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Countering Capitulation

An Arts-Based, Postdisciplinary Approach to Resolving Non-Transparency

Introduction

> *You know for a fact that there are people out there that know what actually happened but they're not talking. So, in fact, this entire paper could be science fiction, or it could be dead on, we have no idea.* – Andrew Lo

Visibility, knowledge and resolution are based on access to information. We usually consider this as either a question of collecting new or examining existing data. However, the term "black box society"[1] points to a situation in which data are deliberately concealed. Manufacturing information asymmetry – imbalances of power due to leverage, misinformation, concealment, collusion or fraud – has become an effective tool for gaining competitive advantage across all levels of life. Noise is the master of information.

Transparency, a paradigm for governing sociality, has come under extreme pressure and the logics of technocapitalism have thus become a threat to the body politic – they not only restrain agency but carve out new forms of exploitation and segregation. As power increasingly shifts from representative to performative speech, it reorganizes the strata of society by creating divisions that affect bodies, minds and affiliations along quite different lines as to how class and consent have been contextualized historically. Hence, we are witnessing a crisis of democratic resolution that far exceeds the epistemic non-transparency criticized by Lo (see motto above[2]).

Proposals to reconstitute transparency and reengineer data access often resort to legal and operational solutions to govern (big data) algorithms, whether they suggest, amongst others, a new professional class of "algorithmists",[3] algorithmic accountability reporting,[4]

1 See Pasquale 2015.
2 Lo 2011: 13:20–13:55. Andrew Lo, professor of finance at the MIT Sloan School of Management, referring to a study he conducted on a quant meltdown.
3 Mayer-Schönberger & Cukier 2013.
4 See: Diakopoulos (undat.).

the right to procedural data due process[5] or, most problematically, corporate digital responsibility as ventilated by Mark Zuckerberg and Silicon Valley venture capitalists. But recommended policies that follow a logic summarized in Linus' Law: "given enough eyeballs, all bugs are shallow"[6] are often rather linear. The question remains whether these approaches can disarm proprietary interests that obscure transparency, visibility and information access. In today's hypercompetitive world, in which margins narrow and monopolization is in the ascendant, non-transparency is tantamount to leveraging against adverse selection.

The pitfalls of a linear conception of transparency fall into two main categories. One is described by Wolfie Christl and Sarah Spiekermann in their study *Networks of Control*: "Transparency is not provided, but avoided. Ambiguous business practices are still the norm and even misleading rhetoric is used to trick people into one-sided and disadvantageous data contracts."[7] Hacker and Petkova, in a study devoted to the limits of transparency, conclude: "The ways in which data collection and processing are accomplished are opaque and exclusive."[8] The second issue relates to the depth and scope of algorithmic complexity summarized by the data researcher Freek Bomhof, "[w]hen a system is too complex to understand, transparency will not help us – not even with the most skilled algoritmist to explain what is going on."[9] This nonlinear "nature of complex systems" is illustrated by the former high frequency trader David Lauer in his account of the financial Flash Crash 2016:

> The markets and the interplay in the industry between all these firms with all these very complicated and complex technology systems and how they interact makes the entire system of exchanges, high-frequency, brokers and the interaction between the technology a complex system. […] There is no cause and effect that you can point to. What caused the Flash Crash is a nonsense question. […] if you were to replay the same sequence of events, identically, there's no guarantee that it will cause a Flash Crash again.[10]

Transparency is commonly conceived as a prerequisite for resolution. Under black box conditions, however, this relation is ruptured, or in fact "colonized by the logic of secrecy," as Frank Pasquale argues.[11] Therefore, this essay proposes a different route to challenge non-transparency. It focuses on an artistic conception that centers on the term *resolution* itself. What I argue is that the term's rich semantic field offers an avenue towards resolving transparency. This postdisciplinary project activates the levels of meaning of the term resolution – from perception, visualization, cognition to knowledge production, decision making and public/regulatory action – for knowledge-making as a collective-activist practice against information and access asymmetries. Here, resolution is leveraged for a multidimensional and non-linear concept of civil agency. But its means and consequences are as radical and

5 Crawford & Schultz 2014.
6 Raymond 1999: 19.
7 Christl and Spiekermann 2016: 119.
8 Hacker and Petkova 2017: 22.
9 Bomhof 2013.
10 David Lauer in: Meerman 2013: 46:00–46:48.
11 Pasquale 2015: 2.

ambivalent as the sea change provoked by secretive black box capitalization. Hence, the artistic research on an *aesthetics of resolution* does not content itself with Linus' Law or design for accountability. Rather, it proceeds from what it holds as a fact: *resolution as visibility has been severed from resolution as cognition and knowledge*. Instead of merely critiquing this breach, it attempts to access the black box as an entry point for collective activism. Accordingly, the move from an *aesthetics* to a *poietics of resolution* – that is, from *perceiving* to *making* and consequently from *critique* to *insurrection* – requires a corresponding conception of the agent producing and carrying through this escalation against the critical mass of non-disclosure.

