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Coastal Communities and Employment Systems:

Networks and communities in change



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A dissertation for the degree of
Philosophiae Doctor

November 2013

Preface

After a winning an Olympic gold medal, a Norwegian Nordic combined skier was asked who he wanted to thank. The answer he gave was rather bold as he answered: “No, it is I who have trained for this, so it is I who should be thanked”. At the danger of appearing rather audacious, I actually could not agree more. For a student to finish a PhD it is first and foremost his/her own efforts, sweat and tears that makes this happen. Still, there are a number of individuals who should be thanked.

First and foremost, I would like to thank my main supervisor Jahn Petter Johnsen. This work would have never been started without him, but it is even more unlikely that I would have finished without him as well. We have had many interesting arguments and conversations. It has been a privilege to work on a topic that engages my supervisor to the extent that fisheries recruitment and employment engage Jahn Petter. A supervisor's role throughout a PhD process should never be underestimated. Second, I would thank my external supervisor Jostein Vik. With a different disciplinary background and perspective, he has been invaluable; he also offered a 'safety buoy' when I was heading for 'deep semiotic waters'. It has been a pleasure working with you both. Third, I would thank my research group MARA for its encouragement and backing, particularly the colleagues who popped their head into my office, risking life and health, when things were looking quite bleak. Fourth, my new employer, SINTEF Fisheries and Aquaculture, has been generous. Not only have they given me faith in a life after the PhD, but they have also encouraged me and kept me grounded.

I think my interviewees also deserve a “thank you”, and in particular the fishers who gave generously of their time. Fishers are the worst and the best interview subjects. On the one hand, they are demanding, will second guess you, and are not afraid to confront you. On the other hand, they are the best as they are open, inclusive, and not afraid to confront you. Small interviews turned into hours of conversations, and I have been able to ask all the stupid questions. Without these people, this PhD would have been purely theoretical.

I am also grateful to the Norwegian Research Council and the Fisheries and Aquaculture Foundation for financing this work.

Finally, I will express my gratitude to friends and family who have kept me sane and reminded me of what is important in life: Frode, Viljar and Vetle for being patient with me all along and particularly towards the end.

Thank you all!!

Signe A.

Tromsø September 2013

Summary

The point of departure for this study was the conceptual framework of the Coastal Employment System (CES) by Jentoft and Wadel (1984). As the concepts of the CES theory are still being used, the work of Jentoft and Wadel has been important to how we discuss fisheries recruitment and employment. The CES served to delimitate this study and offered a conceptual framework. In addition, the CES theory has also contributed to a rhetoric presentation of the fishing industry as a pre-modern sector, where fishers still combine different occupations in order to make a decent living. This is no longer true, as fisheries have become increasingly professionalized and specialized. Thus, this is the first in-depth study of the recruitment and employment mechanisms in the Norwegian fishing fleet for almost forty years.

The theoretical framework of this study is the Actor-Network Theory (ANT). Rather than using ANT as a guide, ANT is used as an inspiration and a framework for interpreting the findings. ANT offers a perspective for studying the CES, as the fisher enrolls in material-semiotic networks that (re)define the fisher and the recruit. Prior to the collapse of the North East Arctic (NEA) cod in 1989/90, the fisheries were more or less open-access. Anyone could become a fisher. The collapse introduced new actors, such as licenses and quotas, and redefined the *bona fide* fisher. With time, licenses and quotas have become central components and valuable commodities of effective fisheries; and fishers have changed from being coastal custodians in an open-resource commons to businesspeople.

The CES was conceptualized as a network of mutually dependent fisheries actors in which the different parts of the fisheries and the coastal community depended upon each other for survival. It was a holistic system, with the fishing fleet playing a key role for system maintenance. Hence, the fleet was critical for local employment and community survival. The CES was based on informal and affective relations and social commitment,

and fisheries recruitment and employment depended on local, social relations and vital fisheries milieus.

However, the fisheries systems have undergone radical changes, affecting the CES. Although the CES theoretical framework is still relevant, we have to recognize that it was developed in a limited setting and context, which may no longer be equally applicable. Still, the contemporary CES and the CES described by Jentoft and Wadel have many common features. Fishers are still recruited through social networks and from local communities, particularly in the coastal fleet. The fishing occupation has, however, been specialized and professionalized, making the fishing profession increasingly a full-time job, on par with jobs in other industries. Moreover, the CES is becoming a specialized *fisheries* employment network, rather than a coastal employment network. As a result, new networks for recruitment and training have developed, which are integrated in professional Fisheries Employment Systems (FES). New types of fishers and recruits have emerged alongside new recruitment mechanisms and new networks that are more loosely connected to local communities. Despite a more professionalized and specialized FES, recruitment problems remain, and there is a consensus that recruitment is the main future challenge for Norwegian fisheries; what constitutes recruitment and how to solve the issue is still debated. As a result, fleet recruitment is controversial and political, and it appears to be more about rhetoric than the number of fishers.

Since the first efforts to limit participation in the Norwegian fisheries in the 1950s, there have been concerns about recruitment. Different actors use different stories to promote their idea of recruitment and the solutions to recruitment problems. Two versions of recruitment are evident in public recruitment discourse. These are political discourses, closely tied to opposing ideology and therefore offering contradicting solutions to the recruitment problem. However, not all fisheries actors are ideological, but some are rather pragmatic, yielding a fluid and dynamic version of recruitment that borrows arguments from other discourses as needed. The use of ANT is pertinent to the discovery

of this third, pragmatic discourse, as categories develop during the research, rather than being predefined *a priori*. Several versions of recruitment being enacted simultaneously produce incoherent policy that does not reach the set target and controversy (Sønvisen 2013).

Recruitment controversies are rooted in different realities and adaptations. A policy founded on a homogenous image of the fisher and his/her adaptation may not reach the intended outcome. By showing that there are several ideal fisher types, it is also evident that fishers have different motivations for entering the fishing profession. This also points to the need for a dynamic and adaptive recruitment policy.

Hence, a ‘one size fits all’ recruitment policy is not likely to be effective. Employment and recruitment patterns vary between regions and fleet segments; thus, a chosen recruitment policy will have varying social effects. For instance, as larger vessels are likely to be less connected to the local communities, a policy that increases vessels size may further disembed fisheries from local communities and undermine the political objective of maintaining local communities. This may especially affect fisheries dependent communities in the North. In the South, however, with a different adaptation and structure, a policy leading to increased vessel size may contribute to a more robust fisheries region. Yet, broken social relations with local community do not mean that social networks are disappearing. New networks are indeed forming—networks that connect fishers through politics and modes of operations, rather than geography, and through an increasingly professional fisheries network. If the fisheries policy shall contribute to maintaining the prevailing settlement pattern and fleet structure, a continued differentiation between regions, counties and fleet segments is needed.

Sammendrag

Utgangspunktet for denne studien er det teoretiske rammeverket utviklet av Jentoft og Wadel (1984) om lokale sysselsettingssystemer. Begrepene Jentoft og Wadel utviklet har vært viktig for hvordan vi også i dag snakker om rekruttering og sysselsetting i fiskeriene. Teorien avgrensner og tilbyr et konseptuelt rammeverk for studien. Bildet av kystens rekruttering og sysselsettingssystemer har ikke blitt fornyet siden 1970-tallet. Derfor er denne studien er den første studien som studerer moderne rekruttering og sysselsettingsmekanismer i den norske fiskeflåten.

Det teoretiske rammeverket i denne studien er aktør-nettverks teori (ANT). Snarere enn å bruke ANT som en bibel, brukes ANT som en inspirasjon og et rammeverk for fortolkning av funnene. ANT tilbyr et nytt perspektiv for å studere lokale sysselsettingssystemer, hvor fiskeren og rekrutten defineres i materiell-semiotiske nettverk. Før sammenbruddet av den norsk arktiske torskestammen i 1989-1990 var fiskeriene mer eller mindre åpne og nesten hvem som helst kunne etablere seg. Sammenbruddet innførte nye aktører, for eksempel rettigheter og kvoter, og redefinerte den genuine fiskeren. Siden da har rettigheter og kvoter blitt sentrale aktører og verdifulle varer, og fiskeren er endret fra en vokter i en allmenning, til en forretningsperson.

I det lokale sysselsettingssystemet som Jentoft og Wadel beskrev var fiskeriaktører gjensidig avhengig av hverandre for å overleve. Det var et helhetlig system der fiskeflåten var en sentral aktør og viktig for vedlikehold av systemet. Flåten var derfor viktig for lokal sysselsetting og vitale kystsamfunn. Det lokale sysselsettingssystemet var basert på uformelle og affektive relasjoner og sosialt engasjement, hvor fiskeri rekruttering og sysselsetting var avhengig av lokale, sosiale relasjoner og levende fiskerimiljøer.

Imidlertid har fiskeriene gjennomgått radikale endringer som har påvirket de lokale sysselsettingssystemene. Selv om sysselsettingsteorien fortsatt er relevant, må vi erkjenne at det ble utviklet i et begrenset setting og kontekst, som kanskje ikke er like aktuell nå. Likevel, moderne sysselsettingssystemet har mange felles trekk med det som Jentoft og Wadel beskrev. Fiskerne rekrutteres fortsatt gjennom sosiale nettverk og lokalsamfunn, spesielt i kystflåten. Fisket har imidlertid blitt spesialisert og profesjonalisert, noe som gjør fisket til en fulltidsjobb på lik linje med andre næringer. I stedet for et kystsysselsettingsnettverk, er sysselsettingssystemet blitt en spesialisert fiskeri sysselsettingsnettverk. Resultatet er at nye nettverk for rekruttering og opplæring utvikles, som igjen er integrert i profesjonelle fiskerisysselsettingssystemer (FES). Nye typer fiskere og rekrutter, og nye rekrutteringsmekanismer og nettverks med løsere kobling til lokalsamfunn enn tidligere utvikles. Til tross for et profesjonalisert og spesialisert FES, rekrutteringsproblemene eksisterer fortsatt. Dessuten er det enighet om at rekruttering er den største framtidige utfordringen for norske fiskerier. Men hva rekruttering egentlig innebærer og hvordan man løser rekrutteringsproblemene er det ingen enighet om. Resultatet er at rekruttering er kontroversielt og politisk, og handler mer om retorikk enn antall fiskere.

Helt siden de første forsøkene på å redusere deltakelsen i fiskeriene på 1950-tallet, har flåterekruttering vært en bekymring. Ulike aktører bruker ulike historier om rekruttering og sysselsetting for å fronte deres forståelse av rekruttering og deres løsninger til rekrutteringsproblemet. I den offentlige debatten eksisterer to versjoner av rekruttering. Dette er politiske diskurser, knyttet til motstridende ideologier som tilbyr motstridende løsninger til rekrutteringsproblemet. Men ikke alle fiskeriaktører er ideologiske, noen har en mer pragmatisk tilnærming og fronter en dynamisk versjon av rekruttering. Denne diskursen låner argumenter fra andre diskurser avhengig av situasjon og kontekst. Siden kategorier utvikles gjennom forskningen, i stedet for å være forhåndsdefinert, var ANT sentral i erkjennelsen av denne tredje, pragmatiske diskursen. Implikasjonene av at flere

versjoner av rekruttering eksisterer side om side er usammenhengende politikk som ikke når satte mål og kontrovers.

Kontroversene i rekrutteringsdebatten er forankret i forskjellige virkelighetsoppfatninger og driftstilpasninger. En politikk som bygger på et homogent bilde av fiskeren og fiskerens tilpasning kan tenkes få problemer med å nå de tiltenkte målene. Ved å vise at det fins flere ideal typer med ulike motivasjoner og tilpasninger, viser vi også at der er et behov for en dynamisk og adaptiv rekrutteringspolitikk.

Derfor, en politikk som smøres likt utover alle flåteledd og regioner vil sannsynligvis ikke lykkes. For eksempel, større fartøy vil trolig ha løsere koblinger til lokalsamfunnet, og en politikk som tvinger fram større fartøy ytterligere frikobler fiskeri fra kystsamfunn, samt undergraver politiske målsetninger om å opprettholde lokalsamfunn. Dette gjelder i særdeleshet fiskeriavhengige lokalsamfunn i nord. I sør, hvor der er en annen tilpasning og flåtestruktur, kan en politikk som fremmer økt fartøystørrelse bidra til en mer robust fiskeriregion. Eroderte sosiale relasjoner mellom fiskeri og lokalsamfunn betyr ikke at sosiale nettverk forsvinner. Nye nettverk dannes, nettverk som kobler fiskere gjennom politikk og driftsform, i stedet for geografi, i et stadig mer profesjonalisert fiskerinettnettverk. Om fiskeripolitikken skal bidra til å opprettholde det gjeldende bosetningsmønster og flåtestruktur, kan en fortsatt differensiering mellom region, fylker og flåtesegment være nødvendig.

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ACRONYMS

ANT – Actor-Network Theory
CES – Coastal Employment System
DA – Discourse Analysis
FES – Fisheries Employment System
ITQ – Individually Transferable Quotas
MCA – Multiple Correspondence Analysis
NEA – North East Arctic (cod)

1. Fleet Recruitment: a downward spiral

Developments in the Norwegian fisheries in the last sixty years have been tremendous. Norwegian fisheries, like other North Atlantic fisheries, have become highly effective harvest systems with an incredible capture capacity (Sinclair 1987; Wright 2001; Johnsen 2004; Johnsen 2005). Unfortunately, excessively high capture capacity has partly contributed to the collapse of several North Atlantic fish stocks (Hutchings 2000; Jeremy, Jackson et al. 2001). To combat failing stocks, resource management has been introduced, which has changed North-Atlantic fisheries from open- to closed-access fisheries (Holm 2001). Reductive measures, such as limited entry and quotas, have been implemented in an attempt to reduce capacity and improve profitability (WP No. 10 (1947) ; Holm and Johnsen 1990; Johnsen 2004). Subsequently, the number of vessels and fishers¹ has declined (Caddy and Cochrane 2001; Holm 2001; Apostle, McCay et al. 2002; Johnsen 2004). However, despite years of reduced participation in the fisheries, there has been a continuous expansion of catch capacity (see Figure 1) (Standal and Aarset 2002; Johnsen 2005; Johnsen, Murray et al. 2009), which is still deemed too high in some fleet segments (WP No. 21 (2006-2007)).

¹ Inspired by Berkes (2010), who prefers to use “fisher” instead of fisherman or fish harvester.

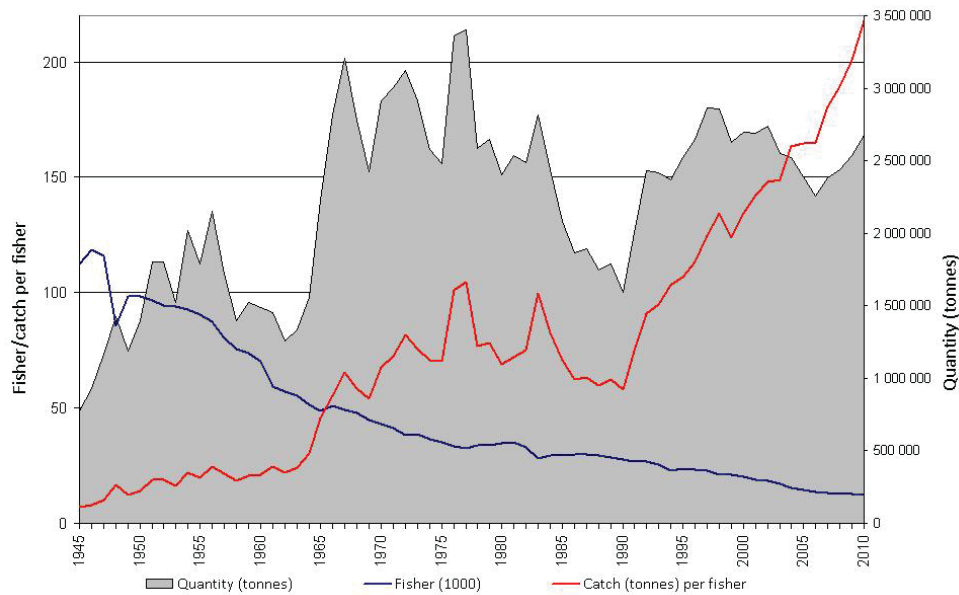


Figure 1: Capacity and employment developments in Norwegian fishing fleet (Source: Ministry of Fisheries and Coastal Affairs)

Since fisheries management has come to mainly focus on sustainable resource use and sector profitability, little attention has been paid to employment and recruitment² issues. It has been assumed that the fisheries labor market is more or less like other labor markets, regulated by supply and demand (WP No. 19 (2004-2005) ; WP No. 20 (2002-2003) ; WP No. 51 (1997-98)). If this were the case, then increased technological efficiency and limited entry should lead to a surplus of fishers or unemployment of fishers. Paradoxically, rather than unemployment, the Norwegian fishing fleet has for the last couple of decades faced increasing recruitment problems (Figure 2); moreover, overcapacity remains an issue (WP no. 22 (2012-2013) ; Nakken 1999; Teistklubb 2004; Norges fiskarlag 2006; Troms folkeblad 2010; Sagen 2011).

² Recruitment has different meanings. In biology, recruitment is “the process of adding new individuals to a population...” (www.merriam-webster.com). In business, recruitment is “the process of identifying and hiring the best-qualified candidate...” (www.businessdictionary.com). In this work, recruitment is also something more: it includes the social process preceding an occupational choice (socialization), as well as formal and informal transfer of knowledge. Thus, recruitment may be explained by economic rational behavior but may also be explained by socially motivated choices within a structure, such as social relations, cooperation, and community (Jentoft and Wadel 1984).



Figure 2: Representation of fleet recruitment problem in Norwegian media (from 2005 to 2011)

So, what were the reasons for this unexpected development? Unemployment may have been avoided as excess labor in the fisheries was absorbed by other, often competing, marine and maritime sectors or by the welfare state. Fleet overcapacity remains or has

not been reduced at the scale expected, as modern fishing vessels have become sophisticated harvest machines that increasingly replace humans (Standal and Aarset 2002; Standal 2003)—a process referred to as *cyborgization*³ (Johnsen 2005). As a result, a focus on reducing catch capacity combined with a focus on the individual actor, the soaring technical capacity has simply been overlooked (Johnsen 2004; Johnsen, Murray et al. 2009). However, it is also argued that without technological advances, the recruitment problem would have been worse (MFCA 2006). Nevertheless, these unexpected developments indicate that little is actually known about the contemporary employment patterns in the fisheries.

