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# Chaos Theory and Butterfly Effects in Times of Corruption and a Bank Crash in 1886: The Case of Arendal (Norway) Illustrated through a Regional-Globalized Model

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Additional information is available at the end of the chapter

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## Abstract

The chapter focuses at corruption practices in the bank crash in the town of Arendal in Southern Norway in 1886 using insights from chaos theory and butterfly effects as theoretical frameworks. Using secondary sources from reports and documents, we illustrate that the bank crash can be explained by corrupt practices of the business and political elite involving manipulation of accounting figures, financial guarantees given in closed and secret circles, and banks giving credit without sufficient security. These activities led the town into a large bank crash in the fall of 1886 having negative effects on business performance, large unemployment, and falling living standards for decades illustrated through a regional-global model discussed in the chapter. The findings can be of interest when studying other bank crashes such as the global bank crisis setting in fall 2008 having negative consequences for leading OECD countries up to present times.

**Keywords:** Chaos theory, butterfly effects, corruption, shipping, bank crash, economic history

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## 1. Problem statement

*The problem statement is defined as how the bank crash in Arendal (Southern Norway) in 1886 can be explained by corrupt practices from the business and political elite in the town.*

## 2. Plan for the chapter

We ask if the bank crash in Arendal (Norway) in 1886 can be explained by corrupt practices from the business and political elite in the town. For this purpose, we use a regional-global organizational model as illustration. Chaos theory is used to illustrate corrupt practices using the theory in an untraditional way focusing on bounded rationality as a part of humanistic research from organizational thinking. Thereafter, general principles for the research project are introduced focusing on chaos theory and how reports and documents are used as secondary sources in the data collection process. Findings confirm that corruption took place in the bank crash in 1886 initiated and implemented by the business and political elite in the town. The problem definition is confirmed leading us to believe that the study might be used as a candidate to explain other bank crashes such as the global bank crises setting in fall 2008 having negative effects up to this day with no clean-cut suggestions for how the bank crisis can be solved.

## 3. Introduction: the Norwegian shipping industry, a regional-global model, and the use of chaos theory

### 3.1. Norwegian shipping expansion in the 1800s

*The historical background.* Norwegian shipping has a long and proud history in international trade. From the Viking times, it has transported goods from the long coast to Greenland and the Southern Europe stimulating trade and economic growth.

Holland became a large economy in the 1500 and 1600 centuries. Norwegian timber was used to build Amsterdam and Rotterdam as large cities. Trade leads to a large immigration from Norway to Holland, and the opposite [55]. United Kingdom was also a leading player in international trade meaning that new trading routes for Norwegian ships were established and developed.

The First Industrial Revolution, which spanned from the mid-1700s to the mid-1800s, was largely driven by the drivers of international trade in few commodities (particularly cotton). Most businesses tended to remain small and to employ as little fixed capital as possible. The chaotic markets of this area led economists such as Smith [48] to describe market forces as an “invisible hand” that remained largely beyond the control of individual firms, leading to less interest for strategic thinking.

The Second Industrial Revolution, which began in the last half of the nineteenth century in the United States and rapidly expanded to Europe, saw the emergence of strategy as a way to shape market forces and affect the competitive environments. In the United States, the construction of the main railways after 1850 made it possible to build mass markets for the first time [4]. In some capital industries, such as shipping and banking which is the empirical

setting of this research, Smith's "invisible hand" can be supplemented by what Chandler [5] termed the "visible hand" of professional managers.

*Norwegian shipping from 1814 until 1849.* Norway got her own constitution, the 17th of May 1814. After the poor country was significantly hurt by the Napoleon War (1807–1814), Norway gradually managed to catch up in the capitalist race far behind super powers like United Kingdom and United States basing their economies on decentralized organizational solutions from the First Industrial Revolution up to modern times ([4, 5, 52, 58]; 105) formalizing the use of explicit and tacit knowledge putting economic growth in the center of attention. The fundamentals were laid for an expansion in the shipping industry with Arendal, one of the leading Norwegian towns.

*Norwegian shipping expansion from 1850 until 1886 with a focus on Arendal.* The Norwegian shipping industry expanded rapidly from 1850 until 1874. There was a great demand for products such as timber from Arendal when the United Kingdom was an engine of economic growth in Europe, leading to possibilities for business people to take advantage of both economics of scale and economics of scope [4, 5].

Arendal took advantage of the new business environment and expanded the fleet rapidly. From 1850 until 1870, Arendal's fleet increased by 260% while it barely doubled from 1810 until 1849 [56]. Arendal was the largest shipping town in Norway.

