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Resilience and social capital: The engagement of fisheries communities in marine spatial planning

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ABSTRACT

Between 2010 and 2016, the Orkney Islands Council, Highland Council and Marine Scotland have collaborated to develop a pilot Marine Spatial Plan for the Pentland Firth and Orkney Waters in Scotland. This paper explores the challenges of marine spatial planning processes by looking at the possibilities for fisheries communities to mobilize their social capital – in the form of bonding, bridging or linking – in order to re-position and to empower themselves in these processes. This paper aims to uncover the resilience of local communities that deploy social capital in order to influence MSP processes and safeguard their own interests. For this article ten weeks of qualitative fieldwork in the form of in-depth interviews and participant observation with stakeholders of the pilot marine spatial plan were conducted on the Orkney Islands in Scotland. The strong bonding social capital among fishermen in Orkney has resulted in a resilient community identity which allows for collaboration and self-organization, but also creates a defensive mentality which does not favor linking. Furthermore, a lack of trust in governmental authorities inhibits the mobilization of linking social capital among fishermen, obstructing the ability to access power through cross-scale connections. In response the fisheries community uses bridging social capital outside governance arenas to access networks and mobilize resources to strengthen its socio-economic and political position in support of future linking social capital. Researching this complex interrelation and functioning of social capital uncovers some of the social dimensions and socio-institutional constraints for fisheries engagement with and power in marine spatial planning.

1. Introduction

In March 2010, there was a stir in the Pentland Firth and Orkney Waters (PFOW) as the front page of the newspaper The Orcadian headlined: "The dawn of a new era. 'Historic' marine renewables announcement could herald the 'greatest economic benefit to Orkney since the birth of the oil industry'" [1]. The Pentland Firth – a 13 km wide strait between the Orkney Islands and the Scottish mainland – contributes to an unique ecosystem, which is known for its diverse marine activities, such as recreation, diving and fishing, and it forms an important national and international passage for cargo vessels and transportation.

Since 2010 the PFOW has become the first UK site for commercial wave and tidal energy production [2]. The leasing of sea beds for this purpose has stirred both excitement and concern from a wide range of stakeholders around the Orkney Islands. Marine energy production is an important element in achieving long-term renewable energy targets of the UK [3]. However, besides contributing to sustainability and climate goals, the planning of marine energy parks could conflict with other maritime activities, such as fisheries. To minimizing user-environment conflicts and competition over marine space, the Orkney Islands Council, Highland Council and Marine Scotland have collaborated between 2010 and 2016 to develop a pilot Marine Spatial Plan for the Pentland Firth and Orkney Waters strategic area [4]. Main objective of the pilot was to trail the marine spatial planning (MSP) process and to provide a basis from which to further develop a statutory marine spatial plan [5]. Through MSP a vision is created for the sustainable development of the marine environment and policies are formulated to manage human activities within a marine area [6,7].

One of the challenges of developing a long term marine spatial plan, is the direct effect such a plan can have on access to and use of the marine waters by local communities as MSP can partly allocate space for specific marine developments [8]. In the case of the PFOW, the pilot plan was initiated in response to concerns for competition over and exclusion from marine space due to the leasing of sea beds for marine energy sites. For local fisheries communities, the waters in which they fish and the fish stocks they target are central resources and access to these resources is vital for their survival [9]. The allocation of and potential exclusion from

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marine spaces through MSP thus seems to pose a threat to fisheries' resilience [10]. Furthermore, fisheries are usually not or not fully integrated into today's Marine Spatial Plans [11]. They have to negotiate their spatial claims with other stakeholders, but according to Jentoft and Knol [12], fishers and their communities (as the least powerful stakeholders) risk being ignored in the planning process. At the same time, MSP could create opportunities for fishermen to actively position themselves in marine planning processes and to influence the decision-making process.

This paper explores the challenges of marine spatial planning processes by looking at the possibilities for fishing communities to adopt new roles, in order to re-position and to empower themselves in these marine planning processes and to develop a marine plan. We will especially focus on the role of social capital in marine spatial planning processes. Following Grafton [9], actors can employ their social capital to induce change in favor of the community. Social capital refers to practices, norms and values present within a social network (or community) which can contribute to the collaboration, functioning and collective action of that community. Social capital exists in many different forms and can be more or less present within a community [13,14]. Resilient communities are able to strategically use their social networks to gain access to resources beyond the community. For fisheries communities this means using different forms of social capital to gain power in marine spatial planning negotiations, and to exercise influence in favor of community objectives [9].

By exploring these issues in the context of the Orkney fishing communities, this paper aims to uncover the resilience of local communities that deploy social capital in order to influence MSP processes and safeguard their own interests. Although there is a large body of literature on the role of social capital in fisheries management, there seems to be a gap in knowledge on the role of social capital in MSP. What is lacking, is an understanding of the functioning of social capital in the spatial ordering of the marine environment [15,16]. Stakeholder participation can contribute to the generation of new knowledge and the legitimacy of MSP [6,17]. Successful marine governance, more specifically MSP, is thus dependent on both institutional and social conditions [15]. Researching the relation between social capital and fisheries' engagement with marine spatial planning can provide valuable insights in the ways in which fishermen engage with market, state and civil society actors to strengthen their position in negotiations and decisions over access to resources and the ordering of marine spaces [18].

2. Theoretical framework

This article takes community resilience theory as its starting point. Community resilience refers to a community's capacity to cope with change and continue its own existence through the mobilization of assets, such as financial, political or human capital, by community members. This theory acknowledges that communities are dynamic social systems that exist in a context of constant change and focuses on community-driven development from an opportunity perspective. Underlying assumption is that every community possesses its own set of characteristics – or assets – and agency which enable the community not only to respond to change, but also to take ownership over development processes. Research into community assets can therefor help gain insight in the ways in which community resources and action drive social change [19,20]. Community resilience is thus about a community's ability to utilize community assets to adapt, defend, respond or transform, but also to seize opportunities to ensure the continued existence and development of the community [19].