With a few exceptions (Johnsen 1996; Johnsen 1998; Sørensen 2000; Johnsen 2002; Johnsen 2004; Johnsen and Vik 2008), updated empirical data in this field is rather poor ; hence, little is known about contemporary coastal employment and recruitment systems. Moreover, the majority of the studies have been qualitative with a point of departure in Jentoft and Wadel's (1984) descriptions of the Coastal Employment Systems (CES).

Jentoft and Wadel (1984) described the CES as a locally based and interconnected network of activities, processes, institutions and enterprises through which fisheries knowledge was produced and transferred, and people recruited. Opposing this position is a more rationalistic approach, which claims that increased economic efficiency and profit is a necessary move towards a more economically sustainable structure in the fisheries sector and successful recruitment (WP No. 19 (2004-2005) ; WP No. 20 (2002-2003) ; WP No. 51 (1997-98) ; WP No. 58 (1991-92) ; Anon 2000; Anon 2002). These two models have dominated the recruitment debates and knowledge in this field. However, due to a lack of data, the models have not been able to build their arguments on updated empirical material from comprehensive studies of the contemporary recruitment and

³ In engineering cybernetics, the term *cyborg* (*cyb-erneti-c org-anism*) signifies an extreme interface between human and machine; in this project, the term *cyborg* means *cybernetic organisation*, which also includes less extreme interfaces (Johnsen 2005; Johnsen, Holm et al. 2005).

employment systems. Possibly as a consequence of the lack of up-to-date knowledge, problem definitions and policy formulations in this field have been vague and reluctant. This thesis aims at reducing those shortcomings.

The thesis is structured as follows: after this brief introduction, the next section brings forth the objectives of this research project and the research questions. In Section Three, the theoretical framework is discussed, in particular the Actor-Network Theory (ANT), Coastal Employment System (CES) and Discourse Analysis (DA). Section Four deals with method and discusses the chosen research strategies, quantitative and qualitative methods, as well as generalization, reliability, validity and limitations of the study. Section Five summarizes the articles used in this thesis. Section Six gives a summary of the main discourses in the Norwegian recruitment debate. This section also gives a general overview of the developments in the Norwegian fisheries, with a focus on employment and recruitment in the fishing fleet, and shows how these developments have contributed to the construction of different discourses. Section Seven discusses the contributions of this thesis work, which is followed by a conclusion in Section Eight. The work is rounded off by highlighting possible directions for future studies.

2. Project Objectives and Research Questions

The fisheries have been subject to a number of changes. Firstly, we know that cyborgization and the introduction of modern resource management have greatly affected the fisheries. Cyborgization changes relations in the fisheries from affective and informal to formalized cybernetic relations. For instance, fishing vessels have changed from rather simple technological and social organizations into technologically sophisticated cybernetic ones, and efficient machines have replaced people (Johnsen, Holm et al. 2009). This affects recruitment and employment systems. While affective relations required people with knowledge, often local knowledge; cyborgization integrates knowledge into technology and the fisheries make do with recruits that are “reasonably competent”. As a result, new relations have formed, and fisheries actors have changed character. In addition, the cyborgization process and resource management makes the fishers and the fish both calculable and manageable. Countable fish are allocated to countable fishers. However, as fisheries policy focuses on individual action, the cybernetic organization remains invisible, and we lose sight of the increasing capture capacity entrenched in the cybernetic organization (Brochmann 1980; Johnsen 2004; Johnsen 2005; Johnsen, Holm et al. 2009; Johnsen, Murray et al. 2009). Moreover, due to the focus on the individual, we may lose sight of communities.

Secondly, altered social relations transform the fisher. Whereas fishing used to be characterized by simple and direct relations between the fish and the fishers, the process of cyborgization has embedded the fishers and the fisheries in complex relations in which fisheries actors are redefined with new abilities and characteristics. Amongst others, fisheries actors have increasingly become economic performers, making decisions and performing in line with economic theories and requirements (Johnsen 2004).

Thirdly, cyborgization and resource management have changed the role of the fisheries in local communities. Fewer fishers from traditional fisheries communities are directly

involved in the fisheries (Jentoft 1993; McCay 1999; Sinclair, Squires et al. 1999; Apostle, McCay et al. 2002; Sinclair 2002) and local milieus for socializing youth into the fisheries have dissolved. It is no longer a given that local youth will become fishers (Jentoft and Wadel 1984; Rossvær 1998; Brox 1999; Jentoft 2001). The role of the fisheries in coastal communities has diminished, whereas non-fisheries sectors have increased; hence, the constitution of a coastal community changes. The result is that coastal recruitment and employment mechanisms are no longer mainly reliant upon the fisheries and have become more like those of other marine or maritime industries.

There are also external factors affecting coastal employment and recruitment. Formalization of the school system has been accused of channeling youth into new occupations outside local communities. Similarly, the development of the welfare state has been found to contribute to reduced recruitment, as factors such as family, leisure time and regulated work hours have become important factors for entering or leaving the fishing occupation (Bøe 1996; Heggen, Myklebust et al. 2001; Johnsen 2004; Johnsen and Vik 2013). Hence, external factors also affect employment and recruitment, and in the long run, coastal communities.

Given these changes in the fisheries, how have these changes affected social relations, and how has this in turn affected employment systems and coastal communities? This is the overarching research question of this work. The project shall investigate and describe the relations between social networks, labor markets and cybernetic mechanisms, and thereby produce updated and relevant knowledge for industry, policy and science about employment and recruitment systems in the fishing fleet. The CES will be studied to see how it has changed and determine its contemporary patterns of recruitment. The links between the fisheries and coastal communities will be examined, including the ongoing recruitment debate, recruitment policies and recruitment strategies. In order to address these issues, the following questions are asked:

1. The Coastal Employment System (CES) theory was developed in the late 1970s and early 1980s by Jentoft and Wadel (1984), and it influenced the way we discussed fisheries recruitment. However, what were the characteristics of the CES? Using the CES as a conceptual framework, what characterizes the contemporary CES? Furthermore, how well does the grand narrative of the CES, as described by Jentoft and Wadel, capture important aspects of contemporary fleet recruitment?
2. Recruitment is the driver of the CES. Although there is a general consensus that there is a recruitment problem in the Norwegian fishing fleet, there is no consensus about what recruitment is or about solutions to the recruitment problem. Thus, what actually is recruitment? What characterizes the recruitment discourse? What rhetoric is mobilized in the recruitment discourse and by whom? Moreover, what version of recruitment and solutions to the recruitment problem are forwarded, and what are the policy implications of the particular recruitment discourse(s) being used?
3. Given the recruitment discourse and accompanying rhetoric, how do contemporary fishers relate to the recruitment discourse? What fisher types are out there, and what values, attitudes and potential behavior do they have in relation to fisheries and recruitment policies? Additionally, what implications may the different fisher types and adaptations have for fisheries and recruitment policy?
4. Given the contemporary CES and the contemporary fisher, is there still a local community orientation in the fishing fleet? What political choices are we faced with in terms of strengthening or weakening the link between the fishing fleet and the coastal communities?

The table below summarizes the research questions, the articles and the findings (Table 1).

Table 1 Overview of articles, research questions and findings

Research Questions	Article	Theory	Method	Findings
1. Characteristics of the original CES? Characteristics of the contemporary CES? How well does the grand narrative of the original CES capture important aspects of contemporary CES?	1. The Coastal Employment System (CES)	Actor-Network Theory (ANT) and CES theory	Descriptive statistics and ANT	Recruitment and employment patterns have changed since the 1970s. There are still similarities between the CES of the 1970s and the contemporary CES. The connection between the fishing fleet and local communities is weakened. A more professional fisheries network is developing.
2. As there are controversies regarding recruitment, what is recruitment? What characterizes the recruitment discourse? What rhetoric is mobilized in the recruitment discourse and by whom? And what are the policy implications of the particular recruitment discourse(s) being used?	2. The Recruitment Paradox	ANT and CES theory	Discourse Analysis and ANT	Two public discourses were identified: the profitability discourse and the community discourse, which both have influenced recruitment policy and thereby contribute to a policy paradox. The result is an incoherent recruitment policy.
2. As there are controversies regarding recruitment, what is recruitment? What characterizes the recruitment discourse? What rhetoric is mobilized in the recruitment discourse and by whom? And what are the policy implications of the particular recruitment discourse(s) being used?	3. Recruitment to the Norwegian Fishing Fleet	ANT and CES theory	Discourse Analysis and ANT	Three storylines were identified: the profitability storyline, the community storyline and the pragmatic storyline. The first two are based on ideology, whereas the third is not. These contribute to the policy paradox and manifest in recruitment policy through recruitment quotas and recruitment grants, which contradict each other.

<p>3. How do contemporary fishers relate to the recruitment discourse? What fisher types are out there and what values, attitudes and potential behavior do they exhibit in relation to fisheries and recruitment policies? And what implications may the different fisher types have for fisheries and recruitment policy?</p>	<p>4. Contemporary Fisher Images</p>	<p>ANT and CES theory</p>	<p>Multiple Correspondence Analysis and ANT</p>	<p>Four types of fishers were identified: the traditionalist, the modernist, the neutralist and the pragmatist. The first two are very political, whereas the last two are not. As fishing becomes increasingly industrialized there is an increased orientation towards rationalization and market mechanisms and a decreased orientation towards community.</p>
<p>4. Given the contemporary CES and the contemporary fisher, how strong is the local community orientation? What political choices are we faced with in terms of strengthening or weakening the link between the fishing fleet and the coastal communities?</p>	<p>5. Coastal Change</p>	<p>ANT, CES theory</p>	<p>Regression Analysis and ANT</p>	<p>There is still a community orientation, especially in the small scale fisheries in the North. Different regions have different fleet structure and the effects of fisheries policy will differ depending on region. In general, a policy that increases the size of vessels will also decrease the local community orientation. Thus, in order to keep the present fleet or regional structures, we may have to consider a fisheries policy differentiated by fleet segment and region.</p>

3. Theoretical Framework—Relational Approach to the Recruitment Phenomenon

In order to achieve the goals that I have set forth, a range of approaches and theories have been employed. As stated above, all the work in the thesis, including the basis for interpreting the findings, is inspired by the Actor-Network Theory (ANT) (Latour 2005). ANT offers a way of looking at the social world and provides a specific language and conceptual framework (Blaikie 2000); it is a frame of mind. The conceptual red-line throughout the thesis is the Coastal Employment Systems (CES) theory of Jentoft and Wadel (1984), which was used for exploring the contemporary coastal recruitment and employment systems. Answering the research questions in practice necessitated the use of more concrete tools, such as descriptive statistics, Discourse Analysis (DA), Multiple Correspondence Analysis (MCA) and regression. Figure 3 is a conceptualization of the theoretical framework of the thesis.

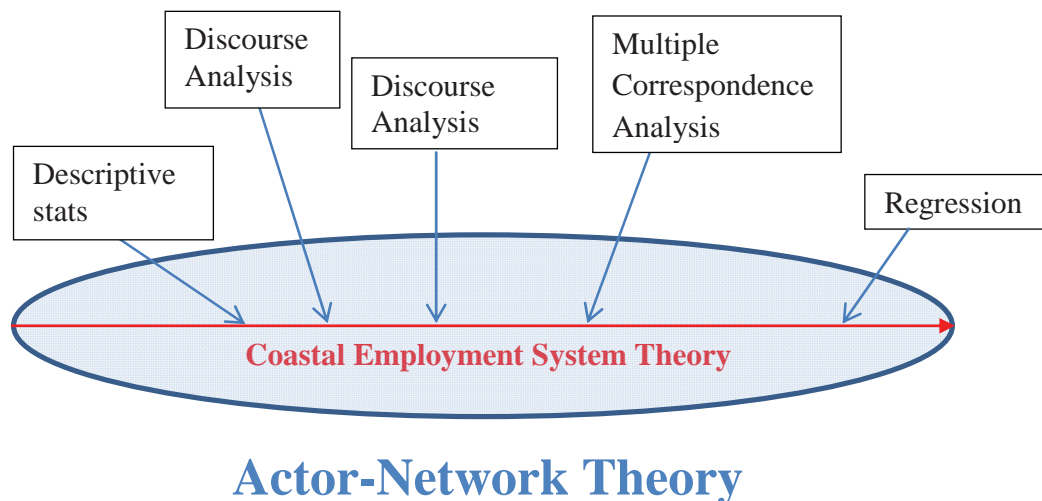


Figure 3: Conceptualization of how selected theoretical and methodological frameworks contribute to updating our CES knowledge

The following section will deliberate on the chosen theoretical framework of ANT, As well as the conceptual framework of the CES. Additionally it will discuss the choice to use Hajer's (1995) approach to DA, to make the analysis more concrete.

a. Why Actor-Network Theory?

Latour has named one of the chapters in his book *Reassembling the Social* (2005) "On the Difficulty of Being an ANT". I could not agree more. The theoretical framework was predefined, as the project proposal of which this PhD is a part was written into the framework of ANT. I chose to stick with ANT due to my limited knowledge in other social science theories and limited time.

ANT started out exploring the history and sociology of science, and the 'typical ANT object' was a technological, 'black boxed' or stabilized object. An object may be said to be stabilized when the network of relations that defines the object is stabilized, and it will maintain its identity as long as the relations hold together and do not change (Law 2002). In other words, as long as a technology works, all of the elements that contributed to its production remain hidden. It is when the technological artifact breaks down that its elements become visible. For instance, when the engine of a car breaks down, we become aware of its many parts. Because recruitment is not satisfactory, it becomes visible and therefore a much debated issue.

However, there were a number of challenges with ANT. Recruitment is not the typical stabilized, technological ANT-object, and using ANT was therefore challenging at times. The vocabulary of ANT was often experienced as abstract and different authors use different terminology. Moreover, the terminology was also easily confused with other more or less familiar sociological terms. As Bloor (1999:97) said: ANT "it is obscurantism raised to the level of general methodological principle". Moreover, a challenge often experienced by students coming from the quantitative sciences is ANT's lack of a clear method. ANT does not offer predefined slots in which observations can be

placed (c.f. The Cyborg Fish Project Johnsen 2008). Another challenge with ANT is that it does not always work well with the article format. The journals that I chose to publish in were not ANT journals, and their readers are not necessarily familiar with ANT. Thus, ANT needs some space for elaboration, which the article format simply does not allow. As a result, despite being the main source of inspiration and the theoretical scaffolding, I chose to tone down ANT in the articles. Perhaps I could have chosen a theoretical framework that was more easily accessible, both for my reader and myself.

Even with a number of challenges, I choose to utilize ANT? ANT studies how systems form, develop and change, including how politics, economics, organizations and cultural values affect these systems (Næss 2002). ANT is said to be a well-suited theory when things change fast and for organization and management studies, when boundaries are fuzzy and when it is difficult to separate humans and non-humans (Callon 1999; Latour 2005:142). Fisheries are fuzzy and consist of a seamless, indistinguishable and tightly woven patchwork of technology, culture, material objects, social motivations, relations and semiotics (Johnsen 2004; Johnsen, Holm et al. 2009). In addition, fisheries have been subject to rather rapid changes: Norwegian fisheries are not what they were just twenty years ago. As such, ANT should be, at least in theory, suitable for studying fleet recruitment.

In spite of the above described challenges, I did find ANT intriguing. It made me rethink ideas that I previously took for granted. Reading *Lab Life* (Latour and Woolgar 1986 (1979)) was an eye opener, as Latour showed 'science and technology in the making' and how things could have been different. I was able to see how nature, technology and the social are interwoven, and I realized that recruitment is complex and not simply about numbers. Moreover, ANT also opened up for me to see how recruitment means different things to different actors (Sønvisen 2012; Sønvisen 2013; Sønvisen In progress).

But what does ANT offer that other theories of the social do not? In danger of generalizing, as I do not have a grasp of all known social theories, traditionally, the study of social interaction has been between predefined entities and terms; conversely, predefined terms may impose limits (Chia 1996 in Lee and Hassard 1999). Rather than describing what is out there, ANT studies how things came to be. Rather than asking whether or not recruitment strategies are effective, ANT asks, ‘what comprises recruitment?’ Is recruitment a stabilized phenomenon? If so, how did it become stable and who or what were involved in its stabilization? If not, what actors and stories are mobilized in order to stabilize recruitment? How are different actors in different networks carriers of different versions of recruitment (Sønvisen 2012; Sønvisen 2013) and have various adaptations (Sønvisen In progress). ANT proved to be a useful tool for analyzing recruitment and “examining the provision of ‘alternatives’” (McLean and Hassard 2004:503).

i. Heterogeneity, Agency and Assumptions

The primary challenge is to ensure that Norwegian vessels have access to the necessary labor to be able to fish the set quota. This is important for the GDP and to maintain Norway’s position as a major fisheries nation. Furthermore, recruitment is important to secure and transfer informal knowledge about fishing operations. This could be knowledge about fishing grounds, local fish stocks migration patterns and spawning areas, ocean currents, equipment use, culture and traditions, and a host of other conditions. Recruitment may also be important for maintaining viable coastal communities (MFCA 2008:4)

There are three particular aspects of ANT that are of relevance to this work: the concept of heterogeneous networks, that we make no *a priori* assumptions about the object we are studying and the principle of generalized symmetry. Heterogeneous networks are at the heart of ANT. Objects and phenomena, such as recruitment, obtain their constitution in relation to others in heterogeneous and dynamic networks (Lee and Brown 1994). This

offers an ontological flexibility that opens up for several realities (Lee and Hassard 1999).

Tremendous changes in the fisheries have introduced new actors and elements that were previously external or of less significance in the daily lives of fishers. The collapse of the North East Arctic (NEA) cod stock in 1989 mobilized and enrolled a number of new actors, such as, biologists, economists, bio-economists, resource management and managers, banking and finance, technology, to name a few (Johnsen 2004; Sønvisen, Johnsen et al. 2011; Vik, Johnsen et al. 2011). Moreover, the collapse also led to new institutions and practices, such as limited access and quota regimes. Hence, fishing entered into a heterogeneous network consisting of human, non-human and semiotic elements, which contributed in (re)defining the fishers and their operations (Latour 1996; Law 2000; Latour 2005). One effect was that fishers changed from being coastal custodians in an open-access commons to a business person in a quota market, increasingly motivated by personal interest (Holm and Nielsen 2007). As a relatively young vessel owner explained in relation to the quota regime:

I had to make a choice: either increase debt to buy a new boat with a bigger quota to provide for my crew, or sell the boat and buy a smaller one and operate it alone. I chose the latter, which was less responsibility and less intensive. Perhaps not less hard, but less intensive. I would like to have one crew member, but the quota does not allow it. 30 tons of cod only supplies one decent wage. A recruit with a quota could have been interesting, as taking on an inexperienced person involves a cost and there are small margins (Coastal vessel owner 8 2010).

