of private equity finance” based on an actual acquisition case (Harvard Business School 2013).

More recently, financial firms have turned to gamification as a way to attract or retain customers, especially younger clients. As one key gamification advocate puts it, clients who are under the age of twenty have “since childhood...been immersed

in the language and metaphors of gaming” (Bunchball 2012: 2–5). While a number of financial institutions, such as BBVA in Spain, have developed unique game-marketing strategies, among the most innovative has been the Commonwealth Bank Group in Australia. Commonwealth has developed a series of online games that includes *Coinland*, an online game designed for children ages five to twelve. The Australian government describes this game as “an animated virtual world where kids can learn the basics of...financial concepts” (Australia 2012). *Coinland* asks very young players to earn “merit awards” by achieving financial literacy steps such as counting money, spending wisely, “budgeting to protect savings,” or learning about interest. These steps not only establish basic financial lessons— often figured in liberal tones—but also drive potential customers and their parents to Commonwealth’s online environment.

Commonwealth developed a second game platform called *Investorville*, an online offering for adults that allows players to experiment with “financial concepts” and the practice of investing. Players manage their own investment and property portfolio in a context that reflects real-world financial and economic data. A successful platform that has attracted 23,382 registered players/investors, *Investorville* is designed as an “online simulation tool” for “budding investors” to both “de-mystify the complex world of property investment” and “test whether a more subtle value-add approach to direct marketing provides a better response than a traditional ‘buy now’ approach” (Whelan 2012: 3–4). Bridging games and marketing, initiatives like *Investorville* model and offer entry to the abstract world of finance.

Finally, initiatives designed to address potential clients who are outsiders to the mainstream financial system have also made use of games. A recent series of experiments in “prize-linked savings” attempts to encourage everyday financial conduct among the “financially excluded” or “underbanked” by creating a standard savings account in which depositors periodically “receive a chance to win a specific prize that is a function of deposit amounts” (Filiz-Ozbay et al. 2012: 2)² Prize-linked savings schemes attempt to leverage the appeal of gambling and lotteries by offering savers a chance to win a substantive prize in addition to, or alongside of, the interest that accrues on their saved balances. As a form of gamification, prize-linked savings schemes address their audience as both savers and gamblers, prudent subjects and players in pursuit of fortune.

As these examples suggest, there have often been game design and mechanics continue to be integral to and constitutive of finance and its reproduction over time. The lingering resonance between finance and its subjugated knowledge of gaming is a vulnerability that has been exposed by activists and artists who explore the limits of the financial world’s abstract rationality.

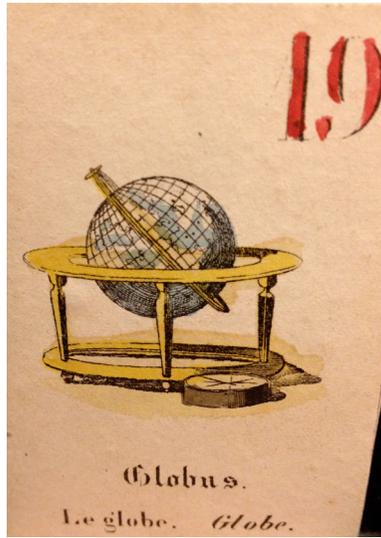


Fig. 1. *La Lotterie De Commerce*, 1840. New York Historical Society.

Staging Finance and its Subjugated Knowledges

For Jesper Juul, games are associated with play, but they are not a site of abstracted “free action”; rather, they are spaces of interaction deeply conditioned by formal rules (Juul 2005: 6–7, 2003). Games occupy what Juul describes as *half-real* spaces: they are “two different things at the same time...games are *real* in that they consist of real rules with which players actually interact...while imagining a fictional world” (Juul 2005: 1). The half-real spaces occupied by financial games stage an encounter between finance and its subjugated knowledges, operating as a contact zone between finance and the irrationalities it has sought to displace. Finance became an object of game-play at the same moment that it became consolidated as a “normal science.” For example, *La Lotterie De Commerce*, a Swiss game from 1840, consists of sixty illuminated playing cards featuring traders as well as merchants (Fig. 1). By the late 19th century finance games were proliferating: they were circulated widely in the 1930s—a period of intense real-world financial spasm—with the publication of *Finance and Fortune* (1932), *Wall Street: The Game of Speculation* (1933), *Bulls and Bears* (1936), *Easy Money* (1935), the *Monopoly Stock Exchange Add-On* (1936), *The Stock Market* (1936), and *Frenzied Finance* (1937). Another wave of financial games created in the 1980s and 1990s took a diversity of forms, including board games, in-situ games and the earliest financial video games.