Social capital is one of the many assets a community can possess, and can be defined as practices, values and sets of norms found within different forms of social networks which can contribute to the collaboration, functioning and collective action of the network [13,14]. Following the interactional perspective,[1] social capital is co-constructed through interactions within a network. Because these interactions take place in a diversity of networks, the social capital that is created differs depending on the actors involved and the boundaries of these networks. As such, social capital is contextual and one can distinguish between different kinds of social capital produced, depending on different scales and types of interaction [14,16].

Fig. 1. Conceptual framework.

There are three types of social capital: bonding, bridging and linking. Each of these types contributes to community resilience in a different way [19]. Bonding refers to the social relations within a community [9]. Bonding capital is important for social cohesion and cooperation within a community [19]. Bridging capital enables interactions between different communities [9,14], which allows different communities to collaborate and broaden their assets-base [19], for instance by sharing knowledge which can lead to innovation. Linking social capital refers to connections made across scales. This form of social capital is for instance important for governance structures, in which communities interact with regulating bodies and market actors. Linking is especially important for communities to be able to mobilize political resources and power [9]. Nenadovic and Epstein [15], operationalize linking social capital by using trust in governance agencies as an indicator for *cognitive-linking social capital*. Trust is an important element of governance, as it enables the exchange of information and improves collaboration for joint decision-making [9].

Social capital allows a community to strategically position itself in networks (or 'arenas') of interest, to develop its assets-base and to strengthen its power position. Through linkages and interaction with representatives from state, market and civil society, agents can "renegotiate the rules governing access to resources in society" [18]. There is thus a plurality of arenas in which interactions take place, with each arena having its own set of rules, ideas and practices [21]. At different scales of governance and in different arena's, different kinds of social capital can be used to reach community objectives [14,18].

Combining resilience theory and the interactional school of thought on community social capital, community members can be seen as agents of change, engaging in social relation within and beyond the boundaries of the community to mobilize assets to engage change and move the community forwards [22]. As such, taking the development of the PFOW pilot marine spatial plan as a case study, this article investigates the role of community social capital in fisheries' engagement with and power in governance negotiations .

3. Methodology

For this article ten weeks of qualitative fieldwork were conducted on the Orkney Islands in Scotland. The Orkney Islands are an archipelago about 10 kilometers north of the north-east coast of Scotland. This

[1] This perspective assumes social capital is socially constructed through interactions, whereby individuals exchange and co-construct norms, values and beliefs [16]. This approach allows for an explanation of the functioning of social capital as it describes the different types of relations within and beyond networks [14]. Furthermore, this perspective describes actors as active agents, engaging in different forms of interactions and thereby establishing different kind of relations. This perspective on social capital is compatible with community resilience theory, which assumes communities have agency to (inter) act.

island group consists of over 70 relatively small islands and skerries of which about 19 are inhabited. For the Orkney Islands, fishing has been a long standing tradition and despite decline of the commercial fishing sector, it continues to be of socio-economic value to the island communities [23]. Majority of landings into Orkney harbors consist of shellfish, which are mostly caught with relatively small fishing boats (< 15 m), which fish the inshore waters of the Orkney Islands [24]. About 2/3 of Orkney's fleet consists of these < 15 m boats, supporting individual fishermen or small crews [25]. The inshore sector is dominated by small scale family businesses and especially relatively isolated harbors and villages are highly dependent on these smaller boats for labor and income. 90% of the catches from the < 15 m vessels, are caught in the Pentland Firth and Orkney Waters and the Orkney ports receive about 50% of their landings from these waters. The inshore shellfish sector thus has a high stake in marine developments for the Pentland Firth and Orkney Waters [26]. The target population of this research is defined as follows: inshore shellfish fishermen who are based on the Orkney Islands, fish the inshore waters of the Orkney Islands and land in the island harbors.

For this research the following methods were used; document review, participatory observation, literature review and thirteen semi-structured qualitative interviews with representatives of Orcadian fishery organizations, inshore shellfish fishermen, researchers and members of the Pentland Firth and Orkney Waters Working Group for the pilot PFOW marine spatial plan. The interviews were structured to cover; the three forms of social capital within the Orkney inshore shellfish fishery community, community resilience, perception of and experience with the pilot marine spatial plan for the Pentland Firth and Orkney Waters and interests of the fishery community with regard to MSP. Coding was used to analyze the collected data.

4. Results

4.1. Marine spatial plan and local conceptualizations of spatiality

As described in the introduction a pilot marine spatial plan for the PFOW was finalized in 2016 to test this relatively new marine governance framework in the face of current and future marine developments in this strategic area. The pilot produced a non-statutory strategic vision for the sustainable development of the marine environment in the PFOW, with the objective of minimizing user-user and user-environment conflicts. To this objective, the plan mapped marine activities and opportunities for marine developments within the strategic area. By outlining current activities within the marine space, the plan visualizes potentially conflicting uses and creates a baseline for sustainable marine development. As such, the pilot should serve a wide range of marine users with the final pilot plan functioning as a guideline for marine planning [4]. However, as MSP is geared towards development of the marine environment, there is a bias towards opportunities for development for new marine users and initiatives, whereby avoiding conflict with existing marine users is framed as one of the main challenges. Existing marine users, such as fisheries can thereby be seen as subject of governance, instead of the drivers of marine development. Implication of this bias is that fisheries are ascribed a passive role in marine development [27]. When looking at the produced policy documents, fisheries are mentioned as a stakeholder to take into account, not as a stakeholder that is actively looking to manifest itself in the marine space that is being developed. Consequentially, the benefits of MSP for fisheries may not be so straightforward, whereas the urgency for fisheries to be included in MSP is high, as fishermen fear displacement and adverse impacts on their business and way for life due to the expansion of other marine activities.