Given the complexity and secrecy we are exposed to, this agency is inevitably a collective counter-effort, rather than an individual one. I refer to it as the *artist-as-collective* and to its performance as *renegade agency*. But in a blurb for an exhibition in 2018, the artist, writer and curator James Bridle still addresses the individual subject:

> As the scale and complexity of our societies grow ever vaster, individuals feel ever more disempowered and hopeless. Our vision is increasingly universal, but our agency continues to be reduced. We know more and more about the world, while being less and less able to do anything about it. In an age of planetary-scale networks and opaque, remote systems of governance, how do individuals retain the capability for creative thought, meaningful action – and a sense of humor?[12]

The *artist-as-collective* posits that the "individual" evoked by Bridle is fundamentally one among many. It can only make sense of itself and the volatile world it inhabits in spheres populated by others. Hence, conceiving the individual as singular makes little sense, neither artistically, nor philosophically, nor politically, as it violently abstracts living assemblages and immixtures to capitalist segregation and extraction (including the art market's individuation and capitalization of the artist brand). In contrast, the figure of the *artist-as-collective* focuses on the multitude of affiliation, alliance, assemblage, material as well as opponency and controversy. It provokes *works of art* which are not objects of beauty for disinterested pleasure or interest-bearing value investments, but "subjects" with their very own, *poietic*, agency in time. Because action is only meaningful in context, *collective resolution* extends the conversation to wider collectives, audiences and allies.

The specific *artist-as-collective* which I will address below includes the figure of the *renegade*. I am interested in this figure because it embraces collectivity not only in forms of affinity, but by entering the risky realms of ambivalence and conflict. It is based on the conviction that controversy is a crucial facet of conversation and making. As such, the work is a form of dispute congealed from creative exchange. "Humor" is a vital ingredient of such encounters and makings, as it *fluidly* allows for "staying with the trouble" (to refer to Donna Haraway).[13] As artists we should engage with the structural "enemy" as well as try to find common ground with those who interact with us from the "other side" in order to take

12 For the exhibition *Agency* Bridle curated at Nome gallery Berlin, see Anonymous (2018).

13 See Haraway 2016.

the process of *making* – the agency of the artwork – to a deeper level of inclusion against capitulation to non-transparency.

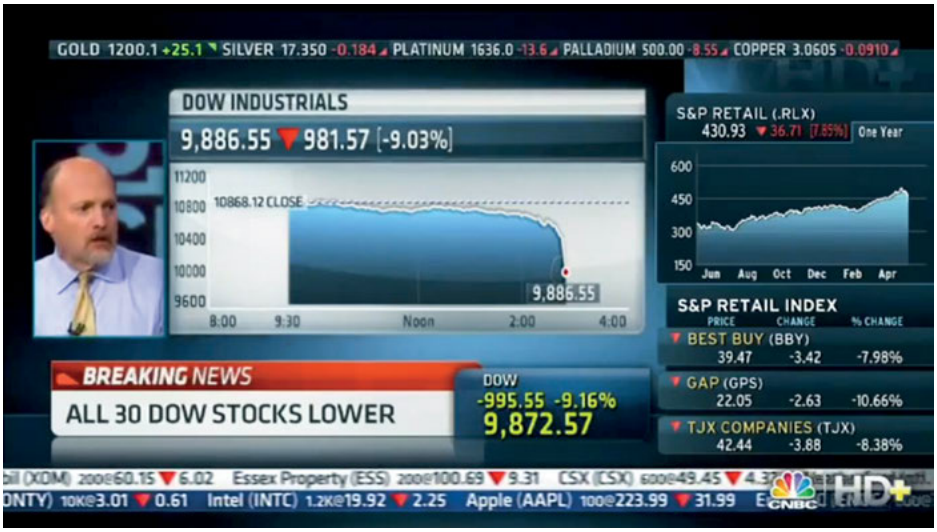
This chapter takes the example of a financial market event (the Flash Crash, 2010) to delineate the *aesthetics of resolution*.[14] I want to emphasize, though, that this project is not at all confined to finance, but potentially concerns all data-driven spheres of technocapitalism. Hence, this introduction is also meant to expand the scope beyond the instance it is based on. One fact in support of this argument – which due to lack of space cannot be treated here in detail[15] – is that derivatives are metadata par excellence, and that the way people-as-data are treated is based on a derivative paradigm. This case is often neglected, as debates about the contours of our technocapitalist era are often narrowed down to a "dataism" that Evgeny Morozov exposes in his review of Shoshana Zuboff's *Surveillance Capitalism*: "Google and Facebook were restructuring the world, not just solving its problems."[16] Long before platforms like Google and Facebook appeared on the world stage of proprietary digitization, scientifically endorsed derivative models and algorithms prompted ever-increasing waves of data exploitation. This rise not only constitutes a source of what was later dubbed Big Data; in fact, derivatives performatively prestructure the modes of how capitalism exploits the unknown (future) and volatility (risk). Hence, we should treat these platforms not merely as Big Tech, but as hedge funds that speculatively capture, produce and govern (future) individual behavior and social patterns at any (micro) moment.

In order to examine the consequences of this financial crash, I resort to resolution and its relation to immediacy as visibility. I focus on the "visibility conditions" (how they relate to immediacy) and the resolution philosophy that informs them. My proposition is threefold: Firstly, based on my artistic reading of the crash and financial automation, current technological and legal frameworks incentivize algorithmic trading. Transparency rules have less weight than proprietary rights; individual, sectoral and public interests are to a large extent mutually incompatible. This conflict, I argue further, is pervasive in all proprietary data-driven fields, as it is predicated on technological, legal and philosophical reasons and their interrelations; a fact that connects finance to other forms of data-driven exploitation. The complexity of automation is not a matter of any one of these conditions but a result of their interaction. Hence, establishing visibility is a question of developing resolution tools that deliver insight. As I argue finally, rather than attempting to penetrate the black box from outside, transparency resolves opacity only by a radical shift of mentality that is based on the necessity that knowledge transpires from inside the black box. Thus, resolution is linked to what I call the *figure of the renegade* (e.g. a whistleblower, hacker with "skin in the game" or "those with

14 For a detailed rendition of the issue, see Nestler 2014b and Nestler 2018b. The research on aesthetics of resolution initiated for *Forensis*, an exhibition at Haus der Kulturen der Welt, Berlin, 2014, curated by Anselm Franke and Eyal Weizman (a project by Forensic Architecture and the Centre for Research Architecture, Goldsmiths, University of London).