Whereas recruitment previously mainly relied on close social relations in a local community, recruitment is increasingly tied to business and markets. Moreover, as being a part of material-semiotic networks, recruitment is also about rhetoric related to fishing

operations, business and industry policy, fiscal policy, value creation, markets and market mechanisms, sector development, knowledge production, fish biology, oceanography, technology, culture and traditions—as the excerpt above illustrates. As a result, we cannot discuss recruitment without bringing in the larger context, particularly the political context; thus, in this work, the political discourse around recruitment is central.

In relation to heterogeneous networks, ANT claims that as long as an object works, the heterogeneous network and actors that it produces remain hidden, as mentioned above. The object and its network are stabilized, and there is little or no controversy (Law 1992; Law 2009). Thus, if the process of recruitment was functioning perfectly and recruitment to the fleet was satisfactory, recruitment would not have been an issue. However, as there are controversies, the recruitment phenomenon is not stabilized, and stakeholders actively and continuously mobilize discourses and related repertoires to forward particular points of view (Sønvisen 2012; Sønvisen 2013). There is a discursive struggle for the right to define recruitment and the solutions to the recruitment problem (Hajer 1995; Kooiman 2003; Bingham 2010; Jentoft, Chuenpagdee et al. 2010; Späth 2012). As a result, recruitment and its networks are continuously transforming and new controversies surface, which enable us to follow the controversies surrounding the discursive struggle to define recruitment (Latour 2005).

The second ANT-feature used in this work is the ‘core assumption’ of no prior assumption about the object we are studying (Law 1992). Since networks are transient and in continual need of being ‘performed’ (Law 2009), we (researchers and informants) are participating in producing recruitment alongside its exploration (Callon 1986). Ideally, we should start with interaction and not assume anything about recruitment. In reality, however, this is difficult. As ANT is nebulous, the concept of the Coastal Employment Systems (CES) was used to delimit and focus the project. Consequently, I did not enter the study with a completely clean slate. However, to come as close to the ANT mantra as possible, I did not assume whether or not the characteristics of the CES,

as described by Jentoft and Wadel, still existed. I had to follow and examine the processes and interactions, as well as actors, resources and alliances that were mobilized in the production of the recruit and semiotic recruitment (Sønvisen 2012; Sønvisen 2013). The end result was that networks were revealed and hidden actors and relations became visible, which makes it possible to actually discuss recruitment and form politics.

The third aspect of ANT that is of importance to this work is the principle of generalized symmetry; though, it is not evident in the analysis itself and I will return to it in the conclusion. The principle of generalized asymmetry states that as nature and society are co-produced, nature and society should be treated equally and a method using a common analytical vocabulary for interpretation should be applied. This also relates to agency of both human and non-human actors and that we should not make *a priori* assumptions about who or what is acting. Subsequently, the requirements we have to studies of nature should also be applied to studies of the social (Callon 1986; Law 1992; Callon and Law 1997; Murdoch 2001; McLean and Hassard 2004).

ii. ANT critiques and challenges

Although the role ANT assigns to non-human agents may be the biggest contribution of ANT, this principle has also been criticized (Amsterdamska 1990; Lee and Brown 1994). Some critics assert that intentionality fundamentally differentiate humans from animals and things. ANT, however, does not presuppose intentionality. Agency is an effect of the heterogeneous networks, or the large number of ‘intentionalities’ at work within the network. It is the mixture of laws, management, regulations, markets, banks, technology and humans that enables a fishing vessel to go fishing. Without the bank, a particular fishing network would wither, as the fishers could not buy vessels with quotas and the fishers would cease to be fishers. Thus, actors, human and non-human, obtain their agency through the networks, but the human is assigned a special role as the one who links everything—who mixes and delegates (Latour 1996; Law 2000; Johnsen 2004).

ANT has been criticized for being apolitical and amoral, and not engaging in the implications of change. Thick description, as ANT promotes, ignores the larger political and social context and undermine social, ethical and political critique (Radder 1992; Castree and MacMillan 2001; Williams-Jones and Graham 2003). Hence,

[i]f we can say nothing at all about the future, as is implied by the actor-network theory,...the theory turns out to be useless in constructive attempts aimed at evaluating the advantages and disadvantages of proposed [policies] (Radder 1992:163).

ANT approaches the social world as something exists there, but not something that we know *a priori*. All objects we observe are real and existing, but what they actually are is not given and has to be studied. Reality lies in the processes, and reality is constructed in the interplay and negotiations between actors in a network (Callon 1986; Cordella and Shaikh 2006). Along these lines, power also resides in the networks and is the effect of the strength of associations in a network (Cressman 2009). "For actor-network theory is all about power—power as a (concealed or misrepresented) effect, rather than power as a set of cause...It demystifies the power of the powerful" (Law 1992:386, 390). To understand the workings of power, we therefore examine the networks and should not make assumptions about these networks. As such, power is neither ignored, as some critiques have claimed (Whittle and Spicer 2008), nor assumed *a priori*.

Approaching power in this manner reveals both strong and weak associations, thereby opening up space for new perspectives and alternative actions (Whittle and Spicer 2008). Through ANT, the recruitment discourse opens up and discloses a multitude of actors and agendas, and shows how particular versions of recruitment gain or lose support, and determines the alternatives (Law 1992; Sønvisen 2012; Sønvisen 2013). Perhaps this was possible, or easier, in this particular study, as recruitment is not a stabilized phenomenon and the weaker discourses are still visible. In relation to policy, however, before we

assign a diagnosis and a treatment, we need to describe the recruitment phenomenon, which entails describing the network. As Latour said:

Refusing to explain the closure of a controversy by its consequences does not mean that we are indifferent to the possibility of judgment, but only that we refuse to accept judgments that transcend the situation... Domination is an effect not a cause. In order to make a diagnosis or a decision about the absurdity, the danger, the amorality, or the unrealism of an innovation, one must first describe the network (Latour 1991:130).

Hence, description precedes policy and morality: we need to know what we are talking about. I would, therefore, claim that ANT is a practical method for studying the “the mechanics of power” in a specific situation (Law 1992:380; Johnsen 2004).

Consequently, my job is not to pass judgment on policy, but to show complexity and alternatives. The execution of politics I leave to the politicians.

b. Employment Theory and Construction of Coastal Employment System (CES)

ANT is the theoretical framework within which the results are interpreted, as well as an analytical tool for studying the Coastal Employment System (CES) (Jentoft and Wadel 1984). ANT offers new interpretation of the CES theory, as it sees the CES as a relational network rather than a system. However, as the concepts of the CES are so immersed in the fisheries recruitment and employment debates, coastal employment cannot be discussed using them. Hence, the conceptual framework of CES is both the object of study and an anchoring point of this thesis.

Studies within the local community paradigm (Hersoug, Holm et al. 1993) studied recruitment and employment systems and showed how these depended upon social relations (Anderson and Wadel 1972; Høst 1980; Trondsen 1980; Wadel 1980; Wadel

and Høst 1980; Kristiansen 1985). Social relations were also the basis for the conceptualization of the CES. Jentoft and Wadel described the local employment system in a coastal context in the 1970s and early 1980s and examined how changes in the fisheries in terms of technology, politics, regulations and education systems affected local employment and coastal communities⁴. The CES was organized differently from labour market in other industries, as it depended on informal and affective social relations and mutual dependencies between buyer and seller in a local labor market. Modern societies, however, were characterized by formalized and impersonal relations, as well as market mechanisms regulating the supply and demand for labor. In addition, in the CES, knowledge and skills were practical, local and transferred through implicit mechanisms and experience (Apostle, Barret et al. 1998). As the fishing activity gave identity and meaning to the system as a whole, the fishing fleet was central to the system and recruitment the crankshaft. Without successful recruitment, the employment system and the communities would disintegrate.

The CES was characterized by 1) mutual dependency between actors, 2) labor flexibility and mobility, 3) primary socialization and 4) low system vulnerability. First of all, mutual and affective relationships between actors in a local community were crucial. Recruitment took place in social network highly influenced by kinship (Terkla, Doeringer et al. 1988; Doeringer, Moss et al. 1992; Johnsen 2004; Hersoug 2005). Households provided labor for fleet, and the fleet provided income for the households and used local services. Secondly, due to system flexibility, labor moved between different fisheries and fleets, as well as between the fisheries and other economic sectors. This limited unemployment and secured a decent annual wage. Thirdly, the CES relied upon primary socialization for transfer of skills and knowledge. Youth were socialized into the fisheries through transfer of knowledge in everyday fishing activities in a local setting. Finally, the CES had, due to its organizational strength, low system vulnerability that ensured vital

⁴ The main data material from Jentoft and Wadel (1984) was from the 1970s, but some was in the early 1980s as well.

and thriving coastal communities. A drastic downscaling of the fleet could, however, significantly alter the CES and disembed fisheries from local communities, which could negatively affect the development of sustainable fisheries and coastal communities.

c. Dealing with Complexities

ANT was a useful framework for exploring recruitment. Still, the recruitment discourse was a more complex affair than I expected and so was the use of ANT. Despite ANT being a frame of mind and the framework in which the results were interpreted, it is as multiple and fluid as the reality it tries to describe. Thus, I had to resort to more tangible sources to guide me. Hajer (Hajer 1995; Næss 2002; Næss 2003) offered some tangibility, particularly the concepts of discourse-coalitions and storylines. This approach offered a dynamic and relational approach, compatible with ANT, while simultaneously allotting tangibility in the analysis.

A storyline is shared terms and concepts that reduce complexity, structure debates and limit what practices and solutions are deemed appropriate (Hajer 1995; Bingham 2010; Hajer 2012). Storylines are rhetorical attempts to enroll as many actors into a discourse-coalition as possible, to stabilize and keep stakeholder groups together (Næss 2003). It is the conflicts between storylines that drive policy processes. “[P]olitics... struggle for discursive hegemony in which actors try to secure support for their definition of reality”, effectively rejecting other alternatives (Hajer 1995:59; Lovell, Bulkeley et al. 2009). To make boundaries between storylines and coalitions durable, groups are compared with anti-groups, and anti-groups are presented as empty, archaic, dangerous, and irrational. For instance, stakeholders favoring modernization and rationalization of the fishing fleet, portray the traditional fleet as archaic and backwards (Sønvisen 2013). Controversies that lead to incoherent policies (Næss 2003), are the results of unstable networks and indicate that a particular storyline has not been accepted as the *one true storyline* (Callon 1986:201-203; Bingham 2010). Thus, we follow controversies left behind by contending storylines and the activity of mantling and dismantling groups (or coalitions) (Latour

2005). Similar to ANT, we do not assume *a priori*. The point of departure in Hajer's approach is not the institutional position of the actor, but the empirically observable and shared storyline that unfolds throughout the study.

Hajer (1993) differentiates between *discourse structuration* and *discourse institutionalization*. Discourse structuration occurs when a discourse dominates the way we see the world, and actors use this particular discourse to appear credible. If a discourse is successful, and many actors use it to conceptualize their world, it will get institutionalized in policies, organizational arrangements and in practices—*reassembling the social* (Latour 2005). If both processes are successful, then a discourse is hegemonic (Hajer 1995; Lovell, Bulkeley et al. 2009). Thus, a powerful discourse coalition is one whose storyline is widely adopted and perceived as a correct translation of a phenomenon (Næss 2002). Discourse-coalitions and storylines allowed me to see how recruitment could be one common phenomenon at one level, but at a different level, contending storylines lead to controversies and incoherent policies. It also showed power relations, as a discourse-coalition successfully defined recruitment and the solutions to the recruitment problem in one context, but was unsuccessful in another (Sønvisen 2012; Sønvisen 2013). Moreover, it showed how a discourse structuration produced particular recruitment arguments in one setting, but also how the same discourse lost out when it came to discourse institutionalization.

4. Method and Research Design

The objective of methodology is to help us comprehend. It is a navigational instrument for the research process. The method is...”not the product of scientific enquiry but the process itself” (Kaplan 1964:23 in Brannen 2004). I consider myself to be a methodological pragmatist (Seale, Gobo et al. 2004). The interest here is social practice, and I have made use of methods and theories I assessed to be useful for answering my research questions in the best way possible. The purpose of this section is to demonstrate the choices made. This section will discuss the chosen research strategies, quantitative method, qualitative method, limitations to the chosen methods and issues of generalization, reliability and validity.

a. Research Strategies

Social sciences are usually divided between quantitative and qualitative methods, where the qualitative method usually deals with the individual, and the quantitative method deals with structure (Latour 2010; Latour, Jensen et al. 2012). The dichotomy between quantitative and qualitative research methods has by many scholars been rejected on the basis that research is complex and diverse. The assumption is that the weakness of one method is compensated by the strength of others (Mathison 1988:15). When different methods find similar patterns, it is thought to strengthen our belief that the results are valid. Quantitative and qualitative methods therefore often seen as broadly complementary (Jick 1979; Brannen 2004). Thus, to obtain as rich a description of the recruitment phenomenon as possible, the multi-method approach of triangulation was chosen.

Several methodological tools are used in this work. The two main methodological tools are Multiple Correspondence Analysis (MCA) and Discourse Analysis (DA), but regression and simple descriptive statistics were also used. MCA and descriptive statistics are rooted in the inductive research strategy; the DA utilized herein is rooted in the

abductive research strategy; and the regression analysis is based on the deductive research strategy. The different research strategies were chosen in relation to what type of question they answer. See Table 2 for an overview of research strategies in relation to objectives and what question they address (number of stars indicating appropriate research strategy in relation to the objective).

Table 2: Research strategies in relation to research objective and types of questions to be answered (adapted from Blaikie 2000:124)

Objective	Research Strategy			Type of question
	Inductive	Abductive	Deductive	
Exploration	***	***		What
Description	***	***		What
Explanation	*		***	Why
Prediction	**		***	What
Understanding		***		Why
Change		**	*	How
Evaluation	**	**	**	What and Why
Assess impacts	**	**	**	What and Why

The MCA and the descriptive statistics are inductive in nature. The ontology of an inductive approach is that of an objective reality where patterns are general and regularities are consequences of natural or social laws. The epistemology is of a positivist strategy—that reality can be observed (Blaikie 2000). The inductive approach is often employed in exploratory exercises and answers ‘what’ questions. What is fisheries management? What is fleet recruitment?

Since the last thorough work on coastal recruitment and employment systems was carried out in the 1970s and early 1980s (Jentoft and Wadel 1984), little is known about the contemporary employment system, and an inductive, exploratory approach was necessary. Rather than fitting data to the theory, as in the deductive method, the inductive method generates theory out of the data. Still, the inductive method is not "theory-free" (Whittle and Spicer 2008:618). As an effective telephone survey demands pre-coding, prior theoretical and empirical knowledge were necessary. Jentoft and Wadel (1984) and

Johnsen (2004) served as foundations for the survey design. Without this knowledge, it would have been difficult to design a survey that produced useful data.

The descriptive statistics produced contemporary recruitment and employment patterns (Sønvisen, Johnsen et al. 2011), and the MCA yielded a fisher typology of social practice (Sønvisen In progress). From these analyses, we were able to generate patterns, which allowed some contextual generalizations (Blaikie 2000). Figure 4 shows an overview of the inductive method in which prior knowledge, combined with empirical data, led to a new knowledge about the CES.

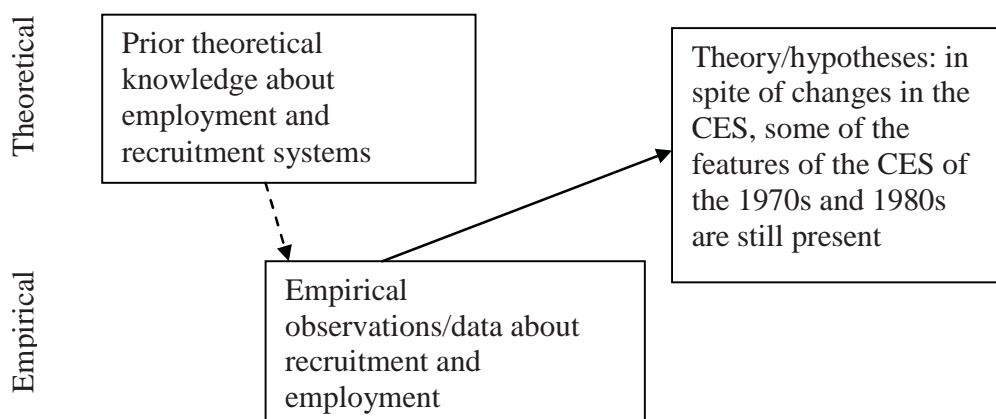


Figure 4: Inductive research process (modified from Kovacs and Spens 2005)

Inductive reasoning is often too vague, the only way to truly understand the world is frequently assumed to be through experience. Thus, the constant process of rethinking and recreating in abductive reasoning is claimed to paint a more accurate picture of the world. The combination of inductive and abductive research strategies may allow us to understand the world more deeply, fluidly and creatively within different contexts (Urback 2012). The overall approach was to explore the patterns in the material inductively, which was complemented with abductive reasoning, adding depth to the exploratory analysis.

The abductive research strategy is a process of generating knowledge, concepts and theories from everyday practices and interpretations made by social actors. It is an interpretive approach based on empirical data and thick description. Hence, statistical patterns or correlations are not seen as being understandable on their own, but also depend on the meaning people give to them. The abductive approach studies why people do what they do by uncovering the largely implicit, common knowledge that influence actions (Blaikie 2000). Similar to the inductive approach, the abductive approach also explores recruitment and answers ‘what’ questions. What is recruitment? What types of fishers are out there? What adaptations and motivations do fishers have?