Toonen and van Tatenhove [28], describe marine governance negotiations as interactions through which marine reality is reconstructed to support the ordering of maritime activities in time and space. The spatial dimension of MSP requires a (re-)conceptualization of the marine space and users and activities within that space as subjects of governance. Through the creation of a shared discourse and a shared understanding of the marine space as a space of development, stakeholders are able to enter into a dialogue on the governance of this space, allowing the discussion on marine spatial planning for the PFOW to be about appropriate designation of this previously perceived 'open space' [27].

Fishing as a practice has a strong history in which it has endured as a small but stable and resilient industry in Orkney. Its local importance relates directly to the salvation of these peripheral islands, where over decades and generations, fishing has provided jobs and income opportunities for the small island communities. Fishing is therefore very much tied to the social cultural identity of the inhabitants and the place. There is thus a local conceptualization of place and fishing practices, but also a fisheries' conceptualization of space.

Orcadian fishermen make user claims over wide areas of marine space but use and valuate these areas to different degrees. Not all the space used by fishermen is active fishing space but large parts are, for example, transit space, to move from one fishing ground to another, or function as buffer zones for gear when weather conditions get rough. In addition to these various uses of space, fishing practices are dynamic over time, relative to seasons, tides, stock behavior, weather conditions and types of fishing. Furthermore, fishermen make claims on fish stocks and relevant ecosystems for these fish stocks; breeding grounds for the stocks they target are equally important for catches as actual fishing grounds. Fisheries' spatial claims to marine areas are thus inherently different from spatial claims by more *static* marine users.

> Fishermen fish, if you like, over very large areas, but not every part of that area is productive. So within those very large areas there'll be a sweet of spots that they are fishing. So if you talk about spatial reduction, it can be the spatial reduction that interrupts their movement within that area, it could also be spatial reduction which removes one spot that is very productive from their sweet of spots. It might be one spot that they only fish at a certain part of the year, but that mix up an important part of their whole income. So terrestrial planning doesn't capture that. It is the opposite, it is destructive to the concept of how fishing works. […] It also takes no account of biological inputs in the sea. Because these don't regard lines on a map or any sorts of boundaries. But all these things which are a threat to our fishery are not accounted for in the marine spatial plan, they cannot be if you are only talking about space – one dimensional space. So for us it is incomplete and it cannot function properly until it takes on board all these elements of the three-dimensional dynamic marine world (Respondent B, September 2016).

One of Orcadian fishermen's main concerns with MSP has been that it would not be able to incorporate this dynamic character of the marine space. As representatives of the Orkney fishery community explained, "focus on static, terrestrial-based planning for marine space could potentially lead to stringent allocation of space at the cost of fisheries' space to roam" (Respondent B, September 2016). This space is needed for fishermen to remain flexible in their day-to-day decision-making; to cope with occupational risks and uncertainties, respond to changes in stock abundance, deal with competitors or adjust to environmental changes. Although it is complex to capture the human-environment interaction in standard planning practices, this is important for the empowerment of stakeholders [12]. Inclusion of stakeholder knowledge and perspectives contributes to the understanding of this social dimension [6]. If fishermen want to be heard (and seen), they thus have to be proactive in providing spatial information that matches their reality.

4.2. Social capital and resilience

When asked about their awareness or opinion of the pilot plan, most fishermen and representatives from fishery organizations responded with disregard. They feel the plan does not sufficiently cover their interest (Respondent B, September 2016; Respondent J, October 2016), fishermen have not been heard in the planning process (Respondent C,

October 2016; Respondent H, October 2016), the pilot plan does not offer a desirable solution to competition over marine space (Respondent E, November 2016; Respondent J, October 2016) or they generally don't believe the plan will be of any influence on future marine developments (Respondent C, October 2016; Respondent E, November 2016; Respondent F, November 2016). As described, resilient communities are able to engage their assets to face changes and support community interests [19]. This article investigates whether or not and how fishermen were able to safeguard their interests in, access to and use of the marine waters by deploying their social capital. The next section will describe the three forms of social capital - bonding, bridging, and linking - as they were found in the Orkney inshore shellfish fishery community. The final section of this paragraph examines the relation between these three forms of social capital and the position of fishermen with regard to the pilot MSP for the PFOW.

4.3. Bonding

Bonding social capital refers to the interlinked community norms, values and practices within a community, which contribute to social cohesion and community identity. Members of the Orkney inshore shellfish fishery community express distinctive cultural values which help determine who belongs to the community. These values relate to work ethics, passion for the job, and collective objectives.

Regarding work ethics, fishermen see themselves as self-made men. To thrive under the hard working conditions at sea requires skills, knowledge and a strong worker-mentality. Key characteristic of this occupation is that you reap the benefits of your own hard work. Orcadian fishermen stated that being successful is thus a direct outcome of your own investment and resourcefulness. Fishermen who thrive in this sector, are men who have know-how and great perseverance. This work ethics fishermen describe idealizes skill, knowledge and courage.

> "Fishermen have used the determination required for their occupation to survive the decline of the industry – survival against the odds is an affirmation of the fisherman's identity" [29].

As such, being resilient is in itself a central feature of the fisher identity. In the case of Orkney, this value of autonomy was heard more among fishermen and islanders and seems to be related to a wider island-identity. Islanders and fishermen have in common that they need to be able to fend for themselves (Respondent B, September 2016; Respondent J, October 2016).

Finally, fishermen seem to find one another in their love for the sea and the fishing way of life. Fishing is hard work, under challenging conditions, with a lot of risk and uncertainty. Yet, when you are skilled there is the possibility to make good money. Skill alone, however, is not enough. Interviewed fishermen agreed that it takes a certain kind of person with a lot of passion to thrive in the fishing sector.

What ties Orcadian fishermen together is thus their shared passion for the sea and a shared understanding of the hardship of their occupation, the challenges they cope with on a daily basis and the working mentality necessary to thrive in this business. Through this shared understanding, fishermen can obtain a sense of belonging to the community. This sense of belonging is strengthened by marking the boundaries of the fisher community: those who do not uphold the same norms and values, or who are unable to cope with the harsh working condition at sea, are outsiders and will not become a true part of the community (Respondent C, October 2016).