15 For more on this relation see Kloeckner, Nestler & Mueller 2018a.

16 See Morozov, 2019.



1 CNBC live coverage, Flash Crash Capitulation, 2010.

two names"[17]). A traitor to her field, but an educator of the general public, *the renegade* exceeds conventional frameworks of critique and resists the false determinacy of the techno-capitalist doctrine. What *renegade activism* calls for is emancipatory insurrection.

Capitulation Automated – Resolution and Dissolution beyond Visibility

> *99 per cent of finance doesn't know how the stock market works.* – Haim Bodek

On May 6, 2010, bots played havoc in financial markets causing mayhem in less than five minutes. The Flash Crash, as it has become known, went viral as the biggest one-day decline in the history of finance. During the slump, the Dow Jones Industrial Average plunged by about 1,000 points – nine per cent of its total value – only to recover most of its losses in the next twenty minutes. CNBC Live, initially covering the political stalemate of the Greek austerity crisis and the protests in Athens, shifted immediately to the trading floor of the New York stock exchange: "What the heck is going on down there? … This is fear, this is capitulation."[18] (fig. 1)

The Flash Crash was a watershed event in financial markets. Algorithmic trading had taken center-stage. Technically, capitulation means panic selling due to pessimism and resignation. But apart from financial losses, the term implies the liquidation of visibility as

17 Brekke 2019: 63.
18 CNBC, 2010: 5:05–5:15.

mediated human perception is severed from collective resolution. We are in a dark beyond invisibility. Hence, the broadcast highlights the relevance of political economy today. What informs such potent noise without leaving much of a trace? What is beyond this "event horizon" and how does it affect us?

The ensuing debate pitted those who blame human error (the generally accepted opinion) against a dissenting opinion that held algorithmics accountable. What appeared were markets at the mercy of quants and developers who not only code algorithms but tweak infrastructure and tune hardware to drive automated speculation. Journalists and bloggers picked up on the theme and as a collateral high-frequency trading (HFT) came to public attention.[19] Apart from exploiting „predictive structures,"[20] algorithms use speed (technically, low latency) to intercept the pricing mechanism. Furthermore, intensifying competition has led to distortions on the level of infrastructure (such as the order type controversy). A recent "development" is regulation arbitrage: exchanges fighting for market share (they are profit-seeking corporations, not public institutions) have become accomplices of traders in the know (who are often shareholders of these exchanges) in the exploitation of regulation asymmetries. Hence, market activity increasingly borders on the illegal or has already been convicted of collusion and fraud.

The Flash Crash. Resolution in Microtime

> *A distributed system is one in which the failure of a computer you didn't even know existed can render your own computer unusable.* – Leslie Lamport

The investigation conducted by the US regulatory authorities put the blame on human trading. A contrasting analysis by a small financial data provider, Nanex LLC, however, claimed that the Flash Crash was caused by orders executed automatically. This discrepancy takes us directly to the issue of resolution and transparency: The official report was based on datasets of standard resolution provided by exchanges and market participants: one-minute trading intervals. But Nanex realized that conventional data records could not show algorithmic activity. They decided to delve deeper into the "abyss" of micro-time to trace the rupture that tore the fabric of market prices.[21] Step-by-step, they enhanced the resolution to fractions of a second, and eventually the Flash Crash came into view. What Nanex "saw" below the threshold of human perception at first sight looked like a glitch. But their forensic analysis (fig. 2) yielded information where others expected only noise.[22]

19 See Wikipedia entry "2010 Flash Crash" for a list of noted contributions.

20 MacKenzie 2016: 6.

21 "We think it's important to note that the SEC claimed there is no value to be gained from looking at data in time resolutions under a second 'because it is just noise'. We strongly disagree." See: Anonymous 2012.

22 Noise as opposed to signal is the term for random information in information theory. As financial markets are information markets (both in the Hayekian sense and cybernetics), noise is a constituent

2 Flash Crash analysis, courtesy Nanex LLC.

Their final statement was unambiguous: "High Frequency Trading caused the Flash Crash. Of this, we are sure."[23]

Nanex's account of the Flash Crash raises the question how *technowledge* (my term to distinguish automated knowledge production) operates *aesthetically* on different sets of resolution: visualization (making tools that enhance perception and render evidence); evaluative measuring (computation of sequences and relations); and knowledge production (analysis and interpretation). High-resolution "telescoping" glimpses into micro-time. But in a system that privileges proprietary rights, attribution and solution – decisive elements in the semantic field of resolution – remain beyond the insight of Nanex or any third party (market participants as well as the general public).[24] The situation is complexified by the fact that an investigation of (market) data interplay is not only confronted with one or several black boxes but with the meta-black box of the market per se (see Lauer above). Hence, Nanex altered their strategy and asked the mutual fund Waddell & Reed – the party blamed but not identified by name in the official report – to grant access to their trading data. Under normal circumstances the fund would have declined disclosure in accordance with the capitalist proprietary regime. But by the time Waddell & Reed had a vested interest in clearing their

element of trading, the ubiquitous other of information (Black 1986: 530): "Noise makes financial markets possible, but also makes them imperfect."

23 Anonymous 2013: unpag.

24 Despite evidence of trades, evidence on the perpetrator is impenetrable, as the law protects proprietary data and its source.

name. And their proprietary source code (including the execution algorithm of their broker Barclay Capital)[25] allowed Nanex to classify the data of this specific address and deviate from the official narrative. Although their interpretation is controversial (algo traders hailed the official report) it brought the cybernetic regime of HFT to light. (What has still not been resolved officially, however, is who caused the Flash Crash.)

