From Fish to Fission

Changing sense of place and risk perception in a power plant host community

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ABSTRACT

Prior studies suggest that proximity to nuclear power plants do not affect concerns regarding perceived risks of nuclear power. This thesis applies and compare Swedish plant Ringhals with prior studies but with the added intent of addressing the relationship between plant and population. The host community Bua is positive towards Ringhals and the changes it has brought. To some degree more so than results of prior studies with a higher than national average percent of study respondents being in favor of nuclear power. When Ringhals was established, Bua was small and had little power to impact the decision. Today, the population is bigger and have a better chance to affect future pathways for their community. While positive towards nuclear power the population expresses concerns over possible future changes. A large scale change like the construction of a power plant is less likely to happen again.

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1. Introduction

1.1 Nuclear power.

Nuclear power can represent a wide range of things for different people. Perhaps more so than any other form of energy production. The possibilities enabled by the energy can be considered great. A steady source of power that is available in any weather and can run at all times. The plant itself can be, and has been, regarded as a great technical achievement. A symbol of ingenious human engineering and scientific progress.

That power has also proven to be a reason of concern for many. The roots of the technologies of nuclear power production stems from U.S. atomic weaponry programs. Because of this origin the destructive capabilities of the atomic bomb comes to mind rather than energy production for some. The experiences of Hiroshima and Nagasaki during the Second World War, the Chernobyl and Fukushima accidents as well as the Cold War arms race between U.S.A. and the Soviet Union gave birth to a fear-tinged terminology with words like nuclear winter, fall out and apocalypse. These words are what some associate with nuclear power. The fear of the bomb has been carried over to the nuclear energy production.

As the possibilities to use the technology for energy production opened up the possibilities was quickly realized by many states. Nuclear power was the height of modernization and would ensure almost unlimited power. It was too good to go without. Sweden was one of many European countries that invested heavily in nuclear power during the 1960s and 70s. However, the very first Swedish reactor was completed as early as 1954 (Storm, 2014). It was intended for research and was the first step in the Swedish nuclear program. The program strived to minimize foreign import of energy as well as to enable nuclear weapons.

During the 1970s more and more people came to associated nuclear power with Hiroshima and Nagasaki. Unlimited power, yes, but fearful and possibly dangerous. When the first nuclear power facilities were constructed politicians had to disassociate the nuclear plants with nuclear weaponry or otherwise circumvent people to construct the plants. The strategies used varies from country to country as well as between different areas within a country.

In Sweden, five power plants for energy production were constructed in the 60s and early 70’s. The plant are, in the order they began production; Ågesta in 1963, Oskarshamn in 1972, Barsebäck and Ringhals in 1975, and finally Forsmark in 1980. In common for all the plants, except Ågesta is that they are coastal. Water is a necessity for the plants to
run and that explains why they majority were placed by the coast. The placements of some plants were chosen in order to minimize the amount of people directly impacted by the physical plant or to deliver electricity to as large a number of households as possible. Ågesta and Barsebäck differ from the other plants in that they were both placed close to populated areas (Storm, 2014).

The impact that nuclear power plants have had on host communities is something that has been researched by geographers from a fair amount of perspectives and angles. Venables et al. (2012), Siegrist and Visschers (2013), Franchino (2014) and Cale and Kromer (2015), to name a few, have investigated in what way risk perception and acceptance of nuclear power have been affected by the proximity of a nuclear power plant. That is to say that they have investigated the impact that the physical infrastructure had on the psychology of the population. While this aspect of geographical psychology have been examined at great lengths these studies are primarily using a one-way perspective. It is the plant that affects the population and it is in what way this has occurred that is examined. While it is definitely important to reveal how a population is affected by imposing infrastructure I argue that there is a relationship to be investigated as well.

The population of a nuclear power plant host community must adapt in some way or other to the infrastructure. How they value their surroundings must change since their surroundings do so. This is touched upon in some discussions on risk perception and sense of place but what these changes imply for the future of the community is rarely, if ever, examined.

This thesis will try to fill this informational gap by examining one of the biggest power plants in Sweden; Ringhals. The case study will in many ways be investigated within a theoretical framework used by earlier studies but with the added intent of addressing the relationship between plant and population. How the infrastructure affect the psychology of the community, but also, how the changes in the community affect future infrastructure.

1.2 Geographical background.

Ringhals is located in Halland on the western coast of Sweden. The plant got its name from the peninsula on which it is located. Ringhals is the largest power plant in Scandinavia, owned by state owned Vattenfall AB, through the daughter firm Ringhals AB and E.On. Ringhals produces approximately on fifth of the electricity consumed in Sweden (Vattenfall, webpage 2015).
The closet settlement to the power plant is the small village of Lingome which is located at the very edge of the power plant. A lot of houses in Lingome is summer residences and the permanent population is about 100 people. A few kilometers south from there is the town of Bua, which is the largest town in Ringhals proximity, both in terms of size and permanent population (nearly 2000). 20 kilometers further south along the highway lies Varberg. Varberg is the second biggest city in Halland (population; 27600) and the biggest in Varberg municipality which incorporates Värö and Ringhals. To the north of Ringhals is Kungsbacka which is the fourth biggest city in Halland with a population of about 19000. All population data is approximated from 2010 statistics, which are the latest available (The National Central Bureau of Statistics SCB, webpage, 2016).

Other than Ringhals Värö also has another big industrial complex in Södra Cell, or, Värö paper mill which is located five kilometers south of Bua on the southern edge of the Värö peninsula. Södra Cell was constructed in 1972 (Södra, webpage, 2016).

![Figure 1. Map of Ringhals and Bua. The protected areas are colored in red (Biskopshagen) and purple (Båtafjorden).](image)

The natural environment of the peninsula is quite barren and windy. Most of the natural details consist of grass, bushes and rocks. Trees grow very scarcely. The coast opens up to the archipelago of Halland that continues from Bua further north.
The outermost parts of the peninsula is a protected area called Biskopshagen and it has been protected since 1971. There is a second protected area by the name of Båtafjorden located in the bay south of Ringhals. Båtafjorden is a Natura 2000 area that was created in 2006.

Biskopshagen is a rift valley area that covers most of the peninsula that Ringhals is also located on. The flora in the area is richer in variety than what is typical of the region with a wide variety of flowers and some orchids but lack any larger assemblies of trees. Historically the area used to be the agrarian commons of the farmers from Lingome and was used for both cattle grazing and small scale farming (Halland County Administrative Board, webpage, 2015). Even today local farmers use the fields within the reserve, though only for cattle grazing.

The area of Biskopshagen became protected during a time when Ringhals was still being constructed. While most of the land used for the reserve was bought by the state, Vattenfall also bought some of the land. Vattenfall also agreed to not extend their power plant over the protected lands that they own (Varberg municipality, 1971).

2. Aim

This thesis aims at explaining how infrastructure and human sense of place correlate and affect one another. This will be reached by examining in what way a nuclear power facility affect the local populations’ sense of place and risk perception. The thesis will also examine whether this risk perception in any way shapes future pathways for further industrial expanse or other infrastructure.

The idea behind the thesis aim is that a contested industry, such as a nuclear power plant, could either be seen as a beneficial development or something disruptive. If it is regarded as something positive it could shape the public into regarding their community as a place that is and should be welcoming to new industry. But not necessarily so.

Earlier studies, with mainly U.S. and British case areas, suggest that proximity to nuclear power plants do not affect concerns regarding perceived risks of nuclear power. Is this also true for Ringhals and settlements in the plants vicinity?

There is also a possibility that these positive results is due to sceptics of nuclear power, or people that perceive nuclear power as something dangerous and do perceive fear, move away from the area. The study aims to examine this possibility by researching if there have been any migration or change in urban areas close to the Ringhals power
plant. Particularly following three major power plant accidents; Three Miles Island, Chernobyl, and, Fukushima. These accidents became international news and spurred discussion on the safety of nuclear power.

Because of the impact that these three accidents had they are the most likely occurrences to have elevated fear or concerns regarding nuclear safety among the Swedish population and thus marks the strongest probable periods of changing the public sense of place. To be able to discern if there exist a correlation between changes in sense of place, risk perception and migration this study will address the following key questions:

- In what ways have the sense of place among the population of Värö changed after Ringhals was constructed?
- In what way has the community been affected by Ringhals? Is Ringhals experienced as something beneficial to the community or something disruptive?
- Is Ringhals nuclear power plant a source of fear for people in their proximity? And if so, to what degree does that fear affect people’s lives and life choices?
- Have there been any changes in people’s sense of safety and risk perception in the study area following major nuclear power plant accidents abroad (Three mile island, 1979, Chernobyl, 1986, and Fukushima, 2011)?
- How do peoples sense of place and risk perception shape future pathways of the immediate physical geography industry (infrastructure, services)?

3. Literature Review

3.1 Introduction.

Many recent geographical studies on nuclear power are conducted, mainly, through surveys with the goal of producing statistical data on different aspects related to the industry in question. Some provide insight on the correlation between nuclear power, risk perception and public awareness in host communities (Venables, et al., 2012; Siegrist & Visschers, 2013; Cale & Kromer, 2015). Some studies utilize a larger scope and reach to describe national and international perceptions on nuclear power (Walls, 2011; Franchino, 2014). A third type of geographical nuclear power research focus more on the socio-political aspects of nuclear power (Rosseger & Ramin, 2013; Zhu, Wei & Zhao, 2016).

Whilst surveys and statistical data is good for creating an assessment on the state of things they run the risk of lacking when creating a narrative or connecting the findings to
a relatable reality. By which the relatable reality is that of both the reader and the survey’s respondents.

This thesis is not the first academic work that has focused on Ringhals and the Värö peninsula. In 2014 historian Erik Hallberg published a study titled ‘När kärnkraften kom till byn’ [When the nuclear power came to the village] on how the Ringhals power plant changed Värö and Varberg municipality. This thesis has two things in common with that work. First; the subject area and industry of interest are alike. Second; Hallberg’s study is based on interviews and historic data much like this thesis.

