Drug trade facilitator or financial disruptor?

A critical study of Swedish and US media's reporting on bitcoin and blockchain

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Abstract

Bitcoin and its underlying technology, the blockchain, has not only given rise to a wave of innovation, but also stirred up considerable controversy. Some have hailed it as the most significant innovation since the internet, while others have dismissed it as a Ponzi scheme. This study looks into how this technology has been portrayed in the mainstream news media in Sweden and the United States. By conducting a critical study of 203 articles from two daily newspapers, the Swedish newspaper Svenska Dagbladet and the American Washington Post, this thesis has revealed some of the discursive sources of power, dominance, inequality and bias that surround the world of bitcoin and contributed to an improved understanding of how the media creates, reinforces and changes the discourses and what effects that may have.

It was found that the movement of bitcoin's exchange rate, significant events that are directly or indirectly related to bitcoin and blockchain, as well as previous discourses have been strong driving forces affecting how the discourses have changed over time. The most noteworthy findings, however, appeared when the two countries were compared. Looking at both purely linguistic features (e.g. the most commonly used words and the tone of the articles) as well as discursive practices, it was made obvious that Sweden represents a more conservative and skeptical view, while the US media has adopted a more progressive and open approach. The concept of intertextuality, the two countries' different views on innovations and contrasting cultural dimensions are possible explanations for these diverging attitudes.

In conclusion, investigating how news media has maintained and reproduced discourse within specific contexts, has allowed us to observe how patterns of particular discourses systematically construct versions of the social world, which are important observations as we are dealing with a situation where the emergence of a new, promising technology is on the line. Further, this study offers insights into the diffusion dynamics of radically innovative technologies, as it points to the fact that the discursive activities of the news media affect the social context of the technology, which in turn affects the diffusion of the technology.

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1. Introduction

1.1 Background

On October 31 2008, the white paper "Bitcoin: A Peer-to-Peer Electronic Cash System" was published by someone under the pseudonym "Satoshi Nakamoto" (Nakamoto, 2008). Nakamoto's paper marks a breakthrough in computer science, building on 20 years of research on cryptographic currency and 40 years of research in cryptography, and the starting point of a wave of innovation within the field of cryptocurrency that has stirred up considerable controversy (Andreessen, 2014). The Bank of England has called it "first attempt at an Internet of finance", the Federal Reserve Bank of St. Louis referred to it as a "stroke of genius" and the World Economic Forum stated in a white paper that "the blockchain protocol threatens to disintermediate almost every process in financial services" (Robinson & Leising, 2015). However, the technology has not only received praise. Former Fed Chairman Alan Greenspan has called it a "bubble without intrinsic value" (Kearns, 2013) and renowned economist Nouriel Roubini has declared it a "Ponzi scheme" and a "lousy" store of value (Clinch, 2014). The uninitiated might wonder what the commotion is about. What is bitcoin and what has caused this controversy?

In 1982, a group of researchers in the field of computer science and cryptography published a paper where they describe a problem that they call the "the Byzantine General Problem" (Lamport, Shostak & Pease, 1982). Imagine a group of generals of the Byzantine army camped with their troops around an enemy city. The generals can only communicate by messenger, and they must agree upon a common battle plan. The problem is that one or more of the generals may be traitors who will try to sabotage by confusing the others. How do you find an algorithm to ensure that the loyal generals will reach an agreement? Bitcoin is the first practical solution to this challenge, and therein lies the core of the breakthrough (Andreessen, 2014). "The Byzantine General Problem" is an analogy for the problem of establishing trust between otherwise unrelated parties over an untrusted network. By solving this problem, Nakamoto has given us a way for one Internet user to "transfer a unique piece of digital property to another Internet user, such that the transfer is guaranteed to be safe and secure, everyone knows that the transfer has taken place, and nobody can challenge the legitimacy of the transfer" (Andreessen, 2014). The technological solution proposed in

Nakamoto's whitepaper is called the "blockchain" and could be described as a decentralized ledger, or list, of all transactions across a peer-to-peer network (Garfinkel & Drane, 2016).

The blockchain makes it possible to transfer value across the internet without the need for a trusted third party. Money is one example of a "digital property" that could be transferred in this way, and the most widely adopted currency that takes advantage of this cryptological breakthrough is called bitcoin. By using the blockchain, bitcoin allows people who do not trust each other to agree on accounting entries in a distributed manner, while eliminating the risk of people cheating by minting their own money, falsifying their accounts or spending their money twice (Palychata, 2015).

Bitcoin is commonly perceived as virtual money or a transaction system, but a closer look will show that the monetary aspect is just the tip of the iceberg. Although bitcoin is the first and most widespread application of Nakamoto's technology, the possibilities reach far beyond just transferring money through the blockchain. It should rather be seen as a revolutionary decentralized architecture which can be used for an untold number of applications. One such application is tamper-proof public databases for e.g. land registries or registers of the ownership of luxury goods or works of art ("The Trust Machine", 2015). To name two examples, London based startup Everledger uses the technology to track diamonds (Caffyn, 2015a) and the artist Imogen Heap is using it to build a platform where musicians "have control over the data created by their songs as they circulate among fans and other musicians, including the song's credits, terms of usage dictated by the artist, where the song is played and when, and any transactions" (Kuo, 2016). The blockchain technology could also be used in the banking and insurance sector to improve compliance checks on customers and reduce the risk of fraud. Further, blockchains could be used in the public sector to facilitate voting or as the official registry for government assets (Palmer, 2016).

It is clear that bitcoin and the blockchain has the potential to have an immense impact in several areas. The following quote, found in a Youtube video in a press release by the Swedish bank SEB, paints a vivid picture of how fundamental Nakamoto's breakthrough could be:

> What if there is a technological advancement so powerful that it transforms the
> very basic pillars of our society. A technology which fundamentally influences the

way our economy, governance systems and businesses function and could change our conceptual understanding of trade, ownership and trust. This technology already exists; it's called cryptocurrency. (Loonstra, Van den Brink, De Vries & Van Zuidam, 2014)

Marc Andreessen, the famous venture capitalist and creator of the first internet browser Netscape, has said that he cannot think of any one thing that "would have a faster and more positive effect on so many people in the world's poorest countries" (Andreessen, 2014). Despite the potentially beneficial impact highlighted by several influential thinkers and institutions, it seems like there still are divided opinions regarding the technology. "One can hardly accuse Bitcoin of being an uncovered topic, yet the gulf between what the press and many regular people believe Bitcoin is, and what a growing critical mass of technologists believe Bitcoin is, remains enormous", as Andreessen (2014) eloquently describes the situation. This is where this study takes it departure; in the extreme polarization that has emerged in the world of bitcoin and the blockchain.

1.2 Problem area, aim and contribution

Openness to new ideas is considered essential for keeping up with the latest development and thereby staying relevant in a world that is changing at an ever faster pace (Fagerberg, 2014). This notion is often applied at a firm level and attention is focused on how to structure processes, organisations, incentives, communication, etc, within or across firms in order to retain their competitive position in the industry (Garud, Tuertscher & Van de Ven, 2013).

However, it is of equal importance to study how new technologies and innovations have diffused throughout the economy at a higher level and this topic have not been left untouched. For example, it has been found that the productivity growth in the US has accelerated since 1995, which appears to be connected with greater investment in information and communication technologies (Chinn & Fairlie, 2007). This acceleration in productivity growth seems to have been manifested at both the country and firm level of analysis (Jorgenson, 2001). Findings like this have contributed to heighten the interest in the diffusion of new ideas, innovations and technology at an international level.

Although there are many theories on why some technologies come to be widely adopted, while other equally plausible alternatives become history, most of them focus on inherent functional and economic advantages of the successful technologies. This prompted some

scholars to call for a more 'institutional' understanding of the phenomenon that leads to widespread diffusion of radically new technologies (Munir & Phillips, 2005). One example is Hargadon and Douglas (2001) who argue that conventional explanations to the question neglect the social embeddedness of the process through which new innovations become widely accepted. By social embeddedness, they mean that when actors interpret a new technology, they generally choose from the set of understandings available to them. Therefore, these understandings or 'schemas' and 'scripts', become essential for the adoption of a new technology (Munir & Phillips, 2005).

This thesis will expand on this area by investigating how different articulations of a novel technology create a shared understanding of what the technology is and thereby plays a part in the diffusion of it by shaping our schemas and scripts. Bitcoin and the blockchain technology has several times been compared to the internet in terms of its potential impact (Folkinshteyn, Lennon & Reilly, 2015; Brito 2015; Andreessen 2014) and is a highly current topic, which makes it a particularly interesting innovation to investigate in this context.

One of the main aims of this study is to give an understanding of how the daily news media creates, reinforces and changes the discourses regarding the emerging technology of bitcoin and blockchain and what differences there are between Swedish and American media. Through this, I hope to contribute to a better understanding of the daily news media's role in constructing meaning and corresponding social realities in regards to a novel and potentially disruptive innovation.

While scholars have produced plentiful meaningful studies of why innovations get adopted or how users get locked into particular standards (e.g. Arthur 1994; David 1985; Cusumano et al. 1992), the research is generally characterized by a lack of consideration to cultural aspects of the change. In this study, on the other hand, the focus will be on how various innovations are given meaning by the media, which in turn affects public opinion and thereby renders these innovations as more or less legitimate for popular consumption, ultimately affecting their diffusion.

1.3 Research question and purpose

To sum up the previous sections, this study looks into how a new and potentially disruptive technology, bitcoin and the blockchain, has been portrayed in the mainstream news media since its inception. Further, two different countries are compared in order to deepen the

insight into how discourses are created, reinforced or changed. Sweden and the United States have been selected in order to investigate how the discourses differ in disparate contexts and cultures and to further increase our understanding of the dynamics behind the bitcoin/blockchain discourse. Both of these countries are rather well developed in terms of internet penetration ("List of countries by number of Internet users," n.d.), but only the US made the top ten list of bitcoin friendly countries in terms of merchant adoption (Scott, 2015). This makes the two countries particularly interesting to compare.

Through a discursive study of articles published in one daily newspaper in each of these two countries, I have studied similarities and differences in language use and which narratives that are dominating and how it has changed over time. Therefore, the research question of this thesis is:

- How has the bitcoin/blockchain discourse developed over time and how does it differ between Sweden and the US?

The purpose of the study is to reveal the dominating discourses related to bitcoin and blockchain, and to see how these have changed over time, as well as how they differ in contrasting social and cultural settings. In this way, the study will theorize these transformations and improve our understanding of "what is, how it has come to be, and what it might become", in the words of Chouliaraki and Fairclough (1999).

1.4 Terms and definitions

Blockchain is the technology that underpins bitcoin, but the term bitcoin has gained a wider reach and become more familiar among the general public and is hence often used when someone is actually referring to the blockchain. In this study, the term bitcoin will sometimes be used referring to the digital currency and sometimes to both the currency and the technology on which it is built (i.e. the blockchain). In most cases, this works well since blockchain is mentioned very rarely in the data and always in connection to bitcoin. And when it does matter, the distinction will be expressed explicitly.

1.5 Structure of the thesis

The next section introduces discourse analysis, which provides a theoretical and methodological framework for analysing the empirical material from the articles about bitcoin

and blockchain. Thereafter, the results are presented and discussed in a manner that follows the structure of Fairclough's three dimensional model of critical discourse analysis. This means that the results section will start with looking at the level of the text, then at the discursive practice where the identified discourses are laid out, before finally putting the discourses in a wider social context. Following that, the findings of the study are discussed, as well as the study's potential implication and limitations. Finally, the main findings will be highlighted and thesis will be concluded in the last section of the paper.