In 1875, Arendal was the richest town in Norway mainly due to an expanding shipping industry ([22], p. 156).

United Kingdom decided to drop the Navigation laws in 1849 as a result of more trade stimulating trade in many parts of the world. Lack of protective steps from United Kingdom meant that it opened up markets also for small countries like Norway. The change in attitude from United Kingdom meant that Norway and Sweden were regarded as one country being involved in a union until 1905 when Norway got her independence. This made trade much easier stimulating shipping between Norway and the United Kingdom [56].

In 1850, Norway had a fleet of 284,000 dead weight tons and 1156 ships mainly consisting of sailing ships. The number of crews in the shipping industry this year consisted of 19,000 persons. Twenty-eight years later (1878), the number of dead weight tons was 1.5 million. The number of crew working in the shipping industry was about 62,000 persons. For ships, this meant a yearly growth rate of 5.7%, for the crew an annual growth rate of 4.5% ([22], p. 136).

In the time period 1850 until 1880, Norway went from number eight in the world of shipping to number three in the world, with USA and United Kingdom in the front, a remarkable achievement given the small size of the country ([22], p. 136).

Economic and political turbulence often have positive effects on shipping markets. The Crimean War (1853–1856), the American Civil War (1861–1865), and the Prussian War ("The

War of 1870") made it possible for the shipping industry to achieve handsome economic returns, a fact shipping people learn early in their careers often told by the elderly generation as an illustration as to how tacit knowledge is transferred [43].

### 3.2. Toward a regional-global organizational model in shipping with Arendal as the empirical setting

Arendal had a strong global orientation of her shipping activities paying attention to changing business regimes, political changes, and social unrest. The shipping industry is dynamic where profits are dependent upon economic, political and social changes (i.e., Blandley, 2000).

Flexibility may be the only option in a changing business landscape [46]. In order to adjust to changing market situations, it is necessary to disregard and even to overturn existing knowledge. Creating new knowledge requires theory building and conceptualization, experimentation and testing, involving successes as well as mistakes and dead ends [29], statement that many shipping executives might agree with.

Trade from Arendal was dependent upon a regional approach from Southern Norway. We build our reasoning based on research conducted by Drucker [10], Handy [18], Bartlett and Ghoshal (1995), and Syvertsen [50, 51] relating regionalization to globalization.

A study of a regional – global model can have a certain degree of validity when studying Arendal in the years from 1850 until 1885. Globalization opens up trading opportunities and the same time as regionalization can support personal and business identity and stimulate trade. It can be wise to have a mental home in global business.

Studies of regionalization have become a popular research approach in the last decades consisting of specialized production, close cooperation, personal contact, and a strong culture, well-defined geographical areas as elements ([39]; Cappchi, 1990).

In the world of regionalization, the value to craftwork becomes an asset in itself as it helps business firms offer tailor-made solutions to carefully targeted market segments (Boynton, 2000). The time of mass production and mass distribution is over, putting regional identity in the center for ship building, ownership over ships, and the operation of the ships, as illustrated in this study using a historical study of the town Arendal in Southern Norway as the empirical setting. In many ways, the idea of market novelty is consistent with the classic market position of differentiation, wherein a firm tries to garner a premium price with a product or a service that customers regard as unique and customized [40].

Business practices often have their own dynamics where contributions from the academic world can give limited insights. Management can thus in many situations be more regarded as an art than a science, by Mintzberg [36] called crafting:

*"Craft evolves traditional skill, dedication, perfection through mastery of detail.*

*What springs to mind is not so much thinking and reason as involvement, a feeling of.*

*intimacy and harmony with the materials at hand, developed through long experience and commitment. Formulation and implementation merge into a fluid process of learning through which creative strategies evolve."*

### 3.3. Chaos theory used in the shipping industry

*Why we use chaos theory in this study?* Due to the dynamic character of the shipping industry, well-established theories such as forecasting and behavior patterns of clients seem to change rapidly. Economic turbulence coupled with accelerating globalization, continuous improvements in technologies, and deregulation of markets have a profound impact on business firm's competition. As a consequence, firms have to organize their operations in new ways and use new mental models when analyzing a changing business environment.

Chaos theory is an approach with a relatively long history with most contributions from natural science, less with a focus on economics and business administration. Still, it can be regarded as a flexible theory chosen as the theory to use in this research project.

*What is meant by chaos theory?* Chaos theory is a study of complex systems, nonlinear dynamic systems, dislodged from its steady-state condition by triggering events, where outcomes can lead to both harmony and increased tensions [20]. Chaos describes a situation where the system is dislodged from its steady-state condition by triggering events [33]. It involves regrouping of elements of a system, for which a new order eventually emerges arising spontaneously from the internal structures [16].

