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Abstract

The GameStop saga aroused the emotion and indignation of a large part of the financial community. This paper accounts for this reaction by exposing the conflict of expertise at the heart of the saga: the Bloomberg Terminal of market professionals and the forum of retail investors supported antagonistic perceptions of events. It then generalizes these findings by characterizing the framing operated by the Terminal mobilized by traders, and by underlining its essential divergences from the framing of the internet forum. Through their selection, weighting and ranking operations, these devices offer different points of view on the financial markets. This pluralization of the informational bases guiding investors' decisions allows this paper to address the issue of the democratization of finance, its conditions of feasibility and desirability.

Keywords: GameStop; Bloomberg; frame; stock market; finance; democracy.

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Introduction

At the end of January 2021, retail investors coordinated via a discussion forum to drive up the price of GameStop stock, which several Wall Street giants had predicted would fall. This resulted in heavy losses for these large institutions and substantial gains for some individuals. This event – often presented (and probably rightly so) as totally unprecedented – caused consternation among most financial commentators: this mass of 'unsophisticated punters', fuelled by contagion via social networks ('mania'), caused absurd movements, disconnected from fundamentals ('bubble'), and fostered the gamification of investment (e.g. Greifeld & Ballentine, 2021; Li, 2021; Sindreu, 2021). With hindsight, however, this reaction may seem surprising, as the trading technique used by retail investors – the short squeeze (see below) – is not so uncommon. This paper proposes to analyse the GameStop episode as a large-scale 'breaching experiment': we will try to understand, through the shocked reactions that it generated, the norms that this event undermined. It will appear that these norms concern in particular the way of understanding the market and are crystallized in a central market device, the Bloomberg Terminal. By resorting to an alternative way of reading the stock market via a discussion forum, retail investors have challenged this device and disrupted its promoters and users.

Our contribution is thus in line with the work that has rapidly documented the GameStop episode, while clearly distinguishing itself from the three perspectives dominating this young literature. First, several researchers have sought to establish the causal relationship between the discussions of retail investors and the GameStop stock price surge: through textual analysis of the volume and tone of forum posts or Google searches, this relationship has been systematically attested (Allen *et al.*, 2021; Anand & Pathak, 2021; Long *et al.*, 2021; Lyócsa *et al.*, 2021; Umar *et al.*, 2021). Second, economists have tried to assess the impact of this coordination of retail investors on market quality (as measured by liquidity and volatility): no clear-cut results emerge, with models by behavioural economists predicting a deterioration following this influx of 'noise traders' (Aharon *et al.*, 2021; Eaton *et al.*, 2021; Pedersen, 2021), while other work shows that advice on these forums can improve market quality (Jarrow & Li, 2021), and even offer higher returns than professional investment funds (Bradley *et al.*, 2021; Buz & de Melo, 2021). Third, some social scientists have examined drivers of this collective action, such as the 'design' of the forum that brought these investors together (Boylston *et al.*, 2020; Van Kerckhoven & O' Dubhghaill, 2021), the repulsive figure of Wall Street deemed responsible for the subprime crisis and family dramas shared online (Chohan, 2021; Di Muzio, 2021; Mendoza-Denton, 2021) and the federating role of opinion leaders (Lucchini *et al.*, 2021; Semenova & Winkler, 2021).

While focusing on the same object, this paper takes a different, upside-down look. We will not analyse the GameStop saga for its own sake, but for what it tells us about the different ways of perceiving and interpreting the market.

We believe that this event, by challenging the universality of the dominant way of reading the market represented by the Bloomberg Terminal, has highlighted its specific characteristics. Therefore, and unlike Glassman and Kuznetcova's (2022) research on the differentiated perceptions *of* the saga induced by 'new' and 'old' media, our analysis starts *from* the saga to identify two rival ways of reading the market. In doing so, this paper contributes to the field of social studies of finance, and in particular to its branch investigating the devices shaping the perception of financial actors (Callon, 1998; Muniesa *et al*., 2007). Through the first detailed study of Bloomberg's place in this framing role, it concretizes the pioneering intuitions of Knorr Cetina and Bruegger (2002) on the mode of behaviour induced by the trader's relationship to 'the screen'. It also follows on from work on the framing operated by block trades (Arnoldi, 2006), securities analysts (Beunza & Garud, 2007) and hedge funds (Hardie & Mackenzie, 2007). All of these investigations provide insight into the decision-making process of professional financial actors, who are forced to make investment decisions in a highly uncertain environment. These framing devices are their beacons. To challenge them, as retail investors did during the GameStop saga or high-frequency algorithms did when they entered the market, is to challenge a deep aspect of their personality (Borch & Lange, 2017). It is a 'breaching experiment' in the sense of Garfinkel (1967), that is an event whose methodological virtue is to reveal, through a breach, what supports the normal course of action.[1]

By analysing this pluralization of the informational bases guiding investors' decisions, this paper finally informs the issue of financial democracy, which has been summarily addressed by two rival approaches. The first is the acritical relay of the observation sold since the 1950s by investment companies of a 'democratization of the stock market'. Thus, as early as 1952, Lion Oil congratulated itself that 'Stock Ownership is one of the most completely democratic institutions in our democracy' (Lion Oil, 1952, quoted *in* Aitken, 2007, p. 16). The work of Nocera (2013) and Duca (2001) has globally relayed this perspective in the academic field. According to this view, democratization is defined by the extension of public *representation* in financial markets: like parliamentarians, market professionals are mandated by an ever larger fraction of the population to exercise their power (to decide which entities to finance and, in the case of stocks, to guide the management of companies). The conditions for greater *participation* remain unaddressed. The second approach deals with 'financial democratization' as a legitimizing discourse that has covered the enterprise of financialization of everyday life. Generally Foucauldian in inspiration, this perspective attempts to document the financial education process to which citizens in neoliberal democracies have been subjected, now called upon to behave as 'investors of the self' (Aitken, 2003; Frank, 2000; Langley, 2008; Martin, 2002). Recent technological developments in the financial field, in particular the emergence of brokerage applications, have stimulated new works inscribed in this second trend: they have pointed to the penetration into intimacy of these instruments of financialization (Bernards, 2019; Gabor & Brooks, 2017) or their complicity with platform capitalism (Tan, 2021). As interesting as these works are, they have never really taken the democratic issue seriously, considering it as an ideological instrument without any real basis.