2. Theoretical perspective and method

Discourse analysis, which is an integral part of this paper, is not just a method for data analysis, but a theoretical and methodological whole. It contains philosophical premises regarding the role of language in the social construction of the world, theoretical models, methodological guidelines, and specific techniques for analysis (Winther Jørgensen & Phillips, 2002). In this section, the theories that form the basis of the analysis are outlined, as well as the method used to conduct the study.

2.1 Social constructivism

In this study, a social constructivist scientific standpoint is adopted. As a result, the world is seen as socially constructed and subjective, rather than being extrinsically given and objective. This means that the thesis will be of interpretative nature. Social constructivism will serve as the foundation on which this thesis is built upon and therefore deserves some further explanation.

The social constructionist perspective builds on the belief that the understanding of a phenomena or an object is dependent on the language and how we express ourselves and make interpretations, and thereby also shape the social world (Börjesson, 2003). "Knowledge is created through social interaction in which we construct common truths and compete about what is true and false", as Winther Jørgensen and Phillips (2002) express it. In that regard, our knowledge of the world cannot be treated as objective knowledge, but rather a product of the categorizations that we make, for example through the use of our language.

Take Foucault's study of madness as an example. In this study, Foucault uncovered three discourses that have constructed what madness is in different historical eras and in different places. The three dominating discourses were "madness as spiritual possession", "madness as social deviancy", and "madness as mental illness" (Foucault, 1988). By tracing the evolution of the concept of madness through different phases, Foucault managed to examine how the language and practices of healthcare professionals and institutions shape and limit the ways that individuals and institutions can think, speak, and conduct themselves (Hodges, Kuper & Reeves, 2008). These findings pose a suiting example of why our knowledge cannot be treated as objective, but rather a product of the categorizations that we

make. Our definition of madness is not an absolute truth, but rather a result of how we have categorized it, which in turn is shaped by social forces. As these social dynamics change, so does our definition of the term and thereby our knowledge of the concept.

Adopting a social constructionist research approach entails that the focus of this report will be on how our knowledge in the field of blockchain and bitcoin is constructed by our way of understanding, representing and categorizing these subjects. Social constructionism builds on the belief that there is a link between knowledge and social action. As a result of this, the social construction of knowledge has real social consequences, giving the ones with power to affect our knowledge an exceptionally influential position (Winther Jørgensen & Phillips, 2002).

2.1.1 Media and social constructivism

One well-documented way in which knowledge is socially constructed is through the medium of news reports. Already in 1922, Walter Lippmann (1922) argued in his book Public Opinion that the mass media are the primary connection between what happens in the world and the images in the minds of the public. This idea is often considered an early version of what McCombs and Shaw later developed into the agenda-setting theory (Rogers, 1993), which describes the "ability [of the news media] to influence the salience of topics on the public agenda" (McCombs & Reynolds, 2002). Another duo that touches on the same subject is Callaghan and Schnell (2001), who accurately pinpoints media's ability to influence readers in the following quote:

> By selectively choosing to cover one side or both sides of an issue, putting forth their own interpretation, simplifying events or stories, or by simply allocating greater coverage to one issue over another, the media act as gatekeepers, advocates, and interpreters of political themes and information. Journalists and editors draw maps or internal story patterns for their readers, and these maps or frames cognitively serve to structure the public debate, influence readers' level of information, and attribute policy responsibility. (Callaghan & Schnell, 2001)

Van Dijk (1988), one of the pioneers within critical studies of media discourse, argues that media discourses in general, and news reports in particular, should be accounted for as specific kinds of sociocultural practice. This study will in that sense follow in van Dijk's

footsteps as it adopts the underlying assumption that how the news media reports about bitcoin and blockchain will have real consequences on our actions by shaping our social world. Thereby, the media may play a central role in the future adoption of the technology.

To sum up the section on social constructivism using discursive analytical terms, you could say that our knowledge and representations of the world are not true reflections of the reality, but rather products of discourse. This term, 'discourse', will be explained further in the following section.

2.2 Discourse as a theoretical term

Discourse analysis is just one of many social constructionist approaches, but it is one of the most widely used (Winter Jørgensen & Phillips, 2002). Before going into details on discourse analysis, a clarification of discourse as a theoretical term is needed.

Discourse analysis has become increasingly popular the last few years, and has been applied to a wide array of academic domains, such as communication, cognitive psychology, social psychology, and artificial intelligence (Schiffrin, Tannen & Hamilton, 2008). This academic diversity has led to a diversity regarding the definition of the discourse term. A common viewpoint, particularly among linguists, is that discourse is anything "beyond the sentence". Others see the study of discourse as the study of language use (Schiffrin, Tannen & Hamilton, 2008). To Norman Fairclough (2003), the father of critical discourse analysis, the term signals a view of "language in use as an element of social life which is closely interconnected with other elements". However, the terms can also be used in a particular way, such as "discourse of power" and "discourse of racism". Here, the term discourse refers to a broad accumulation of both linguistic and nonlinguistic social practices and ideological assumptions that together construct power or racism (Schiffrin, Tannen & Hamilton, 2008). The connection to the social constructionist approach becomes clear when using the term in such a way.

Winther Jørgensen and Phillips (2002) state that there is no clear consensus as to what discourses are or how to analyze them. However, they do propose a compelling preliminary definition of a discourse as a particular way of talking about and understanding the world, which they expand upon as follows:

But, in many cases, underlying the word 'discourse' is the general idea that language is structured according to different patterns that people's utterances follow when they take part in different domains of social life, familiar examples being 'medical discourse' and 'political discourse'. 'Discourse analysis' is the analysis of these patterns. (Winther Jørgensen and Phillips, 2002, p. 1)

In conclusion, although no generally accepted definition exists, discourses could be explained as patterns found in how we use our language. Infused in the discourse concept is also the notion that these patterns are connected to social life.

2.3 Critical discourse analysis

There are three major streams in the field of discourse analysis: Ernesto Laclau and Chantal Mouffe's discourse theory, discursive psychology, and Norman Fairclough's critical discourse analysis (CDA) which is the approach applied in this study. The aim of the latter is to shed light on the changes in society's "large-scale discourses", which is constructed by the use of language. Discursive psychology, on the other hand, is more focused on how people's selves, thoughts and emotions are formed and transformed through social interaction.

CDA has its roots in a branch of discourse analysis called critical linguistics, which goes beyond the mere description of discourse to a wider explanation of how and why particular discourses are produced (Teo, 2000). Thereby, the active role of discourse in constructing the social world is emphasized, but, in contrast to Laclau and Mouffe, Fairclough insists that discourse is just one among many aspects of any social practice. Furthermore, CDA engages in concrete, linguistic textual analysis of language use in social interaction. This sets it apart from both Laclau and Mouffe's discourse theory, where systematic, empirical studies of language use is not carried out, and from discursive psychology which does not carry out linguistic studies of language use (Winther Jørgensen and Phillips, 2002). For these reasons, and due to the fact that Fairclough has created an impressive body of work that provides an extensive theoretical and methodological framework, CDA is the most suitable approach for this report.

Van Dijk is a prominent scholar within the field of critical discourse analysis and one of the most often referenced and quoted in critical studies of media discourse. According to van Dijk, it is sociocognition (social cognition and personal cognition) that mediates between

society and discourse. He defines social cognition as "the system of mental representations and processes of group members" (Van Dijk, 1995, p. 18). Van Dijk calls these mental representations "models", and argues that these control how people act, speak, write, or understand the social practices of others (Sheyholislami, 2001). To illustrate this, picture a society with collectivistic values. These values will act as a model or a "filter" that the members of that society apply when they interact with and interpret their surrounding. An interview with an member of a sports team who talks about his own achievements might be viewed as disgraceful in this society, which in turn will affect how people will act, speak and write about it. Or take the example of how immigration is defined. By framing it as a problem or threat, for example by talking about it as an "invasion of refugees", instead of as an economic and cultural contribution, the dominant speakers shape the mental models of the public if these have no alternative representations of immigration (Phillips, Sewell and Jaynes, 2008). Dominant speakers can for example be opinion leaders, politicians or journalists. Earlier, it was mentioned that our knowledge and representations of the world are not reflections of the reality, but rather products of discourse. This still being true, by adding van Dijk's arguments, one could say that discourses are products of socially shared mental models that the media has the ability to influence.

Finally, one should be aware that this approach is critical, meaning that the analyst "reports the findings so as to critically expose and intervene in the discursive forms, and by opposing them, seek positive change" (Brabham, 2012). This entails adopting an explicitly argumentative style in the writing, which involves using the first person voice and verbs that locate agency in the author rather than the data or the scientific procedures (Tracy, 2003).

2.3.1 Fairclough's three dimensional model - an analytical framework

In CDA, every instance of language use is viewed as a communicative event consisting of three dimensions:

- Text (speech, writing, visual image or a combination)
- Discursive practice (involves the production and consumption of texts)
- Social practice

All three dimensions should be covered in order to perform a complete CDA. Hence, the analysis should focus on the linguistic features of the text, the processes relating to the production and consumption of the text, and the wider social practice. This model is based

on the belief that texts should not be analysed in isolation, as they can only be understood in relation to other texts and in relation to the social context (Winther Jørgensen and Phillips, 2002).

According to Fairclough, concrete language use always draws on earlier discursive structures, since the actual language users build on already established meanings. The concept of intertextuality, which refers to how a text draws on elements and discourses of other texts, is a central term in CDA. Fairclough means that it is by combining elements from different discourses that concrete language use can change the individual discourses and thereby the world around us (Winther Jørgensen & Phillips, 2002, p. 7). Hence, the investigation of change becomes a central area of interest.

2.4 Data collection, sample and delimitations

This report aims to investigate the media reporting on bitcoin and blockchain to shed light on the dominating discourses and see how these change over time and if there are any differences between Sweden and the US. As mentioned previously, these two countries here chosen because they are both rather well developed in terms of information and communication technologies, for example when looking at the internet penetration in respective country. However, in a study where merchant adoption was used as an indicator of bitcoin friendliness, only the US made the top ten list (Scott, 2015). Also, some cultural differences exist, which make the comparison particularly interesting. Using Hofstede's cultural dimensions theory, we find differences on the uncertainty avoidance and masculinity dimensions that could provide an interesting basis for discussion (Hofstede, Hofstede & Minkov, 2010). In each of these two countries, one daily newspaper have been chose; Svenska Dagbladet in Sweden and Washington Post in America. These were selected as they are both mainstream daily newspapers that are held in high regard and within a reasonable political distance from each other. Based on these criteria, Svenska Dagbladet and Washington Post were deemed comparable and suitable for the purpose of this study.

Another delimitation affects the time scope. For practical reasons, no articles written after March 1, 2016 will be accounted for. All articles found when searching the chosen publications' websites have been included up to that date, but blog posts and exclusively non-text based material have been excluded. This generated 134 Swedish and 121 American articles. After removing articles where the terms bitcoin and/or blockchain only have been used in passing, I was left with 115 Swedish and 88 American articles. As shown

in table 1, the American articles are considerably longer than the Swedish articles, resulting in a larger body of text, despite the fewer number of articles in the American sample.

	Swedish	American	Total/Average
Number of articles	115	88	203
Characters per article	2,107	5,443	3,775

Table 1. Distribution of articles and average number of characters per article

2.5 Analysis procedure

Designing and conducting a discourse analysis study has been described as more of an art than a science (Phillips & Hardy, 2002). The lack of a standard method for researchers who wish to carry out such a study makes it a difficult endeavor and increases the importance of a structured and well-explained analysis procedure. Fairclough's three dimensional model provides an analysis framework that will be used as a structure and foundation in this study, in combination with van Dijk's thoughts laid out in his influential book "News Analysis (van Dijk, 1988). Below, the application of critical discourse analysis used in this study will be explained in further detail, as well as the reasoning behind it.