It is possible that economic models can be improved through the application of chaos theory by studying and applying which factors can influence processes leading to economic growth or decline. It has shown to be a difficult task. The results in the field give mixed results in part due to confusion between specific tests for chaos and a more general test for nonlinear relationships [3].

Chaos theory can in our point of view, in contrast to much as the writing on chaos theory, be judged from a humanistic perspective in the way that the concept of bounded rationality [47] is central. This logic breaks with neoclassical economic thinking assuming that actors are rational which often is hard to believe analyzing our daily lives and taking a critical look at strategic decisions such as job changes and buying a new home?

We believe that actors are unable to take decisions in a completely rational manner due to both mental limitations and information-processing constraints [12]. Decisions from the practical world of business are often so complex to comprehend and therefore it is difficult to judge the different alternatives when a decision has to be made. Relatively simple and heuristic decision rules, rules of thumbs and easy procedures and routines are used in order to respond rapidly to a changing shipping market where it can look like that the only constants are uncertainty and short-term competitive advantages (Spencer, 1996).

*Why butterfly effects are important in chaos theory?* The field of chaos theory was pioneered by Lorenz [33] who studied the dynamics of turbulent flows. It is when a system is in a state of chaos that it is most vulnerable to butterfly effects, which states that small causes can have large effects [33].

This metaphor explains that a butterfly in Amazon can, certainly theoretically, cause a swelling ripple that, in turn, can lead to a gigantic dust storm in Texas. Lorenz [33] discovered the



effect when he observed the runs of a weather model with initial condition data that behaved in a perceived inconsequential manner that failed to reproduce results in a consistent manner. The butterfly effect presents a challenge of prediction since initial conditions for a system can never be known to complete accuracy.

On the other hand, scientists have since the contribution of Lorentz [33] argued that the weather system is not as sensitive to initial conditions as previously believed [2, 34]. Research has suggested that the Lorentz equilibriums are highly simplified, seen from a natural science point of view [38].

## 4. Closer description of the research project

### 4.1. The research design

The objective of the research is to analyze if corruption took place in the bank crash in Arendal in the year 1886 caused by the business and political elite.

In order to draw conclusions, we had to find indicators of corruption using reports and documents as sources in the data collection process. This way of approaching research is consistent with the argument to search for relationships that repeat themselves [11].

Kuhn [29] introduced the concept of paradigm shift in order to focus on changes in thinking that can take place over time. He defines a paradigm as a “scientific umbrella” that might manage to unify theories that might seem to be contradictorily. Chaos theory is new enough and flexible enough so that it can be used for a study of the bank crash in Arendal in 1886, where more research is needed.

According to Howe and Eisenhardt [23], the research questions should drive the research design and not the opposite. Platt [41, 42] warns about becoming “method oriented” rather than “problem orientated.” We have played attention to these advices by having an applied approach on the current study. For us, theory has no value in itself. Theory should confirm or reject the claim found in the problem statement.

Validity refers to the relevance of measures and variables. Cook and Campbell [6] present four types of validity: internal, external, statistical, and construct validity. In an ideal world, one should design one’s study to ensure that all forms of validity are ensured. However, this is not always possible in social science. Internal validity refers to causality between two variables, whether variable A has an effect on variable B. In this research chapter, we ask if there is a relationship between corrupt practices and the bank crash in Arendal in 1886.

According to Calder et al. (1981), generalizability can be distinguished by effect application and theory application. The two types of application lead to different priorities when designing studies. This study belongs to the first category; this means that the study is more practical oriented than theory driven. We ask if the study can be of interest for other bank crashes. We are particularly interested if the current study can be of interest when studying the global bank crisis from 2008 until the current times.

## 4.2. Data collection through analysis of records and documents

Since this is a historical study with implications for bank crashes in recent decades, it was necessary to research and draw conclusions from both records and documents ([32], p. 277).

In this research project records included banking statements and shipping contracts. Documents are prepared for personal rather than for official reasons and include diaries, memos, letters, field notes, and so on. Documents, closer to speech, require more contextual interpretations. Records may have local uses that may become distant from officially sanctioned meanings [7].

It has often been assumed that written texts provide a “truer” indication of original meanings than other types of evidence. Indeed, Western social science has long privileged spoken over the written and the written over the non-verbal [7]. Somehow, it is assumed that the words get closer to the minds ([32], p. 277).