The abductive perspective opposes a single social reality and prescribes to multiple and changing realities. The epistemology is that it is the construction of reality that is being studied, not reality itself (Blaikie 2000). In ANT, however, the ontology and epistemology are not separated, as the object and the knowledge about the object are inseparable (Johnsen 2004). Thus, the knowledge about recruitment is also a part of the production of recruitment. Similar to induction, abduction may be seen as inference where the conclusion is a hypothesis (Ruiz 2009). It is like a detective's work, where the he/she interprets clues to construct the course of events (Alonso 1998 in Ruiz 2009). As with the inductive approach, the approach is not theory-free. With Jentoft and Wadel (1984) and Johnsen (2004), as well as previous observations, dialogues and other secondary literature in the hold, empirical observations were influenced by theory—as researchers we are also likely to have preconceptions (Lee and Hassard 1999).

The abductive research strategy materialized this work through the development of the discourses. Initially I found two recruitment discourses (Sønvisen 2012), but after several rounds of analyses and fieldwork, three recruitment discourses became apparent, showing the complexity of the contemporary recruitment discourse (Sønvisen 2013). Beginning with Jentoft and Wadel (1984) and using an abductive approach and ANT, we open the

door for a new way of seeing coastal recruitment and employment. Hence, Jentoft and Wadel's work has been seminal for how we view recruitment, employment systems and processes, and it is pertinent in this thesis (Figure 5). Thus, prior knowledge about the CES, combined with empirical observations adjusting the theory over several rounds, has resulted in adjustment of the CES theory.

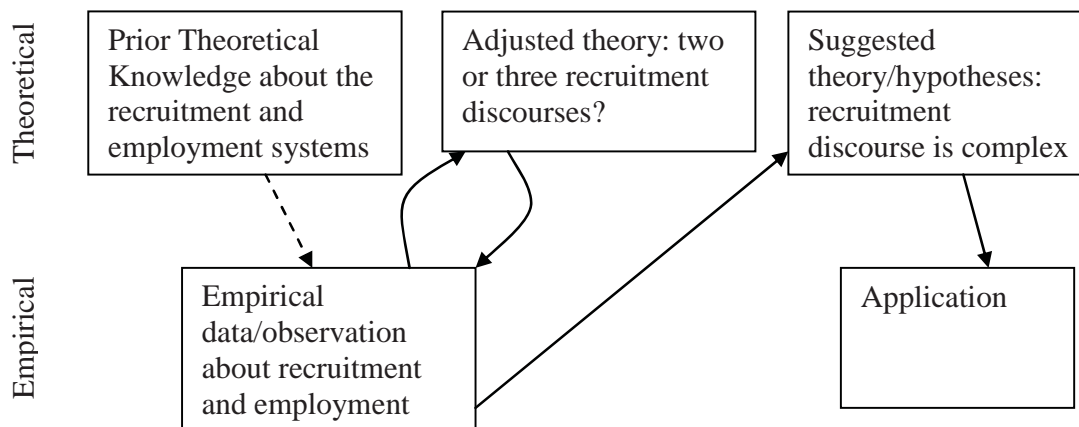


Figure 5: Abductive research process (modified form Kovacs and Spens 2005)

The ANT framework fits well with the abductive research strategy, as it is a reflective research process in which empirical data is subject to translations and interpretations throughout the entire process (Kvale 1997; Johnsen 2004). Rather than aggregating the information from the interviewees into some overarching society, a qualitative typology was created by gathering interviewees and simultaneously keeping their specificity intact. As criminals imitate each other and copy each other's practice, a type of criminal emerges as cases and identifications are assembled. The social aspect is left traceable without limiting us to the individual or structure. For a judge, the code is never a structure in which the prosecuted fit; it is a reference, a guide that is situated alongside the case and precedents (Latour 2010; Latour, Jensen et al. 2012). Likewise, my interviewees were assembled case after case, whereby a recruitment discourse emerged in which the quantitative findings, the descriptive statistics and the MCA acted a 'code' or a guide but did not steer the qualitative research.

After carrying out inductive and abductive research, we gathered a good picture of the contemporary employment and recruitment patterns. However, the new knowledge also led to new questions. Given the large changes in the Norwegian fishing fleet, we were curious about how these changes had affected the traditionally tight relations between the fishing fleet and local communities. A deductive research strategy through regression analysis was chosen for this task.

Opposed to the inductive and the abductive methods, the deductive research strategy is a theory driven strategy. It tests hypothesis, formulated by theory, and then presents a general conclusion (Kovács and Spens 2005). A deductive approach aiming at prediction answers ‘what’ questions. If the structure of the fishing fleet changes, what will happen to the community orientation of the coastal fleet?

The ontology of the deductive method is of an objective reality, which is not directly accessible. Thus, the epistemology assumes that natural and social laws cannot be directly observed and described but are deduced from theories that cannot be falsified (Blaikie 2000). As above, the regression analysis uses the same data material as the MCA and is therefore affected by previous knowledge of the coastal recruitment and employment system.

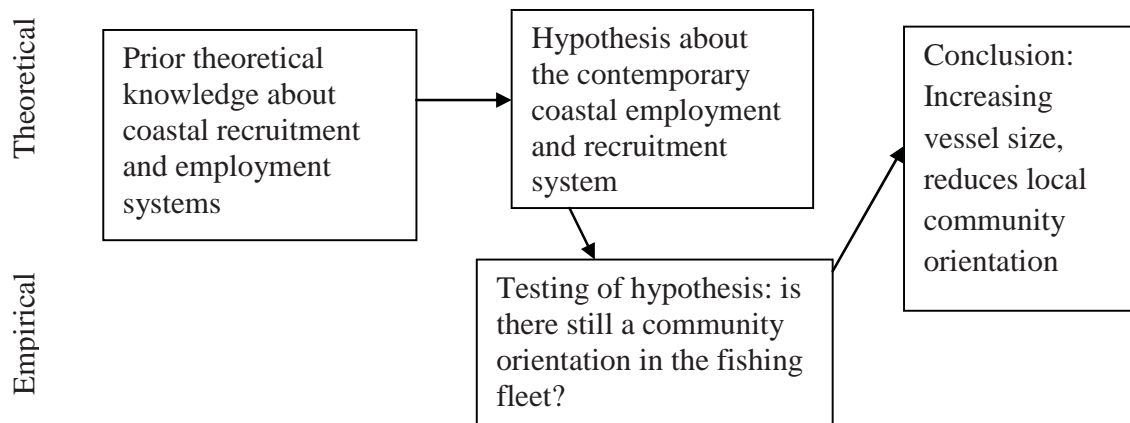


Figure 6: Deductive research strategy (modified from Kovacs and Spens 2005)

Figure 6 shows how prior theoretical knowledge of the CES leads to new theories about the CES. We want to test these theories and therefore test how central elements in the CES have changed and how this has affected the local community orientation in the fishing fleet (Vik, Johnsen et al. 2011).

b. Triangulation

In order to get the best possible description of the contemporary CES, triangulation was chosen. Triangulation is "the combination of methodologies in the study of the same phenomena" (Denzin 1978:291 in Jick 1979) and is thought to strengthen our findings. Related to the various research methods, as discussed above, *methodological triangulation*, particularly *between-method triangulation* was used. This involves comparing research methods, such as survey data, interview data, secondary data and observations (Bryman 2010). Another type of triangulation used was *data triangulation*, in which data was gathered through several sampling strategies: sampling at different times, in different social situations and different groups of people (Jick 1979; Mathison 1988). Hence, the quantitative method gave a good overview, while qualitative data allowed me to go deeper into and reflect upon the statistical patterns and context, as well as clarified puzzling findings (Jick 1979).

There are, however, challenges with triangulation. First of all, it is difficult to replicate, particularly qualitative data. That being said, quantitative data is also difficult to replicate, as it would involve a large amount of work, time and money. Secondly, triangulation has been criticized for subscribing to naive realism, that there is a single account of the social world that we will find using different methods. This is not the expectation in this work, as it shows multiple realities, which is a main objective of ANT. I will argue that triangulation adds richness and complexity to our research. Thirdly, triangulation has been criticized for assuming that different research methods are comparable and failing to include various contexts associated with different research methods (Bryman 2010). This may be a challenge and should be kept in mind. Although the context of Norwegian fisheries is constant throughout the work, the samples are obtained in different contexts and situations, making generalizations challenging.

It should also be noted in relation to the combination of abductive and inductive or deductive methods, i.e., ANT and MCA, mapping the networks described in ANT is not the goal; these are ‘immappable’. Others have tried, but these attempts do not comply with ANT. ANT is about action, as Law and Callon (1988:285) explains:

...we are not primarily concerned with mapping interactions between individuals...we are concerned to map the way in which [the actors] define and distribute roles, and mobilize or invent other to play these roles. We explore the ties within network with a multitude of things.

Hence, MCA produces fisher types and does not portray a particular network. A fisher is, however, a part of a bigger network, but is also a self-contained network. As such, fisheries networks are both constituted by and are the constituter of fishers.

Figure 7 sums up the methodological approach. Based on prior knowledge of the CES, we use different research strategies and methods to produce new knowledge about the

contemporary CES. The inductive research strategy creates new theories about the CES and new images of the fishers (Sønvisen, Johnsen et al. 2011; Sønvisen In progress). It shows that the CES, as described by Jentoft and Wadel (1984), has changed and fishers are attached to longer and more heterogeneous networks. The fishers are increasingly becoming economic performers in a globalized business, and the fisheries are gradually being detached from local communities. Rather than a local CES, the system is developing into a professionalized Fisheries Employment System (FES). Hence, the social relations within the coastal employment systems has changed (Sønvisen, Johnsen et al. 2011). The abductive research strategy also contributes to adjusting our knowledge about the CES and shows that several versions of recruitment are being enacted, which implies a need for a more heterogeneous and adaptive recruitment policy (Sønvisen 2012; Sønvisen 2013). The deductive strategy, mainly regression, shows a direction of particular political policy. For instance, a policy that increases vessel sizes is also likely to recruit from a larger geographic area and thereby weaken the ties between fisheries and coastal communities. Consequently, due to the heterogeneity of the fishing fleet and the fisheries regions, policy is likely to have varying effects (Vik, Johnsen et al. 2011), which is further elucidated in Figure 7.

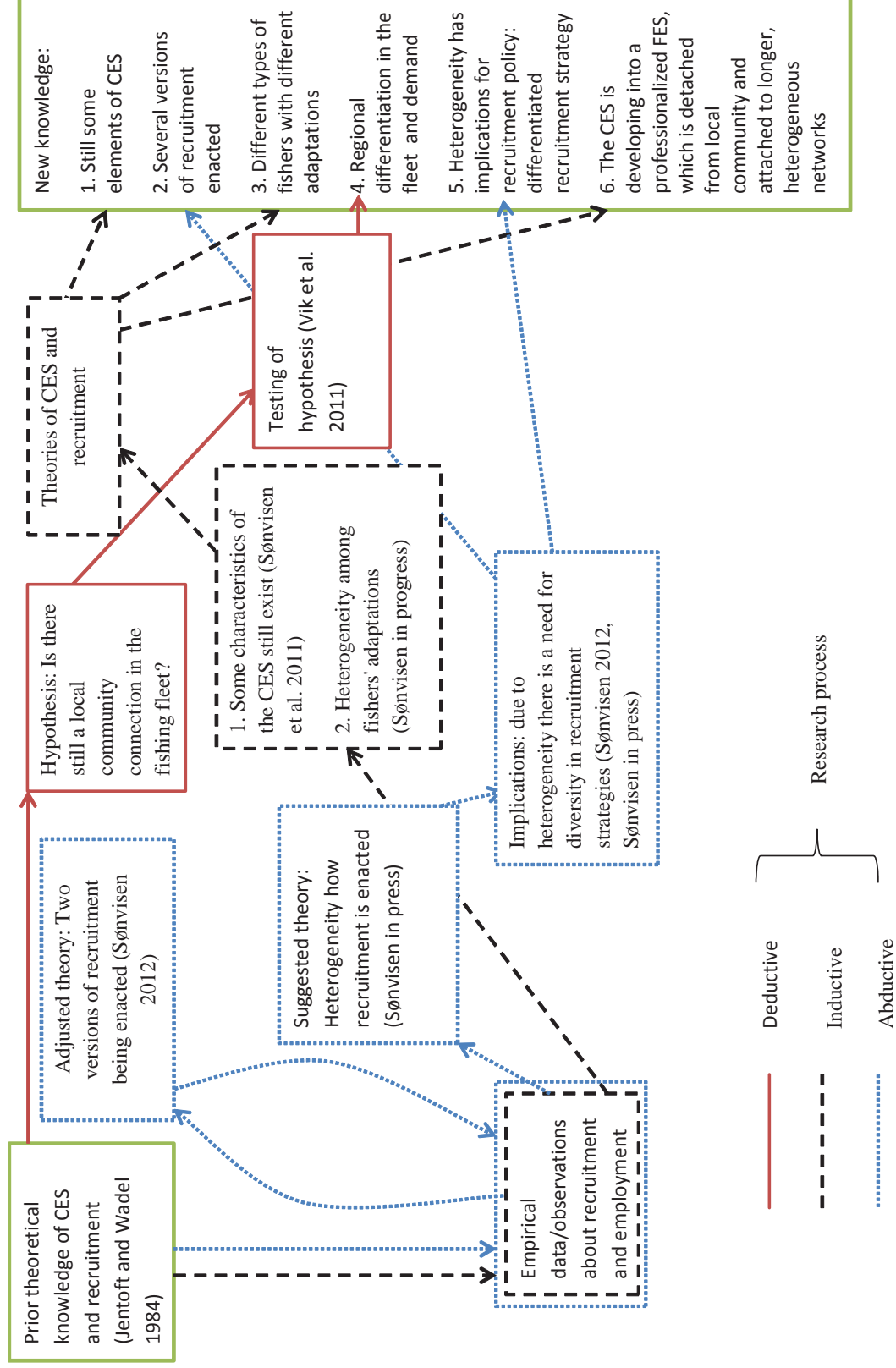


Figure 7: Overview of research process including deductive, inductive and abductive research strategies

c. Role of Researcher

Another aspect of research that has been subject to discussion is the role of the researcher, particularly in qualitative research. There are several opinions about the role of the researcher: whether he/she is a detached observer, an empathetic observer, faithful reporter, mediator of language, reflective partner or a dialogic facilitator (Blaikie 2000). The role of the researcher has often been seen along a continuum with the detached observer on one end and the fully engaged observer on the other. The detached observer has been associated with a positivist view of science, in which objectivity acts as a guarantor for scientific status of knowledge. However, as a reaction to the objectivistic approach, many postmodern researchers argue for a role in which the researcher is a fully engaged participant that “does research with people not on them or about them” (Heron 1996:19 in Dreyer 1998) based on participative relationships that abandon the distinction between the researcher and the researched (Dreyer 1998).

My role has been both as a more or less detached researcher and as a reflective partner or a fully engaged observer. My role as a detached observer is visible in the quantitative work, in which the job of collecting the data was outsourced to a professional polling agency (Sønvisen In progress). However, in the qualitative work, in particular the field work, I act more as a fully engaged observer (Blaikie 2000; Sønvisen 2012; Sønvisen 2013). Interviewing was, therefore a dialogic process, in which the informant and I both participated in the negotiation of meaning and construction of reality.

The role as a researcher may seem contradictory when the inductive and deductive research strategies adopt a role as a detached observer and the abductive strategy a role as a fully engaged observer. As these two approaches are applied in different part of the work, I do not see this as problematic. Rather, I see it as complementary in the same sense as I see qualitative methods as complementary to quantitative ones.

Despite the often perceived notion of an objective, detached observer in the inductive or deductive method, this may not be so clear cut. Even ‘objective’, quantitative methods contain subjectivities. As Callon (2006) says: “both the natural and life sciences, along with social sciences, contribute towards enacting the realities they describe”. When our fisheries technologists enact science, they intervene and participate in the transformation of realities by offering new technology and new practices. When I enter the field, I too intervene as my interviewee and I negotiate recruitment. This is the essence of the abductive research strategy. Reality is produced by social actors, in which the researcher also participates and meaning is negotiated through a dialectic process. Moreover, discourses generated in research may be performative and contribute to the (re)construction of the reality it describes. Thus, my claims about recruitment may be performative in the sense that I do change the perception of the informants and possibly their actions. For instance, the following excerpt shows the discourse, the negotiations and the performativity of certain statements:

Signe: Do you see aquaculture as a genuine competition [to the fishing fleet] with regards to recruitment?

Fisher 1: The majority has gone to the oil/supply fleet...

Fisher 2: The fact is that all the best fishers have gone to oil/supply, so you inquire everywhere to get people.

Signe: Is that so...?

Fisher 2: Yes, that is for sure.

Signe: Do you notice it here?

Fisher 2: No, we are still too far away, but we have a few who have left.

Signe: How many here have left for offshore?

Fisher 1: Locally not many. We have small vessels, stable crew...

Signe: Stable because...?

Fisher 1: There are few labor opportunities here, so they are stable. If you want to become a fisher, then you become a fisher, no matter what...It is a lifestyle.

Signe: Would working in the oil/supply fleet be interesting to any of you?

Fisher 1 and 2: No, because they work long shifts and one would have to be away from home for too long...

Fisher 3: Well, I think it is a bit nuanced. There was a boom, but it is exaggerated. You have to have a certain level of competency in the oil/supply fleet as well. Nobody here has transferred into oil/supply. It is not like being a fisher. I think it is a bit exaggerated. During the high conjuncture there was a bit of a threat... I like this place. I like sleeping at home. To go to the cabin. It is a conscious choice. I have working days no longer than those working on shore. If there is a crisis, I can attend a meeting at school.

The passages show how fishers enroll in a discourse in different ways and how different realities are constructed; while simultaneously, these realities are subject to change as they are negotiated (Callon 1986; Callon 2006). Hence, data is never given to anyone, it is negotiated and I, as a researcher, play an active role on it.