2.5.1 Text

Each communicative event (i.e. article) will firstly be analyzed on the linguistic features of the text. This level of analysis will primarily focus on two aspects:

A. The choice of wording
B. The tone of the text

The choice of wording will be analysed in two ways, first by taking all words in all the articles and generate word clouds, one for respective country. These word clouds visualize the language use in a way where the more frequently used words are highlighted by occupying more prominence in the representation. This provides a fast and visually rich way that facilitates finding patterns and making sense of the vast amount of data at hand. The software Wordle has been used for generating the word clouds. In a study where different alternatives were compared, McNaught and Lam (2010) found that Wordle might be the most versatile software to use for this purpose. The software has also been used by scholars previously, for example by Clement, Plaisant, and Vuillemot (2008) who used Wordle to

generate word clouds in a literary study where they compared and contrasted the styles of writing in "The Making of Americans" (Stein, 1995, originally written between 1906 and 1911) to those of 19th century novels written by Jane Austen, Charles Dickens, George Eliot, and George Meredith. In their study, they found that the use of "one" (mostly as a pronoun) is very prominent in "The Making of Americans" and concluded that the frequent use of this word, contributed to the sense of "confusion" being developed in the work (McNaught & Lam, 2010).

The word "bitcoin" is however excluded from the word clouds in order to better see the nuances in how the language is being used. This due to the fact that "bitcoin" was by far the most commonly used word in the articles. It occurred 859 times in the American articles and 800 times in the Swedish articles, making it so dominant in the word clouds that it was hard to distinguish the relative prominence among the other alternatives when the term was included.

An additional word cloud with charged or loaded words has also been created for each country. This is due to the fact that interesting word usage could be missed in word clouds that contain all words, which was demonstrated when the word "bitcoin" was included. Therefore, notable words and terms have been gathered when processing all articles in order to identify interesting word usage that might not appear in the regular word clouds since the most common words take over. The word clouds with charged or loaded words are therefore to be seen as a supplement to the word clouds with all content, as they are generated based on words that was considered notable in the sense that they stand out from regular language use. These words have either a positive or a negative charge, as opposed to being neutral.

Secondly, the tone of the text has been analyzed. In the process of analyzing each article, the texts have been assessed as to whether it has been written in a way that is positively or negatively angled, or if the article is to be considered neutral.

2.5.2 Discursive practice

When looking at the discursive practice, the analysis aims to identify the discourses and genres that are articulated in the production and consumption of the text. As described earlier, a central theme in discourse analysis is to uncover patterns. According to van Dijk (1988), media discourses should be analyzed in terms of their structures at different levels of

description, which means that the analysis should not be limited to "the grammatical description of phonological, morphological, syntactic, or semantic structures of isolated words, word groups, or sentences". That kind of analysis rather belongs in the level of the text, which is described in the previous section. The reason for this is that discourses have certain complex, higher-level properties, such as "coherence relations between sentences, overall topics, and schematic forms, as well as stylistic and rhetorical dimensions" (van Dijk, 1988). The analysis of the discursive practice has been carried out in accordance with these thoughts by adopting a more dynamic and multi-dimensional approach, as suggested by van Dijk. One example of putting this to use is accounting for the news schemata, which are structured according to a specific narrative pattern consisting of a summary (headline and the lead paragraph), story (situation consisting of episode and backgrounds), and consequences (final comments and conclusions) (van Dijk, 1988). As these sections are sequenced in terms of relevance for the reader, the text in the headline and lead paragraph should be of higher importance in shaping the discourse since this is what the reader can best memorize and recall. In practice this means looking beyond the single word or sentences and try to identify the overall theme, topic and narrative that the writer is enforcing in the text. When analyzing the discursive practice, the main narratives in each article has been identified and named. It should also be noted that one article could contain more than one discourse. Thereafter, these narratives have been compared and then group in a way that more easily allows these patterns to emerge.

2.5.3 Social practice

Finally, the discursive practice will be put into its social context. The purpose of this part of the analysis is to answer whether the discursive practices reproduce or restructure the existing order of discourse, to create an understanding of the factors that influence this process and to look at the consequences for the broader social practice. This is dealt with in two parts, firstly in the section where the results are presented, and secondly in the discussion.

A central notion of CDA is that social practices are tied to specific historical contexts and serve as a way of reproducing or challenging existing social relations (Janks, 1997). Therefore, it is important to relate the discursive practices with their cognitive, social, or political contexts, which has received considerable attention in other work on news and the news media (Gans, 1979; Tuchman, 1978; Fishman, 1980). To understand discourses and their effects, we must also understand the context in which they arise, as Hardy (2001)

points out. Building on the fact that discourse is not produced without context and cannot be understood without taking context into consideration, the discursive practices are contextualized by significant events that are related to the world of bitcoin and blockchain, as well as the rate of bitcoin compared to the US dollar. By studying how the discursive practice has changed over time and how Sweden compares to the US and vice versa, a significant groundwork is laid that will support a discussion on how the texts are positioned, why that is and what the consequences are.

3. Result

In the following sections, the result of the analysis will be laid out and discussed according to Fairclough's three dimensional model starting with the level of the text, thereafter the discursive practice and finally the social practice.

3.1 Text

This part of the analysis focuses on the linguistic features of the texts. First, word clouds generated from the Swedish and then the American articles are analyzed as themes are identified in respective publications usage or words. Following that, the analysis addresses the way bitcoin and blockchain is portrayed by the writers in the morning press; positively, negatively or neutral.

3.1.1 Word clouds, Sweden

Figure 1. Word cloud generated using all content from the Swedish articles (excluding the word "Bitcoin")

The Swedish word cloud (figure 1) consists to a large degree of commonplace words and words that you would expect to find in articles about a digital currency. As we can see in the word cloud above, the word "valuta" (eng. "currency") is the most frequently occuring word except for the word "bitcoin", which was excluded in the word cloud in order to better see the

nuances in the language use. However, a few themes can be identified. One of them is related to currency, with words such as "valuta", "virtuella", "kronor", "rate" and "dollar" (eng. "currency", "virtual", "Swedish krona", "rate" and "dollar"). This is hardly surprising considering that the articles are about a digital currency. Although less prominent, we can also find business related words, such as "företag", "näringsliv", "bank" and "bolag" (eng. "company", "industry", "bank" and "business") and crime related words like "polisen", "kriminella" and "penningtvätt" (eng. "the police", "criminals" and "money laundry"). Most of the words belong in the category common words, for example "ska", "finns", "säger", "kommer", "också" and "andra" (eng. "will", "is", "says", "going to", "also" and "other"). Overall, figure 1 does not provide many interesting findings except for the apparent tendency to use crime related words, which is the most intriguing aspect. Although those words are not particularly prominent in the word cloud, they do stand out in the otherwise rather mundane group of words and might reveal a slight tendency towards negative discourses in Swedish media.

Theme	Words in Swedish	Words translated into English
Currency	Valutan, Virtuella, Kronor, Kursen, Pengar, Dollar, Miljarder	Currency, Virtual, Swedish krona, Rate, Dollar, Billions
Common words	Ska, Finns, Säger, Kommer, Också, Andra	Will, Is, Says, Going to, Also, Other
Business	Företag, Näringsliv, Bank, Bolag	Company, Industry, Bank, Business
Crime	Polisen, Kriminella, Penningtvätt	The police, Criminals, Money laundry

Table 2. Swedish words from figure 1 translated into English

Notable words and terms have been gathered during the analysis of the articles in order to identify interesting word usage that might not appear in a word cloud that includes all content as the most common words becomes too dominant. In that way, figure 2 below supplements the previous word cloud, figure 1, as it exposes more distinguishing and potentially interesting terms. The words in figure 2 are notable in the sense that they stand out from regular language use as charged or loaded (either positively or negatively), as opposed to neutral words.

Figure 2. Word cloud generated using charged words from the Swedish articles

Here, the tendency of adopting a negative attitude towards bitcoin, which appeared only marginally in figure 1, becomes highly prominent. In this word cloud we instantly see a "bubble" theme appearing with "bubbla", "bitcoin-bubblan", "skakig" and "spekulation" (eng. "bubble", " the bitcoin-bubble", "shaky" and "speculation") as the most prominent words. Another theme is related to scams with words like "ponzispel", "banditvaluta", "pyramidspel", "misstro" and "bedrägeri" (eng. "ponzi scheme", "thug currency", "pyramid scheme", "distrust" and "fraud"). This theme could be linked to the crime theme found earlier in the word cloud containing all words. "Hittepå-valutan", "låtsaspengar", "jippo" and "samlarföremål" (eng. "imaginary currency", "play money", "stunt" and "collectors items") are words that portrays bitcoin as a "pretend currency" and a fad that will blow over. There are also some politically themed words that relate to libertarianism and anarchism, as well as a few relating to bitcoin's potential and growth, for example "revolution", "entusiasmen", "möjligheter", "framgång", "smarta" and "enkelt" (eng. "revolution", "enthusiasm", "potential", "success", "smart" and "easy"). Except for these words, the content of the word cloud is predominantly portraying bitcoin in a negative way, either as a bubble, scam, joke or political experiment.

Theme	Words in Swedish	Words translated into English
Bubble	Bubbla, Bitcoin-bubblan, Skakig, Spekulation	Bubble, The bitcoin-bubble, Shaky, Speculation
Scam	Ponzispel, Banditvaluta, Pyramidspel, Misstro, Bedrägeri	Ponzi scheme, Thug currency, Pyramid scheme, Distrust, Fraud
Pretend currency	Hittepå-valutan, Låtsaspengar, Jippo, Samlarföremål	Company, Industry, Bank, Business
Political	Anarkisternas, Libertarianianer, Storebror	The anarchists, Libertarians, Big brother
Potential & growth	Revolution, Entusiasmen, Möjligheter, Framgång, Smarta, Enkelt	Revolution, Enthusiasm, Potential, Success, Smart, Easy

Table 3. Swedish words from figure 2 translated into English

3.1.2 Word clouds, USA

Figure 3. Word cloud generated using all content from the US articles (excluding the word "Bitcoin")

The word cloud generated from all content from the American articles (figure 3) reveals a number of clear themes. The most prominent word next to "bitcoin" (which was excluded from the word cloud), is "new", and we can find several other words related to novelty and innovation, such as "technology", "data", "internet", "entrepreneurs", "digital" and "start-up". Similar to the Swedish counterpart (figure 1), there are several currency related words (e.g. "currency", "cash", "money", "million", "billion" and "value"), as well as words associated with

business (e.g. "business", "companies" and "economy"). In addition to innovation, regulation and finance are two themes that stand out. Words like "government", "federal", "Washington", "state", "congress", "law" and "rules" suggest that the articles in the American sample focus on the regulatory issues associated with bitcoin, while words like "bank", "financial", "transactions", "credit" and "payments" indicate a focus on the financial aspects. The American word cloud provides a richer and fuller image of how the topic has been covered, compared to the Swedish word cloud, which, except for the occasional crime and business related words, mostly contained commonly used words and words related to currency. Just by studying figure 3, it is possible to guess that the corpus is addressing a highly innovative concept where financial and regulatory issues will come into play.