The difference is that Hallberg tell a historical narrative about the whole of Varberg municipality and socio-economical adjustments that occurred as outside forces brought big industry (Hallberg, 2014). This thesis, in comparison, examine and tell a narrative of the mindset of the population affected by this big industry in regard to their spatial reality.

A geographical approach have different points of interest from an historical approach and despite the similarities in subject matter and events covered the conclusions and result are very different as this thesis will address the difference in opportunities, or pathways of development, due to difference in public sense of place.

The impact of power plants can be massive; both in regards to the natural environment, development and people’s lives. The roots of nuclear fission are military. The first reactors were built in order to produce atom bombs that in the aftermath of the Second World War was considered the paramount of national power and security by nation leaders (Walls, 2011). At the same time the damage done to Hiroshima and Nagasaki by the atom bomb gave reason to fear this new technology. However, because of nuclear technology stemming from American and Russian weapons programs the nuclear power programs in many European countries had limited and heavily edited flows of information to the public wherein the positive aspects of nuclear power was emphasized while the possible risks where downplayed so as not to exaggerate any concerns that the populations could’ve harbor (Walls, 2011).

While the first reactor was built in the 1950s Sweden intensified its nuclear power expansion during the sixties, with many plants being completed in the following decades. At that time there was a widespread skepticism among the public all across Europe towards nuclear technology (Franchino, 2014; Storm, 2014). In Germany the nuclear industry during this time applied aggressive and technocratic public relations strategies to win over critics of the necessity of nuclear power (Schüring, 2013). This meant that in Germany there was an uneven balance of information and knowledge between affected communities and responsible parties when nuclear power facilities has been established.

In Sweden there is an example of such secrecy in regards to the Barsebäck nuclear power plant. Storm (2014) reveals that the Barsebäck power plant was decided upon by
politicians and business representatives behind closed doors and later announced around Christmas time during a community gathering to the local populace.

It will be examined in this thesis whether Ringhals was planned with a similar secrecy and minimal interaction with the host community or if the dialogue between involved parties was more inclusive.

3.2 Nuclear power and policy change.

The history of fear of nuclear power is evidently as long as the history of nuclear power itself. In Sweden the debate on nuclear power have been polarized since the very start and Sweden became the first country in the world to decide to phase out its use of nuclear energy (Rossegger & Ramin, 2013). Rossegger & Ramin (2013) find that one reason that the Swedish government decided to have a vote whether they were to phase out nuclear power was the accident at Three Miles Island in 1979. That accident had, unlike Chernobyl in 1986, an accelerating effect on the nuclear debate (Rossegger & Ramin, 2013).

If the accident at Three Miles Island was sufficient to encourage a political decision to phase out nuclear power is also possible that this concern would have affected local communities, especially those in the vicinity of Sweden’s nuclear power plants.

The accident at Fukushima in 2011 also impacted the political route of nations far removed from the actual impact of the accident. Franchino (2014) show how Germany revoked a 2010 decision to extend the phasing out process of nuclear power by twelve years and disconnected seventeen of its nuclear reactors from the power grid, with three of them later being shut down permanently, following the Fukushima accident. Italy, Switzerland and Belgium also revised their nuclear strategies. Sweden, however, did not stray from the pro-nuclear agenda that the Swedish moderate party had set as they came into power following the 2006 general election.

A recent survey on Swedes opinion on nuclear power states that nearly half of the population want to stop the nuclear power plants. This number increased after the Fukushima accident and has remained since then (Reuterskiöld, 2016). How the respondents in Värö relate to the national average will be examined.
3.3 Nuclear power and the public.

The historic polarization of public opinion on nuclear power is quite evident when a new plant is being proposed. When a plant is being planned the public acceptance of nuclear power within local communities is one dominating factor in where the plant can be built. It only possible to construct one where the public acceptance is either favorable or the public is the least resistant (Venables, et al., 2012).

Siegrist and Visschers (2013) analyzed the results from Swiss longitudinal study on public acceptance of nuclear power in relation to the Fukushima nuclear power plant accident of 2011. Their survey included 463 respondents and three surveys – before, immediately after, and one and a half year after the Fukushima accident. Between the first two surveys there was a negative change with attitudes being less favorable immediately after the accident than before but between the second and third the results were alike.

Despite this short dip in the first survey there was a strong correlation across the three studies that the authors conclude to suggest attitudes being relatively stable across all of the surveys (Siegrist & Visschers 2013).

While the accident impacted public acceptance of nuclear power the change was only moderate according to Siegrist and Visschers (2013). Their study have some limiting factors. The most prominent one being the relatively small affect the accident had on Swiss lives as well as the cause of the accident (which is an unlikely scenario for a power plant in Switzerland to suffer).

Cale and Kromer (2015), similarly to Siegrist and Visschers (2013), reach a conclusion in their analysis of a North Carolina survey on public opinion on nuclear power, that proximity (which in their data is set to be within 10 miles) to nuclear facilities do not change the attitude towards nuclear power in either way.

Awareness of the plant is increased but opinions on the necessity, safety or usefulness of them does not. Cale and Kromer (2015) then concludes that proximity – beyond immediate post-accident spikes in negativity – is irrelevant on public opinion of nuclear power. However, they add that the bluntness of their data set might have been a limiting factor in discerning the true impact that proximity play.

In sum the distance between a community and a nuclear power plant correlates with the acceptance of the plant. The closer a community is to the nuclear power facility, the lesser the perceived risks.
3.4 Nuclear power and the housing market.

Following the accident at Three Miles Island in 1979 Gamble and Downing (1982) presented a paper that examined the effects on property values that followed. They reasoned that the increasing opposition that towards nuclear power that they experienced in the late seventies would result in nuclear power host communities being less attractive. Their paper looked at prices on some thousand properties before and after the Three Miles Island accident.

Neither before nor after the accident could they find any significant effects caused by the power plant. Immediately after the accident the number of sales within a ten mile radius from the plant dropped. Within a few weeks however the sales where back to a normal rate (Gamble & Downing, 1982). Their results therefore suggest that a property values within, or near, a host community is not affected in any significant way.

This is only one paper and an old one at that. However, the findings on risk perception among host communities suggest that the findings of Gamble and Downing (1982) is applicable even today. This thesis will examine whether this is also true for Bua.

4. Theoretical concepts

To examine the aims in this thesis there are some theoretical concepts that will be used. This thesis is a qualitative work that examines the subjective narratives of the respondents. Therefore it is a necessity to have a framework in which to analyze their narratives so it is possible to compare to prior academic work (Ritchie, 2003). This thesis will use two geographical concepts as tools for examining the results. The first of these, proximity effect, is derived from the results of prior studies on the effects of nuclear power plants on communities. The second, sense of place, is a staple in human geography and is useful in discerning how and why an area is perceived in the way that it is.

4.1 The proximity effect.

A key concept in studies on the relationship between local communities and nuclear facilities (or indeed any other industry or institution) is the proximity effect. Proximity between actors is a basic consideration in geographical studies of any kind and especially
in studies on nuclear acceptance and the geography of fear (Venables, et al., 2012; Siegrist & Visschers, 2013; Storm, 2014; Cale & Kromer, 2015).

The distance between a nuclear power plant and a community is, perhaps unsurprisingly, of great importance when assessing, for example the acceptance of nuclear power. It is important to consider that the relation between local communities and the nuclear power plant is an asymmetrical one with the latter impacting in some way one the former, receiving, local communities.

A host of studies on the acceptance of nuclear power where the findings have been coupled with the proximity of respondents show that there is coherence to the proximity effect (Venables, et al., 2012).

Studies have shown that when a new facility is to be constructed, either a nuclear facility or other hazardous or contested complex, there is a higher than average resistance among communities closer to the proposed site (Boholm & Löfsted, 2004; Lima, 2004; Venables, et al., 2012).

On the other hand, and of greater importance for this thesis is the shift that occurs once a facility have been constructed and some time has passed. Both Cale and Kromer (2015) and Venables, et al. (2012) show that closer proximity is coupled with a higher than average acceptance and trust among the communities once a facility is established.

Any perceived fears that possibly could’ve been found initially in a community has been lost over time. The explanations for this are varying and there is no consensus regarding any single explanation (Venables, et al., 2012).

The understanding of the shifting role that proximity play in public awareness and opinion is an important basis for the empirical work of this thesis as it creates a frame of understanding the narrative of the development of Bua as understood by the community’s inhabitants.

4.2 Sense of place.

How a nuclear power plant affects the sense of the place within its host community, can go back and forth, over time, between positives and negatives. Storm provides insight in how the way a nuclear power facility is experienced and valued by using the Ignalia nuclear power plant as an example presented by Storm (2014).

The plant was constructed in Lithuania during Soviet times was at first a hallmark of technological achievements but as resentment to Moscow grew among the Lithuanians the plant became a symbol of imperialistic suppression. Once the Soviet empire collapsed the plant became the most valuable source of energy for Lithuania during the early
nineteen nineties. Once closed, the plant came to represent a negative handling of hazardous waste and public health. Again it came to fan the flames of discontent (Storm, 2014).

*Sense of place* is a concept that addresses how an area or a place is perceived by people. An area is understood not as a fixed and clearly defined thing but rather as a fluid process defined as the sum of physical aspects (architecture and infrastructure), the human observer (individuals and society) and the activities that occur within the spatially defined place of interest (Tuan, 1996; Smaldone, Harris & Sanyal, 2005; Friedmann, 2010). The sum of these aspects are what differentiates a room, or an area from a place. The latter only exists through the perception of an observer (Tuan, 1996).

Due to the importance of the observer in the creation of a sense of place any one particular area can result in a wide array of different places depending on the values and experiences of said observer (Pacione, 2001). *Sense of place* can further be understood to grow or evolve as an observer experiences it, leading to a stronger attachment to the area in the observer (Tuan, 1996).

The importance of *sense of place* when studying controversial facilities, such as power plants (as evident by the still on-going debate on the pros and cons of nuclear power), is of key importance for this thesis. When interpreting the stories that arise from the empirical interviews it will most often be the stories of the interviewee’s sense of place. In other words the interviews will reveal the experience of Ringhals’ role in Bua’s development through the personal stories of a sense of place.