Erturk *et al*. (2007) were the first to conceptualize the issue of financial democracy. In their paper, they highlight certain conditions for democratization, defined by greater participation in decision-making power (and not only by the extension of representation). They argue that these conditions are not met: the low financial literacy of the population, the opacity of many financial products and the instability of their value are such that 'disappointing outcomes must fall short of the various hopeful promises' (Erturk *et al*., 2007, p. 555). Erturk *et al.* have thus pointed to the *legibility* of the financial market as a condition for its democratization.[2] But this position remains dependent on a very objectivist point of view on the process of financial valuation: as long as the citizen has access to investor knowledge and the products are more stable and transparent, financial democracy would be achieved. However, financial value – like political values – is not that substance that an enlightened eye can adequately grasp: it is the result of judgments formed from certain information. Hence, the importance of devices like the Bloomberg Terminal. The GameStop saga has highlighted its central political role, somewhat as the election of Donald Trump 'revealed' that of Facebook (Pybus, 2019). Based on the results of our comparative analysis and a pragmatist reading of democracy attentive to the conditions of participation, this paper intends to shed light on the role of information pluralism as a vector of democratization of financial markets.

On the methodological level, the position of this paper implies a certain break with the literature that has documented the GameStop saga. The event will not be studied by its effects on prices or on the quality of the market (since we have said that the financial manoeuvre was not exceptional), but by its formation: on which supports did retail and institutional investors base their transactions? First, we will analyse the exchanges that took place on the discussion forum at key moments of this saga. In the spirit of the ethnomethodologists' breaching experiment, we will then try to understand why the large financial actors did not adopt the same investment strategy, and were even shocked by it. This will lead us to investigate the dominant formation of financial decisions (which is also the formation of the dominants' decisions) and its fundamental differences with that of retail investors. Finally, we will discuss the implication of the findings for the issue of financial democracy. This research is based on an ethnography of the two opposing 'camps' of the GameStop saga. On the one hand, we carried out a three-month internship in a trading room of a large European bank, during which we observed and interviewed 18 traders. These materials were cross-checked by additional interviews with equity traders from other financial institutions and completed by an in-depth exploration of the Bloomberg Terminal. On the other hand, we joined the main discussion forum of retail investors for two months ('WallStreetBets' on the Reddit platform) and analysed the comments posted since January 2021 via the forum's 'archives'.

The GameStop saga and its world

During 2020, several institutional investors felt that GameStop stock was overvalued: generally, the outdated business model (retail stores of video games and electronic equipment) and the poor financial figures (debt, revenues …) were invoked to justify that GameStop stock should be worth less. To bet on the price falling, these large financial institutions could just sell the stock (and possibly buy it back later at a lower price) or ‘sell it short’ (a more lucrative option usually adopted): they borrow the stock and sell it, hoping that the price will fall to buy it back when the loan expires. So, for example, if they borrow a \$100 share at 1 per cent at time *t* to sell it outright at that price, and if at the end of the loan period the share has effectively fallen to \$10, they buy it back at that price and make a profit of \$89 (\$100 – \$10 – \$1 of interest). However, this is understandably risky: if the price rises rather than falls, the stock must still be bought at the maturity of the loan, regardless of the loss incurred (this is known as a ‘short squeeze’). For GameStop’s short-sellers, such a worst-case scenario emerged in early January 2021: after hovering around \$10 in the second half of 2020, the share price reached \$35 on 15 January. On the 19 January, the price rose to \$39, which motivated one of the main short-sellers, Citron Research, to tweet:

> Tomorrow am at 11:30 EST Citron will livestream the 5 reasons GameStop \$GME buyers at these levels are the suckers at this poker game. Stock back to \$20 fast. We understand short interest better than you and will explain.

The retail side

But who are these ‘suckers’ behind the price rise of this old-fashioned stock? They are retail investors on the WallStreetBets discussion forum (on Reddit). Several factors have already been put forward to account for their coordinated purchases of GameStop stock[3]: attachment to the company that cradled the youth of this generation of gamers, revenge for parents ruined by the subprime crisis (the post ‘This is for you dad’ went viral), distraction during the COVID-19 lockdown … As we shall see, the generational factor – disenchanted youth versus mainstream boomers – was also central to this ‘poker game’. As for the ability of these retail investors to compete with multi-million-dollar institutional investors, it has been explained by the emergence of brokerage applications (Milovidov, 2021; Stiebel, 2021), but also by the rise of passive management which makes institutional investments inelastic and therefore makes those of the retails decisive (van der Beck & Jaunin, 2021). In this section, we will focus on an aspect that is transversal to the exchanges on the WallStreetBets (WSB) forum, but which has not yet been raised in the literature: the issue of expertise. Unsurprisingly, the retail investors who supported the GameStop stock price do not share the assumptions of behavioural economists: they do not see themselves as ‘noise traders’, irrationally influenced by irrelevant factors. Rather, they are driven by a counter-expertise according to which GameStop stock is worth well over \$30.

On 21 January, Citron Research published its video explaining why the stock price would quickly fall back to $20 (since its Tweet, it had risen to $43). Six days later, on the 27 January, its price reached $483. The short-sellers were forced to close their positions with very heavy losses: Melvin Capital, another hedge fund involved, lost more than half its value and was forced to accept the bail-out of two competing funds. Explicitly intended to convince investors to join his position, Citron's analysis was a textbook case of counter-performativity. Let us analyse why his argument failed against another register of expertise. Apart from the disdainful form of Citron's video which fuelled the hatred of WSB's investors, the essence of the message focused on the company's fundamentals (debt, turnover, etc.). But if it is easy to interpret the evolution of results as positive or negative signals, it is notoriously more perilous to deduce a fair price from them: valuation conventions are not sufficiently stabilized for GameStop's $5 billion revenues not to evoke a fair price of $50 to WSB's investors where they evoke $20 to Citron's analyst. This was the hardly contestable line of defence of Keith Gill, one of the main retail investors of the GameStop episode, in his hearing before the US House Committee on Financial Services:

> Early June of 2019, the price of GameStop stock declined below what I thought was its fair value. I invested in GameStop in 2019 and 2020 because, as I studied the company, I became more confident in my analysis.[4]