These financial games stage dramatic encounters between the rational world of finance and its irrational shadows of panic, whimsy and chance. This dynamic is dramatized in *Pit* (Fig. 2), a game conceived in 1904 that invites players to “corner” a commodity traded on Chicago’s futures markets. *Pit* is a stage on which players

pursue both market rationality and frenzied chaos. Because it establishes a playing sequence modeled on open outcry financial markets, *Pit* is an allegory of finance as a fantasy of accumulation, where play is marked by speed, noise, chaos, anticipation, even joy. *Pit* and the generation of games it helped to inspire establish fictional worlds in which we occupy the borders between chaos and planning, calculation and adventure, rational deliberation and instinctive impulse.



Fig. 2. *Pit* and *Pit* Playing Cards, 1919. Parker Brothers.

Pit's strategy of staging finance alongside its own irrationality was actually codified a year before the game was developed, in Frank Norris's iconoclastic 1903 novel *Pit: A Story of Chicago*. As narrated in *Pit*, finance is both an expansive force—the market “sent its whirling far...sweeping the wheat into its currents, sucking it in, and spewing it out again in the gigantic pulses of its ebb and flow—and a chaotic pressure legible only to those internal to its strange forces (Norris 1903: 141).



Fig. 4. *The Greatest Juggling Act on Earth* (Kepler ca. 1910)

Bulls and Bears echoes a longstanding conversation in which finance was critiqued as a kind of game.³ This trope—finance as a game—was expertly mined by Kepler himself. In his assaults on Wall Street in the late 19th and early 20th centuries, Kepler invoked metaphors that depicted financial practice as a game pursued with zeal by financial interests. If finance is a game, Kepler reminds us, it is one that is rigged from the outset—everyday populations face a field of play fundamentally outsized and tilted against them (Fig. 4). Framing finance as a game is a powerful

critical move that brings finance into confrontation with the types of forces—whimsy, play, chance—from which it seeks to dissociate. *Bulls and Bears* extends this move by staging finance as a game in a real and material sense, a critical gesture at the core of recent forms of tactical art.

Finance as Tactical Game-Play *Bulls and Bears* is also distinctive as a game; it is most often recognized by historians as an early example of American board and table games, rather than as an artistic or political gesture (Hofer 2003). *Bulls and Bears* exists at the creative intersection of satire, design, game-making and caricature, a bricolage that serves as an entry to situating *Bulls and Bears* in dialogue with recent tactical media and art. Emerging in the last decade across a range of critical genres, tactical media has become closely associated with electronic and digital forms of communication. More generally, tactical art refers to the creative repurposing of media, broadly defined, in ways that both apprehend and disrupt that media. Tactical art is internal to the very practices that constitute its form, medium of expression and object of attention. Although resistant to singular definitions, tactical art has become closely associated with “expressions of dissent that rely on...media created from readily available, relatively cheap technology...projects that people do opportunistically—seizing temporarily available or unclaimed resources....located within an economy of power relations where resistance is never outside of the field of forces” (Renzi 2008: 71–72).

Kepler’s *Bulls and Bears* was not the first attempt to repurpose game media to contest financial rationality, although it is notable in its execution and clarity. The collapse of the South Sea Bubble in 1720 led to multiple sets of playing cards explicitly designed to satirize the claims of the British joint-stock company that was at the heart of this early global financial crisis [Fig. 5]. These cards contested the claims of financial interests by circulating as both game media and political expression. This kind of dual gesture is familiar to artists working in the financial turbulence of our own political-economic present. Critical Art Ensemble (CAE) staged one of the earliest of the recent wave of tactical art performances with *Shareholder’s Briefing* (1996), a multi-media performance that staged a mock shareholder’s meeting. The meeting solicited investment in technologies of control and surveillance, creating a potent comment on contemporary conditions of political authority (Critical Art Ensemble 1994: 137).⁴ At the heart of these tactical media interventions is a pre-occupation with virtual space similar to the practices of global financial markets. The virtual is figured as a key site of intervention and contestation. “The rules of cultural and political resistance,” the CAE has argued, “have dramatically changed... people are reduced to data...The new geography is a virtual geography, and the core of political and cultural resistance must assert itself in this electronic space” (1994). Like finance, contemporary culture is characterized by a globalized geography of digital traces, which can be contested most effectively by what the CAE calls “electronic disturbance.”