4.4. Bridging

Bridging is defined as interactions and collaborations between different communities [9,14] which can be used to broaden the knowledge and assets base of the community [19]. In Orkney, the interaction and collaborations between the Orkney fishery community and other stakeholders and communities within the context of the pilot marine spatial plan was limited. However, their perceived lack of power in MSP did stimulate bridging activities by the fisher community outside the MSP governance arena.

During the pilot MSP process for the PFOW, the Orkney fishery sector was involved in a large scoping research to map the spatial allocation of the fisheries around Orkney and to gain insight in the economic value of the fisheries [26,30–32]. Their objective for participation in this ScotMap survey, was for fishermen to gain power in the MSP negotiations, by generating scientific support for their spatial claims. The experience, however, has been that the maps produced through this research were not protective but could rather have negative implications for fisheries as other marine developers used these maps to justify their own spatial claims as well. For example, the aquaculture sector has used the maps to show that their desired sites would cause "insignificant losses" for fisheries [33]. These claims were based on information on the absolute value of fishing grounds. The ScotMap data would, however, not show the value of these grounds as part of a mix of fishing activities in support of the whole income. Fishermen therefore felt that decisions made based on this data could potentially be damaging for their sector. The main concern is that the produced data are not comprehensive enough to fisheries practices and thus an insufficient baseline for development. As maps are relatively static representations of reality, the risk for fishermen is that the maps are used to create new boundaries at sea [28]. What is, for example, worrisome to fishermen, is that the ScotMap data are a reflection of fishing activity in a specific time scale, whereas fisheries are flexible in time and space. By mapping current use of space, potential future use of space could thus be become restricted, reducing the flexibility of fishermen to operate. Therefore, adequate data on fisheries activities will require continuous re-evaluation [30]. This is where scientists have the potential to become allies of fisheries in marine spatial planning negotiations [12].

As fishermen have experienced the generation of information as a powerful tool in governance negotiations, the Orkney fisheries community has used bridging to connect to strategic partners (such as scientists) outside the marine spatial planning arena to mobilize the resources needed to (1) influence the way the marine space is perceived and defined to gain influence in MSP and (2) to reframe the inshore shellfish community as a central player in marine development.

> But in general terms, at officer levels at government and local government there is very little understanding of dynamics of fishing. Because it is unseen. People cannot see that happen at sea, so it is an unknown place to them. There is a huge knowledge gap to be bridged between the act of industry and the decision-makers who work in their offices and have a whole different mind-set about how the world works really (Respondent B, September 2016).

Fisheries science not only contributes to the available knowledge in support of marine spatial planning, it also contributes to the assets-base of the inshore shellfish fishery community. Through collaboration with research institutes, the fisheries access skills and knowledge needed to set-up, conduct and evaluate fisheries science. The reputation of these research institutes contributes to the credibility of the results and helps fisheries to mobilize financial resources, for instance through government funding (Respondent J, October 2016; Respondent I, October 2016). These collaborations are thus essential for fisheries to gain access to resources that are not readily available within the community. Furthermore, through this built up experience, fishers become familiarized with the role of science in decision-making processes. Past government-led research projects for fisheries management have led to policies that negatively impacted UK fisheries. These experiences have led to distrust among Orkney fishermen for top-down research initiatives. Collaborating with scientists in support of the fisheries helps take away this distrust. Furthermore, by collaborating in research projects with other maritime sectors, the fisher community is showing a willingness to investigate potential compatibility. It shows an acceptance that certain marine developments are inevitable and it allows fisheries to protect their own interests and to potentially benefit from these

developments. As such, these collaborations could help rectify the negative image of fisheries in marine governance negotiations (Respondent G, October 2016; Respondent K, October 2016).

4.5. Linking

For communities, linking social capital can play an important role in facilitating participation. Linking refers to connections made across scales of governance. It allows communities to connect to actors with power and authority, which creates opportunities for communities to gain access to resources and to get a stronger position and voice in governance processes [19]. As mentioned, trust is an important element of social capital, as it enables exchange of information and collaboration [15]. Among fishermen in Orkney, trust in marine governance authorities is overall low. The cause for this seems to be two-fold. On the one hand, fishermen in Orkney feel that they are misunderstood and undervalued by policy-makers. Particularly, they feel that decision-makers in Marine Scotland do not understand fishermen's perception and use of space and that, as a consequence, fisheries policies don't resonate with fishers' reality and are limiting the fisheries, instead of supporting them [8]. On the other hand, fishermen in Orkney feel that new players in the marine space are (presented to be) of an incomparable economic scale, and when economic power is perceived to equal political power, fishermen are left feeling side-lined.

> A body like Marine Scotland can just go and change things. We are the ground troops, making a living. And they seem to just get up and change things. Even though things are put out for consultation. We don't feel part of that process. And in the end of the day, whatever they decide, they decide. There never seems to be anything sensible. Or what we believe is sensible. […] But like I said, we've always felt like we are at the bottom of the list. We more or less are told. This will go ahead, this area. […] Even though they are having consultations, they are not really. We are not stupid. It doesn't really matter. We've always thought that. Especially when there is big money concerned. […] In the grand scheme of things, fishing means nothing (Respondent C, October 2016).

Among fishermen, there seems to be an overall feeling of being underappreciated. They sense that their concerns are not heard or dealt with properly by the government, they feel that they need to defend themselves and they feel that other marine users have an unequal advantage in negotiations. Most of these feelings are based on past experiences with consultation, decision-making and protest. Every fisherman who participated in this research, had an anecdote of an objection made by the fishery community to a marine development not being accredited or a consultation going without consequence. This kind of pessimism towards their ability to exercise influence in decision-making processes appears to have led to a fatigue among fishermen to participate. In addition, due to the complexity of MSP and the lack of experience among fishermen with this new form of planning, they do not know exactly how MSP could benefit them, and what skills and knowledge are required for them to contribute to MSP [34].