De Dominicis et al. (2015) have recently concluded in a study that place attachment, connected with sense of place and also something that becomes stronger with time have a negative effect on people’s risk perception. That is to say, sense of place and place attachment can be understood to be why the proximity effect is happening. Their claim is that all of us have a positive spatial-bias to places that we perceive as home.

Following the results of prior studies it would be reasonable to assume that the population in Bua will have a similarly positive attitude towards Ringhals. The community is as close as any case study community and therefore the findings of prior studies should be compatible with Bua.
5. Method

In many ways this thesis is a close continuation of the understanding from a host of studies concerning the role that nuclear power plants have on local communities. The differences to previous studies is mainly found within the methodological approach as well as the correlation and feedback effects sought between physical and mental geography. This has been done by researching the sense of place among people who lives in the village of Bua, located within view of the Ringhals power plant through dialogue with thirteen respondents that live or work in the area around Ringhals.

The research design for this thesis is qualitative with a humanistic approach. In humanism knowledge is understood as constructed from human consciousness and the relations that individuals have with their surroundings (Rodaway, 2006). The qualitative approach offers itself well to studies that examine individual’s perspectives of their social world (Ritchie, 2003). Since sense of place is a subjective interpretation of the physical world it cannot be reached through statistics or forms.

As stated by Willis (2006) it is only through qualitative interviews that it is possible to come to grips with how people think. What they value in their surroundings and how they do that. Therefore this thesis draw its empirical data mainly from interviews with different persons within, or, connected with the host community of Bua in order to formulate a human narrative. The interviews have been conducted following a semi-structured nature to allow interviewees to tell their own story within the limits of interest of the study (Willis, 2006).

The respondents were approached following a stratified purposive sampling (Ritchie, Lewis & Elam, 2003) where the objective was to get respondents that shared a common relation to Bua but could represent differences in that relation. For example; how long they have lived in the community, or, if they only work there and lives elsewhere.

Most of the respondents are people who live in Bua but have otherwise different relations to the community. It is of interest in what ways the sense of place differs, if at all, between those who have lived in Bua since before Ringhals construction and those that have moved there since it is completion. Some respondents are in other ways connected and more often than not also living close by.

A few of the respondents were chosen deliberately as representatives from the local History Society, Ringhals and a real estate firm. Some were approached and interviewed in or around the central square in Bua or by going around the community and knocking on doors.
Any researcher have a pre-conceived understanding of the world that sometimes could interfere with the experiences of the respondents (Rodaway, 2006). The selection of respondents are therefore part deliberate and part random which was an attempt to get around any preconceptions that this author might have had.

The answers from the interviews have then been conceptualized according to grounded theory. Grounded theory is common in qualitative research due to its focus on developing theory from the social aspects that is being studied (Cloke et al., 2012). In this case, from the interviews with the respondents.

One respondent, G.L. is an employee at Ringhals and therefore stand out among the respondents. The reason to interview a representative of Ringhals is to strengthen the idea of a relationship between the plant and the community. His perspective is most certainly biased towards Ringhals as something positive. This bias can however be handy in broadening the discussion at large as well as being informative on many of the different strategies used by Ringhals to communicate their presence to the community.

Some interviews were conducted in the respondent’s homes or place of work. One of the interviews were conducted by telephone. While interviewing one of the respondents outside two more joined in the discussion. The difference with this interview and the others is that the three respondents discussed the questions within themselves. Which provide a different sort of perspective on how applicable their answers were on the population in general. Since they could, and did, discuss this applicability.

All of the interviews were held in Swedish and recorded with the respondents consent. The telephone interview, however, was transcribed by hand in the form of key words. These recordings and key words have later been transcribed into English. Therefore, some nuances could be lost in the translation.

Some of the respondents consented to have their names in the thesis while others were insecure or unwilling. For the sake of a uniform presentation (and to provide protection to the respondents), all of the respondents are kept anonymous and identified by a two letter code.

It should be noted that Ringhals is not the only large industry in the area that could have resulted in a changed sense of place in the community. Södra Cell, a paper mill located about five kilometers south of Bua, also represent a big industry with environmental impacts and a large employee base. It, too, could represent much of the positive changes that Ringhals can be claimed to have had on the area. Employments, for example. Södra cell is also a pollutant industry with a very distinct, unpleasant smell that, like Ringhals, could be seen as being something negative.
It is a limiting factor for this thesis that the strong focus that this thesis has on Ringhals could mean that the power plant is credited as a transformer of sense of place for aspects that in reality should be credited too Södra Cell; or shared between the two.

The study area have experienced changes since the 1960s as any area would over such a long time. When the respondents are asked what changes should be attributed to the power plant they are in reality asked to consider two things. First, what has actually changed, and second; what impact have the plant had? It is possible that the respondents have a much easier time answering the first of these two and unknowingly suggesting that the power plant is the cause for the experienced change. Under other circumstances, if Södra Cell was the focus of the interview, the answer might have been different. It might also have been the same. This is a problematic aspect of qualitative research that must be keep in mind when discussing the findings. Some respondents also talked about the paper mill and in those cases it would be possible to assume that they had not bundled the two together in their narrative.

That the respondents were chosen the way that they were is another possible shortcoming. It resulted in that there are fewer respondents that have any connection to Bua prior to Ringhals and therefore no own experience of the sense of place and identity of the community at that time.

While the interviews are the main part of the empirical data some statistical data over population counts have been inserted in order to more strongly juxtaposition the human narrative to a quantified story of the development of the region. The idea behind this is not to fault any of the interviewee’s account of the development of Bua but rather to have something to compare them to and measure them against.

The statistics were originally gathered from the municipality archives in Varberg. They are population numbers over Värö parish in which Bua is located. Any smaller data set than that was not available within their archives. Other than Värö parish, statistical data over nearby Ås (a few kilometers inland) and Kungsbacka parishes has also been gathered. This, since Ringhals is located in the vicinity of these parishes as well and because a map to show exactly where parish boarders are located has proven elusive.

The data sets found in the archives also proved to be the statistics provided to the National Central Bureau of Statistics of Sweden for their yearly reports. This means that they have been digitized and available via their database. Therefore, links to the digitized versions have been included in the references list as to provide a more readily available possibility for scrutiny.
6. Empirical Results

6.1 Introduction.

The following results are compiled from interviews with a varying range of individuals living or working near the Ringhals power plant. The results will be presented below in the form a conversation to present as coherent a narrative as possible of the effects that the Ringhals power plant have had on the Värö peninsula - particularly on the community of Bua. The results will also be structured thematically and chronologically. This is also to clarify the historical narrative of the area and the narrative of the mind-set of those living in close vicinity to such a polarizing industry.

It is not only a presentation of change over time that is of concern for this thesis but also the changing sense of place among the respondents. Even more so than the historical and geographical changes such as infrastructure and services. One of the most important questions is the possible presence of fear. In wider terms this questions can be described as trying to find answers to, and explain, the construction of sense of place among the inhabitants of Värö and Bua in response to the physical and emotional presence of the Ringhals power plant. How have the cultural geography (and to some extent, by association, the physical geography) changed such an abstracted thing as people’s minds. More interestingly, however, is that the changes in the population in turn play a part in shaping the future changes of the geography. This will be supported by findings presented below.

As noted above, the respondents have varying connections to the study area and younger generations have no own experience of a time before the power plant. This means that the narrative of sense of place before Ringhals is constructed from only a couple of respondents. The changes in sense of place and identity that have occurred in later years have a stronger empirical base.

6.2 Bua – a fishing village. (1940s – Early 1970s)

In the earlier half of the twentieth century Bua and Värö municipality was like any other agrarian area in Sweden. Bua was a small settlement on the periphery of the economic and cultural heartland of the major cities like Stockholm and Gothenburg. Värö also lacked the mineral rich mountains or the expensive forests that enabled industrial growth in other far removed municipalities of post-war Sweden’s financial blossoming.
Bua, the now largest community on the Värö peninsula, was mainly a fishing village at the time before Ringhals’ construction (B. S., personal communication, March 2016). The activities within a community must play a large role in forming sense of place and most of the respondents agree that it was the fisheries that provided Bua with its identity. At that time some hundred people worked, directly or indirectly, for the fisheries (B. S., personal communication, March 2016). The fisheries was the economic base in the community since the soils were too poor, especially along the coastline, to provide any large scale agriculture (G. L., personal communication, March 2016).

U. B. (personal communication, March 2016) remembers how “during the 1970s it was a lot of fishing boats here and we used to sit out by the lighthouse in the evenings and watch them go out to sea”. The respondent continued by adding that; since then, the fisheries have mostly disappeared. J. B. (personal communication, March 2016) also expressed a sense of lost over the fisheries. In his experiences they have been fewer for each year since the 1970s.

"Just like with the farmers and other such occupations [...] they do not fit this new way of life. It worked for me and my family but today I think it is very hard to make a living out of it. Of course, one never knows if the fisheries will get back their former relevance. Today it has none of the relevance it once had here in Bua. But it is this way with industrialization. It becomes increasingly difficult to get people to these odd jobs. It is so much easier for people to find work at, for example, Värö paper mill or Ringhals and get a good wage“ (B. S., personal communication, March 2016).

Many of the respondents express that the harbor however remains an attractive sight that any visitor to Bua should go and see. So, the past still lingers on in the community’s self-identity.

6.3 A nuclear power plant is planned – Early dialogue between stakeholders. (1960s – 1970s)

In the 1960s, as a young secondary school student, K. S. (personal communication, March 2016) got an assignment in social science class to attend a city council meeting. The respondent went to the local Värö city council and attended one of their meetings. The meeting began at seven pm in the evening and there were two questions on the agenda. The first question was concerned with the placement of a new postal service building. It was a great and long debate, lasting for some three hours, on whether the postal building should be placed on the western or the eastern side of the highway that passed through the municipality. After these three hours, with no agreement reached, the question was postponed for a later date. The second question on the agenda this evening concerned a letter from the state, wondering if the municipality would allow for the construction of a
new, and modern, nuclear power plant on the Värö peninsula. After five minutes the council had reached a positive agreement.