As for the charged or loaded language illustrated in the word cloud below (figure 4), the most prominent word is "disruptive". This, together with words like "powerful", "opportunity", "reimagine", "change", "cutting-edge", "revolution" and "promising" are well aligned with the innovation theme identified in figure 3. Other words, like "risky", "mania", "fad", "exuberance", "gamble" and "faddishness", form a bubble related theme, while the words like "shadowy", "ponzi scheme", "underground" and "swindle" fit into a theme relating to computer hacking and illicit activity. A few observations can be made when comparing figure 4 to the Swedish counterpart (figure 2). Firstly, the American word cloud with charged words is much sparser than the Swedish, meaning that more charged words were found in the Swedish articles. Secondly, although both word clouds contain words that address both the risk and potential in the technology, the Swedish is more focused on the latter and the American on the former. The most prominent word in respective word cloud exemplifies this focus: "bubbla" (eng. "bubble") in the Swedish and "disruptive" in the American word cloud.

Figure 4. Word cloud generated using charged words from the American articles

The word cloud analysis indicates a more negative sentiment in Sweden than in the US when portraying bitcoin, focusing more on the risks and less on the potential. As a supplement to this and to expand the analysis of the linguistic features of the text, the following section will address the overall tone of the text.

3.1.3 Positive, negative or neutral

An article can be written with either a negative or positive tone, or without any tone (i.e. neutral). It is important to clarify that the tone does not necessarily relate to the topic of the article. For example, an article about how the bitcoin price has decreased does not automatically entail a negative tone. To better illustrate this, the following are excerpt from two different articles - one with a negative tone and one with a positive tone:

- Negative: "To skeptics (including this writer), Bitcoin seems a collapse waiting to happen". (Samuelson, 2014)
- Positive: "It could give people living in areas without financial institutions or stable currency a safer way to transact business". (Singletary, 2014)

The author of the first of the two quotes is explicitly taking a skeptical approach towards bitcoin and would therefore be categorized as negative. The second quote, on the contrary,

is an example of how a positive tone might sound. Here, the author is illuminating the beneficial aspects of bitcoin and should therefore be categorized as positive.

The Swedish sample showed a rather even distribution between positive and negative articles, but with a slight tendency towards publishing articles with a negative tone. 12.2% of the articles were identified as negative compared to 8.7% positive articles. However, the vast majority (79.1%) of the Swedish articles are neither positive nor negative. In contrast to the Swedish results, the American articles have a lower number of articles with a negative (5.7%) than with a positive (12.5%) tone towards bitcoin. Although, a majority of the articles (81.8%) are neutral in the American sample as well, these results strengthen impression of the Swedish media taking a more skeptical approach to bitcoin compared to the American.

Angle	SE	US	SE + US
Positive	8.7%	12.5%	10.3%
Negative	12.2%	5.7%	9.4%
Neutral	79.1%	81.8%	80.3%

Table 4. Share of articles with a positive, negative or neutral tone

These results follow in the lines of what was identified in the analysis of the word clouds, where it was noted that the Swedish newspaper has a more suspicious view on bitcoin, whereas the American newspaper tend to highlight the positive aspects to a larger extent.

3.2 Discursive practice

In addition to the level of the text, the discursive practice has been analyzed. This part of the analysis aims to identify the discourses that are articulated in the production and consumption of the text. An overview of the discourses are presented in table 5 along with examples of narratives that fit into respective discourse, as well as the number of occurrences in Sweden and USA.

Discourse	Examples of narratives	Cum. freq.	Freq. (all)	Freq. (SE)	Freq. (US)
Shady business	● Bitcoin is a hard-to-trace currency used for buying drugs, child porn and for financing terrorism.	23%	64	41	23
The rise of bitcoin	● Merchant X accepts bitcoin, and you can use it to pay for university Y and donate money to politician Z. ● The interest for bitcoin among the general public, venture capitalists, etc, is increasing.	43%	55	25	30
Tulip mania	● Just like the 15th century tulip mania, bitcoin has no substance and the bubble will burst. ● Bitcoin is extremely volatile and has risen/fallen by X% the last Y days.	54%	32	22	10
Watch your back	● Warning: Your computer is being hacked and used to mine bitcoins. ● Hackers stole bitcoins worth millions from bitcoin exchange.	63%	25	14	11
Government t vs Bitcoin	● The government in country X is proposing a new regulation for bitcoin related businesses. ● Bitcoin has been banned in country Y.	72%	25	8	17
Financial disruption	● Bitcoin will disrupt the financial system, possibly paving the way for a cashless society	80%	21	14	7
Funny stories	● X bought a pizza/house/coffee with bitcoins and Y accidentally threw a hard drive worth 50 million in the trash ● The story about the mysterious bitcoin creator Satoshi Nakamoto	86%	19	12	7
Safe haven	● Bitcoin is a currency free from government supervision and banking fees, where consumers can seek a safe haven in times of financial crises (Cyprus, Greece, etc)	93%	18	11	7
More than a coin	● Bitcoin is not just "digital money", it has many applications and the underlying technology is most exciting about it	97%	12	2	10
Bitcoin 101	● How bitcoin works and where it comes from.	99%	4	1	3
Death sentence	● It is just a matter of time before Bitcoin is history	100%	3	3	0
Inequality	● The bitcoin community lacks women	100%	1	0	1

Table 5. Discourses in order of frequency

3.2.1 Shady business

The most frequently occurring discourse is "Shady business", much due to the Swedish media's strong focus on stories about how bitcoin is being used for criminal activities like drug trade, bribery, financing terrorism, buying child porn, fake passports and other things that you can find on the dark web. This fits well into what was shown in figure 1, where crime related words was one of the few themes that appeared. A good example of the discourse is found in the article "Virtuella valutor värdefulla för kriminella" (eng. "Virtual currencies

valuable to criminals") published in Svenska Dagbladet (Erlandsson, 2013). In the article, the difficulty to trace transactions and the anonymous nature of the the currency are mentioned as traits that attract criminals like drug dealers and assassins to use bitcoin. It is however worth noting that bitcoin is neither anonymous nor untraceable. This became evident in the trial against Ross Ulbricht, the creator of the marketplace for illegal goods and services called Silk Road. After Ulbricht's bitcoin wallet address was uncovered, it was possible to link him to plentiful of potentially incriminating transactions that are stored on the public bitcoin ledger (Brandom, 2015).

3.2.2 The rise of bitcoin

"Shady business" is a common discourse in American as well, but only on a second place behind "The rise of bitcoin". This discourse includes stories about merchants that start accepting bitcoin as a means of payment, how the bitcoin ecosystem is growing, and the increasing acceptance and interest from venture capitalists, policy makers and the general public. The article "Bitcoin refuses to flip" by Craig Timberg (2014) illustrates the discourse well. In the article, Timberg writes that "[b]itcoin, first issued in 2009, has gradually gained acceptance as a digital currency that, unlike dollars or euros, can move through the global trade system with low fees, relative privacy and no regulation". This is also an example of writing with a positive tone as the author is emphasizing the beneficial aspects of bitcoin and recognizing it relative advantages compared to other currencies. Just like with the discourse "Shady business", we can find themes in the word clouds that correspond to this discourse. In figure 3, innovation appeared as one of the strongest themes, and figure 4 showed a focus on the disruptive potential of bitcoin in the American media. Thus, this discourse is indeed in line with the findings in the analysis of the level of the text in the previous section.

3.2.3 Tulip mania

"Tulip mania" is the third most common discourse overall. The name refers to the tulip bubble in the Netherlands in the 15th century, which is generally considered the first recorded speculative bubble ("Tulip Mania", n.d.). Articles about bitcoin's price volatility and articles warning bitcoin holders and potential buyers for a bubble have been filed under this category, which is particularly common in the Swedish articles. One example of this discourse could be found in the article "Bitcoin-valutans framfart är ett misslyckande för euron" (eng. "The bitcoin currency's progress is a failure for the euro"). The author of the article describes how the value of the currency has gone from a few cents to five dollars a year ago from when the article was published, and then to 130 dollars. The author states

that "many compares it to the1630s Holland, where the value of tulip bulbs without any rational explanation reached astronomical levels and then collapse" (Sigfrid, 2013). Once again, the analysis of the discursive practice is consistent with the previous findings. In figure 2, "bubbla" (eng. "bubble") appeared as the most prominent word, reinforcing the image of the Swedish skepsism and risk focus in relation to bitcoin.

3.2.4 Watch your back

The fourth most common discourse is "Watch your back". The narratives in this category are often alarming, warning readers about hackers that either steal bitcoins or that hijack your computer without your knowledge by using the computational power from your hardware to mine bitcoin. One example is the article published in Svenska Dagbladet in April 2013, warning readers that thousands of Swedish PC users have been hacked and infected by a trojan called Zeroaccess. The trojan forms a botnet by linking infected computers and uses it to acquire bitcoins (TT, 2013). Another one, also published in Svenska Dagbladet, reports about "yet another" bitcoin bank being robbed (AFP, Reuters, & TT, 2013). The "Watch your back" discourse feeds on scandalous events like these.

3.2.5 Government vs bitcoin

"Government vs Bitcoin" is another common discourse. Bitcoin is a decentralized payment system where people can exchange value on a peer-to-peer basis, without passing through any financial intermediary. This also means that it operates independently of any government or central bank, which is something that Nakamoto, the bitcoin creator, clearly considered a core feature of the system. By making it decentralised and independent, Nakamoto has created a system that overcomes the trust issues that he has criticised in the current fiat money system. "The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve", Nakamoto (2009) wrote in a blogpost on the P2P Foundation website. This also means that the bitcoin network does not reside in any given regulation, and bypassing the central regulatory authority in this way creates several challenges that governments and institutions all over the world is struggling to control and cope with. One example is the issue of classification; should bitcoin be classified as a currency or an asset? The legal status of bitcoin varies from country to country and in many places it is still undefined or changing. Both Thailand and Taiwan has posed a ban on bitcoin, to name two examples (Latvala, 2015; "Bitcoin banditvaluta i Thailand", 2013). If bitcoin achieves critical

mass and wider adoption, "it won't just be the banking system that will have to adapt. Governments get that—and are none too happy" as Washington Post journalist Downes (2015) writes.

Narratives that address these regulatory challenges belong in the "Government vs Bitcoin" discourse, which is especially common in the American sample where it is the third most frequent. This fits well into the regulation theme identified in figure 3, where words like "government", "federal", "Washington", "state", "congress", "law" and "rules" were shown to be frequently used in the American articles.

3.2.6 Financial disruption

"Financial disruption" is the sixth most common discourse and includes articles about bitcoin's potential disruptive impact on the financial industry. The topic of the cashless society and reporting on the banks' reaction to this technical development are found in this discourse. Washington Post's review of the book "Age of Cryptocurrency" is one example of an articles that reinforces the discourse by foretelling that bitcoin will put pressure on the incumbents and others in adjacent fields to innovate, just as Toyota Prius and Tesla have forced traditional automakers to step up their efficiency game (Gross, 2015).

3.2.7 Funny stories

A plentitude of "Funny stories" were identified when processing the data. Such stories include anecdotes about someone who bought or sold something (a pizza/coffee/house) for bitcoins, or someone who accidentally found or lost a large sum of bitcoins. Also, stories about the mysterious bitcoin founder, "Satoshi Nakamoto", are included in this group. The article "Huset är till salu – för låtsaspengar" (eng. "The house is for sale – for play money") is a good example of an article that cultivates this discourse ("Huset är till salu – för låtsaspengar", n.d.). The title of the article says a lot about the discourse; the articles are often written an astonished tone, as if the writer is asking himself if it is for real or a just a joke.

3.2.8 Safe haven

"Safe haven" is a discourse with a libertarian undertone referring to bitcoin as a currency free from politicized central banks, government supervision and banks' high fees and transaction costs. In that regard, it can be considered a "Safe haven", for example in times of financial

crises. A good representation of the discourse can be found in the article "Bitcoin-värdet rusar efter Cypernkrisen" (eng. "Bitcoin value is soaring after the Cyprus crisis"). Just as in this example, articles in this discourse often bring up bitcoin's independence of central authority and decentralized nature as its most attractive feature (Eriksson, 2013).