> The people you have there [in Marine Scotland] are people who are an arms-length from what is actually happening on the ground… it's left to the Association and individual federations such as the OFA [Orkney Fisheries Association] to actually handle the case. So it's a bit like Goliath and David. Particularly since it is marine energy that is number one priority. So you really to a degree are fighting with your hands tight, as we have been so often (Respondent A, October 2016).

4.6. Social capital and marine spatial planning in Orkney

The strong bonding social capital among fishermen in Orkney has resulted in a resilient community identity. The emphasis on the autonomous character of the community helps fishermen to position themselves against outside influences [35], but this has also shaped an overall negative attitude towards marine spatial planning, which is experienced as intrusive and threatening to the community way of life. As such, fishermen are overall not always very open, trusting and helpful towards - what is in fishermen's eyes - top-down and bureaucratic decision-making (Respondent D, October 2016; Respondent L, October 2016). This insinuates that there is a distinct fishers' mentality, created through bonding social capital, which does not favor linking. To understand whether the Orkney fisher communities have been able to influence the planning process we have to look at linking and bridging social capital.

The pilot MSP process in Orkney has shown that the ability of the fishery community to influence the marine spatial planning process was limited, with linking social capital on an individual level being rather weak in the local community. The fisheries community showed low levels of trust in policy-makers to support fisheries' interests or to give them an equal voice in negotiations. Not seeing how MSP could benefit fisheries, nor trusting MSP would give voice to fisheries, provided fishers with little incentive to become involved in the policy-making process. Furthermore, the amount of resources required to respond to consultations and to stay on top of policy developments on an individual level, is not compatible with the fisher occupation. Getting acquainted with MSP tools, discourse and processes and getting involved in MSP requires an investment of time – an investment many individual fishermen are not willing to make. Most fishermen are primarily interested in going out to sea to fish, to secure their livelihoods, and don't want to be bothered with policy processes (Respondent H, October 2016) (Fig. 1).

> If it starts affecting me, I will start worrying about it (Respondent F, November 2016).

This lack of understanding, resources or willingness to engage with marine policy-making, is problematic for stakeholder participation and representation. Community social structures have proven to be essential to address these challenges.

Interesting linking partners for the pilot MSP for the PFOW have been the Orkney fishing organizations. The Orkney fisher community sets itself apart from many other fisher communities, in that it is highly organized (Respondent E, September 2017) with two main fisheries organizations; the Orkney Fisheries Association (OFA) and the Orkney Fishermen's Society (OFS). The first is an interest group and formal representative for Orkney inshore fisheries and the latter a cooperative which manages the Orkney crab processing facilities and lobster hatchery and markets Orkney shellfish. Both organizations work towards the improvement and protection of commercial fisheries in Orkney and are part of the Orkney Sustainable Fisheries (OSF); an industry-run company set up to generate fisheries science in support of fisheries improvement and management (Respondent K, October 2016). In the pilot process for the PFOW MSP, the OFA has acted as a representative body for the inshore fisheries and has been active in workshops, consultations and meetings with the working group and other marine stakeholders. The fisheries organizations have thus formed an important link between governmental actors and the governance process on the one hand and community members on the other. However, despite the presence of these organizations, the community feels it has not been able to establish strong connections across scales of governance to mobilize power in MSP negotiations.

> Capturing the amount of data that we require to proof where we fish, proof where the fish are, proof where they spawn, proof how the tide works and the current works to bring in the feed, and how all these can be interrupted either spatially or biologically by other inputs is enormously complex. We don't have the resources to evidence all of that. And in a world where evidence is power, we have very little power (Respondent B, September 2017).

The inshore shellfish fishery community in Orkney has showed several initiatives to use bridging social capital in connecting with stakeholders outside of the community to address these issues. First of all, through fisheries research, the fishery community reaches out to external networks to mobilize resources in order to generate the evidence needed to support their spatial claims and strengthen their position in future MSP negotiations. Through fisheries science, the community creates input for the (re-)conceptualization of marine space as complex, dynamic and multidimensional, matching fishermen's reality and perception of space. Secondly, the Orkney Fishermen's Society is undertaking several strategies to connect with strategic partners in order to reach new markets. The objective of this outreach is twofold: to strengthen the economic position of the community and to reframe the community as a valuable player in the development of Orkney as a brand. By demonstrating the importance of the fisher community in Orkney culture and economy and by taking initiatives towards the sustainable development of the sector, the community is thus trying to reframe itself as a central stakeholder in the marine environment, as well as in marine spatial planning. Fisheries science thus performs a central role in empowering the local fisher community, socially, economically and politically.

> Fishermen in Orkney are getting better prices than fisherman's elsewhere. Given that we are further from the market the opposite should be the case; fisherman here should be given lower prices and one of the reasons that we are getting better prices is that we have a fisheries improvement project in place. We've got our own research, we are demonstrating sustainability of the stocks, we are demonstrating good management, we are engaging with the retail sector and consumers and that has helped us to drive up prices. [..] In terms of informing local management; if we want our fisher community to be empowered and to take responsible decisions about themselves they need to have a justification for doing that and the justification for doing that is robust local science collected by scientists who are working with fishermen in Orkney (Respondent L, October 2016).