However, as Derrida [7] has suggested, meaning does not reside in a text but in the writing and reading it. As the text is reread in different contexts, it is given new meanings, often contradictory and always socially embedded, giving room for subjective interpretations of observations and findings.

## 4.3. A flexible research approach

Given the explorative way the research took place, we preferred to use a flexible research approach. As the study progressed, a similar process outlined by Meyer et al. [35], whereby concepts and research methods were constantly rethought and updated following analysis and findings, followed. Similarly, [24], 99) argued that the researcher has to modify theoretical frameworks during the life of the project.

It has been recognized that the conventional research cycle conceptualization, design, measurement, analysis, and reporting do not hold well in hyperturbulent environments (Chiaburu, 2006, 744). In order to understand organizational phenomena at a more than superficial level, the scholarly literature has called for a more in-depth process research [30].

In our research, we consider change to be a continual process of becoming, rather than a succession of stable states. This viewpoint suggests that social reality is not a steady state, but rather can be regarded as a dynamic process (Beech and Johnson, 2005). Thus, there is a need to observe events and interactions as they unfold over time. This approach suggests that dynamic construction, deconstruction, and reconstruction of meaning make sense over time as contextual forces evolve and as organizational restructuring takes place.

An interpretive approach is regarded as suitable for the investigation of complex and poorly understood phenomena [9] since such an approach implies that the researcher’s task is to “make sense of local actors’ activities” ([49],1426). Thus, the important criterion for assessing interpretive data analysis is its ability to provide reasonable insights into phenomena that demand deeper understandings. Empirical findings illustrate, rather than validate, the theories they reflect [1].



#### 4.4. Data collection through records and documents

We collected data through secondary sources using records and documents. We collected these data from October 2016 until June 2017, using the Kuben (Aust-Agder Museum and Achieves) in Arendal (Norway) as the main site in the data collection process.

Records can include banking statements and shipping contracts, and intentions of going business. Documents are prepared for personal rather than official reasons and include diaries, memos, letters, field notes and so on. Documents, closer to speech, require more contextual interpretations. Records may have local uses that may become distant from officially sanctioned meanings. ([32], p. 277).

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However, as Derrida [7] has suggested, meaning does not reside in a text but in the writing and reading it. As the text is reread in different contexts, it is given new meanings, often contradictory and always socially embedded. Thus, there is no “ordinal” or “true” meaning of a text outside the specific historical context. In a similar fashion, different types of texts have to be understood in the context of their conditions of reading and production [57].

### 5. The bank crash in Arendal (southern Norway) in 1886 explained using insights from chaos theory and butterfly effects

In order to analyze the bank crash, we will distinguish between the years before the crash (1872–1886), the crash itself in 1886, and the time after the crash.

#### 5.1. The time before the crash 1872–1885: butterfly effects illustrate the coming harder economic times

*The traditional view on the crash.* The traditional approach to the decline is that United Kingdom as the main trading partner of Norway went into a decline in 1872 due to high costs in production and distribution and a country not being able to change technology to a more modern capitalist tradition found in Germany and Holland [56]. This led to major decline in supply from Norway, for example, timber to the United Kingdom, having negative effects on the town of Arendal [17].

Sailing ships was a Norwegian trade mark as the people had a competence in both building, owning, and operating such ships. This was to a large extent the case in Arendal where this research takes place. When sailing ships became outcompeted by the dampers, the strategic advantage of sailing ships became less dominating ([22], p. 155).

The traditional point of ship owners from Arendal was to show in the transformation from sailing ships to dampers leading to the bank crash in 1886. Our findings are not in accordance with this argument.

*The argument of corruption from the business and political elite in Arendal leads to the crash.* The argument is that the elite controlled the business bank Arendal Privatbank, established in 1884 in order to support the business interests of local and regional business. This view point supports the idea that business people were involved in opportunistic behavior manipulating accounts in order to attract more investors and ordinary people to take part in new ventures in Arendal, for example, in shipping, insurance, and wood processing.

Our findings support the argument that the brothers Axel and Oscar Herlofson were involved in business practices allocated through Arendal Privatbank, putting their interests first as investors in a number of industries in Arendal, other parts of Norway and abroad. Our results are in accordance with writings of Torstveit [53, 54] claiming that business practices of the business and political elite had direct effects on the bank crash in Arendal in 1886.

The 1860, 1870s, and 1880s were the swinging years of Arendal. Arendal was the town with the highest incomes in Norway with many people being involved in the shipping industry as investors. The years from 1870 until 1874 ship owners gave an annual dividend on 17% of invested capital on average ([54]).