Therefore, as a researcher, I participate in a dialogic process. Through selecting informants, examples and cases, I communicate and translate what informants say. Although I may claim that my descriptions and examples are valid, this does not imply that there are no other valid translations and interpretations. However, my translation does offer a view into how the networks are constructed but may not necessarily be generalizable.

d. ANT as Method

Methodologically, ANT studies the places where science and technology come into being. Once there, we follow the actors and controversies. However, it is not easy. What controversies shall be followed and where do we start. With heaps of information, statistics, articles, and transcripts; choices have to be made about what to include and what to exclude (Latour 2005). As a large number of possible repertoires are available:

It is up to the sociologist to choose the one that seems the best adapted to this task and then to convince his colleagues that he made the right choice
(Callon 1986:200)

Since only a handful of official recruitment documents and hearings have been written in the last decade (MFCA 2006; MFCA 2008), it has been quite easy to locate integral controversies and actors in the recruitment debate. A typical ANT research project focus on science and technology; the central actors or ‘network builders’ are engineers or scientists (Cressman 2009). Engineers herein comprise ministries, politicians, interest organizations and their representatives, individual fishers, finance and banking institutions, scientists, and key actors in the recruitment debate.

Everything is data—everything from the first phone call, to a potential informant to writing the article. Latour (2005) offers a concrete way of keeping control of ourselves through accounts and suggest keeping four notebooks. These are similar to lab-books and are important in (re) assembling the social and, just like the lab-book, leaving the accounts valid and transparent. Some of these notebooks are easier to maintain than others. The first account suggested by Latour is about *me*, which is about the transformation that I undergo. The closest that I have come to this account is my field log-book, which includes interviews, reactions, feelings and impressions. A second notebook of *chronology* is suggested; I have interpreted to mean a logbook of the

chronology of the events and incidents throughout the project, which I have done. A third notebook is a notebook for ideas, writing trials, paragraphs, metaphors and so on. This 'book' has been a combination of post-it notes, notebook, and computer files. Good ideas and writing trials were transferred to the computer, intended for publication. Finally, Latour suggest a notebook to log the effects upon actors whose world has been deployed. This book, in addition to the field notes, acts as a check to see how accounts play their roles in assembling the social and has been included, in some shape or form, in the other three notebooks.

e. Quantitative Data and Method

Most work within the field of coastal employment and recruitment studies has been thick, comprehensive and qualitative descriptions of local employment systems (Jentoft and Wadel 1984; Sørensen 2000; Johnsen 2004; Jacobsen 2010). Johnsen (2004) pointed out the lack of quantitative data in this field, which makes generalizations difficult. With a few exceptions (for example Johnsen and Vik 2008), this is still the case. To update our empirical knowledge around coastal employment and recruitment, and to be able to relate it to a wider context, the quantitative method was also included.

Quantitative research often regards the world as made up of observable and measurable facts, and a researcher's job is to fragment a phenomenon into measurable categories to be applied in a wider context (Golafshani 2003). Furthermore, there seems to be a widely accepted idea that the production and communication of numbers is a neutral process (Espeland and Stevens 2008 in Tveiterås 2012). However, through the process of quantifications, we make priorities and exclusion (Latour 1994 in Tveiterås 2012). As phone interviews was the chosen method to gather the quantitative data and as the length of these interviews must be limited, hard choices were made and a number of relevant topics had to be excluded. To direct the survey design, previous qualitative work,

particularly the work of Johnsen (2004)⁵, served as a basis for the development of the questionnaire.

One challenge with quantitative study is what Law calls “a scientific hinterland of scientific reality” (2004:34). That is, in the quantitative method, we do not have a complete overview or understanding of everything that goes on. Some processes are out of reach and out of view. This hinterland may be complex, standardized statistical packages. Even with an understanding of the content and the general running of an MCA, there is an uneasy feeling that there is something happening within the ‘black box’ called a computer that cannot be controlled. Some statistical packages were only feasible to run after the development of advanced statistical software. Hence, detailed description, as required in qualitative methods (particularly ANT), is not possible, as a number of choices made in quantitative methods often are hidden within this hinterland.

i. Quantitative Data Collection

To obtain the quantitative data, mobile phone interviews were chosen. A significant advantage with telephone interviews in relation to fishers is that we were able reach them. Fishers are always on the move and therefore difficult to contact. A clear disadvantage using telephone interviews is limitations put on length and the need to limit the number of questions, as mentioned above

The data was collected in the spring of 2007 by *Norfakta Markedsanalyse AS* (NM). The subject population was the fishers (boat owners and crew) in the Norwegian fishing fleet, and the total population was the entire official Norwegian fishery registry⁶. At the time of the data collection, the total population was about 10,500 (www.fiskeridir.no). Five hundred (500) crew members and five hundred (500) vessel owners were interviewed, and the interviewees were chosen through semi-stratified sampling. Samples were drawn

⁵ Johnsen was the team leader for the project "Networks or Markets – Recruitment to the Norwegian Fishing Fleet" of which this PhD thesis is a part and his PhD work was central in the design of the survey.

⁶ Fiskemanntallet blad B (full-time fishers)

randomly from the entire population until one of the categories was fulfilled. Thereafter, the remaining samples were drawn from a sub-population, either crew members or vessel owners. Potential interviewees were notified through fishers' interest organizations and fisheries media and urged to participate, but also informed about their right not to as they were called.

The project adheres to the regulations of the Norwegian Social Science Data Service (NSD) (www.nsd.uib.no). In order to store data of the nature used herein, authorization is needed. This was also a benefit of using NorFakta, as they are authorized to do so. Thus, the informants have been treated in according to the ethical standards of NSD and all informants were coded to retain their anonymity.

The Norwegian fishing fleet is heterogeneous in terms of fishers' ages, experience levels, vessel size, technology, gear type, fishing patterns and geographic distribution. Thus, a large and representative sample was considered necessary in order to make generalizations. We also wanted to ensure a sufficient number of respondents to allow for subsamples related to the type of fishery, age or geography. Hence, one thousand interviews were considered necessary.

The interviews were structured interviews, in which some questions were general for all the interviewees, such as age, income, type of fisheries, how and through what channels they were recruited into the fisheries, and the general recruitment patterns and challenges in the area. Other questions were only for the vessel owners, such as vessel size, income and recruitment strategies. The survey was designed based on interesting topics, not with a specific analysis in mind—possibly a weakness in the design. For a detailed description of the development of the questionnaire see Sønvisen (In progress) and Johnsen and Vik (2008).

Crew data was compared to the official fisheries registry data and vessel owner data was compared to the annual economic survey for fishing vessels. The data was found to be representative with respect to important variables, such as age, geography, and crew/vessel owner. Still, there may be some weaknesses in the representativity in the material. Crew from the county of Finnmark seem a bit underrepresented and crew from the counties of Møre and Romsdal a bit overrepresented. This is not surprising as the smallest coastal fleet, mostly owner-operated, is most prominent in Finnmark, and the larger offshore fishing fleet with the largest crews is relatively more prominent in Møre and Romsdal. Still, the representativity was considered satisfying, and the survey could be used to say something about the fisheries in general (Johnsen and Vik 2008). The data was submitted electronically by NorFakta. SPSS and ExcelStat were used as tools for statistical processing and analysis.

The advantage of using a professional polling agency is that it is cost and time effective. I would never have been able to do as many interviews within my entire PhD period, and to input them into SPSS or Excel would also have taken a lot of time. The drawback of outsourcing this service is that the researcher loses some control of the data collection. The professional interviewers do not have an in-depth understanding of fisheries. This was evident when one of the answers was reported as “coastal line” (geographic feature) and not the correct “coastal line-fishing”. This and other clear mistakes were weeded out.

Although some of my data is truly quantitative, such as income, age and length of boats, the majority of the data is qualitative, such as attitudes and opinions. It may perhaps be more correct to say that quantitative techniques are used to analyze qualitative features, as many of the categories have been qualitatively decided upon.

ii. Multiple Correspondence Analysis (MCA)

To explore the CES quantitatively, Multiple Correspondence Analysis (MCA) was used. The main advantage of MCA is that it finds relationships (correlations) among variables,

which are used to organize large and chaotic data and reduce the number of variables. MCA simplifies data, while preserving all of the value information in the data set (Doey and Kurta 2011), and unlike most other exploratory statistical techniques, it provides a plot of associations among variables. MCA is also flexible when other statistical techniques cannot be used because some assumptions are not met. This is particularly relevant in relation to the Likert scale, in which the spaces between descriptors are not equal. MCA focuses on how variables correspond to each other, not whether there is a significant difference between these variables. Thus, MCA demonstrates how variables are associated by the approximate distance of points to one another on the biplot. It also reveals relationships that could not be identified using other non-multivariate statistical techniques and more overly, eases analysis as it presents data in a dual display (rows and columns data). This also makes it easy to add supplementary data points post-hoc, which also eases interpretation (Hoffman and Franke 1986). The main advantages of using MCA is that it may be applied to categorical data, which most of my data is (Blasius and Thiessen 2000), and that the graphical display is more intuitive than most other similar methods (e.g., Factor Analysis).

A disadvantage of MCA is that the results are only as good as the data allows. This may be especially problematic in self-reporting, as part of the survey is, which is especially problematic if objectivity and reliability similar to sound physical sciences investigations is thought to be the result (Sills 1989:114). Another disadvantage is that there is more than one interpretation of the resulting analysis. Hence, we have to make choices and accept the danger of appearing quite subjective. Additionally, one cannot identify causality. For causality, other types of analysis have to be applied (Pett, Lackey et al. 2003).

f. Qualitative Data and Method

He [an unsophisticated forecaster] uses statistics as a drunken man uses lamp-posts – for support rather than for illumination.

Andrew Lang (1844-1912)

Quantitative methods may offer patterns, but that does not necessarily mean that those patterns enlighten the observer with regards to the phenomenon, as the quote above points to. Quantitative methods may give me some general idea of social behavior in a specific context, but not why fishers behave in certain ways. This is where qualitative research, through in-depth interviews, has an important role to play as a complement to the quantitative method and a way to secure validity of the quantitative data.

Qualitative research is “any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification” (Strauss and Corbin 1990:17 in Golafshani 2003). This kind of research produces findings derived from real-world settings where a phenomenon is revealed naturally. Unlike most quantitative research that seeks causality, prediction and generalization of findings; qualitative researchers seek illumination, understanding and extrapolation to similar situations. Compared to quantitative research, qualitative research produces a different type of knowledge, mainly due to different paradigms at work (Golafshani 2003).

i. Access to Information—Worlds Collide

In quantitative data, the analytical instruments are the research tools, such as pipettes, test tubes and scales; in qualitative research, particularly in fieldwork, I am the research tool. My colleague, the lab technician, uses a *PIPETBOY* to handle liquids “accurate, fast and comfortably”. The *PIPETBOY* regulates flow from drop-by-drop dispensing to fast pipetting. It has an ergonomic design that ensures comfortable handling. It even has an

LED light that illuminates the area around the pipette to prevent eyestrain and mistakes (www.pipetboy.info). Unfortunately, there is not a social science PIPETBOY and fieldwork is not always comfortable.

Being a part of academia, I am also a part of something greater than myself. This opens, but also closes doors, and affects information I get access to. Being an academic is not necessarily an advantage when entering a politicized field, such as the fisheries. You are linked to other more or less popular scholars and often placed into the group, “the research” (*forskninga*) – not necessarily an honorary designation. However, scientists are not all the same. In one particular community, there was a divide: the fisheries technologist doing important work and “the rest”. I fell into the second category.

Similarly, being an academic may also be a handicap in the sense that “I know too much”. As a good PhD student, I had read my curriculum before I left for the field. Thus, I entered the field with a head filled with heaps of academic ideas about how to conduct fieldwork. In retrospect, I think I got lost in the literature, which inhibited me as much as it helped. My head was filled with ideas of how to be professional, how to keep a professional distance and so on. The result was that I forgot the most important qualitative research tool at home (me), and the whole experience was awkward. As I got more comfortable with doing fieldwork, however, I came to trust myself and my own skills in the field.

Not having grown up in a fishing community limited my personal fisheries experience and network. Similarly, as the majority of my fisheries knowledge is out of a book, I did not have a large professional fisheries network. Thus, to get access to the fishers, I initially used colleagues already familiar with the field as door-openers. This was an effective approach, as I could go directly to the source of information, but the informants were chosen at my colleagues’ discretion. However, throughout my fieldwork, I also came to develop a network, and choosing my informants also became an easier task.

Armed mostly with knowledge out of a book, fieldwork made me painfully aware of how little I actually knew about fisheries. I had no choice but to admit it to my interviewees and make it clear that I was there to learn. This was generally a well-received strategy. The advantage was that there were no stupid questions. The disadvantage, however, was that some discussions could perhaps have been at a 'higher level'. However, on my second and third rounds of doing fieldwork, this changed. I had gained more fisheries knowledge, and I was slowly learning the discourse and culture'.

Another issue that could affect access to information is my gender, as I worked in a highly male-dominated field. Ryen (2004) discusses advantages and disadvantages with interviewing the opposite sex. According to her, a flirtatious approach could open doors, but that would also require an awareness of the communication process. I am not sure that this was the approach I took, but being a female researcher in a male-dominated field was not necessarily felt as a disadvantage, as the fishers in general were eager to talk. Sometimes, I think they were truly happy with some female company.

The most uncomfortable feeling when going into the field is the feeling of wasting people's time. Appointments were made in the off-season, but fishers are busy even in off-season, as some are running such a tight schedule that there hardly is an off-season. In addition, as my fishing technology colleagues could offer research money or quotas, or at least practical, useful fisheries knowledge, not having an incentive to offer the fishers became very apparent. This feeling was most prominent in my first field visit. In the following field visits, however, I was lucky. The weather was bad, and the fishers had to stay on shore and had all the time in the world to talk to me.

ii. Qualitative Data Collection

In ANT, the interviewees are not simply informers (Kvale 1997; Latour 2005); rather, we (the interviewer and the interviewee) cooperatively produce theory about the social.

Ideally, the researcher enters the scene with an open mind and no *a priori* assumptions about the object or phenomena he/she is about to explore. However, as discussed above, as I had Jentoft and Wadel (1984) as a foundation, the fieldwork was not ‘theory-free’, but no assumptions were made about the characteristics of the contemporary CES. Still, some basic knowledge of the field and recruitment was necessary in order to frame intelligent questions and comprehend what was going on.

Time and money are limiting factors in research. I was not able to take an anthropological approach to the fieldwork. Having lived for a short time in a fishing community in the 1990s, I did have some familiarity with daily life in a fisheries dependent community. My approach consisted of short visits to different fishing communities. Initially, the plan was to carry out fifteen to twenty interviews, but I ended up with 109 informants. I visited Båtsfjord in Finnmark, Ålesund and Måløy on the west coast⁷, and the Lofoten archipelago and Steigen in Nordland. The reason why these sites were chosen varied. Sites were mainly chosen either because I was able to tag along with other known projects in the area or because I was going there on other business. Båtsfjord and the west coast were visited twice. The advantage of this was that I was able to catch some changes in terms of employment and recruitment. All of the chosen sites are important fisheries communities not only in the region, but also in the Norwegian context. In total, I carried out seven fieldwork periods between the spring of 2010 and spring of 2012.

⁷ The counties of Møre and Romsdal and Sogn and Fjordane.

**Table 3: Overview of visited sites during fieldwork and their fleet structure
(www.fiskeridir.no)**

	Municipality	Pop	Number of full-time fishers	Registered fishing vessels	Registered vessel in fleet segment		
					Under 15 meters	11 to 27.99 meters	over 28 meters
Båtsfjord	Båtsfjord	2 089	52	46	80 %	13 %	7 %
Lofoten	Vågan	9 086	216	120	89 %	9 %	2 %
	Vestvågøy	10 848	298	160	80 %	17 %	3 %
	Flakstad	1 383	142	98	86 %	14 %	0 %
	Moskenes	1 116	122	97	80 %	16 %	3 %
Røst	Røst	595	62	58	95 %	5 %	0 %
Steigen	Steigen	2 609	48	51	98 %	2 %	0 %
Ålesund	Ålesund	44 416	315	40	73 %	10 %	18 %
Måløy	Vågsøy	6 129	118	45	82 %	2 %	16 %
Stat	Selje	2 831	90	37	78 %	0 %	22 %

The municipality of Båtsfjord is a small, but crucial fishing community and has a relatively large number of vessels and fishers, particularly in the coastal fleet. Båtsfjord is also a key harbor for landing catches for vessels from all over Norway. The Lofoten archipelago, including Røst, is for many synonymous with fisheries, particularly the seasonal fishing for spring spawning cod. There are still a large number of fishing vessels and full-time fishers, mainly within the coastal fleet. Steigen, located across from the Lofoten archipelago, is also a fishing municipality consisting of mostly smaller coastal vessels. The situation, however, is quite different on the west coast with a higher share of larger, offshore fishing vessels. The city of Ålesund, in Møre and Romsdal, has a long fisheries history, and maritime industry is still important for both the city and the surrounding area. A number of the largest fisheries companies are located there (Johnsen, Sønvisen et al. 2009). Måløy and Stat are important fisheries communities in the county of Sogn and Fjordane with a relatively large share of offshore fishing vessels. Måløy is one of the most important fisheries harbors in Norway, as it is the third largest fishing municipality measured in landed quantity (www.ssb.no). See Table 3 for an overview of the communities visited and their fleet structures and Figure 8 for the geographic location of these communities.