Part of the environment on the peninsula became protected in 1971 but was highly regarded before that. Up to the construction of Ringhals the municipality of Värö had held buildings at the peninsula to a minimum. Later, when Ringhals was decided upon the fact that there were so few buildings there was used as argument for the plants location (B. S., personal communication, March 2016). There were some farms and houses located in the area that Ringhals was supposed to be placed in. These were bought up by the municipality and Vattenfall who, according to B. S. (personal communication, March 2016), bought the lands from those that had the poorest economy first. By owning a fair amount of the necessary lots they could expropriate the ones who refused to sell. The same also happened when Södra Cell was constructed in 1972.

K. S. (personal communication, March 2016) recalls the attitude that people had at the time to be somewhat naïve. The population was not well educated on the matter and had little understanding about nuclear power or energy production in any broader sense. The people living in Värö was told by the politicians that nuclear power was a positive thing and being without other input there were no way to formulate a different idea. Some saw the possibility of more jobs in the area.

Based on the accounts from the respondents it seems that the dialogue between the different stakeholders (population, municipality and Vattenfall) was somewhat asymmetrical. The decision was made and discussed among politicians with no respondent recalling any direct dialogue between planners and inhabitants. This was not something uncommon at the time. Government officials are appointed to make those kinds of decisions and only in recent years have public participation been a preferred method. Also, there seem to have been no clash between the stakeholders.

“The municipality is very humble towards Vattenfall, for obvious reasons. They, I’m sure, have a good dialogue. This matter was already decided. It [Ringhals] was to be built. There were perhaps some protests but it was meaningless. [Among] just about all of the fishers there was a strong opposition against these plans. Not that any of us knew what it was. Nobody knew. The intrusion was perceived to be too great. At that time people was much more afraid of the concept of nuclear power and that has lingered somewhat to this day” (B. S., personal communication, March 2016).

B. S. (personal communication, March 2016) also claim people who had summerhouses in Bua as another group that opposed the construction. They usually had better education and knowledge about the risks of an intrusion on the community such as a power plant. However, since they didn’t live in Värö full time their possibilities to revoke any decision were few.
Even though there were some opposition from these two groups there seem to have been no unified local opposition against the construction of Ringhals. When such a big change occurs in a community like the construction of a power plant, it would not be unreasonable for some opposition or consideration among the local population. Had the same happened today it would be more opposition according to J. B. (personal communication, March 2016).

In other parts of Sweden where there was a proposal of building a nuclear power plant the plans were more readily and successfully fought. B. S. (personal communication, March 2016) recalled how one plant that was proposed to be located on the Bjäre peninsula was fought by an influential local population. On this peninsula lies two high end vacation villages, Torekov and Båstad. The people who have houses in these communities had altogether different capacities to battle the proposed plant than people in Värö had. Even though some people got involved in the demonstrations against nuclear power that occurred in Sweden during the late seventies the majority of the population trusted in what politicians and experts said (B. S., personal communication, March 2016).

G.L. (personal communication, March 2016), who will represent Ringhals’ perspective in this thesis, also says that “everything was driven by the local politicians. Even those that later became opponents of nuclear energy, like the Centre Party. They wanted their municipality to progress and develop. At that time Värö was depopulating. There were no jobs so people migrated to the cities. Politicians from all parties where therefore positive towards the construction of Ringhals. They would get a large employer”.

6.4 Ringhals and the transformation of a community. (1970s and onward)

What were the biggest and most immediate effects that Ringhals had on Bua and Värö? A majority of the respondents were positive towards Ringhals. They credited most of the development and population growth in the study area to the power plant. J. B. (personal communication, March 2016) and C. H. (personal communication, March 2016) also acknowledge Värö paper mill, Södra Cell as a reason for these changes. They are the two biggest employers in Värö.

Some go so far as to claim that Bua without Ringhals would have depopulated to the point where it would have no significance whatsoever (A. K., personal communication, March 2016). The memory of the fisheries as being vital and important is also questioned by one of the respondents who recall that the coastline used to be called “the famished coast” (G. W., personal communication, March 2016).

There is no doubt that Ringhals is regarded by a majority of the respondents to have uplifted the community of Bua. The stark transformation from a small, insignificant fishing
village on the coast of Halland to the town that it is today is attributed by most to industry. Ringhals and Södra Cell. Bua is still small but with a bigger significance in the municipality.

Most also agree that services and business is the result of Ringhals, and to a lesser extent Södra Cell. The local bank, school and pharmacy are some services that were mentioned to have occurred due to the population growth that Ringhals brought (S. T., personal communication, March 2016).

B. S. (personal communication, March 2016) was one of two respondent who didn’t give much credit to Ringhals bringing new businesses to the area. In the respondents view Ringhals have had no significant spin-off effects. J. B. (personal communication, March 2016) also didn’t think that Ringhals had contributed much more than some employments opportunities to the community.

This belief is not shared by G.L. (personal communication, March 2016) who suggests a cement and concrete factory as one example of a firm that came about as a result of the construction of Ringhals and that it probably exists many other.

When discussing the evolution and progress of Bua since Ringhals there is one current event that came back time and time again. It doesn’t have any direct relation to Ringhals but it do play part in constructing the mental geography of the respondents that will be useful when discussing the questions of this thesis. The event eluded to is the future of the local bank. The bank is shutting down sometime during 2016 and this is perceived by many of the respondents as something troublesome. Many fear that the bank is only the first of many losses that Bua will experience. They see it as a sign that services are becoming more and more centralized to Varberg. “Now it is regressing. It is only Varberg that matters. Varberg municipality, in reality, is only Varberg town” as J. B. (personal communication, March 2016) puts it.

6.5 Post-construction population boom.

It is evident when looking at regional population statistics that there have been a continuous growth of the population in the vicinity of Ringhals since its construction. Värö parish, where Bua and Ringhals is located have grew significantly during the construction of Ringhals from a population of 2424 in 1969 to 4013 at the end of 1980; with the highest growth occurring during the first five years of this period (The National Central Bureau of Statistics, 1977; The National Central Bureau of Statistics, 1981; The National Central Bureau of Statistics, 1989).

Ringhals was one of the biggest construction sites in northern Europe for a couple of years. The construction began in 1969 and the fourth and final reactor was completed in 1981. During those eleven years the site had a lot of workers. At its peak four to five
thousand construction workers were employed (G. L., personal communication, March 2016).

Some of the construction workers would not show in any population data since it is quite possible that they only had temporary accommodations in intervals during different stages of the construction. During a group conversation the respondents discussed how there were sometimes up to a hundred caravans on the power plant grounds during different construction projects. Most likely due to difficulties in finding any other accommodation for the extra personnel that do different upkeep jobs (S. T., personal communication, March 2016; G. W., personal communication, March 2016).

These temporary workers is evidence that point towards there being a seasonal and oscillating population growth due to Ringhals that is impossible to find in statistics. Even though these temporary workers doesn’t play a role in the housing market it is not unquestionable that they affect the local economy by utilizing local services. But the biggest and most prominent change must be the statistically observed population increase that is by most account due to the inflow of employees to Ringhals.

B. S. (personal communication, March 2016) say that since the power plant was completed the population in Bua has tripled. This increase has in his view gone smoothly without any social problems or clashes between old and new population. K. S. (personal communication, March 2016), who moved from Värö for a couple of years before the construction of Ringhals and returned only after it was completed, described that he felt like “everybody in the area worked there [at Ringhals]” upon moving back to the area.

“We’ve increased the employees continually here at Ringhals. The number of people not working at Ringhals has also increased at the same time. When I started here in the late eighties there were about one thousand employees at Ringhals and perhaps five hundred temporary jobs, external entrepreneurs and consultants, jobs, not people. And now we are closer to some sixteen, seventeen hundred employees and one thousand temporary jobs. So that has increased” (G. L., personal communication, March 2016).

That this new demography of power plant employees creates a feeling of community is agreed upon by a majority of the respondents of this thesis. Again, B. S. has a more nuanced and cynical view on this aspect that does not align with the majority. He, who have grown up in a different time with different expectations and possibilities, describe a certain alienation between himself and those working at Ringhals like this:

“An industry like this creates a certain kind of person. They are probably competent but they don’t do anything. Their job is to supervise the industry so that it runs smoothly. Then there is mechanics and such but they are few in numbers. This creates people that think that their reality are the same as everybody. They earn well for themselves and they have no requirements other than going to work and care for their measurements. It
is an environment with few initiatives since they must follow the manual. That creates a kind of person that believes that reality is like that. Their reality is like that but mine isn’t” (B. S., personal communication, March 2016).

6.6 What effect have Ringhals had on the housing market?

When a small village such as Bua experiences a rapid population increase such as the one during the construction of Ringhals and since there must’ve been response in the housing market. Since one of the aims of this thesis is to find what kind of effects a power plant have on the local geography it is necessary to see if there’s been any changes in infrastructure or housing. What changes in housing prices can be traced back to the power plant?

“When [Ringhals] was built the population, say, tripled, perhaps more than that. After that it has remained quite constant. They even had to tear down two of those apartment buildings because all the empty apartments. Could that have been in the eighties or nineties? But now there’s a big shortage once again. But that is a problem in all of Sweden, not only in Bua. However, here it has been a shortage for, well, for a very long time because when there were a lot of them they lowered the rents. The apartments were very cheap. Because of that it came a lot of seniors from Gothenburg and Kungsbacka who got an affordable living” (B. S., personal communication, March 2016).

“Perhaps there have been a lot of people moving here [to Bua] from all kinds of places but there haven’t been any new apartments or such things built since... I don’t know... the eighties, perhaps the seventies or whenever they built around here. A long time ago” (J. B., personal communication, March 2016).

On the question whether the price of a house or apartment is affected negatively by the close proximity of Ringhals the viewpoints differ somewhat between the respondents. When discussing with K. G. (personal communication, March 2016), a real estate agent in Varberg who sells houses in Bua, said that there were slight but noticeable differences in the prices compared to other similar villages on the coast of Halland. The prices was slightly lower than elsewhere. This was not true for all of Bua however. The area known as Bua Strand, located on the far side of a height, from where Ringhals is not visible, is more of a luxurious area with high house prices.