High earnings in shipping led to unrealistic attitudes toward risk in both business and privately. In the late 1870s, business people had easy access to credit without good security. People guaranteed for each other. Rules and procedures for sound banking were no longer so carefully followed. Shortcuts were taken in conflict with good banking practices. The banks also had far too low capital in relation to the assets not being able to meet tougher market situations [27, 28].

The Herlofson family played a main role in the crash of 1886. With ownership and management in many industries, the family was central in the crash of Arendal in 1886. Axel Herlofson was also involved in politics. He was a member of tax commission from 1874 on, and from 1878 he had a similar position in Barbu, which was at that time a village close to Arendal, now a natural part of the town. He won confidence of ordinary people writing off small amounts of debts in appeals.

Axel Herlofson was a key person in a network of young businessmen called the "Arendal Ring." They supported each other in business and in social activities operating as a closed group of people with concentration of economic and political power.

## **5.2. The bank crash of 1886**

At times of increased debt, falling freight rates, and ships of falling quality in 1885, it was only a question of time before a financial collapse would occur. So it did.

Arendal Privatbank went bankrupt the 30th of September 1886. For the first time in Norwegian history, a business bank went bankrupt. It was revealed that Axel and Oscar Herlofson's debt was 12.5 million kroner, more than the annual budget in the larger town in Southern Norway Kristiansand [54].

Axel Herlofson had to quit his job when corrupt business practices were found to be of great disappointment for many people in Arendal. He was arrested in the town of Kristiansand trying to leave the country with money from the bank making the scandal even larger. Corruption was confirmed leaving a prison sentence of 6 years for Mr. Aksel Herlofson [54].

The situation in the savings Arendal Sparebank was also led to bankruptcy; 1.7 million kroner were given in credit to business clients with limited degree of financial security. Other clients, particularly from the villages, lost the confidence to the bank and rushed to the bank trying to withdraw cash. A total of 800,000 kroner were withdrawn until December 1886, of these 75% were from clients in the villages. Accounts for 600,000 were canceled from the clients. The Board of Directors came to the conclusion that it was not possible to continue in business. The bank went bankrupt on the 13th of December 1886. The same occurred the next day with the financial group Arendal Haanværkeres Laaneindretning. The only bank that survived the financial crisis in Arendal was the small savings bank Tromsø Sogn Sparebank [56].

A successful town went into a recession with large negative consequences. Workers from all industries came unemployed. In October 1886, Arendal was at the edge of revolt. Fund-raising campaigns and emergency work were started to reduce the disappointment by ordinary people [54].

The working class emerged as a powerful force leading to the foundation of the Norwegian Labor Party in August 1887 in Arendal. Other consequence of the bank crash in Arendal in 1886 was changes in the bank legislation. The huge corruption in Arendal taking place meant that public authorities were of the opinion that business people had to be controlled to a large extent [54].

## **6. Consequences of the bank crash of 1886: long-term effects as a result of butterfly effects prior to the crash**

The crash in Arendal in 1886 had large negative effects. It is argued by the people of Arendal that the town, de facto, never recovered from the decline. The neighboring town of Kristiansand in Southern Norway has expanded while Arendal has not had the same positive development.

The bank failure in Arendal had consequences far beyond the local community. The region of Southern Norway was pushed into recession leading to immigration to the USA, particularly to New York and the surrounding areas.

The socialist movement became a strong source of influence in Norway changing the political landscape from the 1920s on broke with the communist bloc within the party in 1923. The Labor Party has since played a major role in Norwegian politics.

As a part of the new political regime, the bank failure in Arendal, the Norwegian Parliament adapted stricter banking laws. The new legislation stipulated requirements for credits and restrictions for how clients could organize loans in the financial sector [54].

## **7. Findings**

### **7.1. Corrupt business practices confirmed**

The findings must be regarded as preliminary due to little research conducted using the regional-global model as a new to historical events as we have done in this piece of research.

Overall, the research confirms that corruption leads to economic decline in Arendal with large regional negative consequences not only for Arendal as a town but also for the region of Southern Norway.

In order to study the corruption, the regional-global model [51] made sense describing Arendal as a center for shipping until the decline set in the beginning of the 1870s. In the industrialization and urbanization of large countries such as Germany, United Kingdom, and United States, Arendal as a town and Southern Norway as a region had the timber, ice, fish, and other resources that meet the demand internationally.

However, the study of corruption practices is limited to the business elite in Arendal in the 1870 and 1880s. Corruptions might also have taken part in other towns and villages in the region but we have not enough data to draw any conclusions. This is neither the case when it comes to business associates at international markets.