Fig. 5. South Seas Bubble Playing Cards (Wale ca. 1722).

To insert themselves into this virtual space, tactical artists have mounted serious attempts to explore financial themes by repurposing the practices and design architecture of games. Between 2000 and 2002, American artist Lynn Hershman mounted several versions of *Synthia Stock Ticker*. Hershman uses digital platforms inspired by gaming as a vehicle for feminist art concerned with questions of identity and the borders of the self. These works address “flowing data that eats itself, cannibalizing in the process information that mutates and is re-expressed in unpredictable ways” (Hershman 2005a: 209). *Synthia* is a networked sculpture of a female figure whose behaviour is linked to real-time stock market trading activity. In one version of this installation, *Synthia*’s shifting behaviour is transmitted via video to a display built into a replica of Thomas Edison’s original stock ticker (Hershman 2005b: 91). Shifts in real-time trading activity are registered by *Synthia* in a range

of sixteen programmed behaviours: if the market is flat she goes to bed; if it goes up she dances or visits the zoo; if the market is really hot she turns to fire and does backflips; but if the market goes down she takes a gun to her head or has nightmares (Hershman 2005a: 210–211). In *Synthia*, Hershman caricatures financial abstraction and the ways in which those abstractions have the power to override identity.⁵

Gamin also been featured in the work of Derivart, a “finance art” collective founded by Daniel Benuza, a sociologist, Jesus Rodriguez, a Spanish visual artist, and Mar Canet, a video game computer engineer and designer. Since 2004, the collective has staged installations focused on the technology that enables financial abstraction and quantification. In their own words, they have been deeply preoccupied with “the meaning of work and value in an economy characterized by interactive technology, mathematical formulae and market-based organizations” (Benuza 2006: 29). Financial markets are targeted not only as important sources of power and authority deeply implicated in the networked management and display of data. “We believe,” the collective announced in 2006, “that the capital markets embody like no other institution the economy of information [and] technology...that defines our age” (Steffan 2006).

At the heart of Derivart’s work is an attempt to create, repurpose and disrupt forms of financial representation. They show that much of the power of the financial world originates in the complex ways in which financial data is generated and represented, often as forms of seemingly objective, abstract technical knowledge. Derivart seeks both to work within and undermine the ubiquitous streams of financial representation. In doing so Derivart has contributed to what one critic refers to as “an aesthetics of information, an ‘infosthetics’: the transformation of data streams into visual or sonic representations, by way of computer algorithms” (Holmes 2007). Derivart’s “infosthetics” bridges the worlds of financial data, whimsical art and the design ethos of digital gaming.

One of their earliest interventions, *FinanceSketch* (2004), involves the redesign of the popular 1980s children’s toy Etch-a-Sketch. In the installation, a series of Etch-a-Sketch devices are connected to each other and to a computer that receives real-time stock price data. Stock price data was then displayed on a small screen and replicated on the Etch-a-Sketches via a “microcontroller” and a string of mechanical devices that manipulated the knobs of the sketch device to create ongoing, changing, dissolving and re-emerging doodles. Because they were clustered together as a series of linked FinanceSketch devices, the installation was a kind of replication or parody of the trading room, emphasizing

...several aspects of the abstract, high-volume information synthesized everyday in the capital markets. The toy-like nature of the screens draws attention to the playfulness and creativity involved in the elaborate displays used by Wall Street traders. It recalls the ephemeral nature of stock prices.

Just as Etch-a-Sketch drawings disappear for good whenever the board is deleted, the capital markets operate on a flow of events and prices changes with “continuous refresh...” (Derivart 2004)

More striking are Derivart’s ambitious attempts to rework conventional financial knowledge. In 2004 and 2008, Derivart mounted versions of *spread player*, an installation consisting of an online digital interface that transforms data generated from stock prices into sonic compositions. Listeners create their own compositions by dragging icons of listed firms onto a media player, which then translates stock price changes into sounds. As members of the collective noted, “Derivart abandons visual representation as its central focus, and represents information from a sound universe” (Derivart 2004, 2008). On one hand, *spread player* issues a striking reminder of the sonic nature of most traditional financial trading, including the turbulent open outcry in traditional trading exchanges such as those narrated by Norris in *Pit*. On the other hand, by transforming financial data into an unfamiliar form of mediation, *spread player* severs financial representation from any comfortable correspondence to the object it purports to represent. As *spread player* reasserts, financial representation is not a question of objective correspondences; it is always a creative act consisting of complex mediations.