Other respondents also suggest that apartments are somewhat cheaper in Bua than in, for example, Varberg. However, they do not agree on whether there is a noticeable difference between Bua and other small communities or whether this difference is positive or negative. J. B. (personal communication, March 2016) claims that Ringhals haven’t affect prices that much and that there are villages further inland where houses are much
cheaper. B. S. (personal communication, March 2016) on the other hand suggest that Ringhals have had a big impact in lowering the prices in comparison to coastal communities only a couple of miles north were prices can be some 30-40% more expensive. The respondent continued by saying that the lower hosing prices is not all together a bad thing. That it has enabled people to live close to the coast at a cost that is more affordable for a larger group of people.

“If you disregard that it is big and dominating and all that it has been for the better – from the perspective of getting a house here. If you disregard that it looks absolutely terrible. But that is something to get used to” (B. S., personal communication, March 2016).

When asked what made the respondents move to Bua if they had not lived there since birth their answers were primarily based around two things. The first and major aspect that seemed to attract people was the closeness to nature, mainly the ocean (J. O., personal communication, March 2016). The second was the closeness to Gothenburg and Varberg as well as the good possibilities to travel there (K. K., personal communication, March 2016). Other than those two, who were frequent answers there were also some who answered affordable households and employment possibilities.

It was evident that most of the respondents valued the geographical position to be the biggest strength of the village of Bua. It’s position close to the ocean and relatively short distance to bigger cities along the coast. Based on personal experience it takes about thirty minutes to take the bus from Bua to Varberg and from there, another half an hour by train to reach Gothenburg. By car the journey must be much faster, especially considering that one could travel directly to Gothenburg then.

None of the respondents adhered the communication possibilities with Ringhals and it is difficult to measure or form a hypothesis whether these would be the same if Bua had not experienced the population boom that Ringhals brought. However, one question still remain considering the attractiveness of the area and that is one of the key questions of this thesis. To what extent have Ringhals shaped sense of place of Bua? Do the people who live here, now and before, have any concerns or fears related to the nuclear power plant? Do the people in Bua live in the shadow of a nuclear threat like the political discussion and media coverage of nuclear technology have suggested they would since the 1970s?
6.7 Life and risk perception in the vicinity of a power plant.

While preparing for the empirical work the phrasing of the question went along the lines of; in what way have Ringhals impacted your life? Pretty soon it became apparent that the first three words of that sentence where somewhat unnecessary. It became more relevant to ask whether Ringhals had any impact whatsoever on the sense of safety or daily considerations of the respondents.

All of the respondents were clear that they didn’t perceive Ringhals as a cause for concern in any way. One answer to the question was poignant enough to warrant a quote:

“It is ridiculous. Nobody would relocate to Bua if it was insecure. Then you’d have to be an idiot” (G. W., personal communication, March 2016).

The general impression was that Ringhals isn’t something that is talked about among the local population. It is a something that they have gotten used to live with. Part of their everyday life.

Most general impressions on Ringhals have been presented above in other paragraphs but it is impossible to get an understanding of the population’s sense of place based on people’s considerations on infrastructural cause and effect. Undeterred by the respondents quick deflections when asked to what degree, if any, the closeness of the
power plant have affected them, they began to discuss their lives and considerations more in-depth following more general questions concerning their lives.

“We moved to Bua in the late eighties. My husband got a job at Ringhals. He’s a physicist. That was after the Chernobyl accident. Since my husband was so well informed in everything I trusted him. But I was one of those who voted no in the nuclear power referendum. We lived in Skåne at the time and it was a lot of demonstrations and such down there by Barsebäck” (C. H., personal communication, March 2016).

For most who live in Bua and around Ringhals the power plant seem to be likened to any other industrial complex. It’s just “a big building located over there. You don’t think much about it I would say. If anything Värö paper mill is just as big only that you don’t see it as much. It just is there. I don’t think about it” (J. B., personal communication, March 2016). No one of the respondents that have lived in Bua since before Ringhals could remember anyone that moved away from the community because of it being constructed.

The general impression was that Ringhals isn’t something that is talked about among the local population. It is a something that they have gotten used to live with. Part of their everyday life. Some said that the only time that they ever thought about it was when they happened to see it up close while walking on the peninsula where it is located. According to C. H. (personal communication, March 2016) the natural environment have been ruined.

Some concerns for the impact that Ringhals have had on the nautical environment were also raised:

“Many believe, the power plant have had a bigger impact than is accounted for. The cooling water sucks a lot of fry out of the water and they get killed. Eighty to ninety percent dies there. There is no real, official, record over how many tons is killed. I think, without evidence, that Ringhals is one of the biggest predators here in Halland. It kills more fish than anything else I believe. The coastal fisheries are mostly all gone. But it is not only because of Ringhals. The ocean used to be rich in species but now all coastal waters are polluted. But that’s because of a lot of things. It is our state of living that is behind all this but no politician would say that we need to change that” (B. S., personal communication, March 2016).

Other than a few respondents concern for the natural environment most perceived Ringhals too be both clean and safe. But is this normalization of the plant constant? The respondents were asked if they had experienced any heightened sense of risk, either themselves or among others after the 2011 nuclear accident at Fukushima, Japan. But none claimed that these events made them perceive risks more than before.

Most of the respondents also deemed the possibility of an accident as low and felt that Ringhals was a safe industry. They believed that if anything would happen it would have
been difficult to prevent. The lack of natural phenomena in Sweden, such as the Tsunami that triggered the Fukushima accident, was also raised by many respondents. J. B. (personal communication, March 2016) acknowledge that there existed a risk but thought that it was both too difficult to grasp and too great to consider for most. The respondent also thought that Södra Cell used to pose more of a threat than Ringhals when they had chlorine in their waste water. They do not anymore. K. S. (personal communication, March 2016) have become more aware of possible risks over time but claims that most people still have a positive stance towards nuclear power.

According to K. G. (personal communication, March 2016) the interest in Bua didn’t dwindle in any noticeable way after the Fukushima accident. The respondent believed that this was because of the fact that most who relocate to Värö comes from Varberg, Falkenberg or Kungsbacka. Towns that also lie within the zone that would be affected if anything would go wrong at Ringhals.

When A. K. (personal communication, March 2016) and spouse moved to Bua from Åsa north of Ringhals, they weren’t concerned about the proximity of the power plant. Their children however expressed some fear. The respondents response to them was to brush it off, saying that if Ringhals did explode Åsa would also be affected as it lies within the inner preparation zone in case of emergency (see Figure 3).

Many of the respondents feel that they are well informed on what is going on at Ringhals and that they, through measures like the alarms and other perceive a good deal of security. All of the communities within the inner zone (see Figure 3) have emergency radios installed in their households. These radios are for some respondents a further source of their sense of security (S. T., personal communication, March 2016).

G. L. (personal communication, March 2016) describe how Ringhals have made an effort in informing the public and to keep the relations positive. Ringhals have, apart from the aforementioned radios, regular contact with different community groups, a homepage that informs the public about possible disturbances that could occur and a newspaper that is distributed to all households within Varberg municipality as well as neighboring ones.

“It is so that people will have a chance to understand what is going on. Sometimes they get the medias perspective – and I will not argue that media is always wrong, but sometimes there’s misconceptions, or simplified, and often exaggerated. People misunderstand something or want to dramatize the matter. In those cases we at least have the possibility to get our perspective across” (G. L., personal communication, March 2016).
Of course, Ringhals would not consider themselves to be a reason for fear and any of their employees would not think so either. When G. L. (personal communication, March 2016) describe the risk of accident as very low it comes as no surprise. G.L. further explains how Ringhals, and other nuclear power facilities, have had to fight off concerns among the public fueled by politicians. When Sweden were to vote on the future of its nuclear program “the ministers of nuclear power sat in the TV’s and had drawn the Barsebäck power plant over what looked like a dart board on the map. Here ten thousand will die in the first hour, in the second hour one hundred thousand and after three hours all of Copenhagen will have died, they said. Now we actually have had two accidents and can
see how it, in reality, is plenty of time to evacuate but they didn’t [in Chernobyl] because they had this system of secrecy. But in Fukushima they warned immediately and got people out of there. There is no one there that died except after physical injuries that was caused by the earthquake” (G. L., personal communication, March 2016).

It seems that the political dialogue regarding the necessity and safety of nuclear power plants shifted in Sweden once many of them were completed. Even though the debate was quite heated in the late 1970s and politicians raised questions on the safety of nuclear power plants it is evident, from the respondents, that the strategies that Ringhals have employed have been successful in lowering the perceived risks of a nuclear plant among the population in Bua.

B. S. (personal communication, March 2016) who is the respondents that proved to be concerned by Ringhals the most expressed that few people asked any inconvenient questions. This due the fact that there are a lot of people in the area that work, or have a family member that work at Ringhals they are more or less dependent. Ringhals have always brushed off any association with the technology that proved faulty in Chernobyl, saying that such an accident could never happen.

B. S. (personal communication, March 2016) was also the only respondent that expressed some concern for the radiation and the long time effects that it might have on himself and his grandchildren who live in Bua. He said that there were some, rather weak, evidence that suggested that the risk for cancer could be higher in the proximity of a nuclear plant but generally felt that the question wasn’t discussed properly by either the community, Ringhals or experts.

Another consideration when discussing risk perception that stood-out among the respondents came from K. S. (personal communication, March 2016) who feared a forced removal from the area in case of an accident. This has happened recently in Fukushima where people were forced from the area and aren’t allowed to return to their homes. The reason being that the radiation levers in the ground was considered too high for people to live there. It is not possible to get insurance for such an event and if people were forced to move they would have to leave much of their wealth (mainly that locked in properties) behind.