The global part of the regional-global model probably made it possible to hide business practices to a certain extent. In the time period the research project focuses at the 1870s and 1880s in Arendal in Southern Norway, it was probably easier than today to avoid paying taxes in international deals due to less control, also from the public sector. In those years, people from over the class had probably greater possibilities to take advantage of a favorable position. Today with stronger means of social control and an active press, opportunistic behavior have been reduced to a large extent.

## **7.2. Can the study have external validity?**

The study of the Arendal bank crash in 1886 can have a certain degree of external validity as the bank crash in the USA in 2008 led to a global recession that has negative effects on the economic situation such as employment and loss of main industries.

The case of the Arendal crash in 1886 was a result of adaptive expectations, meaning that price increases, for example, in real estate and on stocks would continue to increase. The assumptions were not illustrated through a fall on the US real estate market. Loans were not possible to be met leading to dramatic consequences for the private households and firms, alike [26].

Many of the loans were given with bad security to clients with weak financial standings, the so-called sub-prime loans. Many banks and other financial institutions ran into problems in many situations leading to bankruptcy [26].

Greed was the main motivation for many of the banks leading poor people with limited financial security into deep trouble. In the years from 2005 until 2007, more than 50% of the allocated loans in the US belonged to the prime loan category indicating opportunistic behavior and maybe also corruption [26].

## **7.3. The argument of random growth confirmed**

The research confirms the findings of Geroski et al. [14] arguing that growth rates vary more or less randomly across firms over time. As such, it might be argued that corporate growth is unpredictable. However, their data also indicate that firms' current period of high growth rates is a reasonable predictor of increases in long-term predictability. Our study confirm such as logic.

#### 7.4. The importance of crowd practices confirmed

The study shed light on the importance of crowd practices when business decisions are taken in closed and secret circles. The important role of the brothers Axel and Oscar Herlofson is mentioned in the chapter in order to explain how corruption could take place and lead to the bank crash.

Crowd-related practices and seemingly new, more “open” organizational form are receiving increased attention in the strategy, organizational design, and innovation literature (Harhoff and Lakhani [19]). In this research line, the current research might help to give a contribution to how crowds function, both as an organization and how such organization helps to understand the environment in which the organization operates (i.e., [13]).

#### 7.5. Limitations of the study

The results must be regarded as pre-liminary. It is the first study that tries to combine a bank crash and corruption to chaos theory and how the regional-global model can be used.

More research in public registers and shipping registers can lead to new insight on how corruption can have led to the bank crash in Arendal in 1886. We are of the opinion that more insights can lead to more insights on other bank crashes, also studies as to how the chances of large bank crashes in the future.

On this journey, chaos theory and butterfly effects can be a candidate for further studies on bank crashes. Deeper insights on chaos theory can give possibilities to gain more insights on bank crashes combining theory with practice, an adequate research tradition from chaos theory building on Greek thinking from the early antique.

## 8. Conclusion

### 8.1. Corruption confirmed with its negative effects

Corruption was confirmed studying the bank crash in Arendal (Norway) in 1886. Opportunistic behavior of the business and political elite lead the town into a deep economic recession with negative long-term consequences.

### 8.2. Future research

More research on the relationship between bank crashes and corruption can give new insights.

We will suggest certain areas that can push research to new levels of knowledge.

*The ambidexterity organization literature and corruption?* More research on banking crashes linked to corporate practices can use insights from the ambidexterity organization literature (Birkinshaw and Gupta, 2013, [37]), focusing at strategic decisions and operation in running a company, for example, a business bank or a ship owner company.



*Blue ocean strategy and corruption?* We are of the opinion that in our search for corrupt business practices, chaos theory can be combined with a blue ocean strategy [25] looking at the business world through untraditional approaches, expanding for mental processes. We believe that people who wish to fight corruption can benefit handsomely from using such a way of approaching corporate practices.

*Coase and corruption?* Shipping executives must be brave and ask why they exist at all, as Coase [8] did in his article. Coase's [8] theory of the firm can be regarded as a landmark contribution to help understand organizational boundaries and the competitive dynamics between organizations and markets [15, 44, 45, 59].

Coase, in short, argued that the existence of transaction costs in markets leads to the "emergence of the firm." His seminal contribution was to highlight how the visible hand of an entrepreneur or a manager ([5, 31]; Baldwin and Von Hippel, 2012) intervenes in markets through price mechanism [21].

While Coase's theory (1937) made significant contributions to the understanding of firms and markets, it might be argued that Coase has a rather limited view on social processes in his study. We are of the opinion that future studies on corruption in bank crashes can benefit from paying more attention to environmental factors, in accordance with current political winds found in many parts of the world, for example, in Germany, France, and the USA.