3.2.9 More than a coin

There were a few occurrences, especially in Washington Post, about how bitcoin is more than "just" a digital currency. The potential of the blockchain technology and applications outside using bitcoin for trading goods or services fall into this category. Interestingly enough, blockchain was only mentioned in seven articles (two in Svenska Dagbladet and five in Washington Post). One example is found in a Washington Post article where the reader is asked the rhetorical question what it would prefer: American Express, MasterCard, and Visa, who charge roughly 2 percent of every transaction, or another payment option enabled by blockchain technology, which "provided you with a rebate of this fee, and the transaction was easier and more secure than with a credit card" (Wadhwa, 2015).

3.2.10 Other discourse

Finally there are three "single-digit" discourses that each occur less than ten times: "Bitcoin 101", which is an informative discourse about how bitcoin works, "Death sentence", which is a discourse predicting the death of bitcoin, and "Inequality", which states that the bitcoin community lacks women. The "Death sentence" discourse has been identified elsewhere and the blog 99bitcoins has even dedicated an own domain (www.bitcoinobituaries.com) where it gathers articles that reinforce this discourse. The site has a record of 101 articles proclaiming the death of bitcoin between December 2010 and May 2016 ("Bitcoin Obituaries", n.d.).

3.2.11 Media's polarization of bitcoin

In the twelve distinct discourses described above, the polarization of how the media has been covering the topic once again becomes evident. The two most common discourses, "Shady business" which occurred in 64 cases and "The rise of bitcoin" which occurred in 55 cases, are good examples of this. The most common one is about how bitcoin is used for drug trade and other illicit activities, whereas the second most common discourse is about its future potential and growing acceptance. The discourses could be grouped to further exemplify this. On the one side are the conservative discourses that focus on the negative

aspects such as illicit activities, scams, hackers and extreme volatility. These discourses are "Shady business", "Tulip mania", "Watch your back" and "Death sentence". On the other side are the progressive discourses that focus on the potential of the technology and challenges that regulators are working on. These are "The rise of bitcoin", "Government vs bitcoin", "Financial disruption", "Safe haven" and "More than a coin". Three discourses fall outside this categorization as they are neither conservative nor progressive: "Funny stories", "Bitcoin 101" and "Inequality". The aggregated results are quite evenly distributed between the conservative and progressive discourses, with a ratio of 1.07 occurrences of positive discourses for each negative. However, doing the same calculation for the two countries separately renders interesting results. The ratio is 0.76 for Sweden and 1.61 for the US, which further indicates that the US media has adopted a more open viewpoint towards bitcoin while the Swedish media has a more skeptical stance on the subject.

3.3 Social practice

The third dimension of analysis in Fairclough's model addresses the wider social practice to which the communicative event belongs. This part will examine whether the discursive practice reproduces or restructures the existing order of discourse, which will lead to a discussion about the consequences this has for the broader social practice in the next chapter. Discourses and relevant surrounding events, such as significant price movements, will be laid out in chronological order in order to identify trends.

One thing that quickly becomes evident is that bitcoin's price movements are highly correlated with both media activity, which is demonstrated in figure 5 below, as well as with the general discourse trends. For example, during the fourth quarter of 2013, "The rise of bitcoin" was dominating at the same time as bitcoin experienced a major price spike. During the six months before that, "Tulip mania" and "Shady business" were the most prominent, and "Watch your back" and "Shady business" in the following six months. In addition, there was almost no media activity before the price spike occurring in the second quarter of 2013. Figure 5 provides an overview of how the price of bitcoin has changed since 2011 and how many articles that have been published in Washington Post and Svenska Dagbladet each quarter. The numbered boxes marks out notable bitcoin related events, which are explained in table 6 below. This development will be addressed in a more detailed fashion in the following sections.

Figure 5. Number of articles, bitcoin price (US$) and notable events from January 1, 2011 to March 1, 2016

#	Event
1	Bitcoin price reaches parity with the US dollar
2	Time Magazine publishes the first article about Bitcoin for a mainstream media organization
3	Washington Post publishes its first bitcoin article ("Imagining a world without the dollar")
4	Svenska Dagbladet publishes its first bitcoin article ("Drugs may cause the fall of the new digital currency")
5	FinCEN issues guidelines on the legal status of Bitcoin under the nation's money laundering laws
6	The Cypriot financial crisis
7	US authorities seized assets from MtGox
8	FBI shuts down the online black market Silk Road
9	Silk Road 2.0 is up and running
10	The Chinese central bank's announces that financial institutions are prohibited from exchanging bitcoin
11	Overstock announces that they are accepting bitcoin
12	The CEO of BitInstant is arrested and charged with engaging in a money laundering scheme
13	MtGox, the world's largest trading platform for bitcoins at the time, files for bankruptcy protection
14	Newsweek claims to have identified Bitcoin's creator
15	FEC legalizes bitcoin contributions to political committees
16	New York State releases a first draft of BitLicense

17	Paypal announces that it allows its merchants to accept bitcoin payments
18	Silk Road 2.0 is shut down by the FBI and the alleged operator gets arrested
19	Microsoft announces it will start accepting bitcoin for some of its products
20	Wall Street Journal reveales that the secretive startup 21 Inc had raised $116m in funding
21	The debt crisis in Greece takes a turn for the worse
22	The "hard fork" Bitcoin XT is released
23	Nine of the world's leading financial institutions announces its plans to work on the blockchain in collaboration, forming a consortium led by the startup R3 CEV
24	Wired and Gizmodo claims to have identified Nakamoto as Craig S Wright
25	R3 CEV's consortium has 42 members in the end of the year
26	Mike Hearn, one of bitcoin's lead developers, ends his involvement with bitcoin and sells all of his remaining holdings because he believes the digital currency has "failed"

Table 6. Notable events marked on the timeline in figure 5.

3.3.1 2008 – 2012: The calm before the storm

The white paper "Bitcoin: A Peer-to-Peer Electronic Cash System" is published on October 31, 2008. Some weeks later, in mid January 2009, the first Bitcoin transaction takes place, and in October the same year, New Liberty Standard publishes a Bitcoin exchange rate that establishes the value of a Bitcoin at US$1 = 1,309.03 BTC by using an equation that includes the cost of electricity to run a Bitcoin generating computer ("Bitcoin History", n.d.).

In early 2011, the bitcoin price increases and reaches parity with the US dollar in February. April 16, Time Magazine publishes what may be the first article about Bitcoin for a mainstream media organization (Berners Lee, 2014). The title of the article is "Online Cash Bitcoin Could Challenge Governments, Banks" and calls bitcoin a "revolutionary concept", referring to the avoidance of artificial currency inflation, anonymity and independence of third-party intermediaries for making transactions (Brito, 2011). Less than two weeks later, Washington Post published its first article on the subject with the title "Imagining a world without the dollar" (Eichengreen, 2011). It didn't take long for the Swedish counterpart Svenska Dagbladet to follow suit, however with a slightly different angle. In July, Svenska Dagbladet posted its first bitcoin related article with the title "Droger kan bli ny nätvalutas fall" (eng. "Drugs may cause the fall of the new digital currency") (TT, 2011).

The bitcoin price soared during the second quarter of 2011, reaching US$30 in July before falling back to around US$2-3 in the end of the year. In total, only six articles were published in Washington Post and Svenska Dagbladet until 2013.

3.3.2 2013: The breakthrough

2013 started out slow with only two articles published in the first quarter. However, a few events took place that would spur a significantly increased activity in the second quarter. In March, the Financial Crime Enforcement Network (FinCEN) issued guidelines on the legal status of bitcoin under the nation's money laundering laws. In effect, this meant that bitcoin exchanges and miners were required to register as Money Services Businesses (MSBs) and comply with anti-money laundering regulations, and was one of the first regulatory measures taken by US government in respect to bitcoin (Berners Lee, 2013a). The Cypriot financial crisis is another notable event in early 2013, and was according to some the underlying reason behind the bitcoin price' staggering climb during the first three months of the year (Faiola & Farnam, 2013). The price peaked at US$266 in April, at which time bitcoin's market capitalization surpassed US$1 billion for the first time, before falling to US$ 66 a few weeks later. Furthermore, US authorities seized assets from MtGox, the popular Japanese bitcoin exchange, for illegally operating as a money transmitter in May. Thereby, the feds were effectively enforcing the guidelines issued by FinCEN earlier that year (Dillet, 2013). 20 articles, fifteen Swedish and five American, were published during the second quarter. "Tulip mania" was the dominating discourse in Sweden, and "Safe haven" and "Shady business" were also quite prominent. In the US, "Tulip mania", "Shady business" and "Government vs Bitcoin" were most salient.

The third quarter was another slow one with only four articles published. The most notable event was FBI shutting down the online black market Silk Road in October. However, Silk Road 2.0 was up and running again in November ("Silk Road [marketplace]", n.d.). Yet, this was only the calm before the storm as the two coming quarters were about to be more eventful.

During the fourth quarter, a total of 24 articles were published (20 by Svenska Dagbladet and four by Washington Post) and the bitcoin price surpassed US$1000, bringing the total market capitalization to over US$10 billion. At its highest, one bitcoin was worth more than US$1200 on November 25 ("Bitcoin Price Index", n.d.). Not so surprisingly, "The rise of bitcoin" was the most common discourse in both countries during these months. However in

Sweden, the three discourses "Shady business", "Tulip mania" and "Funny stories" were almost as frequent. In the US, "Government vs Bitcoin" was at a close second place. The popularity of that particular discourse could partly be explained by the Chinese central bank's announcement that financial institutions are prohibited from exchanging bitcoin. Some believe that this was what caused the bitcoin price to plummet ("Bitcoin History", n.d.).

3.3.3 2014: The scandals

The first quarter of 2014 is the quarter with the highest number of published articles yet. 20 articles were published by Svenska Dagbladet and fifteen by Washington Post, adding up to a total of 35 articles. Except for the significant downward price movements, there were a couple of events worth mentioning. The year started with Overstock, a Nasdaq listed low-price ecommerce site with revenue surmounting US$1 billion, announcing that they were starting to accept bitcoin. The company made 780 Bitcoin sales worth $127,000 in the first 21 hours after the announcement (Hill, 2014). The subsequent events were of a more scandalous character, starting with the CEO of the bitcoin exchange start-up BitInstant being arrested and charged with engaging in a money laundering scheme with a user of the previously mentioned online black market Silk Road (Roy, 2014). In February a month later, the bitcoin world was shaken by the news of MtGox, the world's largest bitcoin trading platform at the time, filing for bankruptcy protection (Hern, 2014). MtGox had reportedly lost 750,000 bitcoins (around US$412.5 million) belonging to customers, and over 100,000 bitcoins (around US$55 million) of its own money (Farivar, 2014). Newsweek's article, in which it claimed to have identified Bitcoin's creator, sparked some interest as well. The findings proved to be false, but created such a media frenzy that it even urged the "real" Satoshi Nakamoto to break years of silence by publicly denying Newsweek's claim (Southurst, 2014). The dominating discourse in Sweden was "Watch your back", due to a strong focus on the MtGox bankruptcy. There were also several occurrence of the "Shady business" and "The rise of bitcoin" discourses in Sweden during the quarter. Interestingly, "The rise of bitcoin" and "Government vs Bitcoin" were two most frequent discourses in the US, with the more alarming discourses "Watch your back", "Tulip mania" and "Shady business" on a shared third place.