But there is more. The WSB forum community is mainly made up of young traders who think in terms of positions, rather than investments.[5] Initiators of 'YOLO trading' (You Only Live Once), they often take risky positions involving derivatives (typically options). Certainly, in the case of GameStop, there was also a more enduring attachment to a company, but Hasso *et al.* (2021) are right to temper the praise of a popular insurrection relayed by some authors: 'the GameStop frenzy was not a pure digital protest against Wall Street but speculative trading by a group of retail investors, in line with their prior high-risk trading behaviour' (Hasso *et al.*, 2021, p. 2). This attitude implies a particular attention to market forces: WSB investors are less interested in the fundamentals than in the intentions and resources of the players who move prices. During the GameStop saga, they tracked signals indicating where the other side was, the short-sellers. A particularly commented indicator on WSB was the 'short interest', that is the share of stocks (or floating stocks) that have been sold short (borrowed and then sold).[6] The evolution of this rate indicates whether the short-sellers have already compensated their position (decrease of the rate) or 'whether the pressure should be maintained'. This was the focus of the counter-argument posted following the Citron video:

> The fact that a similar level of % short/float exists today means that the EXACT SAME potential for a short squeeze is present (…) shorts are still in

significant danger. If they weren't, we wouldn't be seeing this huge pushback from media.

This quote brings us to the heart of the struggle for expertise between WSB and 'media'. WSB actors have risky, almost negligent positions (losses are glorified), based on a dynamic analysis of opposing players – the analogy with video games is not innocent. Mainstream investors are richer, more powerful (the media relay them) and older: they make more stable investments, based on fundamentals. As early as 13 January, this divide became apparent when a retail investor was surprised that Bloomberg had not covered the GameStop affair earlier.

– Why was there no news coverage in the past few months? Wall Street bets is more informed than any media outlet or analyst.
– Because Bloomberg and the rest are boomer channels. They only care about ETFs and interest rate bond yield. To have such amazing gains as the one experienced on WSB is unlikely.

Testimonies gathered during the ethnographic study by Boylston *et al.* (2020) also pointed in this direction: '[WSB] is the "front page" of what is going on that affects the market. Not CNBC, not CNN, it's here' (p. 9). Not what explains the value of a company, but what 'affects the market'. Another interviewee said: 'I'm getting a more accurate picture of the reality on wsb than on mainstream media' (Boylston *et al.*, 2020, p. 11). This conflict of reference points ran through the whole GameStop saga. On 1 February, when the stock was worth \$225 (it will fall back to \$40 at the end of the short squeeze), two Bloomberg articles were posted on the forum and received an avalanche of challenges and insults, including several highlighting the generational dimension: 'they literally can't understand how many people in GenX and below that find them absolutely worthless. They have no authority remaining, but they still act like they do'. After the stock fell back to \$40, several institutional investors shorted GameStop again and … another short squeeze occurred: WSB's retail investors pushed the price back up to \$265 on 10 March. Shortly before that, a Bloomberg article again raised the hackles of young traders: 'this Bloomberg article actually makes me like the stock even more. If there really was no chance of a second squeeze, they wouldn't write this article. The only reason they're attacking us is that we're over the target' (again, the video game lexicon is worth noting). A powerful post summarized the attitude of retail investors, embracing generational disdain ('Ok boomer') and distrust of the mainstream media (Bloomberg) (see Figure 1).

The institutional side

The WSB community is in opposition to Bloomberg, which it identifies as the mainstream source, preferring other informational supports to base its

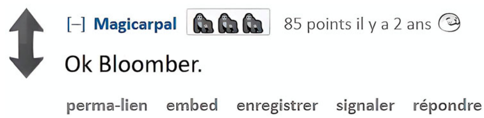

Figure 1 Post on WSB (21 February 2021)

investment decisions on. But is Bloomberg really the dominant provider of financial information? According to the latest report by Burton-Taylor International Consulting, a company specialized in the study of the financial information market, it is: the Bloomberg Terminal covers 325,000 users, while Reuter's equivalent platform (Eikon) does not exceed 190,000. The Terminal, which costs about $20,000 per year, provides access to an impressive amount of financial information – from opinion pieces by Bloomberg journalists to historical securities prices in all markets. It appeared in December 1982, only one year after the creation of Bloomberg LP, and has become so popular that it has dethroned the historic Reuters agency. Some media studies authors have pointed to Michael Bloomberg's autocratic management[7] and gruelling working conditions as explanatory factors, as opposed to Reuters' conservatism (Bartram, 2003; Matloff, 2003). This literature has not, however, provided a transversal insight into 'Bloomberg communication', preferring to study traditional financial presses – a fact that Lee (2014) regretted in his review of the literature: 'investigation of the non-print media industry's structure and relations to trading technologies and trading firms is lacking in the study of the financial news industry' (p. 717). This is what the rest of this paper proposes.

Another proof of the centrality of Bloomberg products is its impact on stock market events. Davis (2006) recently questioned the famous 'media effect' on the basis of interviews with London fund managers: however, his analysis was targeted – in accordance with the tradition of media studies – at the print media (the *Financial Times* in particular). The effect of platforms such as Bloomberg is undoubtedly delicate to grasp, as they shape as much as they produce information. The influence of this framing therefore often goes unnoticed … even by researchers: several economists have attested to the causal effect of certain news on prices by mobilizing Bloomberg data, but without integrating the possible impact of this filter (e.g. Vähämaa *et al.*, 2005). Fortunately, other researchers have recently sought to isolate the impact of Bloomberg framing through a comparative approach: 'the findings suggest that market seems to pay more attention to unexpected information shocks based on the Bloomberg forecasts' (Chen *et al.*, 2013, p. 958). Furthermore, Lumsdaine (2010) showed that a bank whose news was often read on Bloomberg had lower returns during the crisis, all else being equal.