*More research on bank crashes using the regional-global model.* We assume that bank crashes will become a more researched area given the more complex and turbulent business environments. We believe that the regional-global model can be a suitable candidate when researching on bank crashes.

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## References

- [1] Astley WG, Zammuto RF. Organization science, managers and language games. *Organizational Science*. 1992;3(4):443-460

- [2] Basener WF. *Topology and its Application*. New York: Wiley & Sons; 2006
- [3] Brooks C. Chaos in foreign exchange markets. A special view. *Computational Economics*. 1998;**11**:265-281
- [4] Chandler AD Jr. *Strategy and Structure*. Cambridge, MA: MIT Press; 1963
- [5] Chandler AD Jr. *Scale and Scope*. Cambridge, MA: Harvard University Press; 1990
- [6] Cook TD, Campell DT. *Quasi-Experimentation. Design and Analysis Issues of Field Settings*. Boston: Houghton Mifflin Company; 1979
- [7] Derrida J. *Writing and Difference, Rence*. London: Routledge & Kegan Paul; 1978
- [8] Coase RS. The Nature of the Firm. *Economica*. 1937, N.S;**4**:386-405. reprinted in Stigler GJ, Boldings KE. eds. *Readings in Price Theory 1952*, Richard D. Irwin, Homewood, IL
- [9] Dixon S, Meyer KE, Day M. Exploitation and exploration learning and the development of organizational capabilities: A cross-case analysis of the Russian oil industry. *Human Relations*. 2007;**60**(10):1493-1523
- [10] Drucker P. *The Practice Management*. New York: Harper and Row; 1954
- [11] Dublin R. *Theory Building*. New York: Free Press; 1969
- [12] Eden C, Spender JC. *Managerial and Organizational Cognition, Theory, Methods and Research*. Sage Publications Ltd; 1998
- [13] Fedin T, Lakhani KR, Tushman ML. Firms, crowds, and innovation. *Strategic Organization*. 2017;**15**(2):119-140
- [14] Geroski PA, Machin SJ, Walters CF. Corporate growth and profitability. *Journal of Industrial Economics*. 1997;**45**(2):171
- [15] Gibbons R. Four formal(izable) theories of the firm? *Journal of Economic Behavior and Organization*. 2005;**58**(2):200-245
- [16] Gleick J. *Chaos: Making a New Science*. London: Heineman; 1987
- [17] Gjerstad JO. Arendal's decline as a shipping town from 1880 until 1900, Master Thesis the Norwegian School of Economics and Business Administration (Norges Handelshøyskole). Norway: Bergen; 1975
- [18] Handy C. Balancing corporate power: A new federalist paper. *Harvard Business Review*. 1992, nov./dec.:59-72
- [19] Harhoff D, Lakhani K. *Revolutionizing Innovation: Users, Communities and Open Innovation*, MA. Cambridge: MIT Press; 2016
- [20] Hassard J, Parker M. *Postmodernism and Organizations*. Thousand Oaks, CA: Sage; 1993
- [21] Hayek FA. The use of knowledge in society. *American Economic Review*. 1945;**35**(4): 519-530
- [22] Hodne F. *The economic history of Norway, 1815-1970*. Oslo: J.W. Cappelen Publishing Company; 1981