The culmination of Derivart’s artistic interest in finance, data and interactive technologies is its experiments in gaming. In 2009, Derivart launched *Game Broker*, a suite of three online games played on a classic 8-bit software platform (Derivart 2009). The games transport players to several moments of financial instability from the past twenty-five years: the oil crisis of the 1980s, the post-Olympic financial instability in Spain in the mid 1990s, and the dot-com bubble which collapsed in 2000. Each game requires users to navigate various landscapes of financial uncertainty. “Game Broker,” Derivart notes, “invites the player to rethink the nature of financial crises as recurring phenomenon during the last decades” (Derivart 2009). Derivart built their own DIY cartridge for Nintendo’s Game Boy using a series of open source tools, allowing gamers to access the games online or on their own handheld console. The games allow participants to situate themselves directly in the field of financial chaos and contagion, experiencing a kind of immediacy often prevented in the technocratic distance imposed by forms of financial abstraction.

Immersed in the technologies that make financial abstraction possible, Derivart works to insert a stubborn incongruity into the processes that represent objects as abstract streams of data. Even monumental streams of abstract financial data have points of blindness or spillover—unresolved remainders that can be made visible. Derivart disrupts financial abstraction by foregrounding the practices of whimsy, randomness, and game-play that finance seeks to displace. Neither fully inside or outside the space of networked financial information, Derivart’s work disrupts the dream of perfect calculation and abstraction by conjuring small forms of uncertainty.

John Klima, a new media artist from Brooklyn, is preoccupied with “gaming and the various possibilities of manipulating and transliterating data” (Klima 2001). His most well-known piece is *The Great Game*, an installation launched in direct reaction to the American bombing of Afghanistan in 2001. The game engaged players in an interface which allowed them to navigate the “theatre of war.” A gesture at the grand geopolitical game of imperial intervention, *The Great Game* imports and translates daily Department of Defense data related to the Afghanistan bombing campaign into the interface of a topographical game.

Klima’s work addresses the world as it is constituted in large-scale and increasingly complex streams of data.⁶ These streams are not objective or technical objects, but deeply creative traces that can be subjected to creative lines of sight. As Rita Raley notes, Klima’s work “takes data as its material—signals that it then aestheticizes, modifies, interrupts, negates and/or returns” (Raley 2003: 69). Of particular concern for Klima are the unique artistic possibilities opened by the game as a point of contact between everyday audiences and the digital traces of automated data. As one critic notes, “Klima targets the computer environment itself, focusing on interface as a site of transformation” (Apter 2002: 39). *Train*, launched in 2006, consists of a large-scale model railroad. A repurposed Nintendo Game Boy installed on one of the train cars transmits a 3D image of the scenery through which the train travels. The train can be manipulated by viewers via instructions issued through their own cellphones. *Train* is “a unique and original take on ‘mobile computing’ and ‘the moving image’ . A cinematic narrative in miniature” (Klima 2006). *Earth*, by contrast, is a physical globe upon which real-time or cached data generated online is visualized. This data includes weather conditions from weather reporting stations worldwide, data from the United States geological survey and military mapping data (Klima 2002).

Perhaps the most provocative of Klima’s installations, and one which foregrounds financial data streams, is *ecosystem*, launched in 2002. Commissioned by Zurich Capital Markets as an installation for the lobby of its new headquarters in New York, *Ecosystem* creates a virtual world populated by “bird-like creatures” that move in response to the shifting value of different currencies. Both the birds and the world they inhabit are transliterations of real-time financial data:...a real time representation of global currency volatility fluctuations...[which] consists of flocks of “birds” (each flock representing a country’s currency) and branching “tree” structures (each tree representing a country’s leading market index). As a market index advances, the tree grows new branches. If the index declines, branches begin to fall off the tree. Similarly, a currency’s current value against the dollar is indicated by the increase or decrease in the population of the flock. (Klima 2000)

Ecosystem emphasis volatility as a determinant of the behaviour patterns of birds and the territory available for birds to occupy. Moreover, the installation is designed as a video game providing audiences with a joystick that inserts them into the

landscape created by uncertain financial data. *Ecosystem* establishes a monumental game world representing real-time financial volatility, made more abstract by an additional layer of mediation.