But the best way to convince yourself of the importance of Bloomberg is to go to a trading room and talk to traders. Without being in a monopoly position, the Bloomberg Terminal has become the reference for financial market participants.[8] All the traders we met during our internship filled their six screens with Bloomberg windows allowing them to follow their market segment and to chat with brokers and colleagues active abroad. The Terminal is their gateway to the market. An illustration of the power of this centrality appeared during the debates on the integration of environmental issues; it was even highlighted by two Bloomberg's engineers: 'Bloomberg has positioned itself to be a catalyst in the development of financial language for ESG (…). Bloomberg's unique position *vis-à-vis* the global financial community enhances this endeavour' (Park & Ravenel, 2013, p. 62).[9] In short, the WSB community is not wrong to consider Bloomberg as the mainstream source. And since this is the case, the information disseminated by Bloomberg during the GameStop saga may provide a better understanding of the flabbergasting of institutional investors. It is indeed via the Terminal that traders learn about events and build their interpretation:

> It starts with news that you read on the Bloomberg Terminal (…), the first thing is reading. That was very irrational … Usually, when these things happen, it's retail investor who'll suffer most from irrationality. (…) So, 'sorry for whoever is involved, but [you short it]'. It was certainly the feeling at the beginning [of the saga]. You short, it's gonna crash and you think that people are gonna lose a lot of money. (…) We didn't think it'd last for a long time. In a normal market circumstances, hedge funds [would win] and the price would normalize. (Extract from an interview with an equity options trader)

Several elements of the Terminal favour such a reading. When a financial actor inquiries about a stock via the Terminal, he has access to the recommendations of a panel of analysts relayed by Bloomberg. Each analyst recommends an action (buy, sell or hold), as well as a target price that he believes to be the fair price. Figure 2 shows the evolution of these recommendations for GameStop stock from late 2019 to September 2021. The yellow line represents the actual price, the white line an average of the analysts' target prices, and the green, beige and red bars respectively buy, hold and sell recommendations. It appears that analysts very rarely advised to buy GameStop shares, with half even advising to sell on the eve of the second squeeze at the end of February. Above all, the target price has always been and remains significantly below the actual price. It can therefore be said that the explosion of the share price was a big surprise for the analysts relayed by Bloomberg, and therefore for the community of large investors. Allen *et al.* (2021) reaches a similar conclusion from another database (Institutional Brokers' Estimate System).

As we will see more clearly in the next section, the Bloomberg frame often operates by hierarchy. Thus, the investor inquiring about the Terminal does not only have access to analysts' recommendations, but to a ranking of analysts and to the 'consensus' that emerges. In the case of GameStop, the top-ranked analyst is Edward Woo: an investor who had followed his advice would have

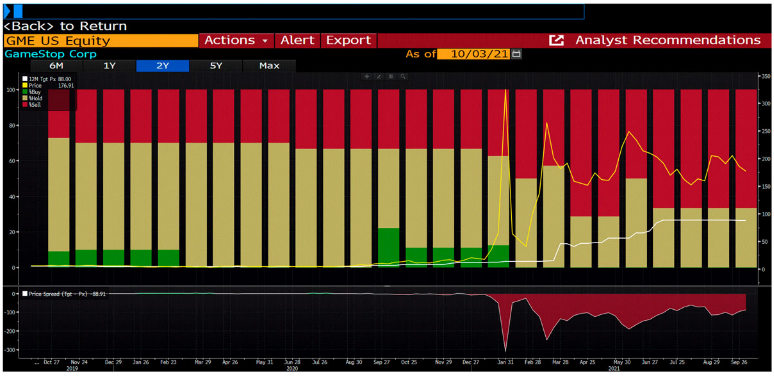

Figure 2 Screenshot from Bloomberg Terminal (5 October 2021)

pocketed a return of −8.21 per cent. Nevertheless, Woo hardly adjusted his target price: he remains convinced that GameStop is worth $24 and recommends selling. This is also the consensus of analysts relayed by Bloomberg (see top of Figure 3).

If the institutional investor was not yet convinced by the absurdity of the current stock price and decides to learn more about GameStop's business, he will come across the firm's news, already prioritized by Bloomberg which selects the key insights (see Figure 4). Moreover, each news item is already pre-interpreted as good, neutral or bad news (green arrow up, transparent diamond, red arrow down). Here again, he will find good reasons to be offended by GameStop's soaring. It is clear: the information from the Bloomberg Terminal – unlike the posts from the WSB forum – has led throughout the saga (and still leads today) to the judgment that GameStop stock is overvalued, that its fair price is lower. The uncertainty inherent in the stock market movement is tempered by the various tools of the Terminal … in a certain way.

Figure 3 Screenshot from Bloomberg Terminal (5 October 2021)

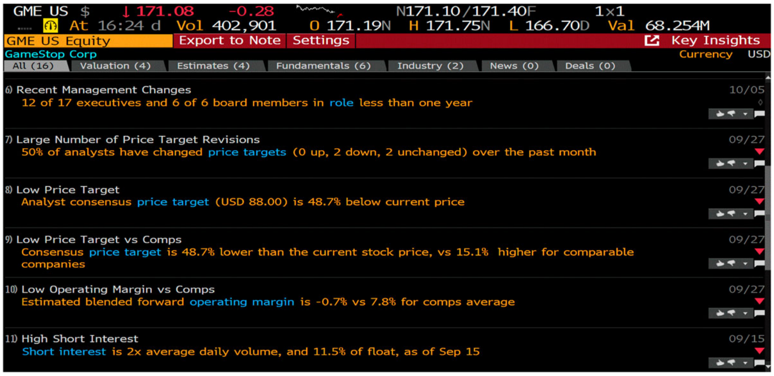

Figure 4 Screenshot from Bloomberg Terminal (5 October 2021)

The Bloomberg frame

From the account of events offered in the previous section, it appears that the GameStop saga constituted a conflict of frames: retail investors criticized the mainstream media and preferred the WSB forum, while institutional investors resorted to the Bloomberg Terminal. By defining differently what was happening, these frames were the source of the mutual misunderstanding. In this section, we propose to deepen the comparison by generalizing these findings. After having identified the elements that supported two antagonistic interpretations, the aim is to draw out the characteristics of these frames: beyond the GameStop case, how does the Bloomberg Terminal organize the experience of market professionals? And how do its features differ from those of the WSB forum? This second moment of analysis will allow us to identify the deeper roots of the opposition between institutional and retail investors, and thus to address questions that go beyond the GameStop saga, such as the conditions of financial democracy. Given its hold on all markets (not just equities) and events, we have focused this section on the Bloomberg Terminal and are using the WSB forum mainly for comparison.