- [23] Howe K, Eisenhardt M. Standards for qualitative (and quantitative) research: A prolegomenon. *Educational Researcher*. 1990;**19**(4):2-9
- [24] Hindings CR, Greenwood R. *The Dynamics of Strategic Change*: Basel. Oxford: Blackwell; 1988
- [25] Kim WC, Mauborgne R. *Blue Ocean Strategy, how to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston, Mass: Harvard Business School Publishing Corporation; 2005
- [26] Knudsen S. Financial crisis at present and in a historical perspective", in financial lack of balance, special issue. *Magma*. 2008;**11**(3):37-46
- [27] Kreps GL, Ferndon, Arnesson P. The power of qualitative research to address organizational issues. In: Herndon SE, Kreps GL, editors. *Qualitative Research: Application in Organizational Communication*. USA: Hampton Press; 1993
- [28] Knudsen L. From N.B. Herlofson's Memoirs- The way things where. 2007. Arendal Historical Society, No. 13, 65-75, printed in Arendal (Norway)
- [29] Kuhn T. *Scientific Paradigms*. In: Barnes B. ed. *Sociology of Science*. Hamondworth (UK): Penguin; 1972
- [30] Langley A. Strategies or theorizing from process data. *Academy of Management Review*. 1999;**24**(49):691-710
- [31] Langlois R. The vanishing hand: The changing dynamics of industrial capitalism. *Industrial and Corporate Change*. 2003;**12**:351-385
- [32] Lincoln YS, Guba EG. *Naturalistic Inquiry*. Beverly Hills, CA: Sage; 1985
- [33] Lorentz EN. Deterministic non-periodic flow. *Journal of the Atmospheric Sciences*. 1963;**20**(2):130-141
- [34] Medio A, Marji L. *Nonlinear Dynamics: A Primer*. Mass: Cambridge University Press; 2001
- [35] Meyer AD, Goes JB, Brooks GR. Organizations reaching to hyper turbulence. In: Huber CP, Glink WH, editors. *Organizational Change and Redesign: Ideas and Insights for Improving Performance*. Oxford: Oxford University Press; 1993
- [36] Mintzberg H. *Crafting Strategy*. Boston, Mass: Harvard Business Review, July-August; 1987
- [37] O'Reilly CA III, Harreld JB, Tushman ML. Organizational ambidexterity: IBM and emerging business opportunities. *California Management Journal*. 2008;**51**(4):75-99
- [38] Ovchinnokov IV. Introduction to super symmetric theory of stochastics. *Entropy*. 2016;**18**
- [39] Piore M, Sabel C. *The Second Industrial Divide*. New York: Basic Books; 1984
- [40] Porter ME. *Competitive Advantage*. New York: Free Press; 1980
- [41] Platt JR. Strong inference: Certain systematic methods of scientific thinking may produce much more rapid progress than others. *Science*. 1964;**146**(3642):347-353

- [42] Pondy L. The role of metaphors and myths in organization and the facilitation of change. In: Pondy L, Frost P, Morgan G, Dandridge T, editors. *Organizational Symbolism: Monographs in organizational and industrial relations*. Vol. 1. Greenwich, CT: JAI Press; 1983. pp. 157-166
- [43] Polanyi M. *The Tacit Dimension*. Mass: Gloucester; 1966
- [44] Sanjek R, editor. *Field Notes: The Making of Anthropology*. Alberta: State University of New York; 1990
- [45] Santos F, Eisenhardt K. Organizational boundaries and theories of organization. *Organization Science*. 2005;**16**:491-508
- [46] Sennett R. A society of broken eggs. *New Statesman*. 2002, 17 December 1991-7 January 2002
- [47] Simon HA. *Rational Decision Making in Business Organizations*, Lecture by Herbert A. Simon when receiving the Nobel Prize in Economic Science, December 8 (1978)
- [48] Smith A, *An Inquiry into the Nature and Causes of the Wealth of Nations*; 1776. Glasgow
- [49] Soulsby A, Clark E. Organization theory and the post-socialist transformation: Contributions to organizational knowledge. *Human Relations*. 2007;**60**(10):1419-1442
- [50] Syvertsen CM. *Towards the Business Federation in Management Consulting Firms*”, Doctoral thesis IESE Business School. Barcelona: University of Navarra; 2000
- [51] Syvertsen CM. Towards a regional-global organizational model for leading research driven business schools, findings from a longitudinal study in China, Europe and the USA from 2010 until 2016. *Problems and Perspectives in Management*. 2017;**15**(2):36-44
- [52] Taylor FW. *The Principles of Scientific Management*. New York: Norton; 1911
- [53] Tilley C. ed. *Discourse and power; the genre of the Cambridge inaugural*. In: Miller D, Rowlands M, Tilley C. *Domination and Resistance*. London: Urwin Hyman; 1990. pp. 41-42
- [54] Torstveit JG. *Corruption and Bank Crash and New Political Party in Arendal 1886-88. Arendal (Norway): Arendal Tidende*; 2012
- [55] Wallin Weihe H-J. *Turbulent Times and Tormod Torfæus as a Historical Thinker-1636-1719. Stavanger, Norway: Hertervig Academic*; 2015
- [56] Wallin Weihe HJ, Syvertsen CM. *The Frozen Water Trade. Stavanger, Norway: Hertervig Academic*; 2012
- [57] Webb EJ, Campell DT, Schwartz RC, Sechrest L. *Unobtrusive Measures: Nonreactive Research in the Social Science*. Chicago: University of Chicago Press; 1966
- [58] Weber M. *The Protestant Ethics and the Spirit of Capitalism*. New York: Harper Collins Academy; 1991/1905
- [59] Zenger T, Felin T, Bigelow L. Theories of the firm-market boundary. *Academy of Management Annals*. 2011;**5**:89-133