5. Discussion

An important feature of community resilience relates to bonding social capital: a strong sense of belonging favors collaboration over individualism and allows community members to work towards shared objectives [36]. In fishery culture, it is important for fishermen to be able to sustain themselves and their families despite occupational hardships [10]. Successful fishermen are self-reliant. They are expected to be able to make independent decisions and manage their own business [35,37]. Creating a sense of similarity among individualistic community members is thus elemental to allow for social cohesion and collaboration within the community. For individuals this means being able to invest in community objectives, under the reassurance that others in the group will do the same. Bonding is thus about the *willingness* to participate in community activities and to contribute to community objectives for development [9,19,38]. As such it's the *glue* that strengthens internal relations in a community [14], contributing to community cohesion [19]. Social cohesion depends on social structures or relations in a group and is produced through the interactions that take place within that group. Social cohesion is thus an indicator for social capital; when there is no social capital (for instance in the form of reciprocal relations and norms) there is no basis for social cohesion in a community [38]. Even though the social composition, traditional community practices and social interactions within the Orkney inshore shellfish fishery community are changing, and a growing individualism is felt among fishermen, there is an active part of the community which continues to stimulate dialogue and collaboration among members of the community. But there are more benefits to bonding social capital. A coherent and heterogeneous community is better able to make connections beyond the (symbolic) boundaries of the community, in the form of bridging and linking social capital, as it allows social groups to act as a unit [19]. It, for instance, allows communities to lobby their interests in governance arenas. Bonding social capital is thus an important condition for bridging and linking.

Despite the presence of bonding social capital, however, bridging social capital and linking social capital of the Orkney inshore shellfish fishery community, in the context of the pilot marine spatial plan for the PFOW were rather weak. This has a lot to do with the attitude of the local fishermen towards the government and towards marine spatial planning. As Jentoft and Knol [12], state, stakeholders who think they have a lot to lose with the introduction of new policies – such as fishermen, who fear for a loss of space, freedom and flexibility with the introduction of MSP – may be skeptical and defensive towards new policies and their participatory processes. Defensive communities inhibit external interactions and thereby opportunities for linking [14]. Even though the implementation process of the MSP provided the fishermen with an opportunity to promote their interests, all respondents in this research have indicated that there has been insufficient engagement of fisheries in the pilot planning process, in combination with low levels of trust in government. Furthermore, a lack of available resources – such as time and money - and the complexity of marine spatial planning undermine the capacity of fishermen to participate in planning processes.

Practices of bridging social capital were mostly visible in relation to the map drawing exercise for the pilot plan. Mapping has been an important tool to visualize spatial information for the PFOW. Maps were for instance used to identify existing maritime uses and infrastructures, marine heritage sites and potential constraints for marine development. This information functions as guidance for (future) marine developments in the plan area [5]. However, when spatial relations are manifested in maps, these maps can become tools to strengthen spatial claims. Those who are involved in mapping spatial information for MSP, can thus have a powerful position in setting the stage for MSP negotiations. Likewise, those who are excluded from the mapping exercise or who are excluded from the representation of marine space on the maps, can have a less favorable position in these negotiations [39]. As such, information is used to determine what perceptions and stakeholders are included in governance [28,39]. This has implications for the legitimacy of marine spatial planning. When the tools used to justify marine policy exclude certain marine users from spatial representation, the legitimacy of the policy can be questioned. Especially social dimensions of space are at risk of being left out or underrepresented in mapping exercises [12,39]. As such, maps become as much tools for exclusion, as they are for inclusion [40].

The role of information and maps in MSP is thus Janus-faced. On the one hand, information is needed for evidence-based policy-making. Spatial information is used to justify decision-making and to create a shared understanding of the subject of governance [9,12]. Tools such as maps are used to open up the dialogue about spatiality and to create a mentality in which a spatial planning discourse takes central stage [27]. On the other hand, there is power in the (re-)production, interpretation and representation of spatial information. The same tools that are needed to create the space for negotiation, are also the tools that include and exclude topics of interest, actors and perceptions of space [28,39].

The development of maps for the pilot marine spatial plan for the PFOW has proven to be a practice reflecting the community resilience, or lack thereof. As Symes [8], describes, fishermen apply an ecosystem-based approach to their fishing practices, in the sense that they base their decision-making on what they know about the environment, the tides, the weather, the seasons and the behavior of fish stocks. Although they use tools such as numerical charts and weather forecasts, much of what they know is also stored in *mental maps*. These maps are informed by experience, trial and error. Fishermen are thus used to dealing with different kinds of evidence than what is expected or standardized in

policy making and planning. Fishermen relate to, for instance, weather conditions and gear status in their decision-making. These factors become invisible in maps that plot hotspots of fishing activity. As described, in fisher's experience, important fishing areas will be much larger than the areas with the highest economic returns. The challenge for Orkney's inshore shellfish fishery community is therefore to develop evidence for their cultural knowledge, human-nature relations and socio-economic value, which resonates with the MSP discourse and information requirements. It seems the dissatisfaction of the fisher community with inclusion of fisheries' perception of space in the PFOW pilot plan has created an awareness of this challenge among fishers in Orkney. They have experienced their influence in the policy making process for the pilot plan to be relatively low, and have come to the realization that generating information on the fisheries can be a strategy to gain power in policy making. As such, bridging activities of the Orkney fisher organizations with regard to research in support of sustainable fisheries improvement and branding not only help strengthen the economic position of the fisheries, but are also used to reframe the inshore fishery community from a (potential) threat, to a custodian of the sea and an important player in the marine environment. The community thus uses bridging social capital to strengthen the position of the fisheries both inside and outside marine governance arenas.

Through the exchange of knowledge, governance stakeholders create an understanding of marine spatial planning and gain experience with the process and planning discourse. Furthermore, through this interaction, trust can be built between governance stakeholders [34]. Linkages between fisheries communities and governance actors can thus stimulate an exchange of knowledge which contributes to good fisheries governance [9], while an absence of linking can undermine marine governance [15]. Interestingly, the fisheries organizations in Orkney have been important in laying the ground work for fishermen's engagement with MSP. The representatives working for these organizations are up-to-date with current marine developments, respond to formal consultations and act as a voice for the community. They create awareness among members about contemporary marine developments, and inform members about public meetings and workshops that could be of interest for fishermen, or where it could be valuable for fishermen to be present in terms of representation. For policy-makers, the level of social organization of fishermen in Orkney has also proven to be beneficial. The pilot project for the PFOW covered the fisheries of Orkney and the county of Caithness and Sutherland on the North-East coast of the Scottish Mainland. On the Caithness side of the water, there are no fishery organizations that act as a representative body. For policy-makers, this made it more challenging to get in touch with and inform fishermen there about the pilot project and to get them involved (Respondent T, September 2016; Respondent M, November 2016).