G. L. (personal communication, March 2016) was asked about these two concerns and as expected didn’t give much weight too them. Larsen acknowledged that the ground in Chernobyl and Fukushima was polluted enough so that it would be unsafe too eat that which grows in the ground. He mentioned Mushrooms as an example. The respondent also acknowledged that there were evidence that pointed towards a slight increase in some forms of cancer.
“I agree, it is dangerous to live near heavy industry, I’m sure, but I do not think that a nuclear power plant stands out. There is so much else. There’s not that many people that have died due to nuclear power. Chernobyl, depends on who you’re asking, but probable estimates; fifty people. I mean, due to the accident as such. Additionally there were people who got radiated, firemen for example, when dealing with the accident and there is some evidence of a couple of cases of thyroid cancer. Smoking kills a thousand people in Sweden each year but there are no acts of trying to shut down these tobacco firms” (G. L., personal communication, March 2016).

Although the above statement is somewhat cynical, in a way that suggests a tiredness of repetition of the question, there are traces of what was prominent in many of the respondents’ answers. A sense of as long as nothing happens it is all right – and if anything ever does happen that is just the way it goes. Nothing to do about that and especially nothing to spend hours awake at night over.

Apart from possible radiation, the few remarks on Ringhals effect on the coastal waters, surrounding landscape and being kind of ugly none of the respondents felt and deeper, or, at all prominent concern living close to a nuclear power plant. There were some who discussed the possibility of a terrorist attack on Ringhals but at the same time deemed that scenario to be unlikely since the grounds and proximity of the plant is patrolled by guards (G. W., personal communication, March 2016).

G. L., who been involved in public communication for Ringhals for quite some time provides his thoughts on why people near the plant haven’t experienced any heightened concerns even after internationally covered nuclear accidents:

“Knowledge provides…. I mean, there’s people who are afraid of all sorts of things that are far away. The farther away they are the more afraid they become” (G. L., personal communication, March 2016).

6.8 Past and future pathways for Bua and Värö.

There seem to have been two ways in which the construction of the Ringhals power plant was considered among the population. The first, and paramount, perspective was championing the possibilities that such an industry would bring to the declining municipality. The second and rarer perspective was more skeptical, perhaps derived from a perceived alienation from the decision-making process among the inhabitants. The later perspective could also be part fear of the unknown impacts that a power plant would have, mainly concerning livelihoods but also possibly the natural surroundings.

The respondents were also asked what they thought that Bua, or Värö, could have become if the nuclear power plant had not been placed on the Ringhals peninsula. Some of the
answers have already been provided above under a different heading but others took a more liberal approach to the subject. The point of this thought experiment was for this thesis to have a basis of what part of the population’s sense of place was due to the nuclear plant and what were based on other attributes. Attributes that, perhaps, once the nuclear power plant was detracted from the consideration, would emerge more fully. This is perhaps also of key interest since the plans to shut down Ringhals, as part of Sweden’s nuclear plan, has begun.

However this thought experiment proved somewhat complicated to address. This question didn’t lend itself very well to does who didn’t live in Värö before the construction of the power plant. The respondent that had lived in the region the longest, B. S. (personal communication, March 2016), was also the respondent who had proven the most skeptical of Ringhals. His long ties with the area is probably why it was he who was the one that lingered the longest on the, perhaps lost, potential of Bua as something other than it became:

“I believe that, given the opportunity, you should visit Särö and the Onsala fjord. There the conditions were about the same as here and they have experienced a big inflow of people from Gothenburg. There it’s expensive houses all the way. It could have been the same here, for better or worse. I think the houses would be so attractive that tourism would not matter. It has up there anyway. You know, the need to live by the sea has accelerated and the opportunities to provide that has grown. We would have been more of those permanent population with towers and expensive houses. If that would have been any better, I’m not sure. But that would have happen because the location is such. But that opportunity is gone. It will never be” (B. S., personal communication, March 2016).

Other than this rather full analysis of bygone opportunities most respondents didn’t think that Bua without Ringhals, or Södra Cell, the paper mill, would have amounted to anything. It would have been a near forgotten vacation spot among others. A couple of the respondents told fondly of the work that has been done down in Bua’s harbor to restore the old fishing cottages to attract tourists (U. B., personal communication, March 2016).
There are also plans to build a new hostel and public saunas there as well (C. H., personal communication, March 2016). The work is coming from different community groups, the most prominent being *The Future of Bua*, that work to make the village attractive. Most of the future possibilities for Bua, restorations and development, is credited to these groups, and there is a sense of being forgotten by the municipal authorities in Varberg by some respondents (J. B., personal communication, March 2016; J. B., personal communication, March 2016; C. H., personal communication, March 2016).

The last question to be examined was what the people believed would happen with the community if, or when, Ringhals shuts down. Their thoughts on this matter provide evidence towards the sense of place that the population have. While most were not overly concerned with the past, many were more talkative on future of Bua. Perhaps because the future is more tangible and real to them.

Most of the respondents were concerned that if Ringhals shuts down it would hurt the community. One belief was that if Ringhals closed it would be fewer visitors to the village and fewer who used the services. “*That could result in the whole village being impoverished*” (S. T., personal communication, March 2016).
Because the community would lose one of its biggest employers some also thought that the housing market would be affected negatively with house prices plummeting (J. B., March 2016). This loss of jobs would also constitute a sudden problem for the municipality since there are few other equivalent positions available in the area for people who have the high qualifications necessary for some jobs at Ringhals (B. S., personal communication, March 2016).

“If it happens over a long period of time the community will adapt and the municipality have to think of things that help people. But if it as a fast process it will, of course, be a big change. This is a very big employer and from a historical perspective it has heightened the level of education in the area. We’ll have to see what will take its place” (G. ., personal communication, March 2016).

A few saw the future possibilities for Bua without a power plant more hopefully. “What would happen is that several thousand jobs would disappear. That’s what will happen. I do not believe that the village will be terribly affected really. The village will not die out” (K. K., personal communication, March 2016).

Just as people in Bua have been positive towards Ringhals they’re also generally positive towards nuclear power and most wish to keep the power plant up and running. That way they at least could get electricity when needed as G. W. (personal communication, March 2016) expressed it. Some also felt that nuclear power was the cleanest and most efficient form of power that they could hope for and considered the environmental impact of coal (their example) as something that was much more destructive (A. K., personal communication, March 2016).

“We who work here [at Ringhals] certainly think so. When it comes to the big threat towards the environment it is not Sulphur and nitrogen, but carbon dioxide that the whole world is concerned about. We have very low carbon dioxide emissions. That is not a point of view. We’ve had investigations that claim this. The whole lifecycle of nuclear power has emission rates that rival that of wind power. But wind... you cannot guarantee anything. Just a couple of days ago, the thirteenth and fourteenth of Mars all of the wind power stations stood still. Then something else will have to produce. Who will do that if you shut down the nuclear power plants? Then you’ll have to use fossil fuel; probably gas” (G. L., personal communication, March 2016).

No matter how clean or otherwise beneficial the people in Bua think that Ringhals is the future of the plant is uncertain. The financial burden coupled with far going political plans to phase out Swedish nuclear energy might finally break the camel’s back, as the idiom goes. This will, by necessity, dwell upon the political and financial aspects of energy production that sidesteps the focus of this thesis but is of importance to get a context on people’s thoughts on the future possibilities of Värö and Bua. G. L. (personal communication, March 2016) considers the political decisions to be the biggest threat to
Ringhals with high taxes on production and subsidies to other forms of energy production, such as wind. The subsidies enables these otherwise equally, or more, expensive production forms to be profitable in a way that nuclear power cannot.

That the fault of low income for nuclear power lies with the state is not a belief shared by all. Sceptics have a different reasoning:

“Now they claim that it is the transportation tax that is breaking the nuclear energy business. That is rubbish. The nuclear business is breaking because a bad management that have spent a whole lot of money in Germany and places. That is why they cannot run with a profit. Such old plants should be able to produce much more cheaply” (B. S., personal communication, March 2016).

Whichever of these is true is not that important for this thesis. However, the discrepancies in reasoning on this matter can be translated into a larger belief in regard to the sympathies toward authorities. Which is a theme that has resurfaced from time to time during the evolution in Bua.

A few of the respondents also drew attention to the costs of shutting down and dismantling a nuclear facility. There have been few European cases so far with the most recent one being a plant in Greifswald, Germany. While Ringhals is estimated to cost some 20 billion SKR to dismantle the Germans had to pay about 100 billion SKR – well over expectations (K. S., personal communication, March 2016). The Germans, from their experience, say that the final cost of dismantling a nuclear power plant is impossible to calculate, according to B. S. (personal communication, March 2016).

K. S. (personal communication, March 2016) believes that the most likely future for the headland where Ringhals is located is that it will house other sources of energy in the future. The property is officially regarded as very attractive from an energy production perspective.

“The area is to be used for heavy industry. My thought is that it will be another form of energy production. Gas, for example. Import the gas by boat and run a gas power station since the other infrastructure is there already. If the nuclear power stops I believe that it would be something like that. Even if you have a lot of water, solar and wind power you need something to boost it when it get cold and so on. In that case gas is a good source” (B. S., personal communication, March 2016).

K. S. (personal communication, March 2016) speculates along similar lines. If Ringhals closes the infrastructure should be refitted to some other energy production facility. Preferably wind or solar energy.

However simple it would be to turn the area into something else there is likely to be some resistance. As G. L. (personal communication, March 2016) explains:
"It is possible but people out here aren’t too happy about it. Vattenfall had plans to build three windmills out here on our grounds and it was an outcry. The population rose like one man and made name lists and so on. I saw an interview in one of the regional papers. An old lady up here said that no, she didn’t want any windmills. They asked her how she could say that since she lived next door to one of Europe’s largest nuclear power facilities. Three windmills, she said, then they might as well build another reactor so we’ll get some electricity. So, it is not so easy. Officially the ground is marked to house energy production. But you know people, and when you are about to make something new – people don’t like change”.

The future of Bua and Värö is still very much uncertain. If the plant has to shut down the municipality will have to decide what to do with the infrastructure. B. S. (personal communication, March 2016) think that it would be good in the long run to dismantle the plant and properly clean the area. However, he fears that Ringhals will be treated similarly as Barsebäck which he considers to have been improperly shut down and left standing as it is because it was too expensive to do otherwise. If that would happen with Ringhals he considers it too be devastating for the community since it would not provide any benefits but remain as hazardous.