The only researcher active in the social studies of finance to have taken Bloomberg as an object of study is Claudine Carluer. In two papers, Carluer (2001, 2005) studies the extension of Bloomberg's products and how this extension challenges the national boundaries of information. However, her analysis remains brief and focused on the Bloomberg TV channel, rather than on the Terminal. To account for the type of framing operated by Bloomberg in the trading rooms, we had to complete our interviews and observations with an immersion in this Terminal (fortunately accessible to the business department of our university) and in the methodological notes that are published. Indeed, the traders we met mobilize different tools of the Terminal without taking time to examine their production conditions: their testimony did not allow us to grasp the characteristics of the Bloomberg frame. Conversely, our analysis of the device ‘from the inside’ reveals three framing effects allowing institutional investors to reduce uncertainty in their valuation work: selecting, weighting and ranking.

Selecting

The analysts whose recommendations are relayed on the Terminal, as well as the news that stand out as ‘key insights’ have been selected by Bloomberg. This operation divides the signals emitted on the markets, distributed on one side or the other of the ‘visibility border’. It carries significant power – and we saw with Park and Ravenel’s (2013) comments on ESG data that the company was aware of this. However, this power is conditional on the support of the financial community; this selection is therefore not entirely arbitrary and must respond to a coherent line of conduct that is in conformity with the expectations of the target audience. In the case of the selected news, the manual *The Bloomberg Way* has precisely the task of maintaining this line of conduct, beyond national borders and the rotation of exhausted editors. Not all selection operations are spelled out (Bloomberg keeps the right to discretion by publishing its methods very partially), but the spirit that must guide the employees in charge of these selections is meticulously explained.

The first 11 editions of this 278-page manual were exclusively for Bloomberg employees – the twelfth was published in 2014. In 20 chapters, *The Bloomberg Way* teaches the codes for producing good information, that is the art of selecting ‘everything worth knowing on a real-time basis’ (Winkler, 2014, p. xiii). We will not dwell on the very strict instructions of pure form, intended to make the information integrable in the Terminal and ‘digestible’ by the financial community: four-paragraph article with standardized content (theme, details, quotation, perspective), no adverbs, past tense and active voice, 64-character headline, etc. Instead, we will develop three axes that are transversal to the logic of information selection at Bloomberg: the personification, the dramatization and the fundamentals-oriented rationalization. If these three points concern above all the ‘news’ window of the Bloomberg Terminal, they inform more broadly on the spirit guiding the selection of relevant signals (opinion articles, but also analysts’ recommendations, company balance sheets, etc.) – these windows frequently overlapping (an article being written for each release for example).

‘Put Bill Gates at the beginning, and the story will get the attention of Microsoft Corp’s managers, employees, customers, suppliers, competitors and investors, as well as people who want to know what one of the world’s richest men is doing’ (Winkler, 2014, p. 14). In keeping with its motto ‘names make news’, Bloomberg focuses on the news of the stars of the stock market. The information spread via the Terminal consecrates the opinion leaders. Bloomberg employees are in fact asked to become close to their ‘top 10’, that is ‘the most important people and institutions’ of the sector they cover:

> Find out what makes them influential; visit and talk to them regularly (…). Establishing just a handful of contacts on a beat can take hundreds of phone calls and multiple visits to industry conferences. From there, reporters need equal amounts of persistence and patience to deepen the relationships and build trust. (Winkler, 2014, p. 42)

Not only the importance of the information lies in the personality covered, but also the importance of the reporter: 'We are only as good as the people we know. The best reporters recognize this and always go to the top. Their stories quote people who are in a position to know something and influence events' (Winkler, 2014, p. 108). In sum, those already established in the financial world will find in Bloomberg a spokesperson, perhaps a bit pushy, but generally docile.

This self-interested proximity to the big financial actors undoubtedly allows Bloomberg to broadcast on its Terminal some breaking news about the latest house bought by Elon Musk. But it also has the effect of aligning what institutional investors see with what these stars think. According to Manning (2013), this type of relationship is at the root of the media's – and the financial community's – inability to foresee and therefore prevent the last financial crisis: 'exchange relationships between financial journalists and their sources were important because they rarely prompted journalists to develop more holistic and critical perspectives on the financial system' (Manning, 2013, p. 186). But this personification of information is difficult to reverse, as its performativity confirms its necessity: the more a person is relayed, the more influential she will be and therefore the more important it will be to relay her, etc.

The second main logic of information selection is dramatization. In his investigation of the 'eventalization' of the 2010 Flash Crash, Borch (2016) has already underlined the importance of its mediatization: the latter allowed to give a meaning to the event (high-frequency trading is the culprit), an attractive nickname (Flash Crash) and more generally a magnitude … despite its very moderate economic impact. The same is true with most real-time news. To attract the eye, Bloomberg has to create an event; and to do that, it has to dramatize: 'Explains why the news matters. Providing a superlative, such as the biggest, the most, the least or the smallest, is an essential revelation of what's news' (Winkler, 2014, p. 8). For Bloomberg's employees, it is a matter of selecting the best-selling themes: 'Select words that tantalize the reader and advertise the story's theme, such as nuclear, terror, China, salary, cancer, billionaire, Harvard and hedge fund' (Winkler, 2014, p. 50). This second aspect is of course not unique to the Bloomberg frame: many traditional press titles also use these marketing techniques. But these do not have (or no longer have) the power of the Terminal. As a result of this power, institutional investors will tend to base their investment policy on dramatized information relating to stereotyped themes. And as Chen, Jiang and Wang (2013) have attested, this can be seen in stock prices – and arguably also in their volatility.

Finally, the information relayed on the Terminal generally provides a rationalization of a stock market movement based on what financial theory calls the 'fundamentals', that is the economic situation of the company issuing the share or bond in question. This system of explanation, which is dominant but not hegemonic at Bloomberg,[10] is not self-evident: in particular, it appears very different from the rationalization by the 'state of the forces at work' which prevailed on the WSB forum. It conveys a conception of the market as a 'machine' whose function is the integration of information in the valuation of companies. In the spirit of Bloomberg, by disseminating this information quickly and clearly, the Terminal's task is to help financial actors react quickly in order to take advantage of future market adjustments. It is therefore a matter of systematically associating information with its impact on a price, while maintaining an ideal of neutrality. Thus, while prescribing to 'leave the interpretation of the facts to the reader' (Winkler, 2014, p. 29), the Bloomberg manual states that 'our job is to find at least one plausible reason, and preferably several, for any price change' (Winkler, 2014, p. 14). This interpretation is explicitly intended to guide investment decisions: 'A story about companies, stocks, bonds, commodities or currencies should tell investors whether to buy, sell or hold' (Winkler, 2014, p. 82). And as the market's 'adjustment' to new information is almost immediate, speed is key: 'When we become aware of possible market-moving information, the first thought must be: Have we told our audience about this?' (Winkler, 2014, p. 56).