After the eventful first quarter, the media activity calmed down significantly in both countries. In the second quarter, the number of articles published more than halved; seven articles were published in Sweden and ten in the US. Except for FEC legalizing bitcoin contributions to political committees, provided the amount is less than $100, no major bitcoin related

events took place ("Bitcoin History", n.d.). The bitcoin price regained some value as it moved from below US$400 to over US$600 ("Bitcoin Price Index", n.d.). The dominating discourse in Sweden was "Shady business", while "The rise of bitcoin" and "Funny stories" where most common in the US.

The third quarter had even less media activity, with ten articles published in Svenska Dagbladet and only one in Washington Post. The discourse "The rise of bitcoin" was found in half of the Swedish articles. In July, New York State released a first draft of BitLicense, its much-anticipated plan to regulate bitcoin and other cryptocurrencies. These regulations asked bitcoin businesses to store not only of the physical addresses of their customers, but also of anybody who sends their customers money using the bitcoin network, and received criticism for undermining the very foundation of bitcoin (McMillan, 2014). Further, Paypal announced that it would allow its merchants to accept bitcoin payments in September ("Bitcoin History", n.d.).

The media's lower interest in Bitcoin persisted in the end of 2014 with four Swedish and nine American articles published. "Shady business" was the dominating discourse in both countries, which is partly explained by the Silk Road 2.0 being shut down by the FBI and the alleged operator getting arrested on 6 November (Silk Road [marketplace], n.d.). The price kept rather steady below the US$400 mark throughout the quarter and the year ended with positive news for the bitcoin community as Microsoft announced it would start accepting bitcoin for some of its products ("Bitcoin History", n.d.).

3.3.4 2015 - 2016, March 1: The internal battle

The first three quarters of 2015 look quite similar to each other. The price moved between US$200-300 and the number of articles published each quarter remained around fifteen without particularly strong discourse trends. The most dominant discourse during these nine months was "Shady business", which appeared in more than a quarter of the articles. Other than that, no trends could be identified as the discourses covered most of the spectrum. Wall Street Journal revealed that the secretive startup 21 Inc had raised $116m in funding. This was the biggest funding round ever by a startup in the digital-currency sector, based on data from bitcoin news service Coindesk (Casey, 2015). Another major event in the bitcoin sphere was the "hard fork" that took place in August. A fork occurs when developers take a copy of source code from one software and start independent development on it. This fork, called Bitcoin XT, was created by Gavin Andresen and Mike Hearn as a way to opt out of bitcoin's

current 1MB block size limit, which restricts the network to a maximum capacity of seven transaction per second. This pales in comparison to Visa, which is designed to handle peak volumes of 10,000 transactions per second (Berners Lee, 2013b). According to Hearn, the project had come about as a result of frustration with the consensus-driven governance of Bitcoin Core (the current version of the bitcoin software). Unlike Bitcoin Core, Bitcoin XT would not run on consensus, but could be forked and modified by others. The changes would only come into effect if at least 75% of the miners adopted Bitcoin XT (Caffyn, 2015b). This fork would come to split the bitcoin community in two camps; the ones who supported Bitcoin XT and the ones who wanted to keep Bitcoin Core.

The debt crisis in Greece took a turn for the worse in June as the country became the first ever to fail to repay a loan to the International Monetary Fund. This led to a period of negotiations to reach a bailout deal and created uncertainty whether the country would stay in the European Union or not (Becatoros & Casert, 2015). Limits on cash withdrawals and money transfers were enforced by the Greek banks. The Coindesk reporter Perez noted that "though little evidence was found that Greek buyers were behind bitcoin's rising price, some commentators noted that the perception of the digital currency's utility as a hedge for the euro was convincing investors of its potential" (Perez 2015). Starting in August, bitcoin experienced a price rally as the value moved from around US$200 to US$465 in December.

In September, it was announced that nine of the world's leading financial institutions planned to work on the blockchain in collaboration, forming a consortium led by the startup R3 CEV. The consortium included JP Morgan Chase, Credit Suisse, Commonwealth Bank of Australia (CBA), UBS, Barclays, BBVA, State Street, Royal Bank of Scotland (RBS) and Goldman Sachs. Kevin Hanley, Director of Design at Royal Bank of Scotland, called the initiative an "effective way to deliver robust shared ledger solutions to the financial services sector" (Pick, 2015).

The fourth quarter had a higher activity from the media with eleven Swedish and fourteen American articles published. The Swedish articles were primarily focused on "Shady business" and "Financial disruption", whereas the American focused on "The rise of bitcoin" and "Shady business". As mentioned previously, the price more than doubled in the span of a few months with the steepest rally starting in the fourth quarter.

In early December, Wired and Gizmodo claimed to have identified Nakamoto as Craig S Wright, an Australian computer scientist and entrepreneur. However, subsequent reporting raised serious concerns suggesting that the Wright-Satoshi connection is nothing but a hoax ("Who is Satoshi Nakamoto? The creator of Bitcoin remains elusive", n.d.).[1] Previously mentioned R3 CEV continuously announced that it was adding more banks to their blockchain exploring consortium, adding up to 42 members in the end of the year. Among those where the two Swedish banks SEB and Nordea. In addition, R3 CEV also announced it had recruited Mike Hearn as Director and Lead Platform Engineer. Hearn is one of the world's leading experts in bitcoin and blockchain-based digital currencies and is one of the two developers behind the aforementioned Bitcoin XT fork (Parker, 2015; Higgins 2015).

2016 started quietly with only three articles published in Svenska Dagbladet and none in Washington Post in January and February. "Shady business" and "Death sentence" were the discourses present in this period of remarkably low media activity. The price, which moved around US$400 during the period, decline by 10% in a day after one of its lead developers, the previously mentioned Mike Hearn who recently had joined R3 CEV, said in a blogpost that he was ending his involvement with bitcoin and selling all of his remaining holdings because the digital currency had "failed" (Kelly, 2016).

3.3.5 Zooming out

Before discussing the reasons for the findings presented in the material above, let's zoom out and look at how the discourses have changed over these years. In figure 6, the frequency of all the discourses are presented per year (excluding 2016 since this study only contains data from the two first months of that year). This provides some interesting observations. First, there are a few discourses that seem to have peaked and started to decline. Both "Tulip mania" and "Government vs Bitcoin" has been declining since 2013 and "Shady business", "The rise of bitcoin" and "Watch your back" occurred less frequently in 2015 compared to the year before. The two discourses "Financial disruption" and "More than a coin" have, on the opposite, had a steady increase. Although it is too early to say with certainty that these changes represent a trend reversal, it could give us a hint about changing winds in the bitcoin and blockchain media reporting. If this proves to be true, we

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[1] Wright later came forward in May, 2016, and confirmed himself as the Bitcoin creator. He proved this by signing messages with cryptographic keys said to belong to Nakamoto in private sessions with a handful of media organizations and high profiled members of the bitcoin community. Both the founding director (Jon Matonis) and the chief scientist (Gavin Andresen) at the Bitcoin Foundation have backed up Wright's claim, but some encryption experts have dismissed his claims, saying that more robust cryptographic proof is needed (Fox-Brewster, 2016).

could expect to see a stronger focus on the potential effect that the technology might have on the financial industry, and also more interest in the blockchain and it's many potential applications besides bitcoin. Somewhat surprisingly, the word "blockchain" was only mentioned in seven articles (two Swedish and five US articles) in the data set used in this study. However, this might already have begun to change as the graph below indicates and some signs have already started showing of an increased interest for the wider applications of the technology. In 2015, Blockchain related news decorated the cover of both Bloomberg Markets' September issue (Robinson & Leising, 2015) and The Economist's November issue ("The trust machine", 2015).
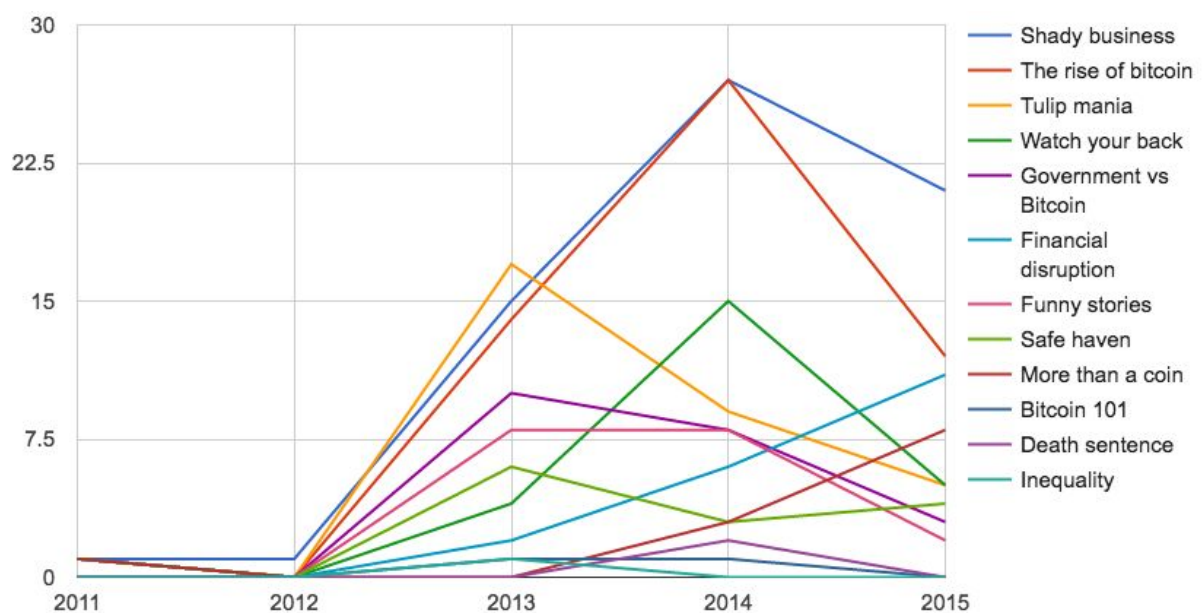

Figure 6. Development of discourses 2011-2015

4. Discussion

The findings presented in this study show that the creation and reinforcement of bitcoin and blockchain related discourses are affected by the development of bitcoin's exchange rate, significant events in bitcoin's surrounding ecosystem and previous discourses. We have seen how the price movements of bitcoin are correlated with both media activity and the general discourse trends. During price spikes, media activity increases and the period is usually dominated by a "progressive" discourse, e.g. "The rise of bitcoin". During steep declines, conservative and skeptical discourses like "Tulip mania" and "Shady business" take over. However, this is looking at the media activity at a general level. Even though the same notions are true in large at a "local" level, some indicative differences have been observed between Sweden and America.

4.1 The difference between Sweden and USA

Throughout the previous chapter, it has been noted that there is been a considerable difference between the Swedish and American media's reporting in the subject of bitcoin and blockchain. In summary, Sweden represents a more conservative and skeptical view, while the US media has adopted a more progressive and open approach.

4.1.1 Intertextuality

One possible reason for these two contrasting approaches might be found in the concept of intertextuality. According to Fairclough, language use always draws on earlier discursive structures as language users build upon meanings that have been established earlier (Winther Jørgensen & Phillips, 2002). The term intertextuality refers to how an individual text draws on elements and discourses of other texts. In the US, Time magazine published what Coin.co refers to as the first article about Bitcoin for a mainstream media organization. The article bore the title "Online Cash Bitcoin Could Challenge Governments, Banks" and refers to bitcoin as a revolutionary concept. "If it catches on, Bitcoin might pose a threat not just to governments, but to payment processors as well. And it's a story that's just getting started", Jerry Brito (2011) concludes. Thereby, Brito's article addresses regulatory challenges, as well as the potential of the technology and how it might disrupt the financial industry. In terms of the discourses discussed earlier, it touches on "Government vs Bitcoin", "Financial disruption" and "The rise of bitcoin". When Washington Post published its first article less

than two weeks thereafter, it followed suit with an article titled "Imagining a world without the dollar" (Eichengreen, 2011). Svenska Dagbladet's first article had the title "Droger kan bli ny nätvalutas fall" (eng. "Drugs may cause the fall of the new digital currency") (TT, 2011) and was published on the same day as the biggest Swedish daily newspaper, Dagens Nyheter, published its first article on the subject titled "Droghandel kan förbjuda ny valuta" (eng. "Drug trade may prohibit new currency") (Hallberg, 2011).