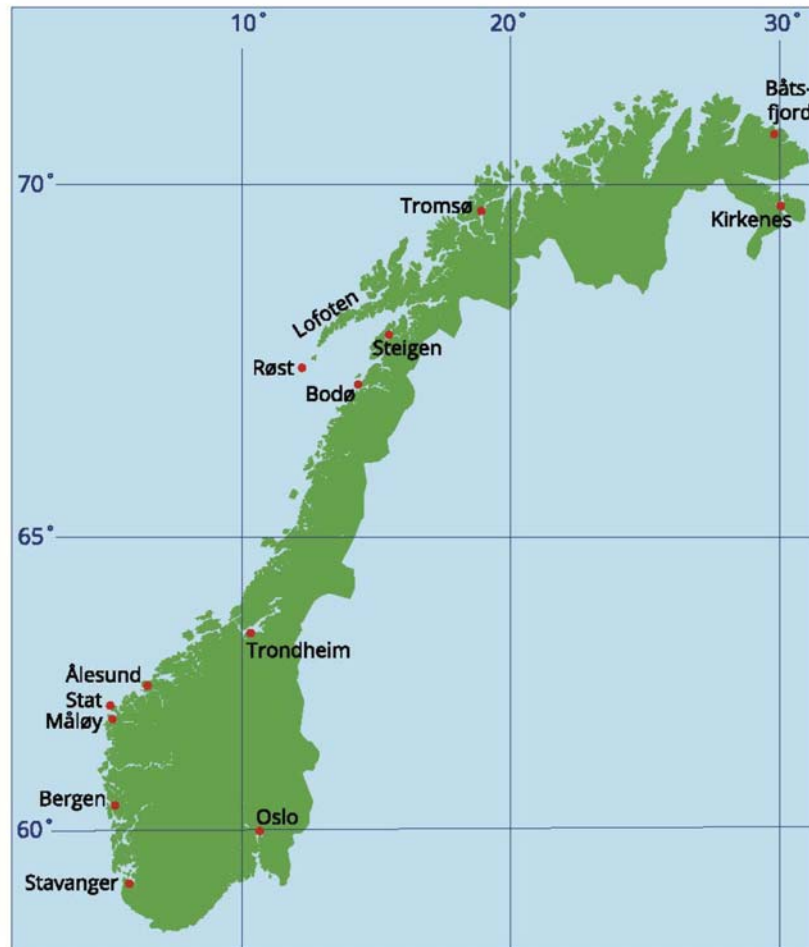


Figure 8: Map of Norway and fieldwork sites (Map: Frøydis Strand, UiT)

The majority of the in-depth interviews were in-person, but some were also telephone interviews. The telephone interviews were intended as check-points to secure that the observed patterns were representative. This concerned especially the coastal fleet, as this is the fleet consisting of the largest number of fishing units. Thus, the majority of the ‘check-point interviews’ were carried out in Northern-Norway. However, despite the intention of the check-point interviews to be short, most of them turned into full-fledged interviews. Moreover, for these telephone interviews, I relied particularly on representatives from the Norwegian Fishermen’s Association (NFA).

Informants included fishers, vessel owners, shipping companies, fisheries managers and bureaucrats, representatives of fishers' organizations, and various actors working in related fields. Informants were chosen using *snowball sampling*. Snowball sampling is a non-probability sampling technique used to find interviewees with particular traits or knowledge. One interviewee directs the researcher to the next one—like a snowball rolling (Biernacki and Waldorf 1981; Andrews and Vassenden 2007). In this work, as I already had a sample of one thousand fishers, I wanted to find out the underlying factors to the statistical patterns. I therefore wanted to talk to particular fishers, in particular fisheries, in a particular age group, and so on. For instance, quantitative analysis showed that the purse seine fleet did not have any significant recruitment problems and were therefore not chosen for the in-depth interviews⁸.

One advantage of snowball sampling is that it allows me to include informants that would otherwise have been unknown to me. I was also able to quickly find the people who are considered the experts in the field, as people referred me to those they believed knew something about fleet recruitment. Thus, snowballing about a particular phenomenon with a limited number of informants proved to be effective, as I saved time and money (Biernacki and Waldorf 1981). Interviews were in general carried out until further interviews yielded little new information (Kvale 1997); then I moved on to a different fleet segment. As mentioned above, the poor weather forecast made a large number of fishers stay on shore. This combined with snowball sampling was efficient, as large number of fishers within a limited geographic area were available in a short period of time, which contributed to the high number of interviewees.

Snowballing is, however, subject to a number of biases. First of all, informants with large networks are more likely to be recruited. Unless you know the local context, some people

⁸ Although it should be noted that the purse seine fleet is facing recruitment challenges of vessel owners as prices of vessels with quotas have risen to such a level that the next generation are having problems taking over the business, this is, however, outside the scope of this work. Despite seemingly not having any current recruitment problems, we cannot speak to the future of this fleet.

may appear as experts when they are not. For instance, I initially asked around regarding whom I should interview in a particular coastal community before going there. The person who was recommended to me was a highly profiled person. However, upon arriving at the community and after interviewing and talking to a number of people, I realized that this person had no credibility locally and was more of a special case, than a general case. Snowballing may also be an inexact science, as it produces varied and inaccurate results, and depends on the researcher's ability to find an appropriate sample. The lack of definite knowledge regarding the sample's accurate reading of the target population is also a challenge (Biernacki and Waldorf 1981). These latter two factors, however, I do not think are a great problem, as I already had a large quantitative dataset and a good picture of the general patterns.

The process of snowballing is illustrated in Figure 9. It shows how one central actor (the *Raw Fish Association*) directed me to other central actors. A method like this, however, requires that the researcher has to be flexible in terms of who he/she ends up talking to, but also the situation and the context. The snowballing also worked 'locally', as a number of interviews, intended for only one informant, turned out to be more of a focus group discussion as the informant called in his colleagues or friends. Thus, at times, a researcher has to accept that he/she cannot control every factor, at least not when dealing with fishers.

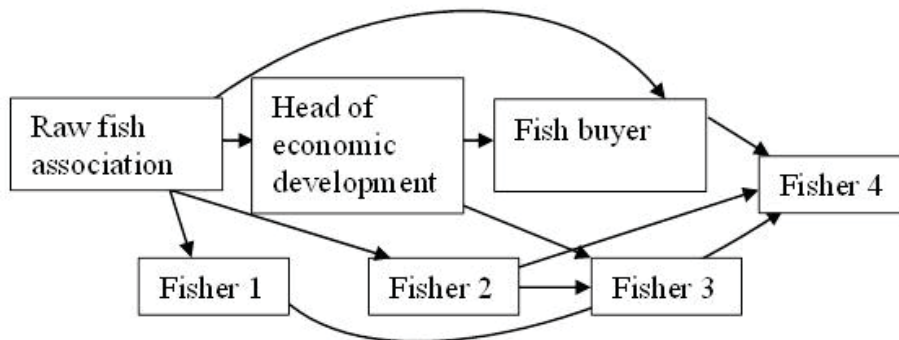


Figure 9: Conceptualization of snowball sampling in selected Northern Norwegian community

In addition to primary data, the thesis relies heavily on secondary data. Secondary data consisted of central documents in the fisheries and recruitment debate, such as research, official reports or Green Papers (NOUs), government documents, such as White Papers, law documents, previous research, minutes from meetings, newspaper articles, web pages, and Internet blogs and so on: any media that could contribute to describing the recruitment discourse. Due to the immense amount of fisheries documents produced, texts used herein are those central to the Norwegian fisheries debate and discourse. White and Green Papers are used as anchoring points in the discourse analysis. In terms of sampling of these documents, all the fisheries political documents of interest to recruitment in the period have been included. This is possible because in Norwegian fisheries politics, government will, at more or less at regular intervals, present their fisheries politics (White Papers), which guides the politics for the next four to six years. These documents are not legally binding and are more ideological in nature. In addition, a number of Green Papers have been produced that are of relevance. These are reports or documents, without any commitment to action that may precede law amendments or white papers. These types of monumental texts were particularly used in Sønvisen (2012) and Sønvisen (2013) (Neumann 2001: 177-78). In terms of sampling of the other types of secondary data, it was simply carried out by keeping updated on what goes on in the fisheries sector and the fisheries media. Thus, there may be information that has passed

me by. The data was analyzed by looking particularly at what was being said about recruitment at that particular point in time. The picture presented here is therefore merely snapshots of the recruitment debate at specific points in time (Mol 2002:53; Mol and Law 2006).

iii. Interview Process

The quantitative survey guided the design and formulation of the interview guide, as it became clear that some questions were in need for more in-depth information. The interview process was carried out in mainly two rounds: 2010–2011 and in 2012⁹. The first round of fieldwork focused on local employment and recruitment systems and their links to coastal communities. And the second round, although slightly different in focus, also included a large amount of data related to employment and recruitment patterns, and has been actively used in the analysis.

Each informant gave their consent to participate in the interview and was briefed about the project, the interview, how the information would be used, confidentiality, consequences and the possibility of withdrawing at any point during or after the interview, or to withdraw specific statements. The informants were also offered summary of the interviews—an offer all of them declined. Most of the interviews were also followed up by a quick debriefing.

The interviews were semi-structured, life history interviews. All informants were asked to describe how they were recruited into the fisheries, the local recruitment patterns and local recruitment challenges. A broad opening question was for example: “Can you tell me how and why you became a fisher?” The rule-of-thumb was to let the informants do the talking. As long as the dialogue flowed easily the guide was not needed. Although a guide was used to secure that certain topics were covered, the different interviews lived

⁹ Through the work related to the project "Safety in the fishing vessel" (*Sikkerhet i fiskebåten*) in collaboration with SINTEF

their own lives and took different directions. Of special interest in the interviews were patterns found in our quantitative material that contradicted the common understanding and those that were linked to controversial discourses.

After the interviews, in my field notes, I commented on my experiences, impressions, feelings, improvements, as well as some possible translations of the material. The interview guide was improved and prepared for the next interview. I have to admit, as I became more confident and got to know the field and my informants better (some I interviewed three times), I was able to relax, the informants were familiar with the process; and I was able to relax the formalities, improving the flow and allowing me to focus on content.

Although most informants open heartedly discussed the issues I brought up, at times interviews were like “pulling teeth”. Some informants were extremely tight-lipped—to the point that it almost became a structured interview. However, I think the most challenging situation was doing a focus group interview with a high school class. Only a couple of the students spoke willingly. But since they also lack fisheries experience and vocabulary, they seemed to simply reproduce the stories of the elders. As they made a statement, I asked them to clarify what they meant and they were not able to. This was a stark contrast to interviewing a young fisher, only a few years older than these students, but who had gained his own fisheries experience and was producing his own stories.

Initially, the plan was to record interviews. However, due to strict Norwegian regulations regarding storage of personal data, I was not able to do so, which turned out to be a benefit to the interview process. Some interviews were on docks or boats while fishers were working, something that could have affected the quality of the taping. Some people may not be comfortable with being recorded, and the recorder would have destroyed the ambiance and acted as a barrier to communication. Moreover, I am not partial to using a recorder myself. Having tried it once, I feel it makes me more formal than what is natural

for me, and it tends to be something that negatively affects the interview situation. Rather than recording, I made use of extensive field notes during and/or after the interviews.

According to the books, the researcher is the one in charge and the one who defines the situation, thus leading to an asymmetry of power (Kvale 1997). This was not my experience. Clearly, I defined the theme, but the interview situation was often out of my control. For instance, my very first interview took place in the office of one particularly active fisher. His office proved to be a meeting place. The advantage was that I was able to interview several fishers over a short period of time. The disadvantage was that people entered and left on their own initiative. Instead of panicking, I decided to relax and see what happened. The interview became more like a focus group interview. I was able to obtain a lot of information and different points of view and listen to discussions and disagreements. The disadvantage in this particular case was that one fisher dominated the discussion; however, since he had to leave, other fishers began speaking more freely. I encountered similar situations in many interview situations, which in general proved to be fruitful. Other interviews, particularly those with representatives of organizations, were more 'by the book'

As mentioned above, rather than recording or using the computer, I chose to take careful notes during the interviews. Notes taken were transcribed the same day. However, while 'hanging out' on the docks, there were situations when I almost accidentally fell into an interview situation without pen and paper. In these situations, I sat down immediately after the interview and wrote down everything I could recall. There was also one interview in which the informant was clearly skeptical to disclose information, and I refrained from taking notes altogether. Although this information was only kept as a mental note and not used as actively as the other information obtained, what she offered was also important and added new pieces to the puzzle. I made summaries of the main findings of the interviews. Some information was reformulated and condensed, while other information, such as interesting quotes, was transcribed word by word. It was the

spirit of the interview that I wanted to capture, not the words (Kvale 1997) even if this meant that I could miss some information. However, with over one hundred informants, the likelihood of that is smaller.

According to Latour (1991), the faith of a statement lies in the hands of others. What this entails is that I translated statements made by my informants. The entire qualitative process is about translation. In this respect, language is an issue. Furthermore, the majority of the material has been translated from Norwegian to English. Notes were in Norwegian, often in the informants' dialects. Only parts of the interviews used in the articles were translated into English, to avoid something getting lost in the translations. Additionally, I transcribed according to how they talked, which mean that it was not necessarily correct English or Norwegian.

iv. Analyze Strategy

The theory behind the analysis was outlined in the theory section above; this section will outline the practical work done in the analysis. The main aim of the analysis is to deconstruct accounts into fragments and elements, and then reconstruct new accounts. In accordance with the ANT-perspective, I did not venture out there to find a reality. Rather, the fishers and I co-constructed meaning and reality through interactions, negotiations and translations (Latour 1996; Kvale 1997; Latour 2005). Stories often include elements of politics and research, which are woven into other lives, other things and other phenomena, and that are continuously being produced. Thus, fishers' stories have to be seen in relation to context, own life, society, politics, practices and associations, thus allowing the researcher to view the fishers' world (Johnsen 2004).

The analysis is a continuum between description and translation (Kvale 1997). Through the accounts that I was given, I described the employment and recruitment processes. I tried to catch the fishers' descriptions of reality. Simultaneously, however, a process of

translation takes place, as I translate their reality into new accounts, which were related to the quantitative findings as well as theory and other literature.

Discourse Analysis (DA), as described in the theory section, is the main method chosen to analyze the qualitative data (Sønvisen 2012; Sønvisen 2013). Discourses suggest some regularity and structure in language that influence discourses (Hajer 2012). Every discourse is embedded in a context and a history, which has effects on current and future discourses (Wodak 2004). General development in the fisheries is therefore relevant for recruitment and therefore relevant to describe. Hence, the analysis of the recruitment discourse is carried out with contextual and historic description as a backdrop. To make sense of statements, I relied on previous theory and literature dealing with the CES, but I also made extensive use of monumental documents to anchor the analysis in the wider (political) context (Neumann 2001).

The practical approach for analyzing the recruitment discourses was inspired by Hajer (2012) and Woodak (2004). Prior to entering the field, an extensive literature review was carried out. This gave a grasp on the recruitment debate and acted as a guide for developing the themes and questions. Interview data, as well as secondary data from previous research, official reports (Green Papers [NOU]), government documents (White Papers [WP]), law documents, newspaper articles, web pages, internet blogs and so on, were used for developing the recruitment discourse. The analysis was driven by the narratives, which were sorted thematically and then chronologically. Narratives were categorized based on what was said about recruitment, the recruitment problem and potential solutions to it. For instance, statements such as “low recruitment is caused by poor fleet profitability” and “low recruitment is caused by restructuring policies” were sorted into two different categories. Three storylines with associated discourse coalitions emerged: one tied to business and economic theory, one tied to regional development and community values, and one not closely tied to any particular ideology or theory. The discursive strategies of the discourse coalitions were also explored to see who argued

what and to check for consistency. Finally, I explored discursive hegemony based on Hajer's concepts of institutionalization and structuration. The methods used were described in Sønvisen (2012) and Sønvisen (2013).

g. Generalization, Reliability and Validity

The degree to which an account is believed to be generalizable is a factor that distinguishes qualitative and quantitative research (Maxwell 1992 in Golafshani 2003). A challenge with the qualitative method, and ANT, is that it is based on cases and it is therefore difficult to transfer the interpretations into other contexts and situations (Whittle and Spicer 2008). Thus, there are several cautions to be made in generalizing the results. There are also cautions to be made in relation to the generalizability of the quantitative data. Although the quantitative material was found to be representative of the fisher population (Johnsen and Vik 2008), the data is a punctualization and must therefore be contextualized, keeping in mind the specific political and economic situation in the fisheries sector at that time. However, through a mixed methods approach, we should be able to make some analytical generalization about what could happen with employment and recruitment in another situation or context (Kvale 1997).

Reliability and validity are often discussed in relation to the quality of research. In quantitative research, reliability refers to the replicability of the results and validity to whether measurement instruments are accurate in that they measure what they intended to (Golafshani 2003). According to Patton (1987:8), in qualitative research, reliability and validity "depend to a great extent on the methodological skill, sensitivity, and training" of the researcher. There are even scholars that question the relevance of reliability and validity in qualitative research (Davies and Dodd 2002).

Triangulation, as discussed above, is typically thought to strengthen research as it improves reliability and validity and to controls bias (Mathison 1988; Johnson 1997; Patton 2002; Golafshani 2003). As the aim in qualitative research is to get a deeper

understanding, rather than skimming the surface, it also recognizes that there are multiple versions of reality. Rather than producing singularity, triangulation contributes to multiple realities (Johnson 1997), which lead to a more valid, reliable and diverse construction of reality (Creswell and Miller 2000)

However, rather than using reliability and validity, credibility and trustworthiness are argued as tools for evaluating the results of qualitative research. In quantitative research, credibility depends upon the instrument construction; in qualitative research, however, “the researcher is the instrument” (Patton 1999:1198) and credibility depends on the researcher’s sensitivity to the data and ability to make the correct choices in the field (Hoepfl 1997). Similarly, trustworthiness is achieved through the presentation of the material, making the research practice visible and the reader able to follow and verify the research process (Sandelowski 1986 from Knol 2011). Thus, credibility is about being my own PIPETBOY and making my research findings credible and trustworthy through my efforts and ability to make my research design and practice visible.

Whether we discuss reliability and validity, or credibility or trustworthiness, the project depends on the methods chosen and their quality; this includes the quality of the interviews, the transcription, the analysis and the texts. Thus, I have tried to be critical and reflexive around my work and my role in this project. I have also attempted to leave the research process visible and traceable for the reader by giving details. I believe the main strength of my work is the application of three different methods—literature review, DA and a statistical method—and that all three methods yield more or less the same result: recruitment “enacted is more than one, but less than many” (Mol 2002:55).

h. Limitations

There are a number of limitations associated with this study. Since I have given lengthy details around the weaknesses in the different methods or theories chosen, this section focuses more on the practical side. Variables change and empirical or statistical

observations are not continuous. They only refer to a particular point in time. This is also the case with our data collection. The quantitative data was collected in the spring of 2007. It was a period when things were running fairly well in the Norwegian fisheries, and answers should be expected to be accordingly (Fiskeridirektoratet 2008). In the winter 2010, the fisheries were struggling with effects from the financial crisis and the low cod prices. The catchability of the cod this spring was high in some areas, so the quota was caught quickly; thus, parts of the coastal fleet was left idle waiting for other fisheries to open. In the winter of 2012/2013, the financial crisis was starting to take its toll, as cod prices continued to decline and the warehouses were filling up. Hence, collection of the large amount of quantitative data in later periods could have yielded different results. The qualitative interviews, however, were able to pick up some of these developments.