A paper authored by members of the official report amplifies the issue of immediacy as competitive distortion between automated, semi-automated and human traders:

> HFTs have become the main beneficiaries of immediacy, using it not only to lower their adverse selection costs, but also to take advantage of the customers who dislike adverse selection and do not have the technology to be able to trade as quickly as they would like to. […] Consequently, HFTs can both increase their demand for immediacy and decrease their supply of immediacy just ahead of any slower immediacy-seeking customer.[26]

Immediacy, I therefore argue, defines visibility as a performative issue. In relation to market activity immediacy equals visibility: immediacy is technological visibility constructed by resolution techniques. Developers in the algorithmic trading space increase obscurity within the entire playing field by narrowing, if not modifying, the field of visibility.[27] Immediacy understood as visibility engineered performatively in micro-time expands Michel Callon's theory of performativity (2006): "My thesis is that both the natural and life sciences, along with the social sciences, contribute towards enacting the realities that they describe."[28] The data-driven black box – a scientific apparatus – constructs reality in finance, Donald MacKenzie's use of "counterperformativity"[29] throws a sharp relief in the light of recurring flash crashes: While self-fulfilling prophecy explains success or failure in terms of beliefs, counterperformativity transcends the human mind. It deploys all the materialities of the socio-technical *agencements* that constitute the world in which agents are plunged: performativity leaves open the possibility of events that might refute or happen independently of what humans believe or think.

Due to the complexity described by Lauer, the market cannot be "captured" in all its immediacy and "replayed" like a film. The vision-enhancing sensors, which detect time-blurred traces and mark discriminations in a complex environment, deliver information from noise. But it has to be unearthed before it can be resolved in a separate stage.

25 See, for example: Lash 2010.
26 Kirilenko et al. 2011: 3.
27 This is the most current in a row of performative revolutions in finance, which started with the displacement of (human) floor traders by quants.
28 Callon 2006: 7.
29 See MacKenzie 2006: 19.

Reperformative Forensics in a Hypercompetitive Environment

Noise crashes within as well as without. – N. Katherine Hayles

We can now outline a sharper distinction, which will help us to grasp what is at play in the forensic evaluation apparatus. Artificial sense organs reach into the depth of micro-time by increasing the resolution bandwidth in order to revisit the otherwise imperceptible "scene of the crime." The analysis is thus an intricate and extensive cybernetic undertaking characterized by a process of re-mapping, re-modeling, re-visioning, and re-narrating a black box past that happened at near-light speed – a performance *ex post* that *was* the occurrence of a future event. As this approach re-enacts the performance of the event, the methodology can be specified as a *reperformance*. Only rigorous research into the deeper, imperceptible strata of microscopic time reveals the material matrix. Such excavation elucidates an inversion from Chronos to Kairos, i.e. from a chronological interpretation of time to one of intense event time (real time). Even if there is an absolute limit to speed, the operable spaces of time between human perception and algorithmic reaction time are cosmic, to say the least.[30] A divide of response time has opened up, the gaping but invisible abyss of latency: a new class of resolution enclosures and scales – and hence knowledge – has found the means to effectively hide its machinations from less immediate competitors. In this infrastructure "the concept of performativity has led to the replacement of the concept of truth (or non-truth) by that of success or failure".[31] (fig. 3)

Here, Gottfried Wilhelm Leibniz's notion of apperception ceases to be a conception of conscious experience emerging from small, unconscious perceptions. The myriads of mathematically constructed small perceptions (of which these camera-engines are not at all "unconscious") define a virtual field of machine apperception where those who do not command the latest cyborg infrastructure are captured or blocked. Information asymmetry gains traction on the level of systemic visibility. Financial market architecture with its proprietary logistics is a black box not only with regard to the parameters of official inquest, but also in terms of knowability and objectivity in general (and beyond algorithmic trading proper). Such *technowledge* exerts influence on the industry, but of necessity also incapacitates the public forum as a whole. Quantitative speech translates into algorithmic violence, invisible and insensible, built on performances that are real but unrecognizable (fictitious capital not in the sense of it being insubstantial but in the sense of asymmetric tricks).

Noise exceeds the category of information theory towards the asymmetric *other* not detected by the majority of market participants; because it is not a signal in the sense of communication. In the hypercompetitive environment of narrowing spreads, noise is guerilla tactics in pursuit of profit.[32] It is a weapon of *counterinformation* that injures without

30 "By the time the ordinary investor sees a quote, it's like looking at a star that burned out 50,000 years ago" (Sal Arnuk, quotes from: Adler 2012).

31 Callon, 2006: 13.

32 Haim Bodek's whistleblowing proves that exchanges are partners in crime. See, for example: Hope 2015.

3 Gerald Nestler: *self-organized* | *self-regulated* | *mythological* | *resolution*.

directly inflicting the feeling of pain; a powerful and disruptive "rhythual," to add the layer of the immediated frequency of algorithmic speech to Judith Butler's performative "ritual":

> The performative needs to be rethought not only as an act that an official language-user wields in order to implement already authorized effects, but precisely as social *rhythual* [original: ritual], as one of the very 'modalities of practices [that] are powerful and hard to resist precisely because they are silent and insidious, insistent and insinuating': When we say that an insult strikes like a blow, we imply that our bodies are injured by such speech.[33]

The most cunning insults are indirect. Fisher Black, in his seminal text succinctly entitled *Noise* holds that "noise is information that hasn't arrived yet."[34] But as the evidence has shown, there is a bifurcation that goes far beyond competitive advantage in Hayekian information markets: Those who do not command the automated rhythual of micro-time face noise as the "silent and insidious" other of information; they cannot perform equally and thus cannot partake in "that reiterative power of [*market*] discourse to produce the phenomena that it regulates and constrains,"[35] to adopt Butler's linguistic reading of performa-