At Bloomberg, this 'market-moving' information is most often linked to fundamentals: 'Identify what's behind the changes in supply and demand that cause share prices to move. If the story focuses on specific companies and industries, provide the reasons for their gains or losses' (Winkler, 2014, p. 151). The Terminal therefore tends to direct investors' attention to the news of listed companies (rather than to other investors in the same market segment, for example): 'What are the key pieces of information that anyone needs to know about a company right now? (…) Show how analysts perceive the company by saying whether they rate the stock a buy, a sell or a hold' (Winkler, 2014, p. 167). As we saw in the first part, this focus on fundamentals is largely responsible for the stupefaction of institutional investors with the GameStop saga.

Weighting

How do we obtain the consensus target price of the GameStop stock (represented by the white line in Figure 2) from the predictions of the different analysts? We need an aggregation. But there are many ways to aggregate and the simple arithmetic average is seldom the solution: should we not give more weight to the predictions of the best analysts? Should we keep in the panel an analyst who has not updated his predictions for four months? All these methodological choices – without being sensational (and perhaps because they are not sensational) – have profound consequences on the shaping of the signals reaching investors. Bloomberg is rarely satisfied with relaying indicators produced by other agencies: it also builds its own, and knows where to position them so that they are seen. Yet, most indicators involve an aggregation and weighting operation. It is this weighting – understood here as a hierarchical ranking of information at the source of a synthetic indicator – that constitutes the second framing effect of the Bloomberg Terminal. To illustrate its significance beyond the GameStop case, we will briefly develop the case of the BVAL Score.

Bloomberg LP's stated goal is to make the Terminal an indispensable device. To this end, the Terminal cannot be content with being an information support. It has been equipped with a messaging system allowing financial actors to interact. But for some financial products, this connection function took on an even broader dimension: the Terminal became the market. This is the case for products for which organized markets (such as Euronext, the Frankfurt Stock Exchange or the NYSE) are not the main medium: bonds in particular have historically been traded over the counter. The matching of buyer and seller and the publication of the official price are not *a priori* assured by a regulated market. Bloomberg has therefore applied (in competition with others) to fulfil these indispensable functions with two products that it hopes will be just as indispensable: Instant Bloomberg (messaging service presented as 'the leading chat tool used by the global financial community') and the BVAL Price. We will focus on the latter and the weighting operation it secretes.

The Bloomberg BVAL Price is intended to be the reference price for the bond market. When a bond is liquid, the BVAL Price simply provides the price at which market makers covering this security are willing to buy/sell it on Bloomberg (which then acts as a trading platform). But when this is not the case, the prices of 'comparable' securities[11] are mobilized and mixed with available market data:

> To derive a Final BVAL Price, the results are then appropriately weighted and aggregated based on the relative strength of each [method]. In this way, BVAL produces a high-quality price for every Target Bond regardless of the quantity of market data available. (Bloomberg, 2021a, p. 2)

In the only methodological document available (via the Terminal), no technical details are provided to better understand how the two methods are 'appropriately weighted'. A 'Price Transparency' window does reveal the contribution of the different sources to the Final BVAL Price, but not the formula dictating the weighting rate adopted (see Figure 5). This methodological decision, with its heavy framing effects, is part of Bloomberg's internal kitchen.

Instead, the investor must assess the quality of the data mobilized using the BVAL Score, 'a proprietary and innovative metric (…) measured on a scale of 1 (the lowest) to 10 (the highest)' (Bloomberg, 2021a, p. 6). But for this measure as well, Bloomberg's discretion is expressed through weighting: 'a BVAL Score

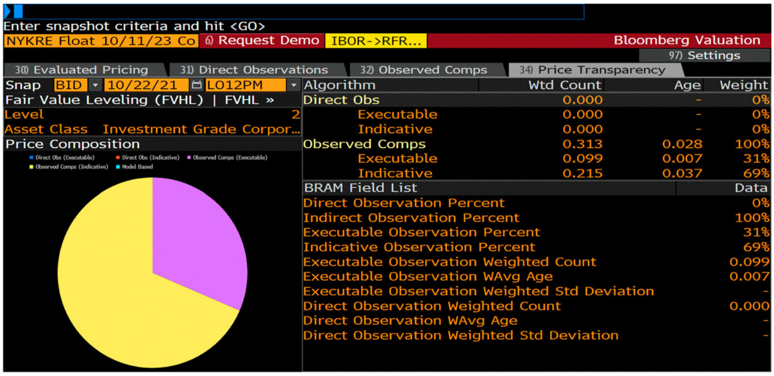

Figure 5 Screenshot from Bloomberg Terminal (22 October 2021)

is calculated for each [method] which are then appropriately weighted to derive a Final BVAL Score' (Bloomberg, 2021a, p. 6). The idea here is not so much to condemn the weighting technique adopted by Bloomberg or even its opacity, but to highlight the work of reducing uncertainty that it implicitly carries out: investors are looking for synthetic indicators whose semiotic content depends on the aggregation technique adopted. By claiming the right to decide on this technique, Bloomberg allows collective attention to be focused in one direction – which makes it possible to agree on the definition of the value of a bond, but which also leads to blind spots that resurface in the interpretation conflicts of the GameStop saga.

Ranking

The last fundamental feature of the Bloomberg frame is the ranking. Often backed by selection and weighting, ranking creates a competitive space, a fight for investors' attention. In the GameStop saga, the recommendations of Woo – ranked first despite his negative performance – were more highlighted than those of other analysts, who became his competitors. Bloomberg has grasped the effectiveness of this shaping and thus provides Terminal users with rankings of multiple entities: brokers according to the volume of transactions they handle, personalities according to their wealth, economists according to their predictions of major releases, companies included in a stock market index according to their return, national currencies according to their three-month interest rate, etc. Even more often than in the case of weighting, Bloomberg reserves the right to be opaque about the methodology underlying these different rankings. For example, in the case of analyst recommendations, the only document accessible via the Terminal simply states that Bloomberg 'uses a proprietary calculation to rank the analysts relative to each other, based on their entire coverage' (Bloomberg, 2021b, p. 20).