Not necessarily a weakness, but something that could have strengthened the study, would have been the availability of time series. Due to the lack of these, we cannot say anything about changes, e.g., from 2007 to 2013. All the data collections are mere snapshots at a particular point in time used to make some inference about fleet recruitment. However, the data collected could be a baseline for future work, and the design of this work allows building a time series.

Related to validity and reliability is our limitation to reproduce the study and the findings, especially the qualitative data. This is something that often is problematized, especially by researchers with partialities towards quantitative methods. Law asserts that not even labs are able to replicate studies; it would be too expensive and too time-consuming of an endeavor.

There were also some weaknesses in the design of the survey. One was that questions about vessel lengths were only posed to vessel owners. As a number of regulations are attached to vessel lengths, it was difficult to compare crew and vessel owners' data using

vessel size. This was, however, solved by using the mode of fishing, rather than vessel length, which was a question posed to both vessel owners and crew.

5. Summary of Articles

Article I – The Norwegian Coastal Employment System: What It Was and What It Is

This article explores the contemporary Coastal Employment Systems (CES) using a mixed method approach. The qualitative Actor-Network Theory (ANT) develops the coastal employment and recruitment narrative, using Jentoft and Wadel's (1984) employment theories as a point-of-departure. The quantitative approach describes quantitative and structural patterns in the contemporary employment and recruitment system. Discovered patterns found are discussed with the recruitment narrative as a backdrop. The research question is: what characterizes the Coastal Employment System (CES)? How well does the grand employment narrative of Jentoft and Wadel capture important aspects of the contemporary fleet employment and recruitment system?

Contemporary recruitment patterns differ from those described by Jentoft and Wadel. Although recruitment still depends on local community and social networks, some fleet segments are increasingly recruiting outside local communities. Contemporary employment systems are also found to be more formalized and professionalized than previously, with less dependency on local communities for employment, recruitment and training. Property rights, fishing right and increased demand for capital has also contributed to a more specialized and professionalized sector. Consequently, as the social relation between fisheries and communities weakens, new relations are formed, which are increasingly embedded in a formalized and professional Fisheries Employment System (FES). The implication in the short run may be employment and recruitment problem in local communities. In the long run, however, due to broken social relations, local communities may no longer be guardians of the fisheries, as the fisheries becomes like any other business.

Article II – The Recruitment Paradox: Recruitment to the Norwegian Fishing fleet

Fleet overcapacity and low profitability has led to measures that have reduced participation in the fisheries. Still, overcapacity remains, and there are claims that there are still too many fishers. Concurrently, there is a general consensus that the fishing fleet is facing recruitment problems. There are too many, but there are also too few fishers. This was termed the *Recruitment Paradox* in Sønvisen et al. (2011) but was not described in detail. Thus, what characterized the Recruitment Paradox, and what are the policy implications of its existence?

The article is situated within Actor-Network Theory (ANT) but uses Discourse Analysis (DA) as a tool to analyze the Recruitment Paradox. The analysis shows how actors within a network share similar representations and versions of recruitment and how they agree on a definition of and solution to the recruitment problem, and how these oppose other networks. The article uses both primary and secondary data.

Two separate discourses unfold: *the profitability discourse* tied to economic theory and business development, and *the community discourse* tied to the Coastal Employment System (CES) theory and rural development. In terms of recruitment, the profitability discourse argues for establishing grants for youth to buy vessels with quotas in the ordinary market. The community discourse argues for recruitment quotas for young fishers already in possession of a vessel but outside the closed fisheries. Using market mechanisms, establishment grants try to limit participation; whereas recruitment quotas try to increase participation. Founded in different discourses and different logics, the two recruitment measures suggested contradict each other. This is the manifestation of the Recruitment Paradox, and the result is incoherent and contradicting recruitment policies and strategies.

Article III – Recruitment to the Norwegian Fishing Fleet: Storylines, paradoxes and pragmatism in Norwegian fisheries and recruitment policy

Due to stock collapses, Norwegian fisheries have increasingly become closed-access, and participation has declined. There is a general consensus that fleet recruitment is the main future challenge, but how to solve the challenge has not been agreed upon. The result is controversies and diverging policies, or a Recruitment Paradox (Sønvisen, Johnsen et al. 2011). Similar to the previous article, this article also investigates recruitment, but it takes it a step further. As a number of stories told did not fit neatly into one of the two discourses, a new analysis was needed. Hence, recruitment was revisited and the recruitment discourse, as well as storylines and discourse-coalitions, were explored. Finally, policy implications of particular discourses being used were examined.

Using primary and secondary data within the framework of ANT and DA, the article examines the relationships between storylines, discourse coalitions and recruitment policies, to show how actors construct meaning around recruitment and act upon it.

Of the three discourse coalitions, two were the same as the previous article: *the profitability coalition* and *the community coalition*. However, a number of statements did not neatly fit into these two categories and a third coalition emerged: *the pragmatist coalition*. It is in the tension between these two first discourse coalitions that *the pragmatic-fisher coalition* forms. Fishers are adaptive and pragmatic, picking arguments from different ideologies depending on circumstances. Similarly, practical measures from both the profitability and the community coalition are applied, resulting in contradicting policies and measures.

Discourses may be converging into a single pragmatic storyline, as actors have multiple adaptation and motivations. Hence, focusing on particular discourse or ideology, may limit or policy options. Rather, a pliable policy adaptable to complex and dynamic

challenges is needed, and strategies and actions have to be applied to the appropriate challenges.

Article IV – Contemporary Fisher Images: Ideologies, policies and diversity

A range of instruments have been implemented in Norwegian fisheries to control human impact, such as access rights and quotas. Chosen management instruments are based on theories about human behavior. Gordon (1954) and Hardin (1968) have in particular affected how we imagine the fishers. However, studies within the *local community paradigm* (Brox 1966, Jentoft and Wadel 1984) challenge these assumptions. Still, modern management tends to assume homogeneity among fishers, ignoring complexity, diversity and dynamicity. This article analyses fisher discourses with focus on recruitment and asks: what fisher types are present in the contemporary Norwegian fishing fleet? What characterizes these fishers in terms of attitudes and motivations? What are the policy implications of a more heterogeneous fisher image?

The article uses primary data in a mixed-method approach. Multiple Correspondence Analysis (MCA) is used to produce a fisher typology, and Actor-Network Theory (ANT) aids interpretation of the typology and deepens our understanding of them.

The result is four fisher types: the traditionalist and modernist fisher types, which are founded in ideology, and the neutralist and the pragmatist, which are less ideological. Contrary to the usual assumption of homogeneity among fishers, this study shows that there is diversity among fisher types, their rationalities and motivations. Thus, policy aimed solely at offering competitive wages may miss the fact that the majority of fishers enter the fisheries because of their interest in the fisheries. Moreover, as we move from coastal fisheries towards industrial fisheries, there is likely to be an increased orientation towards rationalization and market mechanism among fishers, and decreased orientation towards local communities. Thus, if the objective is to maintain existing coastal

communities and fleet structure, a diversified recruitment policy is needed that take the heterogeneity of the fleet and the fishers into account.

Article V – Coastal Changes: fisheries policy as regional and local community policy

Coastal employment and settlement were the main objective of Norwegian fisheries until the breakthrough of the resource management regime in 1990. To meet the objectives of sustainable resource utilization, reduction of catch capacity was necessary. This has improved profitability but has also changed sector structure and affected coastal communities. Thus, to maintain coastal employment and communities, there may be a need for changes in fisheries policy. Hence, we ask: is it still possible to identify a local community orientation in the fishing fleet? And if so, what political choices are we faced with in terms of strengthening or weakening the connection between the fishing fleet and the coastal communities?

The article uses Actor-Network Theory (ANT) and the Coastal Employment System (CES) theory. Secondary data is used to describe how the core elements in the CES have changed. Primary data and regression analysis test community orientation.

The main finding is that an increase in vessel size reduces local community orientation. Moreover, the farther north a vessel owner resides, the stronger the community orientation. Thus, a policy that leads to a continuous increase in vessel size will weaken the local community orientation. If the objective is to contribute to the viability of coastal communities, then policy must take into account that the structural differences in the fleet will affect coastal communities in the North differently than in the South. Hence, structural and regional differences in coastal Norway are reasons to consider a stronger regional differentiation in fisheries policy without challenging the resources and existing distributional arrangement in the fisheries.

6. Employment and Recruitment Developments in the Norwegian Fisheries - Findings and Discussion

This thesis is written within the Norwegian context, but similar developments to those described here have been observed in other North Atlantic and North Pacific states (Knapp and Lower 2007; Eliassen, Sverdrup-Jensen et al. 2009; Johnsen, Holm et al. 2009; EU Fisheries 2011; 2011). Traditionally, North Atlantic coastal cod fisheries were labour intensive and community based, using low-level technology (Johnsen 2005). These fisheries, however, have undergone fundamental changes. Case studies in Norway, Canada and a number of North Atlantic fisheries nations describe significant changes in technology, organization, fleet structure, knowledge, management, property rights and community relations (Eythorsson 2000; Apostle, McCay et al. 2002; Johnsen, Holm et al. 2009). A primary, and very visual, result of these changes in Norwegian fisheries has been the great depopulation in the last sixty years. Since the 1950s the total number of fishers has been reduced by over one hundred thousand individuals, a reduction of almost 90%. This decline is not something of the past; in the last twenty years, the number has dropped by nearly fifteen thousand fishers, or 54% (www.fiskeridir.no),¹⁰ which is likely to have affected employment and recruitment systems, as well as coastal communities (Sønvisen, Johnsen et al. 2011). Given these vital changes, the following will sum up the two main discourses that have influenced the recruitment discourse.

a. Too Many Fishers – Resources and Fleet Profitability at Risk

The first perspective that has been a main influence in the recruitment debate is the profitability discourse. In this discourse, increased profitability with fewer and more profitable fishing units is the key to the recruitment problem. This section will summarize the developments that have contributed to the construction of this discourse.

¹⁰ Both numbers refer to full- and part-time fishers

Despite a continuous depopulation of the fleet in terms of both vessels and people, fleet capacity has not declined proportionally and fleet overcapacity remains. Technological innovations have contributed to a more efficient fishery. For instance, in the 1980s a 64-foot fishing vessel needed at least five fishers to handle about 200 nets. In 2007 a 49-foot vessel with three men could easily handle 120 to 180 nets, with the same or higher catch potential as in 1981 (Sønvisen, Johnsen et al. 2011). Similar developments have been seen other fisheries. Hence, technological innovations allowed for more efficient fishing operations as technology replaced people.

Modern resource management has also contributed to the reduction in fleet participation. The atlanto-scandian herring stock collapsed in the late 1960s, followed by a collapse of the North East Atlantic (NEA) cod stock in the late 1980s. Both collapses were attributed to increased capture capacity, partly due to technological innovation. Following these stock collapses, limited entry measures and quota schemes were introduced (Johnsen and Vik 2013). In this process the fish and the fisher were translated into calculable and manageable objects (Johnsen 2005; Johnsen, Holm et al. 2009; Johnsen, Murray et al. 2009), making fishers and vessels disposables. The intentions of these management measures were reduced participation and increased profitability, while simultaneously reducing capture capacity to a biologically sustainable level. A lower number of vessels was expected to reduce capture capacity; however, as older vessels were replaced by newer and more modern vessels, the capacity actually increased.

This development continued into the new millennium (Johnsen 2005) and further capacity-reducing measures were needed. Fleet restructuring policies were introduced, which allowed the merging of several vessel quotas onto one vessel, provided that one vessel is permanently removed from commercial fishing (Holm 2001; Johnsen 2004; Hersoug 2005; Johnsen, Holm et al. 2009). Again, the theory was that the set quota could be harvested with fewer vessels and less people, thus yielding higher profits (Hauge 2008). These measures have been said to have contributed to rebuilding the NEA cod

stock (Finstad and Holm 2013) and improved fleet profitability (WP No. 21 (2006-2007)), but overcapacity remain in some segments (NOU 2006:16) (as seen in **Figure 1**).

There are also factors external to the fisheries that have affected capture capacity and participation. The school reform in 1994 (Reform '94) granted youth 12 years of education and has been accused of steering youth out of the fisheries. Due to longer schooling, youth would be introduced to the fisheries at an older age or not at all. The development of the welfare state has also affected the fisheries participation, as it increased the standard of living, shaping people's perceptions and expectations in terms of living and working conditions. Consequently, as fishing is still seen as strenuous and dangerous, with other employment opportunities, fisheries is less attractive (Aasjord 2010; Johnsen and Vik 2013). Finally and also related to the welfare state and the educational reform, contemporary youth have more job and educational alternatives than previously and no one *has* to enter the fishing profession.

Due to technological innovations, resource management and general societal changes, participation declined and catch efficiency increased in the Norwegian fishing fleet. In 1950 there were over 98 000 full- and part-time fishers fishing 1.3 million tons of fish. In 2005 there were merely 14 500 full- and part-time fishers fishing 2.4 million tons (Figure 1) (Hagevik 2006; Fiskeridirektoratet 2008). Thus, despite a significant reduction in participation in the fisheries, catch capacity has continuously risen and overcapacity remain (NOU 2006:16; Dreyer NA).

These changes have also affected recruitment mechanisms in the fleet. Recruitment challenges have been discussed for decades. In the 1950s it was recognized that too many fishers and technical overcapacity led to too low income for the fishers—too many making too little money. Efforts to reduce participation in the fisheries were attempted and the first outcries of recruitment problems followed. Since then, capacity reduction has been directed at resource conservation – too many chasing too few fish – and fleet

profitability – too many making too little profit (Sønvisen 2013). Still, some fleet segments are struggling with low profitability and too-high capture capacity (WP No. 21 (2006-2007) ; Johnsen 2004; Sønvisen, Johnsen et al. 2011; Dreyer NA), as well as recruitment problems (Johnsen and Vik 2008). Although some fleet segments lack recruits, in this profitability discourse there is not a recruitment problem. There is no shortage of recruits and there are still too many! The remedy is further fleet restructuring. This remedy, however, does not take into consideration either the effects it may have on coastal communities or that the different fleet segments may have varying recruitment demands. Moreover, we cannot simply assume that fishers are solely economically rational actors acting strictly in accordance with economic theories. Although this perspective has been influential, there is also another perspective that has influenced the recruitment debate in particular, which shall be summed up in the following section.

b. Too Few – Communities at Risk

The second perspective that has influenced the recruitment debate is the community discourse, in which the solution to the recruitment problem is vital fisheries communities. After WWII there was a general labour shortage in Norway, coupled with low wages in the fisheries. The first attempts to reduce fleet employment to increase wages were made, and youth, particularly, were encouraged to go into other professions. This proved so effective that in the early 1950s the first outcries of recruitment problems surfaced (Johnsen 2004; Sønvisen 2013). And the number of recruits continued to decline. Between 1965 and the end of the 1970s there was a 48% decline in the number of fishers, mainly young fishers. In the last twenty years, the share of fishers under the age of thirty has been reduced by 72%, from almost 6 500 in 1991 to just over 1 800 in 2011 (Figure 10).

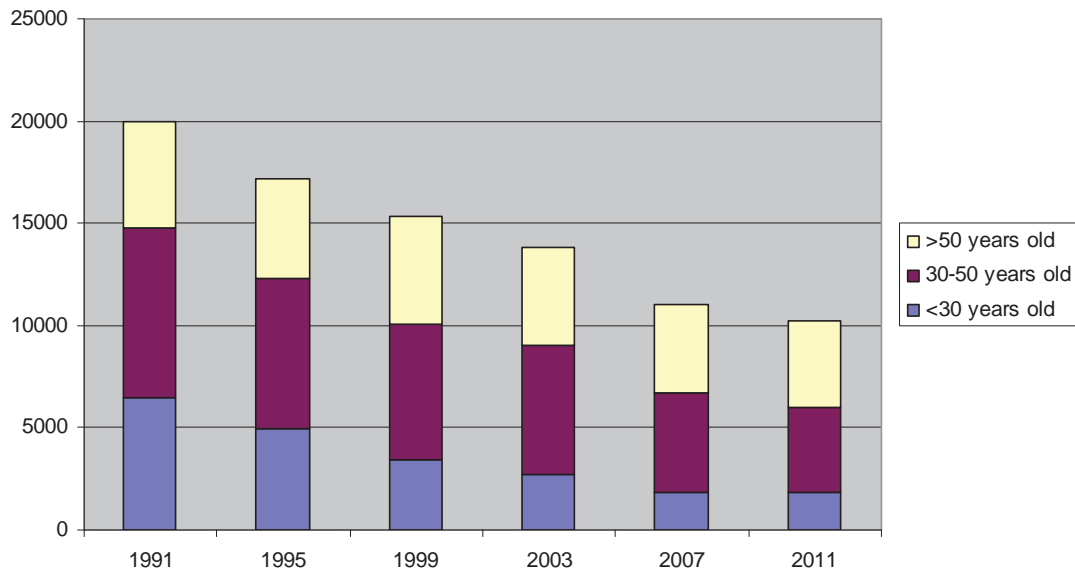


Figure 10: Development in number of fishers in relation to age (source: www.fiskeridir.no)

The reduced number of fishers, especially the declining number of young fishers, has become a representation of the struggle of coastal communities (Kyst og Fjord 2011). In this perspective, fewer local fisheries actors is thought to weaken the relations between the fisheries and their communities. Due to the mutual dependency between the fisheries and the communities, this could erode the coastal recruitment and employment systems. This could in turn negatively impact coastal communities and further exacerbate the recruitment problems, as arenas for transfer of knowledge and socialization disappears (Jentoft and Wadel 1984; Hersoug, Holm et al. 1993; McCay 1999; Apostle, McCay et al. 2002; Sønvisen, Johnsen et al. 2011). The recruitment problem has been claimed to be a consequence of modern management and particularly the quota regime. As the leader of the Norwegian Coastal Fishermen's Association said:

[Poor] recruitment is the greatest threat to the profession that laid the foundation for communities along the coast for several generations... The quota system ruins the coastal fisheries. It makes it almost impossible for

recruits to enter the business. Youth cannot afford to go into the fishing occupation... (Paul Jensen to Skjærvik 2009)

In this perspective, the remedy for the recruitment problem is allowing the coastal populations to live off the coastal resources, thus, increasing participation. Rather than market mechanisms, the faith lies in government intervention and the abolishment or limited use of restructuring policies, as well as more free fishing for the smallest coastal fleet (Norwegian Coastal Fishermen's Association 2013). However, this viewpoint does not take into consideration that years of technological change has led to more cybernetic relations in the fisheries, and that these effects may be irreversible. We cannot assume that traditional recruitment mechanisms are still dominant and that future recruitment will take place in local communities—even the coastal fleet makes use of foreign crew. Moreover, we cannot assume that the fishers are unaffected by the dramatic changes in the fisheries.