Key to this installation is a complex staging of financial agency. By inserting us into the game as players, Klima's work allows us to perform or parody our conceptions of ourselves as financial agents. As Rita Raley writes, Klima has consistently used and reworked the A* algorithm—a central component of contemporary gaming platforms—in his interactive pieces. These games invite participation from players but limit that participation in important ways. Klima's games allow players to navigate a landscape that they cannot act on or modify. While Klima "self-consciously works with programmatic aspects of the game...one can navigate through the financial landscape environment in *ecosystem*, but such navigation only changes perspective and not the system itself" (Raley 2003: 80). At this level, Klima stages a kind of parody of financial agency. We are "outsiders" unable to influence the financial landscape, in a parody of the financialized imagination that so powerfully construes us as enterprising subjects capable of managing our own investing life (see Rose 1999). In another sense, Klima's game interface reminds us that we do constitute an irreducible part of the game, as participants in a financial landscape that is partly a mechanical response to stimuli.⁷

This parody of our own fantasies of financial agency is made more complex in Klima's reformulations of *ecosystem* in the years that followed its initial installation. *Ecogame*, launched in 2004, is a real-time, multi-user securities trading game built around the bird-creatures invented in *ecosystem*. As Klima describes *ecogame* players, "create flocks of birds whose appearance, behaviour, and very survival, is determined by a stock portfolio the user creates" (Klima 2004). These flocks interact with other flocks in ways that are partly determined by algorithms that establish genetic sequencing for all flocks in the games. "Flocks created by players are released into the ecosystem...When you play *ecogame*, you are in control of your flock. When you are not playing, it is under its own control based on behavioural rules and the genetic algorithms" (Klima 2004). *Ecogame* establishes a more subtle conception of financial agency. On one hand, the flocks are shaped by the universe of stock prices that users help to constitute—a direct gesture at a financialized self capable of governing his or her own financial agency. On the other hand, their ultimate outcome is shaped by algorithms programmed in advance, in a reflection of an ecosystem largely governed by abstract streams of data.

In establishing this delicate staging of financial agency, *ecosystem* and *ecogame* constitute a particular kind of tactical subversiveness. Most immediately they disrupt the seamless ways in which financial data is apprehended in everyday life, because of how it is mediated. Emily Apter notes that *ecosystem* works to make visible streams of financial data that make just enough sense; they are not uncontested or unknowable forms, but *mediated* representations with dubious connections to any stable referent.

Klima's idiosyncratic reworking of data streams render "the viewer hyper-conscious of the technological mediation of the world and its images" (Apter 2002: 42).⁸ In Klima's games, we are immersed in unfamiliar forms of financial abstraction, suddenly aware that those forms are constructions of value and worth rather than products of rational calculation. In the words of another critic, Klima's works are "visual spectacles" aimed at disrupting the ease with which we consume mediated financial data.⁹ By immersive players in his own ecology of financial abstraction, Klimah simulates the very "rational" financial knowledge the work seeks to question.¹⁰

Tactical financial art creates interfaces that allow players to directly encounter real forms of abstracted financial data while making those representations less familiar—a kind of creative making strange (de Goede 2005). This is achieved by dissolving the borders that seemingly separate gaming and the financial world. Klima's interactive installations try not to separate those worlds or subjugate them to one another, but establish points of contact so that they might enfold. His work undermines finance's claim to be a rational body separated neatly from its subjugated knowledges. These installations also create a porous threshold between the virtual and the real. Although Klima's installations are rooted in the virtual world of digital gaming, he stresses the physicality and materiality of games:

Klima's ecosystem virtually evacuates geophysical space and operates at the level of the meta-geophysical... His mapping projects and financial ecosystems alike are post-geographic... Yet the work paradoxically insists on the materiality and material effects of capital and currency. *Ecosystem* thus establishes an explicit relation between the abstraction of currency markets and the material consequences of finance capital. (Raley 2009: 124)

The trading of financial assets is often framed in opposition to the realm of physical, productive or material economies.¹¹ Interventions like Klima's tactical art challenge this convention by threading a line that cuts between and across material and virtual spaces. His artistic practice seeks to complicate the way we relate to and are situated in the spaces of finance. Through spatialized encounters between finance and its subjugated knowledges, these pieces disrupt the easy dichotomies that often characterize our critical descriptions of the financial world: virtual/real, inside/outside, material/imaginary.