This suggests that some form of bottom-up initiative – in the form of self-organization - to facilitate participation could be required from civil society stakeholders. However, communities which are marginalized and lack (access to) assets due to a relatively weak social, economic and political status or which lack agency due to institutionalized social inequality, may not be able to show such initiatives. As Jentoft and Knol [12] and Symes [8], warn, fisheries often find themselves in that exact vulnerable position. The fact that the Orkney inshore shellfish fishery community has set up fisheries organizations which function as connectors to governance actors and arenas, signals this is an exceptionally resilient fishery community which uses its community assets to mobilize resources and strengthen its position. At the same time, however, the pilot planning process has shown that the community still lacks essential linking social capital to gain meaningful power in the policy process. Having social organization, is thus not a guarantee for fisheries engagement with marine planning, just as adopting a participatory approach to governance is no guarantee of stakeholder inclusion. As Westlund et al. [41], describe practical and physical barriers which isolate communities can strengthen bonding but obstruct linking social capital. Practical barriers to participation are evident in the peripheral location of the community and the limited resources fishermen seem to have to be able to engage with MSP on an individual level. Although bonding social capital allows for the social organization of fishermen and the ability to work towards shared objectives, community values and the perceived threat to the community way-of-life in the form of contemporary marine developments, have also created a defensive mentality towards MSP. Cleaver [21], describes how social and institutional structures influence the opportunities to access resources and exercise agency. She warns too simplistic evaluation of participation as a magic charm for inclusive governance, surpasses the complex structural relational obstacles that obstruct people from accessing networks and acting as agents of change. Although fisheries organizations can thus be seen as facilitating factor for linking social capital, for fisheries to gain power, additional changes in governance structures and processes might be needed, with an emphasis on building on the linkages between fisheries and governance.

6. Conclusion

According to community resilience theory communities possess different community assets which can be mobilized to pursue community objectives [19], and community assets create opportunities – or community capacity - to act [42]. As such, community assets create a basis for agency [20], which refers to the ability of actors to make purposeful decisions and drive change. Agents are thus able to exercise power to reach specific objectives [18,42]. In this research, the different forms of social capital; bridging, bonding, and linking, were seen as assets to enhance community resilience. However, this research has shown that the relation between social capital and community resilience is not so straightforward. Social capital has proven to be not so easily mobilized. The three forms of social capital can be recognized in the inshore shellfish fishery community, but the community has also shown a lack of agency to mobilize its linking social capital. While there have been opportunities for the fisher community to promote their concerns, the community felt that it lacked the resources to gain power in marine spatial planning negotiations. In other words, having social capital, does not equal being able to mobilize social capital and having agency to act.

The objective of this research was to gain insight in the way in which community social capital influences the engagement of fishermen in marine spatial planning processes. The hypothesis has been that as a resilient community, the Orkney inshore shellfish fishery community would be able to use its community social capital to participate in and excise power in marine spatial planning negotiations. The Orkney inshore shellfish fishery community displays different forms of social capital, but being able to use that social capital to gain access to the MSP processes has shown to be an issue. First of all, the community shows levels of bonding social capital. There are internal connections within the community – based on shared norms, values and traditions – which create a willingness to collaborate towards shared objectives. This bonding social capital is a fruitful basis for bridging and linking. In the pilot marine spatial planning process for the PFOW, however, fishermen have experienced their ability to influence decision-making to be low. On an individual level, fishermen lack the resources and willingness to participate in policy-making. Thanks to the bonding social capital of the community, the community is well organized, with multiple fisheries organizations. These organizations have performed important roles as representative bodies for the community. However, social organization alone is not enough to gain power, neither is having a participatory framework for policy-making enough to ensure meaningful participation. Experiences with the pilot plan have shown that linking social capital is to be further developed for the inshore shellfish fishery community in Orkney, to establish those essential linkages between the community and governmental actors. In order for the community to be able to participate and exercise power, they need

to speak the language of policy-making. As the generation, interpretation and dissemination of information is a power-loaded process in MSP, for fishermen to voice their interests and strengthen their position in negotiations, taking control over this process is an important strategy. Through the divers fisheries organizations, the community has been active in connecting to researchers to generate evidence for the socio-economic and spatial claims of the community, to generate scientific support for community-led fisheries improvement projects and as such, to strengthen the socio-economic and political position of the fisheries community and reframe the community as a driver of blue growth. As such, the community is showing bridging social capital which can benefit future linking for the community.

References

[1] I. Johnston, The dawn of a new era. 'Historic' marine renewables announcement could herald the 'greatest economic benefit to Orkney since the birth of the oil industry, The Orcadian, Orkney Media Group, Kirkwall, Orkney, 2010, p. 1.

[2] Marine Scotland, Pentland Firth and Orkney Waters Marine Spatial Plan Framework & Regional Locational Guidance for Marine Energy - Final Report, Edinburgh, 2015.

[3] G.P. Harrison, A.R. Wallace, Climate sensitivity of marine energy, Renew. Energy 30 (12) (2005) 1801–1817.

[4] Pilot PFOW Working Group, Pilot pentland firth and orkney waters marine spatial plan, in: M. Scotland (Ed.), The Scottish Government, Edinburgh, Scotland, 2016.

[5] Marine Scotland, Pilot Pentland Firth and Orkney Waters Marine Spatial Plan, Lessons Learned, Edinburgh, 2016.

[6] S. Jay, Built at sea: marine management and the construction of marine spatial planning, Town Plan. Rev. 81 (2) (2010) 173–192.

[7] A. Zervaki, Introducing maritime spatial planning legislation in the EU: fishing in Troubled waters? Marit. Saf. Secur. Law J. 1 (2015) 95–114.

[8] D. Symes, Marine spatial planning: a fisheries perspective, Report. Engl. Nat. (2005) 1–35.