“If this is just a parenthesis one could get really mad. If it never amounts to anything more than this when they ruined so much” (B. S., personal communication, March 2016).

7. Discussion

7.1 Introduction.

The goal of this thesis as presented in the beginning of the document is mainly concerned with two key aspects. The first of these was if the sense of place among the residents on the Värö Peninsula had changed due to the construction of Ringhals and if so, in what way. Such a change could have two possible reasons to occur, though one does not exclude the other. Either the interpretation and value of the area has changed within the composition of the population, or, the composition of the people has changed. To exemplify a question should be asked and answered whether the Ringhals power plant has altered the sense of place within the community or the community itself – which would indicate that a new sense of place should be coupled with this new population.

The second key aspect concerns the element of fear and risk perception among the community. This aspect is, in a way, a more straightforward examination of the first
aspect but comes coupled with a different set of follow up questions that need to be addressed. Such questions as if there’s been a change among people’s risk perception following the media attention and safety debate after big nuclear accidents such as Chernobyl or Fukushima.

Following the empirical results presented above that examine these two key lines of enquiry should add up to a reasonable conclusion on to what extent Ringhals affect the local populations’ sense of place and risk perception. It should also be understood if this risk perception in any way shapes future pathways for further industrial expanse or other infrastructure.

As initially described the idea behind this thesis is that a contested industry, such as a nuclear power plant, could either be seen as something positive or something disruptive. If it is regarded as something positive it could shape the public into regarding their community as a place that is and should be welcoming to new industry. This assumption proved to be somewhat erroneous.

7.2 Sense of place.

Firstly this discussion will cover in what ways have the sense of place among the population of Värö changed after Ringhals was constructed? Perhaps unfortunately, not all of the respondents were living in Bua at the time of the construction of Ringhals for this thesis to be able to have an even estimate over past and current sense of place among the community at large. It is also necessary to keep in mind that Ringhals was constructed a long time ago and that memories tend to fade with age and adjust to persona changes. This is not to say that the respondent’s claims are untrustworthy or fallible as sense of place is unable to be such things. It is merely to highlight the unevenness of a comparison between past and present.

The village of Bua has been the main area of interest for empirical data as it is the closest settlement to Ringhals of any prevalent population that would’ve gotten affected. All of the respondents, when discussing the past, bring forward a very similar description to one another of Bua before the construction of Ringhals. Pre-Ringhals Bua is credit with being a very small, rural village with fisheries as its main form of sustenance. In many ways it can be likened to almost any other small community far removed from the industrial and economical processes that occurred in urban regions of Sweden.

The general level of education in the area before Ringhals have been described as low (G. L., personal communication, March 2016). Hallberg (2014) brings further depth to the rurality of, not only Bua, but all of Halland by describing how it was cultivated very slowly in comparison to other parts of Sweden due to the poor soils in the area.
The fishing industry developed over time as new and better technology became available and after a while the oceanic fishing business was so lucrative that it phased out other activities like large scale farming. B. S. (personal communication, March 2016), who himself was a fisherman describe how there was some hundred fishermen in the village during the 1960’s. This rough estimate is similar to the number Hallberg (2014) found which amounted to some 80 fishermen in Bua and further thirty in Videberg on the Ringhals peninsula. These numbers might appear small but at the time Bua parish only had some two thousand three hundred inhabitants at that time (The National Central Bureau of Statistics, 1977).

About five percent of the population was fishermen for a trade and together with the economical role the fishing industry had at that time it is easy to see why all of the respondents mark Bua as a fishing village above all else. The fisheries were what defined Bua before the construction of Ringhals.

There are some thoughts that can be drawn from this periodical self-definition of Bua being a fishing village. One important aspect is found in a slightly offhand remark that B. S. made as the respondent told about a perceived difference in personality among people who are employees at Ringhals and fishermen.

This is only one of the respondent’s personal experience but within that remark lies the description of a veiled difference between modern workers and those of yesteryears. This would not necessarily amount to anything of value if it wasn’t also for the amount of respondents claiming that it feels like if most people in Bua work for Ringhals and that people aren’t interested in working in the fisheries or on farms (K. S., personal communication, March 2016; J. B., personal communication, March 2016).

Sense of place, as have been described above in this document is not something static and the therefore it is likely that the inflow of inhabitants to the area has led to a change in sense of place (Smaldone, Harris & Sanyal, 2005). This change is due both to the new composition of the population and the fact that most of the inhabitants today do not have any connection to Bua or Värö before Ringhals.

It is evident that where Bua once was a fishing village, with an educational level that was perceived as low, it has now transformed into something else where highly educated employments stand as defining. However, this definition is not as simple as the definition of Bua as a fishing village. When the respondents thought back and described what Bua was before Ringhals it was often with the tone one would use when talking about something futile or naïve. To quote as an example: “Without it, the nuclear power plant, Bua would be dead” (A. K., personal communication, March 2016).

The coastal line was also remembered as being called the famished coast which suggest a fishing business that contradict the description by Hallberg (2014). The truth could be
that it in actuality once was the most lucrative business in Värö at one time but have been compared to more recent measures. As modernization occurred in more recent memory and have proven to be successful in ways that are more readily experienced by inhabitants, old or otherwise. It has become regarded as something that works. All benefits that befalls the community are directly or indirectly assessed as being a result of modernization, of which Ringhals is the local example.

7.3 Public perception of Ringhals.

As stated by respondents the people of Bua and Värö are generally positive towards nuclear power (K. S., personal communication, March 2016). The opinion differs from the general opinion of the Swedish population as reported by a recent survey (Reuterskiöld, 2016). According to that survey nearly half of the Swedish population is against nuclear power while the majority seem to be positive in Bua. Bua have a long history of being positive towards Ringhals and nuclear power in general. In the nuclear power referendum of 1980, two thirds of the votes in Bua were on line one for a continuous nuclear program. While all of the choices would result in the nuclear power being phased out eventually the first line was the most positive. Neighboring voting districts, such as Våröbacka and Varberg voted against (Hallberg, 2014).

None of the inhabitants in the immediate vicinity of Ringhals regarded the nuclear power plant as a source of fear. Thus, the proximity effect as described above holds true also in Bua. The responses given to the question on whether the interviewees perceived any fear or risks associated suggested a sort tiredness of repetition in regard to the question. It was prominent in many of the respondents’ answers to brush any suggested risks aside. There was a sense of; as long as nothing happens it is all right – and if anything ever does happen that is just the way it goes. Nothing to do about that and especially nothing to spend hours awake at night over. The title of the study by De Dominicis et al. (2015), “We are at risk and so what?” could’ve been applicable to the respondent’s answers’ except that none of the respondents really do believe that they are at risk.

Since the empirical work of this thesis was concerned with any risk perception among the local population it was also necessary to examine if this lack of fear or perceived risks was something constant. The respondents were asked if they had experienced any heightened sense of risk, either themselves or among others after any of the bigger nuclear accidents that got international attention; Three Miles Island, Chernobyl and/or Fukushima. Even during these times the respondents were unable to recollect any heightened sense of risk in the area. K. G. (personal communication, March 2016) the real estate agent in Varberg, claimed that neither the interest nor selling price was affected other than for a short time after Fukushima. This immediate spike in risk
perception is similar to the conclusions drawn by both Gamble and Downing (1982) and Cale and Kromer (2015) who presented similar findings in America.

K. G. (personal communication, March 2016) attributed the lack of any concern among those who chose to move to Värö to the fact that most who relocate to the area comes from Varberg, Falkenberg or Kungsbacka. Towns that also lie within the zone that would be affected if anything would go wrong at Ringhals (see Figure 3).

Other than some respondents acknowledging the physical intrusion of the plant – either on the skyline or on the environment as a negative, almost all of them considered Ringhals to have had a positive effect on Bua. The primary exception was B. S., who lived in Bua continually since before the plant was constructed and who has also worked within the industry that defined the community before Ringhals. B.S. was more restrained when distributing accolades to Ringhals.

The other person was J. B. (personal communication, March 2016) who has also lived in Bua since birth but was born after the plant was established. The respondent, lacking any personal experience of the community and times before Ringhals was more than any other inclined to regard the plant as “a big building over there” more than anything else. The respondent neither regarded Ringhals to have had any important impact on day to day life in Bua.

These experiences in Bua and Värö are somewhat in line with findings on public opinion on nuclear power within host communities by, as example, Venables et al. (2012) and Siegrist and Visschers (2013). Those in close proximity to a power plant perceive lower risks than people who lives further away (Boholm & Löfstedt, 2004).

The findings by Cale and Kromer (2015) two concluded that proximity – beyond immediate post-accident spikes in negativity – is irrelevant on public opinion of nuclear power are also comparable. Their study however said that awareness of the plant is increased but opinions on the necessity, safety or usefulness of them does not. The results of this thesis contradicts that last part of Cale and Kromers (2015) results.

Most of the respondents also deemed the possibility of an accident as low and felt that Ringhals was a safe industry that didn’t run the risk of being disturbed by natural risks or faulty safety. This feeling of Ringhals as safe and why people close to power plants is most likely because that they live so close as to allow for the plant to be a normal aspect of their lives. It is part of their sense of place and therefore part of their home and as De Dominicis et al. (2015) conclude in their study – that which we perceive as home and part of our home is something that we have a positive bias towards.

The other aspect that could provide insight as to how the proximity effect has come into play in Värö is because of the amount of people that are within the informational outreach that Ringhals do. Ringhals actively work to calm any fears or concerns that people living
in the area. Something which is similar to the technocratic outreach that occurred in Germany when their power plants were to be constructed (Schüring, 2013). The exception is that the uncertainty factor is lower in Bua. It should also be noted that a majority of the population work directly or indirectly on Ringhals or the other industrial giant of the peninsula, Värö paper mill and one of the respondents, C. H. (personal communication, March 2016), who moved to the community shortly after Chernobyl stated that she trusted in her husband, an employee at Ringhals who was positive towards the safety of the plant. An informational bias, either positive or negative, is a key factor in shaping the belief systems of a community (Zhu, Wei & Zhao, 2016).