33 Butler 1997: 159.
34 Black 1986: 529.
35 Butler 1993: xii (adapted by the author).

tivity to the speculative speech of financial markets.[36] Insult as information asymmetry turns into violence of noise asymmetry – a limitation of visibility that forms the space in which the performative reiteration of algo speech becomes the dominant language; an avalanching of "volatility created by circulatory forces so as to preserve and restore [*their*] liquidity."[37] But information asymmetry plays out on the systemic level of technocapitalism, rather than between individual entities. Corporate *noising* exploits legal and regulatory policies in all data-driven fields, not only in financial markets.[38] What we are confronted with are deliberate distortions that capitalize on regulation arbitrage.

Resolution and its Semantic Field

Performativity is not about creating but about making happen. – Michel Callon

A new medium emerges from the techno-quantification of financialized and automated data. N. Katherine Hayles reminds us, "for information to exist, it must always be instantiated in a medium."[39] Bots act on the infrastructure. In this *technosphere*, the production of risk – the mode of production of finance in its engagement with the future – turns into an operational hazard. While massive amounts of data are analyzed, trading logistics are streamlined to happen in a flash. Real-time action is instant and thus opens up to the whole gamut of a *technowledge* that constantly redefines the increment of an actionable moment. Immediate visibility is constricted to the mediation by advanced resolution machines. The HFT trader and whistleblower Haim Bodek ascribes the cannibalistic acceleration to competitive advantage:

> Since 2007, we saw compression in the algorithm trading space where the profit margins approached near zero. And I am part of that problem. I ran my firm specifically to tighten up markets. We sometimes call that the race to the bottom in the business. […] If I can make a near-risk-free fraction of a cent and even if the whole day would have demanded a little bit more, I'm happy to do that now even if we barely make a profit because I'm basically taking away the opportunity for someone else to make a profit. […] We cannot tolerate a zero-profit margin environment. We will find ways around that situation. We will cheat. We will manufacture situations. We will undermine infrastructure.[40]

Algorithmic trading accelerates the exploitation of an old paradigm[41] materially embedded in the computer-powered calculative evaluation of massive data sets. Predication machines

36 Also Appadurai refers to Butler: "[She] introduced the idea of what I now refer to as retro-performativity, which allows us to see that ritual can be regarded as a framework for the co-staging of uncertainty and certainty in social life." (Appadurai 2016: 111).
37 Li Puma 2016: 51.
38 On regulatory arbitrage, see, for instance: Hayes 2019. An example in the extended space of finance are shadow banks and a study of the topic in health care can be found here: Terry 2017.
39 Hayles 1999: 13.
40 Bodek, in: Nestler 2014a: 14:20 min.
41 How this plays out in financial corporations was shown by Ho 2009.

attempt to evade *their* unpredictable contingent event by trading in fractions of a second.[42] This performative paradigm exploits a future it doesn't know, and doesn't need to know, as it *meets* it immediately, at instant. The production of volatility (risk) – a massive concept for societies with closely intertwined needs and desires – complexifies price, but without producing a present in which the latter is translated back to value. Rather, it produces massive volatilities in the social realm; resolution dissolves into leveraged power.

The notion of *resolution* involves technologies that engineer thinking and affecting, orient attractions and forge applications. *Resolution* is not restricted to technical appropriation, such as a device for perceiving (previously undiscovered worlds), a visualization tool, the setting of a laboratory, big data evaluations or the like. Neither is it only a cultural technique of conciliation and consultation to craft compromise and compensation. It is a basic category, though not uncharged with ideologies. An instrument of power, it inspired revolutions and served restorations. Its trajectory is towards openings and new perspectives but at the same time it can also be reversed to map the scales of new hierarchies. Fundamentally, however, resolution initializes new layers of thought that move from surface to surface in a connective, interrelating and unbiased way (per se a flat ontology) that erupt in new visions and knowledge. In such a postdisciplinary arena of research science, philosophy and art are natural allies. Resolution apparatuses provide knowledge and transparency in a technological, political and cultural sense. But they also produce competitive advantage when commodified and resolution becomes a means for producing attraction, evaluation and appreciation. A profit maximization inherited from post-Fordist operations,[43] semantic openness reaching from perception to visualization and from knowledge to decision is fenced in technologically, semantically and socially. The intrinsically flat ontology of this communicative ensemble is deliberately breached, corrupted, redirected, and stratified: The black box exploits resolution through the whole gamut of the term's semantic potentials. It circumvents transparency and inserts hierarchies. Resolution techniques are performative power, never pure, impeccable and flawless; there are glitches, inconsistencies and noise that escape the probabilistic contraption from consumer products, social media to finance. Human-technological entanglements give rise to new forms of (volatile) collectives. Hayles' general thesis comes to mind:

> The contemporary pressure toward dematerialization, understood as an epistemic shift toward pattern/randomness and away from presence/absence, affects human and textual bodies on two levels at once, as a change in the body (the material substrate) and as a change in the message (the codes of representation).[44]

42 E.g. Knight Capital bankruptcy as black box event. On August 1st, 2012, the HFT trader lost over 400 million Dollars in 30 minutes due to a technical error. "The glitch led to 4 million extra trades in 550 million shares that would not have existed otherwise" (Nanex).

43 To give an example: while a digital camera contains the full scope of its resolution capacity, the price paid determines which resolution is unlocked; this is not only a technique to control access and commercial interests but the *sign(ature)* of the capitalist order. Obsolescence is another example.