Hence, these two discussed perspective have influenced the recruitment debate and, as the discussion above hints at, are founded in two different ideological frameworks, which greatly affect the execution of policy. This is the topic of the following section.

c. Policy Paradoxes

Despite of the findings in Sønvisen et al. (2011) where recruitment in terms of crew is not a major challenge for the fleet, recruitment is still seen as *the* main future challenge in the fisheries sector (WP No. 51 (1997-98) ; Jentoft and Wadel 1984; MFCA 2008; NOU 2008:3; Fiskebåt 2010). In the coastal fleet, restructuring policy raise the price of vessels with quotas, leading to difficulties recruiting vessel owners (Norwegian Coastal Fishermen's Association 2013). In the offshore fleet, particularly the pelagic fleet, the same policy has improved profitability (Henriksen 2012) and this fleet does not have significant recruitment challenges (Johnsen and Vik 2008). Besides, further restructuring is believed to improve profitability (Berg-Hansen 2012). Hence, a disparate policy results

in the Recruitment Paradox: too many versus too few, and incoherent and poorly formulated recruitment policies and measures (Sønvisen, Johnsen et al. 2011; Sønvisen 2012; Sønvisen 2013).

Policy paradoxes are not uncommon. General fisheries policy is also riddled with paradoxes. Fisheries policy shall increase profitability and reduce participation while simultaneously, securing coastal employment and settlement—two seemingly contradictory objectives (Participation Act of 1999 no. 15 (updated 2008 no. 10, §1)). These paradoxes are founded in different ideologies. Ideology offers a limited tool box and predefined solutions, and locks policy to a set number of alternatives. In general fisheries policy, the quota system locks management alternatives to institutionalized allocation keys. Similarly, large individual investments in vessels with quotas reduces management options, making the system less pliable (Holm and Nielsen 2007). In terms of recruitment, there seems to be only two choices: reduced participation through the use of market mechanisms and restructuring policy, or increased participation through government intervention.

The real recruitment challenge, however, may lie ahead. Politically, recruitment policies focus on short-term solutions. Some fleet segments are not presently experiencing a shortage of crew, whereas others resort to foreign crew. Consequently, recruitment is not experienced as acute and is not discussed. However, with a short-term political focus, the long-term recruitment questions, such as where the future recruits shall come from, what competency shall they have, how are they to be socialized and trained, what is the future role of the community in recruitment and so on, is not up for thorough political debate. Thus, there is a tension between short-term and long-term political priorities.

This brings us to the pictures from Henningsvær on the cover of this thesis. These images illustrate the paradox and the two perspectives at play: one tied to business economic theory and industry policy, the other in community theory and regional development. The

first picture from 1951 shows a large number of relatively simple fishing vessels, whereas the second picture from 2011 shows fewer, but more technologically sophisticated fishing vessels. From an industry and profitability point of view, the picture from 1951 shows the recruitment problem: too many making too little money, making the fleet unattractive. However, from a community perspective, the picture from 2011 shows a recruitment problem: too few fishers weakening the traditional recruitment mechanisms and local communities. Ideally, one perspective prefers a situation similar to the one seen in 2011, whereas the other perspective prefers the situation similar to the one depicted in 1951.

The question is whether we can accept the paradox or not, as it produces conflicting policy measures. Moreover, what policy dominates the general fisheries policy may be of greater importance to recruitment than what policy dominates the recruitment policy? The question is what policy has the greatest effect on recruitment in relation to fleet segments and community? And moreover, what are the long-term recruitment challenges in a system with changed recruitment mechanisms? This brings us to the next section that deals with coastal recruitment and employment systems and the relations with local community.

d. Contemporary Recruitment, Employment and Community

The analysis thus far has shown that recruitment has a variable and dynamic ontology; hence, recruitment change from one site to the other and over time (Mol 2002). Being central to the Coastal Employment System (CES), changing recruitment mechanisms are likely to affect both employment and coastal communities, which in turn affect recruitment. First of all, recruitment shows up in all kinds of contexts, often surprisingly. It is woven into all types of fisheries political and public discourse dressed in various ideological outfits. Tied to general fisheries policy, recruitment is declared as *the* main future challenge of Norwegian fisheries. It is proclaimed as the key to community survival, as well as to an efficient and profitable operation of the fleet. It even shows up, quite unexpected, in ethnic-rights discourses, as recruitment also shall secure Sami

communities and their traditional way of life (Sønvisen 2012; Sønvisen 2013). The recruitment discourse also shows up in the fisher types. For some fishers, recruitment is tied to an ideology that affects attitudes and behaviour, as in the modernist and the traditionalist fishers. For others, however, recruitment is not tied to ideology, but is tied to practices and is about securing the right people at the right time, as for the pragmatist fisher (Sønvisen In progress). Hence, recruitment is multifaceted and for a constructive recruitment debate aimed at addressing the specific recruitment problems, we need to know what version of recruitment we are addressing.

Thus, given the significant changes in the fisheries and that recruitment is central to the maintenance of the employment system, how have recruitment and employment mechanisms changed? The CES, as described by Jentoft and Wadel (1984), has changed. It has been argued that the employment system is developing in a direction of a professionalized, specialized and sector-oriented Fisheries Employment System (FES) (Sønvisen, Johnsen et al. 2011). The CES was characterized by close and affective human relations that differentiated the CES from other employment systems at the time. Rather than affective relations, the FES is constituted by socio-technological relations. For the CES local recruitment, use of local services and local socialization were essential. As the FES transgress local boundaries, the FES's recruits hail from outside the local community (Thorvaldsen, Sønvisen et al. 2012), services are purchased by nationalized and/or globalized service providers and socialization and transfer of knowledge are embedded into cybernetic organizations and technology. Thus, just about anybody can become a fisher, independent of relations to local community (ibid). Although local community becomes less important, community does not cease to exist. Rather, the FES enrolls into new communities defined by technology, operations, practices or politics, and not by geography. Thus, the FES is a part of longer networks woven into a globalized economy. As a part of the modern management system, the FES is also instrumental to the achievement of national and international fisheries objectives. In addition, whereas the coastal fleet has a stronger community orientation, it is more integrated into a

‘traditional’ CES than the offshore fleet, which is more integrated into the sector-oriented FES (Sønvisen, Johnsen et al. 2011; Vik, Johnsen et al. 2011).

So, given the above-discussed changes in the fisheries and the CES, is there still a community orientation in the fishing fleet? Yes and no. There is still a local community orientation, especially in the coastal fleet. However, there is also disengagement between community and the fisheries, as the CES is transforming into an FES. This disengagement may also be a consequence of the presence of other employment systems (health, school, etc.) as well as the welfare state, which has become a master organizer of Norwegian society and employment—fishing communities being no exception. Hence, the fisheries are less significant in coastal communities' employment system. More importantly, though, the disembedding of the employment system from community, or the transformation into an FES, makes the CES less of a cultural object and brings it closer to the ‘normal networks’ and becomes more like other employment systems in the marine or maritime sector. So what can we learn from this work?

7. Contributions

The contribution of this work is six-fold. First of all, although the case in this thesis is the Norwegian fishing fleet, it is not limited to Norway. Clearly, stocks, management policies, among others, are international by nature. Concepts, understanding and frames of reference that are part of the Norwegian discourse sometimes have their origin in descriptions and studies in other parts of the world. For example, Jentoft and Wadel (1984) developed the employment system theory inspired by both Berger and Luckman's (1967) general theory and by empirical studies of social relations and mutual dependencies in specific settings and specific fisheries in Newfoundland, Shetland, Sweden and Norway (Andersen and Wadel 1972). Similarly, although this study relates to a Norwegian setting, similar developments as seen in Norway in the last thirty years are found in a number of industrialized fishing nations; thus, this study may also contribute to knowledge and fisheries policies outside the Norwegian setting.

Secondly, it is a theoretical contribution as it uses ANT in new ways. ANT does not always combine well with quantitative methods. It favors exceptions over norms, controversies over consensus, and change over stability. Averages and aggregates are seen as flattening out individual variation (Venturini and Guido NA). Rather, Latour calls for a science in which we maintain individual differences when aggregating data (Lacombe 1996; Latour 2010; Latour, Jensen et al. 2012). We do not quantitatively reproduce the social networks we describe; according to Latour, these cannot be drawn. Thus, the contribution here lies in that we use both quantitative and qualitative methods, and the results are interpreted in the ANT perspective.

Thirdly, also related to theory, we revisit the CES theory (Jentoft and Wadel 1984) and contribute to updating this body of theory. As the situation and the relations within the

fisheries have changed significantly since the 1970s, new theory should reflect new mechanisms within the CES. The CES had its foundation in empirical case studies in coastal communities in Atlantic Canada, Shetland, Sweden and Norway (Andersen and Wadel 1972). Furthermore, the work by Jentoft and Wadel (1984) was based on case studies in small, mainly northern Norwegian, coastal communities. Hence, the approach was limited in geography and influenced by a community tradition from an area where local context was geographically limited. Still, the theory has contributed significantly to coastal employment theory and policy. However, due to its geographic limitations, it may not have captured all elements of a CES. Moreover, due to the radical changes in the fisheries since the 1970s, it may not be as applicable today. Thus, to update the CES theory, a new perspective (ANT) is critically applied to an old, and heavily utilized, theory, thereby offering new insights into the contemporary CES (Sønvisen, Johnsen et al. 2011; Vik, Johnsen et al. 2011).

Fourthly, also in relation to the employment theory, this study contributes to an updated and more thorough understanding of what the fisher is and the fisher's behavior. The employment system theory is based on set assumptions about what the fisher's rationality. This has political implications, as policy and management relate to fishers as a particular object. However, through DA (Sønvisen 2012; Sønvisen 2013) and the quantitative method, we find that the fisher types and their adaptations are more heterogeneous (Sønvisen In progress) than policy usually assumes.

Fifthly, this work contributes methodologically to how we study employment and recruitment systems. In general, this field has been studied through thick, qualitative descriptions (Johnsen 2004). This study, therefore, offers a new multi-method approach applied at a larger scale than before. The quantitative method allowed a good overview, but reduced heterogeneity in the material (Venturini and Guido NA). Thus, to bring back *the heterogeneity in the material qualitative method was used. The result is updated empirical data with regards to fleet employment and recruitment.

Finally, through updated empirical data and analysis, this work addresses the knowledge gap identified by Johnsen (2004) and provides policymakers with contemporary knowledge regarding recruitment and employment systems in the Norwegian fishing fleet.

8. Conclusion – lessons to be learned

Over the past 20 years, the fisheries and fishing communities along the Norwegian coast have undergone major changes. This means that we must revise our understanding of the relationships between the fisheries and the fishing communities. We also need to rethink what the fishing profession is and what it means for coastal communities.

This thesis has produced updated knowledge about the coastal recruitment and employment system. The work of Jentoft and Wadel (1984) has been revitalized and analyzed in a new perspective, which shows that the Coastal Employment System (CES) has changed since the 1970s. From affective relations and community orientation, the CES has increasingly become formalized and woven into global, socio-technological networks in a Fisheries Employment System (FES). Thus, the grand narrative of Jentoft and Wadel only partially describes the contemporary employment system. Due to the fact that recruitment is a complex and multifaceted object, because fishers and their behavior are heterogeneous and as a result of the lack empirical data about the coastal employment system, recruitment policies are incoherent and contradicting. Furthermore, due to heterogeneity in the fleet and between regions, fisheries policies have disparate effects. A policy may in one context secure a varied fleet and vital coastal communities, but in another context, it may actually contribute to the demise of the local fleet and community. The bottom line is, due to the tremendous changes in the fisheries in the last forty years, recruitment and employment mechanisms have changed, which have affected the social relations between fisheries and coastal communities.

Looking forward, what are the effects of an even more professionalized fisheries employment network? In other words, what are effects of less affective and more technological relations? One effect may be a clearer distinction between vessel owners and crews, particularly where crews are temporary and non-local. It may also lead to a distinction between a globalized business and local communities, as fisheries no longer—

to the same degree—depend on local community for success. Another effect may be that capital and investment could come from outside the local community. As even fewer local actors are engaged in the fisheries and fisheries activities are contributing less to the constitution of the coastal community, these developments could further weaken the social relations between fisheries and communities. In the short-run, this may not have significant effects. There may be temporary fleet recruitment problems and unemployment, which could be alleviated through the use of foreign crew or technological advancements. In the long-run, however, this may have more profound effects. Lack of local socialization and local recruits could lead to a *recruitment-vacuum*, with few local youth advancing to become skippers or vessel owners (Sønvisen 2013). As such, the future recruitment challenge could also be about competency, transfer of knowledge and sites for transfer of such knowledge. Reduced local fisheries activities could also inhibit coastal communities' value creation ability, as fewer vessels, less employment, fewer recruits and fewer services would be available locally. This would particularly affect smaller coastal fleets and fisheries dependent communities. Moreover, as fisheries contribute no more than other economic sectors to community viability, fisheries are subject to the same demands as other economic sectors, and coastal communities can no longer act as guardians of the fisheries; arguing for utilizing the resource rent for employment no longer holds.

A continued existence of the policy paradox in which fisheries policies are not harmonized—the right hand does not know what the left hand is doing—is likely to be ineffective. Despite recognizing the recruitment challenges and the need to secure coastal communities and a varied and viable coastal fleet (WP no. 22 (2012-2013)), a restructuring policy that increases size, but decreases the number of fishing units may have the opposite effect. Hence, a recruitment policy that is not in tune with the general fisheries policy may be ineffective. As general fisheries policy aims at reducing fleet participation, offering a small number of recruitment quotas per year may appear as sheer window dressing to avoid political conflict. In fact, restructuring policy may affect

recruitment more than recruitment policy may affect recruitment. In addition, as policy focuses on the short-term recruitment challenges, challenges in the long-run are either postponed or sacrificed on the altar of short-run solutions.

However, the negative effect of restructuring is not the rule. Due to the development of the FES, further disembedment of fisheries and coastal communities may neither have a significant impact on fleets nor the local communities. In the offshore fishing fleet, recruits already hail from a larger geographic area, and specialized crewmembers are trained through formalized and technologically advanced systems, independent of local communities. Rather, an FES may actually contribute to lessening the recruitment problem, as recruits outside local context becomes available and further technological advancements reduce the demand for recruits.

For communities, the effect of reduced fisheries activities may be facilitated by the emergence of other industries, making communities less fisheries dependent. The development of the welfare state has already contributed to reducing fisheries dependence, but a large number of actors trust the coastal future to the oil and gas industry (WP No. 28 (2010-2011) ; Angell, Aure et al. 2013; Lofoten og Vesterålen Petro NA). Perhaps the oil and gas industry will contribute to the maintenance and development of some coastal communities, but further erosion of the relations between the fisheries and the coastal communities is also likely to occur. Moreover, an oil-fueled economy leads to increased wages and therefore harder labor competition, which may further increase fleet's recruitment challenges. However, what happens to communities that are stripped of fisheries activities and do not reap the benefits of oil and gas activities? We have to recognize that the role of fisheries communities has changed, which may affect the future of a number of coastal communities. However, to address the future needs of coastal communities, policymakers have to recognize regional differences and that coastal communities and employment systems, as well as the fisheries actors, are dynamic and subject to change. A general, one-time and one-size-fits-all policy that is not

empirically based and that aims to include all fleet segments, regions and types of fishers, is likely to miss the target. Consequently, the recruitment and employment systems must be examined periodically.

This brings us back to some theoretical reflections related to ANT's principle of generalized symmetry. Recruitment is not only a rhetorical and ideological object, but it is also a real challenge that needs to be addressed empirically and scientifically. We do not set the total allowable catch based on what politicians and fishers believe. We actually perform real science. In line with Ecosystem Based Management (Berkes, Folke et al. 1998) thinking, fisheries management has to include both the social and the natural systems. Thus, management should have as good scientific knowledge about the social system as they have about the natural systems.

Hence, we need up-to-date empirical data and images. Politicians need to know what is happening, and both social and natural scientists should assist in the endeavor to understand the systems they are managing. They need to understand the present situation and the tools that are available to deal with challenges. Moreover, decisions with regards to future recruitment have to be made. What will be the characteristics of the future recruit in terms of knowledge and skills? From where shall the recruit come? Politicians also need to be aware that locking policy to a particular ideology or theory will limit their future options. The answers to these questions rely on where the fisheries are going and where fisheries governance is going. Moreover, this requires a fearless formulation of recruitment policy, as well as fisheries policy, objectives and making some difficult choices.

9. Future Studies

Due to the lack of time series, we cannot say anything about changes in the employment and recruitment systems; hence, another collection of quantitative data, supplemented with relevant qualitative data, should be undertaken in order to keep up with the developments. This work is a baseline for such future work. In order to monitor changes and the effects of policy, such studies should be carried out every seven to ten years.

Another direction in which I would like to take this work is to go more in-depth into the effects changes in the employment and recruitment system have on local, fisheries dependent communities. Outmigration, lack of local recruits and a historically low level of unemployment in many regions has made recruitment of local youth difficult, and thus the fleet depends upon foreign labor to operate (Thorvaldsen, Sønvisen et al. 2012). Some of these workers are temporary, while others immigrate with their families. What are the effects on local communities and local fishing fleets? Moreover, given that successful fishing also depends on local knowledge, how is transfer of skill and knowledge secured between generations when recruitment is a challenge?

Yet another factor that could affect employment and recruitment is the bureaucratization of the sector, or the depoliticization of the sector. In fisheries policy, there have always been tension and power struggles between traditionalism and modernism—a divide that still exists. But due to the number of management instruments in the Norwegian fisheries, power is transferred from politics to management, and a number of negotiations take place in the fisher organizations. This, combined with a more pragmatic fisher, the question becomes how do we make practical arrangements that work and ensure that fisheries political objectives are attained?

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Appendix - Articles

Paper 1

Paper 2

Paper 3

Paper 4



ISBN XXX-XX-XXXX-XXX-X