There is no way of knowing exactly how big effect these first articles have had on subsequent discourses in respective country, but providing that the concept of intertextuality holds, it has likely had some role in the divergence of the two countries' discourses. "Shady business", the overall dominating discourse in Sweden, follows in the lines of the first Swedish article, while "The rise of bitcoin" has been the most frequent discourse in the US. Another interesting observation is how strong foothold the discourse "Tulip mania" has had in Sweden as compared to the US. In Sweden it is the third most common discourse with 21 occurrences and in the US it is sharing a fifth place with only ten appearances. Drawing on the concept of intertextuality, one might ask if this could be a heritage from the dotcom crash. During the end of 1999 and the beginning of 2000, there was an unprecedented rise in the stock market. The valuations of IT companies skyrocketed, driven by unrealistic expectations of future growth. This period lasted until March 2001 and was then followed by a sharp and prolonged downturn that left many private investors in economic distress. The crash affected both the Swedish and the US stock market to a very high degree, decimating the value of companies across the board. However the Swedish citizens suffered a bigger hit judging by the ratio of private investors who was exposed to the stock market at that time. If you account for indirect investments in the stock market (e.g. through mutual funds), 80% of the Swedish population was exposed to the stock market at the time of the crash (Berg, 2007). The corresponding number for the US is about 60% (McCarthy, 2015). Both the boom and the subsequent crash gained major attention by the Swedish media, likely in part due to the significant involvement of the Swedish citizens. Media became one of the major culprits in the drama and journalists who had written overly positive articles about the companies that crashed were accused of causing the bubble (Linnala, 2010). The "Tulip mania" discourse could be a legacy from the traumatization of the dotcom crash and thereby a reproduction of the discourses nurtured in its aftermath.

Van Dijk, one of the most influential thinkers in the area of critical discourse analysis, argued that ideologies essentially are the abstract mental systems that organize socially shared

attitudes and that these indirectly influence the personal cognition of group members as they act as filters through which we see and interpret the world (Sheyholislami, 2001). Applying van Dijk's reasoning on the example of the diverging bitcoin discourses in Sweden and the US, one could argue that it is the manifestation of ideological differences that we have observed. The traumatization of the dotcom crash has created socially shared attitudes which link e.g. disruptive innovation and volatile price movements with negative outcomes in the Swedish society. That could be one explanation to why the discourse "Tulip mania" has been so actively cultivated in Swedish media, but not in American.

4.1.2 View on innovation

Another possible explanation for the differences could be found in differences in the consumer demand for innovation. The international index of Innovation Confidence is developed for and funded by the Institute for Innovation & Information Productivity (IIIP) and measures the degree to which individuals are willing to "engage with and perceive benefit from new products or services, or products or services that embody new technology" (Levie, 2009). In the report, it was found that Innovation Confidence is high in countries with strong traditional values, like South American countries, the United States and Ireland, and low in countries where secularism is valued, such as the Netherlands, Finland and Japan. Although Sweden was not in the report, it is a reasonable assumption that it would be in the latter group with secular values. Sweden is often mentioned as one of the most secular countries in the world. One sign of the high level of secularization in Sweden can be found in the low belief in God. 26% of Swedes claim they believe in God, compared to 90% of Americans (Zuckerman, 2008). One might ask why Innovation Confidence is higher in countries with strong traditional values. In the report, Levie (2009) reasons that the social conditions that prompt enthusiasm for innovations are not necessarily the same as those that stimulate innovation. "Individuals are constrained by community pressure to conform in countries with traditional values, and new products and services are thus more highly valued as one of the few sources of novelty and freedom of choice in such environments", argues Levie (2009) in the report. Could it be that embracing new innovations, such as bitcoin, is one of the few expressions of freedom in countries with traditional values such as the US, resulting in the media taking a more open and progressive approach in their reporting? This approach could also be a symbol of aspiration, or of apparent conformity with society's aspirational norms, although the individuals might not be aspirational themselves.

4.1.3 Culture

Research in the field of cross-cultural psychology supports the notion that aspiration could be an influencing factor. Looking at Hofstede's cultural dimensions theory, the biggest differences between Sweden and the US is found in the Masculinity Versus Femininity dimension, where the two countries are found on opposite sides of the scale. According to one of the most comprehensive studies of how values in the workplace are influenced by culture, Sweden is considered a highly feminine culture, scoring five on the 100 point scale, while USA is considered masculine with a score of 62 (Hofstede, Hofstede & Minkov, 2010). The fundamental issue of the Masculinity Versus Femininity dimension is what motivates people; wanting to be the best (Masculine) or liking what you do (Feminine). USA could therefore be regarded as more "aspirational" with a culture that favors striving for success more than Sweden, which has a culture that promotes harmony and balance more. This could provide some explanation to why a potentially disruptive innovation like bitcoin is embraced more by the US than by Sweden. Disruptive innovation entails major change. "The new ways of playing the game are in conflict with the established ways", as Charitou and Markides (2002) put it. The Swedish culture is based around the term 'lagom', which is an adjective describing something that is neither too much, nor too little. This focus on balance and moderation might run counter to the concept of disruption, which is often associated with disorder and revolt against the status quo. The American society, on the other hand, is rather driven by competition, achievement and success, with success being defined by the "winner". This is more aligned with disruptive innovation, as the competition and achievement is more related to progress, while balance, harmony and 'lagom' favors conserving what is, or at least taking changes in a moderate pace.

However, another of Hofstede's cultural dimensions suggests the opposite. The dimension Uncertainty Avoidance addresses the way that a society deals with the fact that the future can never be known. Should we try to control the future or just let it happen and embrace change? Sweden scores 29 on this dimension, which means that it has a very low preference for avoiding uncertainty. This implies that the members of the Swedish culture don't feel threatened by ambiguous or unknown situations. With this follows a high degree of acceptance for new ideas, innovative products and a willingness to try something new or different. USA scores higher, 46, on this dimension, which suggests a higher degree of aversion towards innovation (Hofstede, Hofstede & Minkov, 2010). Although the field of cross-cultural psychology fails to provide unambiguous evidence explaining the differences

found in the study, it does provide an interesting basis for discussion and a potentially fruitful area for future research.

4.2 Implications

Media's ability to shape public opinion has been suggested time and time again. By promoting a particular discourse, angle or frame, media can alter how an issue is understood and thereby shift public opinion. The power of shaping public opinion makes the media an interesting object of investigation, especially in the case of a potentially disruptive innovation where network externalities are present. These two terms, "disruptive innovation" and "network externalities", are keywords in the sentence and deserve some extra attention. We will start with the latter before moving on to the former.

A monetary system can be viewed as a network, where the benefit of using the network rises with the number of participants (Weber, 2014). This makes a currency a good example of the dynamics of network externalities, meaning that the value of the currency depends on the number of others using it. For example, if there is only one person using a currency, it has no value since that person has no one to trade with. On the other hand, as soon as someone else starts using and accepting the currency, that person can start using it to buy goods and services from this other person, and thereby it has suddenly gained value. Network externalities create a reinforcing feedback loop; the more often a currency is used as a medium of exchange, the more liquid it becomes and the lower the transaction costs get, leading, in turn, to the currency becoming even more attractive to new users (Elwell, Murphy & Seitzinger, 2013). The same is true for the opposite; the less often a currency is used as a medium of exchange, the less liquid it becomes, etc. This means that the media, through its power of shaping public opinion, can have a significant effect on the probabilities of success for an innovation such as bitcoin because of its sensitivity to and dependence of mass adoption.

Bitcoin has been referred to as "potentially disruptive" several times in this paper. The term "disruptive" can be used in either in an academic or non-academic way. "A disruptive innovation (i.e., one that dramatically disrupts the current market) is not necessarily a disruptive innovation (as Clayton Christensen defines this term)", in the words of Schmidt and Druehl (2008). So how about bitcoin and blockchain? In what sense is it disruptive? As we saw in figure 4, bitcoin has been described as disruptive by the American media at several occasions. In these instances, it has come without any reference to Christensen's

theory of disruptive innovation or research papers in that field. It can therefore be assumed that it is used in the colloquial way, referring to bitcoin's potential to dramatically change or disturb the current order of one or several industries. However, both bitcoin (McDougall, 2014) and the blockchain technology (Evans, 2014) has also been recognized as displaying the characteristics of disruptive innovation in the academic sense. Regardless which way the term is used, it stands clear that bitcoin has could have a major impact on several industries, for example the financial industry. The fact that 21 cases of the discourse "Financial disruption" was identified in this study, making it the sixth most common discourse, reinforces this notion. Bitcoin has also been described as a "technological development of similar magnitude and potential" as the internet (Folkinshteyn, Lennon & Reilly, 2015), further strengthening the image of bitcoin as a technology that could have a significant impact on the world.

Andreessen, who is one of only six inductees in the World Wide Web Hall of Fame, has proclaimed that it is the technology with the potential of providing the fastest and most significant positive impact for people living in the world's poorest countries, for example through lowering transaction fees for international remittances. These fees often amount to 10%, sometimes more (Andreessen, 2014). By removing the need for a trusted third party, Bitcoin could reduce that fee it to an fraction of what it is today. Just imagine what difference that would make in a country like Tajikistan where personal remittances has accounted for 43-50% of the nation's GDP during the last two decades (Personal remittances, n.d.).

Given media's ability to influence bitcoin's probability of success and the potentially disruptive power of the technology, the results of this study could be of interest for a number of actors. Those responsible for creating, reinforcing and changing the prevalent discourses might find it interesting to see how some discourses are given more space and the effects it could have. However, media's role is complex as they "simultaneously may act as constructors of unique frames as well as a conduit for the public communiqués of others", as Callaghan and Schnell (2001) phrase it. Although journalists have control over mass media discourse, it would be unfair to make them solely accountable. Other actors, e.g. policy makers and financial institutions, have likely also affected the discursive practices. Two examples of sponsored articles were found in the Swedish sample. In both of these cases, the Swedish bank SEB had paid for the editorial content. Granting that two articles is not a lot, one can only speculate how much indirect or non-visible influence (e.g. through lobbying) that the financial industry has had on the news production.

When assessing the potential implications of the study, taking a step back and looking at the aims of critical discourse analysis (CDA) will provide a sound basis for the forthcoming discussion. According to van Dijk (1988), CDA aims to reveal the discursive sources of power, dominance, inequality and bias through studying and analyzing written and spoken texts. By looking at how these sources of discourse are maintained and reproduced within specific social, political and historical contexts, we can observe how patterns of particular discourses systematically construct versions of the social world. Or as Fairclough (1992) proposes, it allows us to "to investigate how such practices, events and texts arise out of and are ideologically shaped by relations of power and struggles over power". CDA is not purely descriptive, nor is it neutral. It is interpretative and critical, and it takes opposition against those groups and institutions who abuse their power, and in solidarity with dominated groups by "discovering and denouncing discursive dominance, and by cooperating in the empowerment of the dominated" (van Dijk, 1995). Hence, the sole action of uncovering the discursive dominance, which in this case risk suffocating the emergence of a new technology, carries value in itself. It is important to keep in mind that journalists, in the words of Callaghan and Schnell (2001), "frequently exploit the personality, sensationalism, drama, and conflict of stories, thereby downplaying the larger social, economic, or political picture" due to the ratings-driven environment in which they reside. Therefore, practitioners within the bitcoin and blockchain space need to pay close attention to current discourse trends, either for the sake of taking advantage of the ones that are present or by trying to exercise influence in order to change them. Although it is too early to call it a trend, figure 6 shows a potential discursive trend change in the direction of an increased interest for the wider applications of the technology. Using and reinforcing that momentum, and trying to steer away from the sensational and skeptical discourses, is a firm action that bitcoin advocates and practitioners could take based on the findings in this study.