44 Hayles 1999: 29.

While accounts of financial practice up to the 2000s, such as Mackenzie's, are concerned with "bodies" (physical and mental ones as well as devices) and their "messaging" operations, automation replaces the "trivial" resolution of humans with high-resolution algorithms – it is imperative to automate in order to stay in the game. Massive real time calculations fold in new bodies, scales and hierarchies. They leverage big data to construct the future on a preemptive trajectory. For the uninitiated, however, it still feels as if it happened at random.[45]

The Figure of the Renegade

> *Wall Street is not immoral; it is amoral. When you are not comfortable having an ethical discussion with somebody over lunch, that's a clue. When those types of basic questions are taboo, you're not going to have much reflection.* – Haim Bodek

Scientific and technological progress have had far-reaching implications (not only) on financial markets. Beyond the market proper, this shift has radically affected a fundamental category: "value has no place at all in the market, which is solely the regime of price."[46] The complex and intricate operations and machinations between humans and bots result in new resolutions that either constrain or resolve our perception, cognition and appreciation. What is at stake is reorienting resistance from critique to insurrection by transforming *aesthetics* into *poietics of resolution*. Such a shift away from critique, however, implies forms of resistance that, for instance, exceed Bruno Latour's proposal of "composition":

> Where critique aims at debunking, composition aims at building. Where critique focuses on content and modes of representation, composition focuses on regimes of attraction. If regimes of attraction tend to lock people into particular social systems or modes of life, the question of composition would be that of how we might build new collectives that expand the field of possibility and change within the social sphere.[47]

As the Flash Crash and its investigations show, in order to push resolution to the level of immediacy, we are in need of an *attractor* that is both inside and outside the black box. As black boxes extract competitive monopolies by implementing access hierarchies that fold in a new ontology of resolution, their reiterated power can only be addressed by the performative resonance of a counter-agent who not only *knows* the violence *expertly* but takes the consequence of exposing herself. I call this attractor-agent the *figure of the renegade*.

Merriam Webster defines "renegade" as a "person who leaves one group, religion, etc., and joins another that opposes it," or, as "someone or something that causes trouble and cannot be controlled." In our case, the "composition" of the renegade is that of a *traitor* who denounces loyalty to the *black box* and transgresses her system's unwritten laws of

45 This form of leverage is also at play in security, debt and austerity politics, which are partly socioeconomic implementations of such exposure.

46 Roffe 2015: 29–30.

47 Bryant 2011: 226–227.

complicity and secrecy. At the same time, however (and often by default rather than design), she becomes *educator* of the *demos*, the general public. Providing material from undisclosed or classified sources, the *renegade* is the principal expert witness who can establish degrees of transparency by procuring otherwise unavailable evidence of information asymmetry (most famously Edward Snowden).

Such *resolution* does not come without risk. Hence, this radical initiative is ambivalent and vulnerable. But this uprising – a marginal and precarious act, but more promising than the cry for transparency – can deeply destabilize the neoliberal discretion hegemony. Here, *resolution* is not treated as consensus in terms of probability – in other words, as risk management. Instead, *resolution* points to engaging with the *impossible* – taking risk beyond one's horizon (often unwittingly) and thus *out of proportion*. The *renegade* is exposed to sheer limitless consequences – impossible personal risk – but her act of civil courage makes *resolution* possible. Disengaging with the capitalist infrastructure, which renders critique ineffective by exploiting or externalizing it, she enters the realm of revolutionary negation. Such *renegade activism* might seem at the margin of technocapitalism, but it is in fact right at its core; it is the insurrection that unlocks the *black box*. Leveraged by solidary alliances, it bears the potential to access wealth preempted by the capital-state nexus, finance conglomerates and data platforms and transform the acquiescent conditions of social automation and (digitized) labor.

Towards a Poietics of Resolution

The past is only the impatience of the future. – Elie Ayache

The story of the Flash Crash offers an example of the significance for the *making* of future publics, depicting in all its complexity the horizon of an exposed and discontinuous self-regulating force against the boundless utopia of a self-regulating market. In the impasse between "perspectives," such as the official investigation versa Nanex, the intricate problem of resolution demonstrates the ambiguity contained: the participation of a *traitor* is required to unearth data buried in undisclosed documents, in fractions of a second or elsewhere. Hence, the paradigmatic shift to *technowledge* also gives rise to the cognate notion of a subtly different witness than the eye-witness, one who is capable of challenging calculative violence. The *renegade* who presents objects as subjects-of-debate is an expert witness as much as an analyst who by composing facts produces strata of transparency and opposition within the system.

The one who speaks is addressed by violence. Thus, she invites both resolution and retaliation. Revisiting Judith Butler's reasoning on the speech act, "Insurrectionary speech becomes the necessary response to injurious language, a risk taken in response to being put at risk, a repetition in language that forces change."[48] When confronted with the black box,

48 Butler 1993: 163.

composition and association are secondary to the *renegade act* (they follow it), which itself is secondary to an event or a series of events (violence). Reframing Judith Butler's reading of the performative, the marginal becomes potential for insurrection. The *renegade* opens new inroads into sets of *technowledge* that allow building new compositions and collectives by performatively "in-citing" speech from affirmation to allegation. Systemically speaking, a marginalized outside (e.g. the public) can again be "inaugurated into a sociality:"

> The performative is not a singular act used by an already established subject, but one of the powerful and insidious ways in which subjects are called into social being from diffuse social quarters, inaugurated into sociality by a variety of diffuse and powerful interpellations. In this sense the social performative is a crucial part not only of subject formation, but of the ongoing political contestation and reformulation of the subject as well. The performative is not only a ritual practice: it is one of the influential rituals by which subjects are formed and reformulated. This point […] raises again the possibility of a speech act as an insurrectionary act.[49]