7.4 Ringhals effects on the housing market.

It is evident from the statistics that the population in Bua parish has grown rapidly since the construction of Ringhals began. More so, both in hard numbers and percentage, than nearby Kungsbacka and Ås parishes (The National Central Bureau of Statistics, 1977). This increase in the population led both to a higher demand for local services, communal and business as well as a greater economic incentive for such.

Gamble and Downing (1982) found that it was no significant difference in property values in the vicinity of nuclear power facilities in the United States. The findings in this thesis are somewhat contradictory. Some of the respondents perceive the property values in Bua to be lower than in other similar communities. Although the effect is not agreed upon by all of the respondents. Some didn’t perceive and difference while others saw big differences. Even those who said that Ringhals had affected house prices didn’t necessarily regarded it as something negative as it enabled a greater spectrum of new inhabitants that could afford to live by the ocean.

None of the respondents claimed that, as they chose to move there they considered the proximity of the Ringhals plant. Instead it was the geography of the community that was considered. It’s closeness to the ocean and well-connectedness to cities such as Varberg and Gothenburg.

7.5 Lost opportunities?

The respondents were also asked what they thought that Bua, or Värö, could have become if the nuclear power plant had not been placed on the Ringhals peninsula. Some of the answers have already been provided above under a different heading but others took a more liberal approach to the subject. The point of this thought experiment was for this thesis to have a basis of what part of the population’s sense of place was due to the
nuclear plant and what were based on other attributes. Attributes that, perhaps, once the nuclear power plant was detracted from the consideration, would emerge more fully. This is perhaps also of key interest since the plans to shut down Ringhals, as part of Sweden’s nuclear plan, has begun.

Other coastal communities with similar conditions as Bua in Halland have experienced a very different evolution. B. S. (personal communication, March 2016), without putting any value in the difference, claimed that without Ringhals Bua would’ve been home to a richer population. Such as is the case in parts where the plant isn’t visible from (K. G., personal communication, March 2016).

Other than this lost opportunity to become a coastal vacation spot most respondents didn’t think that Bua without Ringhals, or Södra Cell, the paper mill, would have amounted to anything. It seem most think it, at best, would have been a near forgotten vacation spot among others but perhaps Bua without Ringhals would’ve also become like those luxurious communities with a majority of its households being vacation homes. In the early half of the nineteenth century, while Bua was still a rural community, it was the preferable vacation resort for people in Borås who wanted to spend their summers on the coast (Hallberg, 2014).

A couple of the respondents told fondly of the work that has been done down in Bua’s harbor to restore the old fishing cottages to attract tourists (U. B., personal communication, March 2016). There is also plans to build a new hostel and public saunas there as well (C. H., personal communication, March 2016).

The initiative to rework Bua is coming from different community groups, the most prominent being The Future of Bua, that work to make the village attractive. Most of the future possibilities for Bua, restorations and development, is credited to these groups, and there is a sense of being forgotten by the municipal authorities in Varberg.

The people who were summer residents in Bua when Ringhals was planned were the ones who were mostly against the construction of the plant, together with some fishermen. The opposition among summer residents is attributed to their higher educational level. That they were more knowable about the possible risks and more involved in the general nuclear debate.

There is, however, another possibility for their negativity and that is that they had another sense of place than those who lived in the community all year. For those who lived only during the summers it was the environment that was of paramount value. Their concerns would not have been on whether a big industry such as Ringhals would provide more and better services to the area. Their interest lied in escaping the city, as one would assume is the reason for spending a vacation on the countryside. They might also have worried
that the value of their summer house should fall due to the possible negative effect Ringhals would have had on the environment.

For those living all year in Värö there seem to have been two ways in which the construction of the Ringhals power plant was considered. The first, and paramount, perspective was championing the possibilities that such an industry would bring to the declining municipality. The second perspective was more in line with the stronger voices of the seasonal inhabitants and was more skeptical. Part fear of the unknown impacts that a power plant would have, mainly concerning livelihoods but also possibly the natural surroundings.

Since the decision was made and discussed among politicians and business actors, with no respondent recalling any direct dialogue between planners and inhabitants the skeptical perspective could’ve been derived from a perceived alienation from the decision-making process among the inhabitants.

The dialogue between the public, experts, business and politicians have become more inclusive in the years after the plants completion. Many of the respondents feel that they are well informed on what is going on at Ringhals and that they, through measures like the alarms and other perceive a good deal of security.

7.6 Future pathways.

The final question the respondents were given was what they assumed was the possible future pathway for Bua. The Swedish nuclear power program, as a result of the nuclear referendum of 1980 is that all nuclear power plants should be phased out in the near future. The support for this has been increased among the Swedish population since the Chernobyl accident and more recently the accident in Fukushima (Reuterskiöld, 2016). Sweden was one of the first states to phase out its nuclear program and have clear plans to do so (Rosseger & Ramin, 2013). Franchino (2014) on the other hand described Sweden as one country that didn’t sway from a generally positive view on nuclear power after the Fukushima accident. So, most of the population is for phasing out the nuclear power plants while the politicians are more torn to do the same.

Just as people in Bua have been positive towards Ringhals they’re also generally positive towards nuclear power and most wish to keep the power plant up and running. The plant is a big part of their place identity and a positive factor for their sense of place.

But high safety demands and taxes are making it less and less profitable to keep the power plant running (G. Larsen, personal communication, March 2016). No matter how clean or otherwise beneficial the people in Bua think that that Ringhals is. The financial
burden coupled with far going political plans to phase out Swedish nuclear energy is a very possible future.

Whilst people in the Värö are positive towards nuclear power there is mixed feelings towards other sources of energy production. Some of the respondents believe that if Ringhals closes the infrastructure should and will be refitted to some other energy production facility. Preferably wind or solar energy.

The informational bias is another aspect that comes into play in Bua who is well informed on nuclear power but still perceive uncertainty regarding the effectiveness and impact of other energy producing facilities.

Despite the fact that Ringhals, the biggest change that Bua has experienced as of yet proved to be regarded as something positive there still exists a fear of the unknown. Fear, as have been discussed, increases with distance, and this distance needs not to be geographical in nature. While some respondents were positive towards alternative energy sources such as wind and solar energy others were not. While most believe that the area will continue to be an important producer of energy in the future there are skepticism towards the possible alternatives mainly due to them being new and unknown. It is nuclear power that is considered to be effective and any negative impact it could have had has become normalized and common.

The future of Bua is more unlikely to repeat a project that would involve such a big change to the community as the construction of Ringhals. Today, the population in Bua and Värö is both larger and with a higher percentage being well educated and well informed. Thus the possibility for the population to oppose and affect the future pathways for the region are greater than ever before. The respondents gave several suggestions to this possibility. Firstly people are more likely to protest large scale projects such as new plants today, says J. B. (personal communication, March 2016).

Second, people who live near Ringhals have already declared their negativity towards the idea to construct wind mills on the peninsula and would rather have had nuclear power.

Thirdly; a well-informed and powerful population within a host community has in other areas of Sweden been able to stop construction plans. If a population is driven and resourceful enough to work together they can prevent big projects, like any suggest future industry.

Lastly, some of the respondents have described a feeling of being forgotten by municipal authorities in Varberg which could suggest that their trust in them is low. People only spoke fondly of recent change that was implemented by local interest groups which they felt represented a force that worked for their own and their community's best.
Where before Bua was a small fishing village on peripheral west coast of Sweden, rural and with limited summer inhabitants it is today a community very much connected with Ringhals. Once it was define by its fisheries, now it is defined by its energy producing activities. Therefore Ringhals can be said to have had a great impact on the sense of place among inhabitants of Bua. This change is most probably due to the great immigration of people of different educational levels that do not share any connections with the area before the construction of the plant.

More people lead to an increase in provided services, both communal and business, and a higher level of education among a population often means that demands on such services are higher. Because of these new services, Ringhals is regarded by most respondents as something positive and an important institution in the area. Only for a minority of the respondents, with connections to the area that goes further back than Ringhals, did the power plant in some ways symbolize a lost opportunity for the community.

The experiences of fear of Ringhals in Bua and Värö are in line with earlier research on public opinion on nuclear power within host communities. None of the respondents showed any experience of fear towards Ringhals or nuclear power and risks associated with nuclear power by some were among the respondents deemed as low or improbable. Even in times immediately after big accidents such as Chernobyl or Fukushima hasn't resulted in any perceived spikes in risk perception among the respondents. The geographical circumstances are deemed to different and Sweden and Ringhals are regarded as much safer than the aforementioned examples. The difference in comparison to earlier studies is that Bua seem to be more positive towards nuclear power than the average population of Sweden.

Whilst people in the study region are positive towards nuclear power they are evidently less positive towards change in general. Despite the fact that Ringhals, the biggest change that Bua has experienced as of yet proved to be regarded as something positive there still exists a fear of the unknown. Fear, increases with distance, and this distance needs not to be geographical in nature. While some respondents were positive towards alternative energy sources such as wind and solar energy others were not. While most believe that the area will continue to be an important producer of energy in the future there are skepticism towards the possible alternatives mainly due to them being new and unknown. It is nuclear power that is considered to be effective and any negative impact it could have had has become normalized and common.

However, when Ringhals was planned and established the community had little power to impact or oppose the decision. The changes brought by Ringhals have affected the
possibilities for future pathways. It is likely that any future pathway involves energy production but the form that production takes will is not clear, or even decided upon, at this point in time.

Today, the population in Bua and Värö is larger, with a higher percentage being well educated. Thus the possibility for the population to oppose and affect the future pathways for the region are greater than ever before. The conclusion therefore is that the possibility for such a big change in the community is more unlikely to happen again and any future pathway will probably result only in minor changes.

**Limitations**

There are some limiting factors to the results of this thesis and those are mostly concerned with the respondents. Since it is not very many of them their answers, and the ratio of positive and negative viewpoints might not represent the general view among the inhabitants of Bua.

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**Interviews with 13 anonymous respondents.**

**Statistics.**


Electronic resources.