At the end of this second part, it appears that the Terminal offers more than 'raw data' that it would be up to the investor to interpret. On the one hand, because these 'raw data' do not exist and all information implies a formatting. And on the other hand, because Bloomberg is well aware of the type of formatting that makes the Terminal attractive, even indispensable, so that the 'Bloomberg frame' – through its selection, weighting and ranking – offers a very particular perspective on financial markets. And the peculiarity of this perspective becomes clear when it clashes with another one, such as the WSB forum. Indeed, much of the shock that institutional investors felt when GameStop stock soared was due to the heterogeneity of their frame of reference. In the same vein, Milovidov (2021) noted – but did not substantiate – that 'the networking [i.e. WSB] contributes to a significant change in the priorities of retail investors' attention to various signals and indicators that other investors usually use for elaborating investment decisions' (Milovidov, 2021, p. 18).

Table 1 summarizes the main characteristics of the Bloomberg frame identified in this second part, comparing them with those of WSB. The forum differs in many ways: its members tend to account for price movements through the intentions and resources of the actors involved rather than through the evolution of the activity of listed companies; events are taken lightly, even casually; the sources of authority invoked are more marginal actors than the 'stars' relayed on the Terminal (which tends to shift the focus away from the 'centre' of the financial system); the information is freely accessible and debated, contrary to Bloomberg's paid subscription;[12] the points of attention are limited, focusing on certain conjunctural issues (such as the GameStop case). A common thread between the two frames is the real-time dissemination of information.

Information pluralism, democratic threat

The heterogeneity of the frames of reference makes it possible to understand the incomprehension expressed during the GameStop saga and beyond. However, in addition to this astonishment, there was regularly a virulent criticism of the behaviour of WSB's traders. Besides the outraged press articles

Table 1 Comparison of the Bloomberg frame to WSB

	Bloomberg	WSB
Type of rationalization	Fundamentals-oriented (company balance sheets)	Market-oriented ('forces at play')
Tone	Dramatization, personification	Trivialization, ridicule
Effect	Centripetal	Centrifugal
Transmission	Private, priced	Public, debated
Update	In real time	In real time
Coverage	Extensive	Focused

already mentioned, several scientific papers end with a call for stricter regulation of this type of forum:

> The findings of the study have important implications for regulators and policymakers, they should continuously monitor the investing groups on social media platforms as they can create inefficiency in the market, which may lead to a bubble creation or crisis ignition as in the recent episode of the GameStop tussle. (Umar *et al.*, 2021, p. 7)[13]

And the public authorities did not remain deaf, quickly expressing their concern – albeit ambiguously. The European supervisory authority reacted on 23 February 2021: 'An increased participation of retail investors in stock markets is welcome (…). Nonetheless, ESMA urges retail investors to be careful when taking investment decisions based exclusively on information from social media and other unregulated online platforms' (ESMA, 2021, p. 1). In his inaugural speech, the SEC chairman was similarly ambivalent about the GameStop saga (Gensler, 2021). Why do those who have supported the democratization of finance for years resent a popular takeover?

According to Macey (2021), the answer lies in class struggle: while 'there is no substantive difference between what short-selling hedge funds were doing and what the Reddit users were doing' (Macey, 2021, p. 12), regulators leave the former untouched because they both belong to the dominant class. This agonistic reading is also present, in a more worrying way, in the conclusion of Lyócsa *et al.* (2021): 'WSB-like people-powered initiatives might dramatically increase the polarization of our societies, providing additional ammunition to both Alt-Right and Alt-Left movements. We should all keep this in mind' (Lyócsa *et al.*, 2021, p. 12). However, this first answer does not stand up to a more detailed investigation that reveals the heterogeneity of the two 'camps' – for example, several institutional investors supported the price increase, while some retails shorted the GameStop stock (Hasso *et al.*, 2021). In conclusion, we propose an alternative explanation, based on our analysis of the frames: what scandalized the financial professionals was not that the poor took power, but that their interpretation of financial reality was attacked. This is what appears, for example, in the commentary proposed *a posteriori* by the head of Citron Research, one of the most emblematic short-sellers in the GameStop saga:

> This story is the story of when information doesn't make a difference. (…) Stocks used to follow the truth (…) It's how the market's always worked. If you find the truth, you can find the stock price. The reason why we're here right now is because what happens when they become detached, the truth and the stock.[14]

What has outraged most commentators is the emergence of information pluralism. This pluralism is understood here as the possibility of contesting the criteria of validity on the basis of alternative information. This is what retail investors have sought to do by using the forum as a critical alternative to the Terminal. Now, despite the concerns that it has stimulated, this pluralism can be considered a condition for the democratization of the financial markets (understood in the sense advanced in the introduction of an extension of participation, and not only of representation). Several theorists have indeed placed pluralism – rather than legibility – at the foundation of democratic functioning: a democratic decision must be the result of a contradictory exchange. Hence, also the emphasis on media pluralism shared by several schools of democracy (Raeijmaekers & Maeseele, 2015). Sen's (1985) concept of 'informational basis' – and the less discussed concept of 'information pluralism' – support this position. Since a judgment about the world depends on the data considered, the information pluralism can be considered as the epistemological extension of the democratic requirement. This was obvious to Sen:

> There is no argument in all this for expecting that moral goodness must be ultimately decidable by counting the units of some homogeneous nonmoral quantity (…), rather than having to balance the relative importance of different considerations that conflict. It is not so much that information pluralism can be defended, as that there is no special need for a defense. (Sen, 1985, p. 178)

Several social scientists have taken up and elaborated this requirement to 'formulate an agreement on the facts to be taken into account in describing reality in all its diversity' (Salais, 2009; see also Bonvin *et al.*, 2018). In the field of financial markets, this translates into a broadening of the sources mobilized by investors to guide their decisions. From this point of view, the rise of WSB appears to be a democratization – the first – of the stock exchange.[15] But this challenge to the validity criteria underlying the Bloomberg frame does not lead to a discussion in the Habermasian sense: given the absence of a 'public space' where the different conceptions of reality could dialogue and agree on a compromise, this epistemological clash is condemned to produce erratic price behaviour, as in the GameStop saga. This allows us to explain the concern of regulators mentioned above. More concerned with the stabilization of financial markets than with their democratization, they are more worried than enthusiastic about the emergence of alternative expertise.