The figure of the *renegade* points to a destination where resistance is inside rather than outside a system. In fact, the *renegade* constitutes an act that proceeds from mere dissent (critique within a system) to concrete insurrection (an act of resistance and renunciation). The *renegade* is an expert acting from a point of no return, a risk taker at the point of massive crisis. By speaking out and sharing proprietary data or classified information, she not only discloses what was excluded from public debate but also manifests noncompliance as an act of civil courage.[50] The ambivalence, the perils and the counterperformativity of the *renegade* surface in condensed form in Haim Bodek's whistleblower experience:

> The whistleblower syndrome is kind of a pattern. The whistleblower says that 'this is obviously wrong and I'm going to call it out' and then when I call it out everyone else is going to realize that it's wrong and it's just going to get fixed right away. What he doesn't realize is that everybody knows about it. […] So, the message a whistleblower should probably address is […] 'you know this is wrong and I know all of you recognize this is happening, but this is *wrong*.' And when you realize that that's what whistleblowing is – that you're making people go through the uncomfortable process of looking at themselves […] – you realize you're not the hero, you're not bringing new information to the table. You're the guy pointing out the thing that no one wants to see, that everybody knows about. And what's weird about all these cases is that it seems that these, call it injustices, happen in pharmaceuticals, in labor and it's the same pattern over and over, where there's massive injustices no one wants to talk about and no one wants to admit vocally but everybody knows that's how things work. It doesn't change until the whistleblower does it.[51]

The figure of the *renegade* is not heroic; it is as ambiguous as the world she inhabits. But this is not to the disadvantage of the concept: in the midst of (fabricated) noise – in which noise is the master of information – the system *accidentally* yields information; exploiting the event of sectoral asymmetry resolves societal blindness. The *renegade act* – essentially

49 Ibid.: 160.

50 This is a point to be taken seriously even in cases where the act is an attempt to assist in improving the system (and not an ethical decision to act against structural violence) – a fact that applies to many industry whistleblowers.

51 Bodek, in: Nestler 2014a: 33:46–36:42.

a violation of current custom, rule or law – produces a host of viable *resolution* materials across the semantic field of the term: visualization, discrimination, cognition, transparency, decision. Whatever the impulse, each act perforates an autonomy that is otherwise decreasingly conceded to natural persons. Hence, the *renegade act* reclaims autonomy against all odds against platform capitalist and data driven forms of sovereignty. That said, it does not constitute political autonomy with a capital A – an autonomy that bestows rights or vests powers. To the contrary, it constitutes an act that attracts serious consequences and might fail. The *renegade* is an extremely precarious figure, as history has shown unmistakably.

Moreover, the normalizing enclosure, virtualization and commodification of data leads to a constitution of citizenship where the virtual, bot-assembled stake in the subject increasingly separates it from the physical body. What is looming at our political horizon is its disappearance from the social contract and from status, rights and autonomy.[52] But Latour reminds us: "While a division between nature and society renders invisible the political process by which the cosmos is collected in one livable whole, the word "collective" makes this process central."[53] Hence, if we expand the figure of the *renegade* to a notion of collective solidarity in the sense of creative voices and practices – *the artist-as-collective* as a step in the transformation from aesthetics to poietics of resolution – we can conceive *renegade activism* as a forceful strategy to counter technocapitalism, its immediate biopolitical grip on life and its ever-shrinking distance (physically, affectively and ethically), which it manufactures from the *absolute* distance it *invests* in (knowledge does not resolve, it dissolves into what it cannot know but what it can intensify as price).

The making of resolution and the renegade act stand against information asymmetry and noise by counter-constructing their "assemblies." Thus, it traces aesthetic (what we *see*), poietic (what we *make*) as well as political (how we apply these to resolution as decision-making) consequences. Here, solidarity means either to become or to accompany the *traitor-educator*. The *renegade* is a revolutionary figure in the sense that she "re-maps" the playing field from the inside; she is not only invested in research and analysis (critique from the non-transparent outside); rather, she resists the performative speech asserted by black box data evaluation and decision-making by attempting to change course from within. *Renegade activism*, on the other hand, stands for counter-institutions whose collectives (artists, activists, experts, nonhuman agents) act in solidarity to enhance public resolution across the whole gamut of the term's semantic and political meaning.[54] The autonomy gained is ambivalent, marginal, in a state of constant flux and highly volatile if not outright dangerous. At the same time, *renegade activism* generates tactics of infiltration that create value and produce myriad

52 See Hayles 1999.

53 Latour 1999: 270.

54 Butler's suggestion as regards homosexuality might be also of relevance for *queering* critique and resistance towards insurrection – the topos of *renegade activism* and its systemic as well as individual implications and forms of solidarity: "we surely need to take seriously the contention that 'coming out' is intended as a contagious example, that it is supposed to set a precedent and incite a series of similarly structured acts in public discourse." (Butler 1997: 124).

forms of knowledge. In intensifying, reinforcing recursive acts that belong to art, language and other forms of expression, new modes of making (*poiesis*) can come into existence and produce new ways of perceiving, thinking and making the world. As Deleuze once wrote, "The institution is always given as an organized system of means. It is here, moreover, that we find the difference between institution and law: law is a limitation of actions, institution a positive model for action."[55] *Renegade activism* is a case of offering platforms of affiliation (rather than conformity exploited by platform capitalism); and a case of strengthening the desire to participate in common ownership and forms of autonomy that exist side by side and in flux. And in which the future is *seen* with differentiating, envisioning and resolving *eyes* through all the folds that distort the playing field. In short, to move from *low-res* to *high-res* across the whole gamut of resolution's consequential – and hence not only technological or economic but eminently artistic, philosophical and sociopolitical – meanings.