It is important to remember that a news report is not just a reproduction of opinions and events, but a factor that shapes the world we are in. CDA often focus on social inequalities and injustices, areas where the power dynamics are clearly distorted. "Much work in CDA deals with the discursively enacted or legitimated structures and strategies of dominance and resistance in social relationships of *class, gender, ethnicity, race, sexual orientation, language, religion, age, nationality or world-religion*", according to van Dijk (1995). Phillips, Sewell and Jaynes (2008) have noted that discourse analysis has become increasingly common in many areas of organization and management research, but that the same level

of influence has not yet made its appearance in strategy research. The same is true in the academic area of innovation in general and cryptocurrency in particular. In that way, the study also adds to the body of literature in the field of critical studies of media discourse, and shows the significant potential of CDA to inform innovation management research.

Another important implication is that of challenging and making people aware of existing power structures. Bitcoin is a decentralizing technology, and thereby it challenges organizations and institutions that have been allowed to reign free from any disturbances. In the words of Roio (2010), "money has been too important to be questioned and its evolution too natural to be interfered with by the masses. It is a system that permeates most if not all societal interactions, at least in the Western world, so we assume it to be neutral and, in any cases, we will never question its existence". Suddenly, when a new technology emerges that disturbs the current order and challenges existing power structures, it will have consequences. The advocates of the innovation will fight for its diffusion, while the challenged actors will fight for retaining the current order. This power struggle can be identified in the news reporting, as demonstrated in this thesis. "It is clear to many how unjust monopolies are often dominating various contexts, curbing the possibilities of innovation that are in the hands of younger generations", as described by Roio (2010). This study contributes by educating the reader about the social dynamics that are involved in the emergence of a disruptive innovation and the role that news media plays and will hopefully assist in evening out the battlefield.

4.3 Limitations

A common critique against qualitative studies is that the quality of research is heavily dependent on the individual skills of the researcher and is therefore more easily influenced by the researcher's personal biases and idiosyncrasies. CDA is not exempt of this critique and thus, it constitutes an obvious limitation of this study. However, Fairclough (2003) argues that textual analysis is "inevitably selective". We choose to ask certain questions about social events and texts, and exclude others. Fairclough's general point is that there are always particular motivations for choosing to ask certain questions about texts and not others. This makes the study subjective per definitions, since the motivations are the researcher's. However, a textual analysis cannot be objective, if we by that mean that the analysis simply describes what is 'there' in the text without being biased by the subjectivity of the analyst. As our ability to know what is 'there' is limited and partial, and the questions we

ask necessarily arise from our subjective motivations which go beyond what is simply 'there', subjectivity is a precondition for an analysis of this kind.

The sample used in this study represent another limitation worth mentioning. It is hard to determine whether the conclusions drawn are related to the specific publications or if they are more generalizable. In an ideal study, all relevant daily newspapers, as well as more niched publications for example within finance and technology, would have been included. This was however not possible due to the limited scope of the study. Future avenues of research could thereby reproduce this analysis, but with an alternative selection of texts that takes the diversity of the Swedish and American press and media landscape into account. Also, it would have been interesting to widen the scope and include other countries in order to learn more about what drives the differences in how bitcoin and blockchain is represented in the media. Furthermore, it would have been valuable to investigate both the production and consumption of the texts in greater detail, as this would have provided greater insights into what drives the discourses and how it affects readers in practice. Increased insight into the production perspective could have been achieved in part by studying the journalists to find patterns to their motives, possibly by conducting interviews. The consumption perspective could have been accounted for by studying reader reactions on social media and also by surveying or interviewing people from respective country to see how the discourses have been manifested and interpreted. These additions could have benefitted the study and is something that might be an interesting area for future research to look into.

5. Conclusion

In this study, daily news media's role in shaping the discourse of a new technology, bitcoin and the blockchain, has been investigated. In order to shed some light on how this relates to the adoption of the technology and deepen the insight into how discourses are created, reinforced and changed, 203 articles from two daily newspapers, the Swedish newspaper Svenska Dagbladet and the American Washington Post, have been compared.

The research question of the thesis ("How has the bitcoin/blockchain discourse developed over time and how does it differ between Sweden and the US?") was answered by conducting a critical discourse analysis according to principles laid out by Norman Fairclough and other influential scholars adhering to the social constructivist school of thought. In the study, it was found that the movement of bitcoin's exchange rate, significant events that are directly or indirectly related to bitcoin and blockchain, as well as previous discourses have been strong driving forces affecting how the discourses have changed over time. It is clear that the price movements of bitcoin are heavily correlated with both media activity and the general discourse trends. When the price goes up, so does the media activity - usually following a period dominated by a progressive discourse like "The rise of bitcoin". On the other side, when the price drops, conservative and skeptical discourses like "Tulip mania" and "Shady business" become more prominent. The most noteworthy findings, however, appear when Sweden is compared to the US.

Already at the level of the text, when looking at which words occurred more frequently in the articles in respective country, it was possible to distinguish a difference in the view of bitcoin and blockchain. Except for commonplace words and words that you would expect in such a context (e.g. currency and business related words), the Swedish journalists used more words related to crime, while the American articles contained a substantially lower degree of "ordinary" words, and more words related to innovation, regulation and finance. When analyzing charged words, similar observations were made. The Swedish articles contained many charged words portraying bitcoin as a speculative bubble, scam or pretend currency, while the main theme among the charged words in the American sample was innovation related (although it also contained words related to financial bubble and illicit activities). A pattern of a skeptical Swedish approach and an open American approach towards bitcoin started to emerge and was reinforced by the analysis of the tone of the articles. It showed

that, while the ratio of neutral to non-neutral was almost identical, the American articles tended to portray bitcoin positively more often and negatively less frequently compared to Sweden.

This tendency was even further strengthened when comparing the discursive practices in each of the two countries. One sign of this can be identified when comparing the most frequently occurring discourse in respective country, which is "Shady business" in Sweden and "The rise of bitcoin" in America. Also, when grouping the discourses in two groups, conservative (e.g. "Shady business", "Tulip mania" and "Watch your back") and progressive (e.g. "The rise of bitcoin", "More than a coin" and "Financial disruption"), it was shown that the ratio of progressive to conservative discourse was 0.76 for Sweden and 1.61 for the US. So what are the reasons to why the US media has adopted a more open viewpoint towards bitcoin while the Swedish media has a more skeptical stance on the subject?

The answer to that question could lie in the concept of intertextuality, meaning that an individual text draws on elements and discourses of other texts. The very first article published on the topic of bitcoin in a mainstream US publication had a clearly progressive approach, while the first article in Swedish newspapers were about how drugs would cause the fall of bitcoin. The Swedish discursive practice could also be traced back to the dotcom crash, when IT related stocks plummeted after being raised to the skies by the news media. Another source of explanation could be the differing views on innovation. It has been shown that Americans are willing to "engage with and perceive benefit from new products or services, or products or services that embody new technology" (Levie, 2009), while people in countries with secular values, like Sweden, generally have a lower degree of confidence in innovation. Finally, cultural differences have been discussed as a potential cause of these differences. However, both cultural factors that support and contradict the findings have been identified, using Hofstede's cultural dimensions theory. For example, the US is considered a masculine culture that favors striving for success to a greater extent than Sweden, which has a culture that promotes harmony and balance more. Arguably, an aspirational culture would be more open to disruptive innovations than a culture that wants to keep things in balance. On the other hand, Sweden has a lower uncertainty avoidance than American and should thus have a lower degree of aversion towards innovation.

The study's findings become particularly interesting in light of what we have learned about bitcoin's disruptive potential and the dynamics of network externalities. Due to network

externalities that make bitcoin especially vulnerable to public opinion, the media is in a powerful position where it could have a significant effect on the probability of the technology's future success. This position becomes even more intriguing when considering the impact that a disruptive technology such as bitcoin could have on the world, for example by lowering transactions fees on international remittances and thereby vastly improving the economic conditions for some of the poorest countries.

As mentioned earlier in this paper, there is an enormous "gulf between what the press and many regular people believe Bitcoin is, and what a growing critical mass of technologists believe Bitcoin is" (Andreessen, 2013). This gulf has been the focal point of this study and, by conducting a critical study of Swedish and US media's reporting on bitcoin and blockchain, this thesis has revealed some of the discursive sources of power, dominance, inequality and bias that surround the world of bitcoin. Also, investigating how news media has maintained and reproduced discourse within specific contexts, has allowed us to observe how patterns of particular discourses systematically construct versions of the social world. These are important observations as we are dealing with a situation where the emergence of a new, promising technology is on the line.

Further, this study offers insights into the diffusion dynamics of radically innovative technologies. Although it is difficult to establish a cause and effect relationship with certainty, this study points to the fact that the discursive activities of the news media affect the social context of the technology, which in turn affects the diffusion of the technology. One should not take these findings as 'the one and only' answer to why disruptive innovations become adopted or not, but rather expand the view by adding discursive practices and social construction as a piece of the puzzle. Inherent functional and economic advantages will by no means play an essential role in an emerging technology's diffusion, as do macroeconomic factors, industry dynamics and local regulations. However, the social embeddedness of the technology adoption process plays an integral part and should be accounted for, as been pointed out earlier. This particularly applies in cases where network externalities come into play, as this makes the technology even more vulnerable to public opinion.

By shaping our 'schemas' and 'scripts' related to the new technology, news media control how we interpret the technology and thereby affect the adoption rate of it. In this study, it was found that the Swedish media has adopted a skeptical approach, focusing primarily on

volatility, risks and illicit activity, while the US media has a more progressive approach with focus on innovation and regulatory challenges. To apply the concept of media's ability to shape our understanding and thereby affect the adoption of a technology, let's take the example of merchants considering what payment options to implement in their business. While making the choice, they will apply the available set of understandings to the options they are looking at. When Swedish merchants consider bitcoin or blockchain based solutions, they will, consciously or subconsciously, think "risky" or "shady" to a greater extent than the American. Needless to say, you don't want your payment options to be associated with being risky, which leads to many merchants avoiding bitcoin as a means of payment. On the other hand, American merchants will probably associate bitcoin with a growing and promising new technology, at least much more so than in Sweden, leading to a higher adoption rate. These dynamics may be what has been observed in the studied countries, where the US has seen a higher rate of bitcoin adoption among merchants compared to Sweden. The social constructivist approach applied in this study provides a lens that allow us to better understand the dynamics of this process and to take the early observations made in this paper even further.

This study stands in the line of research pointing at the opinion shaping power of the media. "If the text frame emphasizes a variety of mutually reinforcing ways that the glass is half full, the evidence of social science suggests that relatively few in the audience will conclude it is half empty", as Entman (1993) eloquently phrases it. And by shaping public opinion, the media is also shaping the world. Therefore, media's polarization of bitcoin should be taken seriously. Whether bitcoin and blockchain is presented in the news as a facilitator of drug trade or a disruptor of the financial industry could play a significant part in the adoption of a technology that has the potential to change our conceptual understanding of trade, ownership and trust.

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