The project of a public space confronting WSB to Bloomberg may seem antipragmatist because it is 'too idealistic', but it could be embodied by taking inspiration from certain experiences of democratization of other financial devices: the Terminal could 'integrate' certain criticisms by modifying its selection, weighting and ranking operations, in the way that the rating agencies integrated (certain) criticisms by modifying their model following the eurozone crisis (Legind & Jensen, 2014). This requires, however, that the arcana of the Terminal be subjected to a public debate similar to the one that had taken the rating agencies as its object. Failing that, financial democratization projects can only take the form of radical institutional change, such as the creation of a network of financial NPOs (Block, 2014), the nationalization of banks (McCarthy, 2019) or the establishment of a public digital platform (Palladino, 2019).

Conclusion

The starting point of this paper is the ambition to understand a misunderstanding: why were most financial market professionals, even though they are used to tactical manoeuvres, stunned by the GameStop saga? And why was this shock coupled with indignation? These two issues – epistemological and moral – were addressed by studying the frames mobilized by the two 'camps' in the saga: the Bloomberg Terminal of institutional investors and the WSB forum of retail investors. During the events of early 2021, these two frames supported antagonistic perceptions of what was happening, to the extent that professional traders did not see the same thing as millions of internet users. To generalize these findings beyond the GameStop case, we have put forward a characterization of the 'Bloomberg frame' and its main divergences from the 'WSB frame'. By challenging the criteria of validity conveyed by the Terminal and accepted in the financial community, retail investors have threatened the organization of the experience of market professionals. In so doing, they have also confronted financial commentators and regulators with the issue of information pluralism. If this pluralism can be considered a condition for the effective democratization of financial markets, it can also, in the absence of a discussion space allowing for the confrontation of different perspectives, be the source of instabilities that regulators fear more than they wish for a financial democracy.

Finally, we think that two lines of research could be explored in the wake of this paper. On the one hand, the case study at the heart of this paper has reaffirmed the heuristic potential of 'breaching experiments': these events that break the sense of normality of market actors bring to light certain realities that are usually too deeply rooted to be analysed. If the Bloomberg Terminal has been the subject of so few studies, it is mainly because it has managed to blend into the financial reality to the point of making its agency forgotten. The latter reappeared when it was challenged by WSB's retail investors. Some previous investigations have already demonstrated this fruitfulness, such as the Flash Crash study conducted by Borch (2016), and it will be important to analyse the upcoming 'breaching experiments' to discover their revelatory power.

On the other hand, this paper would benefit from being extended by a study of the diversity of uses of the Bloomberg Terminal. In order to clear the field, we have focused on the main and most decisive use: the traders we met mobilize it without taking any particular distance. When they were asked to explain their relationship with the Terminal, they generally emphasized its virtues (completeness, innovation, ergonomics, etc.). That said, as other research has shown about other devices (e.g. Beunza, 2019), it is likely that more reflective, even critical, uses coexist, particularly during moments of doubt. For example, one trader interviewed recognized the impact of the news relayed by Bloomberg on the interpretation of the GameStop saga and suggested that this could be problematic. In order not to adopt an overly mechanistic reading of the behaviour of financial market actors, an analysis of the possible plurality of Terminal mobilizations would therefore be welcome.

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Ethical approval statement

All of the people interviewed for this paper were willing and aware of my academic motivations.

Notes

1 As a result of this methodological positioning, the concept of 'framing' is mobilized in a radical sense: it does not only designate a colouring of information that impacts the interpretation of an event, but also and more fundamentally an organization of experience (in the sense of the *Frame Analysis* proposed by Goffman, 1974). The Bloomberg Terminal selects what is part of the market situation; as such, it may be preferable to consider it as an *infrastructure* of financial markets, rather than as a *device* (for a development of this conceptual distinction, see Pinzur, 2022).

2 It is also from this perspective that Angel (2021) praises WSB for its role in the financial education of young people: 'we need investors who are willing to take risks. We are all better off if we manage to draw the gamers away from lottery tickets and into the market' (Angel, 2021, p. 32).

3 The challenge was to support the stock price until the short-sellers were forced to 'close out their positions', that is to buy the stock to give it back to their creditor. This could be done by simply buying the stock or by acquiring a call option (a security that entitles its holder to buy the underlying stock from the option seller at a predetermined

price and date) – the option seller then being in a position similar to that of the short-seller, forced to buy the stock in order to honour his commitment … regardless of the loss incurred. But this 'forced purchase' also supported the stock price.

4 Hearing retrieved from https://www.c-span.org/video/?508545-2/gamestop-hearing-part-2.

5 While the age category is easy to identify through an immersion in the forum (vocabulary, cultural references …), a quantified estimate is more delicate, notably because of the explosion of the membership during and after the GameStop saga. A post before the saga (31 January 2020) polling members on their age gave the following results: out of 46 respondents, the average age was 25.8 (with a minimum of 17 and a maximum of 39).

6 This rate exceeded 100 per cent during the saga – this is possible because a shorted stock can be lent a second time by its new buyer to another short-seller, etc.

7 His autobiography gives a good insight into this megalomaniacal dimension (Bloomberg & Winkler, 2019).

8 A famous financial analyst interviewed in the recent Netflix series devoted to the GameStop saga declared: 'I don't think you can be a member of the financial community without it [Bloomberg Terminal]'.

9 This communication campaign also served to re-legitimize the firm, whose image had been tarnished by a case in which confidential company information was transferred from the 'data department' to the 'journalism department' (Campbell-Verduyn, 2017).

10 Some windows are devoted to technical analysis (rationalization by patterns identified from the price history).

11 These are other bonds issued by the same issuer or bonds that are issued by companies in the same industry and have the same 'credit quality' and 'seniority rank' (order of priority for reimbursement).

12 This subscription corresponds to the 'club model' that has become the norm in the financial information market since the early 2000s (Thivant, 2006). This, of course, raises equality issues, as raised by Freeland (2010).

13 For similar policy recommendations, see Allen *et al*. (2021) and Eaton *et al*. (2021).

14 Interview excerpt from the Netflix series devoted to the GameStop saga.

15 This reading seems to us to be more faithful to the critical perspective of WSB than the warning of the advent of a 'memocracy' that would threaten the 'shareholder democracy' by subjecting corporate governance to ideological and frivolous criteria (Goetzmann, 2022). As Massoc and Lubda (2021) have shown, the WSB forum is not characterized by a univocal ideological orientation.

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