Renegade Activism and the Artist-as-collective

> *The world is already otherwise*. – Steven Shaviro[56]

Boris Groys argues that the "artistic aestheticization" of contemporary art "means defunctionalization, violent annulation of practical applicability and efficiency" and therefore operates in "art museums because it does not believe in the stability of the present conditions of our existence – to such a degree that contemporary art does not even try to improve these conditions."[57] Brian Holmes, in contrast, identifies the art museum (and the university) as the "normalizing devices within the rule-sets of a financialized economy."[58] Responding to both these accounts, this essay offers an aesthetic-artistic turn that seeks to defunctionalize both the black box and the white cube, and thus the market framework that generates and recalibrates the scenes of hypercompetitive asymmetries in algorithmic as well as artistic practices. The media art theoretician and curator Christiane Paul recounts an "unsatisfactory but necessary mediation" in the contemporary art world:

> The post-digital and New Aesthetic provide us with a blurry picture or perhaps the equivalent of a 'poor image' as Hito Steyerl would understand it, a 'copy in motion' with substandard resolution, a 'ghost of an image' and 'a visual idea in its very becoming,' yet an image that is of value because it is all about 'its own real conditions of existence.' Whether one believes in the theoretical and art-historical value of the post-digital, post-Internet, and New Aesthetic concepts or not, their rapid spread throughout art networks testifies to a need for terminologies that capture a certain condition of cultural and artistic practice in the early 21st century.[59]

55 Deleuze 2004 [1955]: 19.
56 Shaviro 2012: xii. Shaviro argues with Whitehead ("how is it that there is always something new?") against Heidegger's insistence on being to replace "the obsession of oppositional critique" with "speculation, fabulation and invention."
57 Groys 2014: unpag.
58 Holmes 2006: 415.
59 Paul 2015: 1–2.

This essay proposes an approach that repoliticizes artistic-activist practices along the lines of an aesthetics in the field of consequences, which performatively moves from critique to insurrection via *renegade resolution*.[60] From an art theoretical perspective, such practice constitutes a radical reformulation of new media art for the 21st century. To exemplify this with an example other than the artistic research project on the Flash Crash, Forensic Architecture's practice "uses architecture as an optical device to generate evidence, and cross references it with a variety of sources, such as new media, remote sensing, material analysis, witness testimony, and crowd-sourcing."[61] The very antithesis to *l'art pour l'art*, it is situated in a realm of postdisciplinary research, which is operationalized within a number of contests such as laws of court, NGO campaigns and negotiations with governments, not to mention the extensive coverage received by mainstream media. Regarded in the light of Malabou's (2018) theorization of plasticity via repetition, what characterizes Forensic Architecture's radical counter-investigations is their deliberate intention – their agency – to "receive form" by way of acts of violence and "bestow form" by way of the event of forensic *reperformance* of these very acts. While these practices enhance resolution not solely for artistic means, their *revolutionary* association of technology, theory and research towards emancipatory, entangled and encouraging interventions reverberates increasingly in art world corners that are seeking new conceptually, materially and ethically consequential approaches to move beyond conventional frameworks of criticality. Despite the existing array of (forensic) investigations and mappings, we are confronted with a regime that only submits "substandard resolution, a ghost of an image" – to take Paul's observation[62] outside the art field. Hence, only renegade alliances are essentially capable of making the black box speak – enhance resolution across all levels of the term – and produce knowledge that is otherwise absent due to the proprietary logic of capitalism. The point of arrival for the *artist-as-collective* is no longer be the gallery, the museum; rather, these institutions are important "bus stops" of artistic-discursive engagement on route to other destinations and to another institutional ecology.

Conclusion

All consciousness is a matter of threshold. – Gilles Deleuze

This essay proposes *resolution* as a counter-concept to transparency. The term *resolution* reflects democratic processes more adequately than the term transparency, as the potential agency of the former's semantic field can be conceived as a viable template for collective

60 The shift to a performative speech of biopower impacts and affects the body as much as the mind. Due to length, I cannot expand on this issue, but I'd like to refer those interested to my essay in *Performance Research*, 25.3, 2020, which takes the argument to the (micro)performativity of the body as artistic-activist counter-resolution against performative overflow.

61 See Forensic Architecture 2017.

62 Paul 2015: 1–2.

action. Ranging from visualization, discrimination, intelligence and knowledge to intention, purpose, (common) initiative and (joint) decision-making, the term's meanings understood as cohesive rather than distinct aspects of reality enact a thinking and making that performs collectivity against data-driven violence. *Resolution* speaks of intellectual, physical and affective potentials but also involves technological properties, operations and the "distances" between them. It is a socially powerful mode of how we may sense, map, differentiate and support material and performative relations. Moreover, it holds the potential to access value in radical contrast to the proprietary logic of technocapitalism, without losing the performative edge necessary within complex sociopolitical contexts in flux. Against the non-transparency of capital, autonomy is conceptualized as a dynamic, open and instantaneous process (acts connected to a multitude of contingent moments) that integrates ambiguous, heteronomous influences. Based on the intricacies of a specific event in algorithmic finance, *Countering Capitulation* conceptualizes a postdisciplinary practice (the *artist-as-collective*) that aims to resolve contemporary aesthetics towards poietics of insurrection. It calls on us to turn *renegade*. Because otherwise, what is going to happen if we refrain from turning against conventional frameworks of critique and dissent, which as a consequence of their conformism not only perpetuate but in fact escalate technocapitalist violence and algorithmic governance?

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