[9] R.Q. Grafton, Social capital and fisheries governance, Ocean Coast. Manag. 48 (9) (2005) 753–766.

[10] N. Ross, Understanding the fishing 'community': the role of communities of the mind, Sociol. Rural. 55 (3) (2015) 309–324.

[11] H. Janßen, F.B. Margit Eero, Katell G. Hamon, Hans-Harald Hinrichsen, Paul Marchal, J. Rasmus Nielsen, Olivier Le Pape, Torsten Schulze, Sarah Simons, Lorna R. Teal, Alex Tidd, Integration of fisheries into marine spatial planning: Quo vadis? Estuar. Coast. Shelf Sci. 201 (2018) 105–113.

[12] S. Jentoft, M. Knol, Marine spatial planning: risk or opportunity for fisheries in the North Sea? Marit. Stud. 12 (1) (2014) 1–16.

[13] M. Lehtonen, The environmental – social interface of sustainable development: capabilities, social capital, institutions, Ecol. Econ. 49 (2) (2004) 199–214.

[14] Y. Rydin, N. Holman, Re-evaluating the contribution of social capital in achieving sustainable development, Local Environ. 9 (2) (2004) 117–133.

[15] M. Nenadovic, G. Epstein, The relationship of social capital and fishers' participation in multi-level governance arrangements, Environ. Sci. Policy 61 (2016) 77–86.

[16] R. Rutten, H. Westlund, F. Boekema, The spatial dimension of social capital, Eur. Plan. Stud. 18 (6) (2010) 863–871.

[17] J. van Tatenhove, Integrated marine governance: questions of legitimacy, MAST 10 (1) (2011) 87–113.

[18] A. Bebbington, Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods and poverty, World Dev. 27 (12) (1999) 2021–2044.

[19] K. Magis, Community resilience: an indicator of social sustainability, Soc. Nat. Resour. 23 (5) (2010) 401–416.

[20] A. Mathie, G. Cunningham, Who is driving development? Reflections on the transformative potential of asset-based community development, Can. J. Dev. Stud./Revue canadienne d'études du développement 26 (1) (2005) 175–186.

[21] F. Cleaver, Understanding agency in collective action, J. Human. Dev. 8 (2) (2007) 223–244.

[22] F. Cleaver, The inequality of social capital and the reproduction of chronic poverty, World Dev. 33 (6) (2005) 893–906.

[23] K. Towsey Orkney and the Sea - an Oral History Project (cited 2016 september15), 2004. Available from: 〈http://www.orkneyjar.com/archaeology/dhl/papers/kt/index.html〉.

[24] L. Jamieson, G. Munro, M. Perrier, Social change in Scottish fishing communities: a brief literature review and annotated bibliography, Soc. Chang. Scott. Fish. Commun. (2009).

[25] Orkney Islands Council, Orkney Environment Strategy 2013–2018, 2013.

[26] Marine Scotland Science, Pentland Firth Orkney Waters Marine Spatial Plan: Value Added in the Fish Supply Chain in Orkney and Northern Highlands, 2014.

[27] G. Smith, Creating the spaces, filling them up. marine spatial planning in the Pentland Firth and Orkney waters, Ocean Coast. Manag. 116 (2015) 132–142.

[28] H.M. Toonen, J.P. van Tatenhove, Marine scaping: the structuring of marine practices, Ocean Coast. Manag. 75 (2013) 43–52.

[29] M. Reed, et al., Beyond fish as commodities: understanding the socio-cultural role of inshore fisheries in England, Mar. Policy 37 (2013) 62–68.

[30] A. Kafas, A. McLay, M. Chimienti, M. Gubbins, ScotMap inshore fisheries mapping in Scotland: recording fishermen's use of the sea, Scottish Marine and Freshwater Science, 5 Scottish Government, Edinburgh, 2014(17).

[31] Marine Scotland, 2012. Draft report on ScotMap: The Inshore Fishing Study Pilot in Pentland Firth and Orkney Waters.

[32] Marine Scotland Science, 2015. Pilot Pentland Firth and Orkney Waters Marine Spatial Plan. Consultation Draft. Socio-Economic Baseline Review.

[33] Orkney Fisheries Association, A Consultation on the Pilot Pentland Firth and Orkney Waters Marine Spatial Plan, The Scottish Government, 2015 (Response 310526574), https://consult.gov.scot/marine-scotland/pfowmarinespatialplan/consultation/view_respondent?uuId=310526574.

[34] S. Fletcher, et al., Effective practice in marine spatial planning: a participatory evaluation of experience in Southern England, Mar. Policy 39 (2013) 341–348.

[35] R., Williams, 2008. Changing Constructions of Identity: Fisher Households and Industry Restructuring.

[36] H.G. Hendrix, 2005. Groeperingen, in: Werkboek sociologie: een door de praktijk geïnspireerd werkboek voor mensen die met mensen werken, Nelissen: Soest. pp. xx-xx.

[37] MMO, 2014. Social impacts and interactions between marine sectors. A report produced for the Marine Management Organisation, p. 273.

[38] A. Cloete, Social cohesion and social capital: possible implications for the common good, Verbum Et. Eccles. 35 (3) (2014) 1–6.

[39] G. Smith, R.E. Brennan, Losing our way with mapping: thinking critically about marine spatial planning in Scotland, Ocean Coast. Manag. 69 (2012) 210–216.

[40] W. Flannery, M.Ó. Cinnéide, A roadmap for marine spatial planning: a critical examination of the European Commission's guiding principles based on their application in the Clyde MSP Pilot Project, Mar. Policy 36 (1) (2012) 265–271.

[41] H. Westlund, R. Rutten, F. Boekema, Social capital, distance, borders and levels of space: conclusions and further issues, Eur. Plan. Stud. 18 (6) (2010) 965–970.

[42] J. Pelenc, D. Bazile, C. Ceruti, Collective capability and collective agency for sustainability: a case study, Ecol. Econ. 118 (2015) 226–239.