Conclusion: Agonistic Limits to the Financialized Imagination

In the autumn of 2002, New York artist Ben Rubin mounted *Open Outcry*, an audio installation that produces a soundscape recorded during the resumption of commodities trading at the New York Mercantile Exchange. After the trading floor was destroyed in the 9/11 attacks, the exchange replaced its long tradition of open outcry trading with an automated system. Rubin's soundscape places two layers of sound in dialogue. Overlaying the installation and emanating from the upper

reaches of the space is an ethereal piece of music. The music features a female voice singing the actual price of commodities culled from international market data. The soothing presentation of market data is contrasted with the chaotic roar of open outcry traders, which fills the body of the space, often eclipsing the price-song. The chaos and the strange lexicon of floor trading echoes the “great tumult” of Norris’ *Pit. Outcry*’s layered soundscape condenses what is at stake in the tactical art I have assessed in this paper. The work dramatizes a particular moment in the digitization of financial markets: the conversion of financial exchange from human voices into automated digital traces. The rational price signals that are given verse in the music contrast sharply with the pandemonium of the trading floor. The soundscape is literally a space of encounter: a zone where rational financial exchange comes into unsettling juxtaposition with the forces of disorder, intuition and chaos supposedly displaced when finance was recast as a rational endeavour. The traders interviewed as part of the project describe their work as a practice governed by intuitive or instinctive impulse. “You can tell,” notes one open-outcry trader, “when somebody is bluffing...it’s really an internal gut feeling as far as seeing the expression on somebody’s face, the way that somebody is breathing, the way that somebody is leaning....” (Rubin 2002).

Subjugated knowledges were not defeated in any “once-and-for-all” achievement; rather they continue to haunt the forms of scientific practice from which they came, reminding us that finance and its Others are bound up in complex relational webs. These webs are striking in the lines that separate finance and game-play, but also connect them through their shared commitment to virtual space. The financial world now occupies gamespaces in ways that outstrip the resonances between gambling and financial markets at the dawn of the financial revolution; the same kind of virtual spaces. In the digital world of algorithms, 3D and online gaming, meaningful separation between games and finance is no longer possible. As Mackenzie Wark writes,

Everything is digital, and yet the digital is as nothing. No human can touch it, smell it, taste it. It just beeps and blinks, and reports itself in growing alphanumeric, spouting stock quotes on your cell phone... . The jitter of your thumb on the button or the flicker of your wrist on the mouse connect directly to an invisible, intangible gamespace of pure contest, pure agon. It does not matter if your cave comes equipped with a Playstation or a Bloomberg terminal. It does not matter whether you think you are playing the bond market or Grand Theft Auto. It is all just an algorithm with enough unknowns to make a game of it. (Wark 2012: 23, 2008)

If, as Rita Raley suggests, tactical art seeks disruption and intervention, what kind of critical strategy is encoded in the tactical encounter between finance and its subjugated knowledges? By way of conclusion, I want to suggest that the art reviewed in this paper foregrounds what Carl DiSalvo has called “adversarial design”: the creative production of objects concerned not primarily with function, but rather

with injecting contestation into their very form. DiSalvo argues that adversarial design seeks “to produce systems that perform the very conditions...that they strive to reveal.... One of the tasks is to provide...conflictual representations of the world” (DiSalvo 2012a: 53–54). In these terms, adversarial design invokes a critical practice that is *agonistic*. Rooted in Greek meanings of conflict or discord, agonistic practices purposely seek out interruption, contestation and disharmony, especially in relation to objects conceived as settled beyond dispute. Unlike conventional conceptions of counter-hegemony common to the critical political economy tradition, agonistic approaches do not pursue the grand ambition of a fundamental reordering of society, nor do they imagine a place somehow outside of the force they seek to contest, such as an outside to the reaches of financial capital. Rather, agonistic approaches seek out small spaces inside of existing practices, from which dissensus can be established. Much of the power and legitimacy extended to finance relates to its taken-for-granted status as a technical object. Adversarial design aims to disrupt objects that are certain in their immunity from political debate and deliberation, such as financial markets. Designers create objects capable of integrating contestation at all levels, and attempt to install:

...a condition of disagreement and confrontation—a condition of contestation and dissensus...In labelling an object as adversarial, I mean to call attention to the contestational relations and experiences aroused through the designed thing, and the way it expresses dissensus...It requires that the description and analysis of the object bring to the fore, the way that its designed qualities enable or model the productive and ongoing commitment to questioning, challenging, and reframing that typifies agonism. (DiSalvo 2012b: 48)

Finance is not often framed as a contested or unsettled set of practices. Over the course of the 20th century, finance was detached from the robust forms of contestation that marred financial exchanges and institutions in the 19th century (Rosenberg 2003, de Goede 2005, Preda 2009). In lieu of contestation, finance was recast as a technical object legible in the highly specialized languages of experts: financial management, risk analysis and, above all else, mathematical and quantitative methods. The aim of tactical finance art is to install an agonistic language and practice of contestation at the heart of finance.

The etymological roots of agonism relate not only to contestation, but also to games. *Agon* refers to the competition inherent in all games. This meaning relates to the public celebration of games, to a contest for a prize, or to “a verbal contest between two characters in an Greek play” (Di Salvo 2012b: 48). Tactical finance art bridges both meanings of agonistic impulse, as a site of contestation and of play. This double meaning entails a critical gesture suited to the world of finance and its self-image as a rational, scientific object. Unlike more conventional critical languages which stress emancipatory, counter-hegemonic resistances, agonistic gestures seek a more

modest goal of discord and disruption. “Instead of the old school rituals of negation and refusal,” writes Geert Lovink, “tactical media engage both makers and users, producers and viewers, into a game of appearances and disappearances” (Lovink 2005). Although modest in scope and duration, this is a kind of tactical intervention that might be productive as we continue to think critically about the possibility of limits to finance—a force as expansive and ambitious as it is subject to its own latent points of exhaustion.

Notes

1. Note that some of the argument developed in this paragraph about the subjugated knowledges of finance is elaborated in more detail by Rob Aitken in the slightly different context of artistic reactions to the financial crisis of 2008 (Aitken Forthcoming).
2. Prize-linked savings involve connection not to virtual or online games, but to more conventional forms of gaming associated with gambling and lotteries. Gamification, as this example suggests, refers to games in the broadest sense, not merely to online or video game platforms.
3. In this conversation finance was a game that was detached from “real” kinds of social, economic and moral conditions, but which was also tragically real in its consequences. “But, I hear you say, ‘speculation in Wall Street is not a game of chance or skill as in cards’...[However] ninety-five percent of the business in Wall Street is part of a game....of skill...directed by shrewd men who control millions of dollars” (Hoyle 1898: 5–9).
4. Similar performances have been accomplished by the Yes Men/Yes Lab. In April of 2012, for example, they launched a fake Bank of America website (<http://YourBofA.com>) which mocked the role of financial institutions in the 2007/2008 crisis (Yes Lab 2012).
5. As Martin has suggested, finance, in our neoliberal present, “becomes not simply a form of calculation, a way of knowing, but also invites a kind of being” (Martin 2002: 15). In Lynn Hershman’s rendering, however, calculation becomes a basis for a certain kind of being. The Martin quote is pointed to in a blog posting by Australian graduate student Richard Glover (2011).
6. As Rita Raley puts it, Klima is concerned generally with “the transformation of material bodies into statistics, assets, even geometric icons” (Raley 2003: 83)
7. “...Klima’s work demonstrates our engagement in and by the game: Moreover, the game reminds us that we cannot be removed from our position of responsibility...We are, then, fundamentally part of the game” (Raley 2003: 81).
8. Or as put by one critic: “By using the look and feel of video games, the pieces encourage users to consider other kinds of games played in life” (Berwick 2001).
9. “The visual spectacles Klima produces are subversive of the technicity and technological rationality inherent in statistical calculation” (Raley 2003: 69–70)

10. Raley notes “...the effect of immersive enclosure...suggesting not only an all-encompassing world time but also the absence of an externality to capital.” (Raley 2009: 120)

11. As Raley puts it: “Capital has detached from a concrete, material context and become speculative...currency no longer circulates with a solid material basis.” (Raley 2003: 71)

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