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Innovative Attitudes Towards Property Rights on Natural Resources in Remote Maritime Regions

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ABSTRACT

The aim if this paper is to understand the attitudes towards property rights and related rents in remote maritime regions within the challenge of the European Marine Strategy. The main hypothesis to be exploited, focusing on the growing search of new maritime resources, is that innovation can be seen as a rent seeking phenomena not only through time – as is commonly understood in a Schumpeterian perspective – but also throughout space, where the allocation or appropriation of property rights play a crucial role. We look into the attitudes of key marine stakeholders in Horta related to changes in marine property rights implicit in the European Marine Strategy. We conclude that innovation and development in remote areas is strongly related to the influence that innovative entrepreneurs have on the redefinition of property rights and related allocation of rents from the use of natural resources.

1. Introduction

Most of the innovation and development literature emphases the relevance of agglomeration economies in big cities that continue to be the major engine for knowledge spillovers, technological innovation and economic growth, despite the wishful dream of the death of spatial attrition associated with the dramatic decreases in the costs of transportation and communication [de Groot et al, 2007]. This justifies the major interest in explaining the nature of agglomeration externalities on knowledge spillovers, on technological innovation and, finally, on economic growth. The theoretical bases of these hypothetical causal connections comes from the endogenization of technological innovation of the growth theory developed by Solow (1956), coming from the seminal papers by Romer (1986) and Lucas (1988), and further explored with the work of Krugman (1991, 1995) that established the theoretical connection between spatial agglomeration economies and economic growth [de Groot et al, 2001] focusing on the knowledge flows between people, organizations happen occur more easily within the geographical proximity [McCann and Simonen, 2005] but can also be identified looking both at geographical and technological proximities [Oerlemand et al., 2001; LeSage et. al, 2007].

The major point behind that explanation is that, from the two geographical attributes of regional development highlighted by Krugman (1991) – accessibility and scale – scale or production capacities, very much associated with agglomeration externalities [Krugman, 1995], is more important for innovation and growth than accessibility or consumptive capabilities. This perspective denounces the enduring common sense of regional development policies that assumes that regional development is closely associated with the access to goods and services [Lopes, 1979] and, more recently, access to knowledge and technology [Barca, 2009].

There is no doubt that the World is spiky and increasingly spiky [Florida, 2005]. The question is that if is for the good reasons and with the best effects? What is, in the end, the vi-

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able solution to prevent the technological and development gap between core and periphery? Rodriguéz-Pose and Ceh (2001) suggest that R&D investment in lagging regions may be the solution but probably there are new assumptions to introduce in the accepted causalities between knowledge creation, innovation and development. On the one hand, the importance of natural, technological, human and cultural capabilities and constraints [Capello, 2002] in the process of innovation in remote areas and, therefore, the possibility of remove some of these barriers, on the other the role of the spatial allocation of the rents of natural resources on the spatial patterns of development [Dentinho, 2012].

The aim of this paper is to know whether the pattern of interactions between human and the environment – namely in which concerns the location of environmental knowledge and the spatial allocation of the rents of natural resources – is important for the process of innovation and development in more remote regions. The main idea to be discussed is that, focusing the continuous searching of new maritime resources, innovation can be seen as a rent seeking phenomena not only through time – as is commonly understood in a creative destruction process [Shumpeter, 1934] – but also throughout space, where the allocation or appropriation of property rights plays a crucial role.

To achieve that we, first, review the literature on knowledge, innovation and regional development and propose two interconnected assumptions to the accepted causalities: on the one hand, the importance of natural, technological, human and cultural capabilities and constraints in the process of innovation in remote areas, on the other hand the role of the spatial allocation of the rents of natural resources on the spatial patterns of development. We analyze the context of the marine area of Faial Island, in the Azores, and look into the values and the attitudes of the main stakeholders focusing on the creative and commercial spirits of recent marine activities (whale watching, aquaculture, traditional sailing, selective fishing, recollection of specimens for zoos at world scale, environmental education [Oceanoscópio - http://www.oceanoscopio.com], biotechnology, computing applications on fisheries assessment, http://www.linkb2b.pt/empresas/fishmetrics-512106100.php). Finally we discuss the progress of these innovative activities in the local milieu of submerged competitive complementarities (or unrevealed agglomeration economies) between environment, technology, institutions and economy; their impact on regional competitiveness; and on their unsuspected potential contribution for the Marine Strategy. We conclude by suggesting that there is a need, on the one hand, to look into the spatial, technological and also environmental agglomeration externalities, and, on the other hand, to address the issue of the spatial allocation of rents generated by those externalities.

In point 2 we conceptualize the assumption that the allocation and appropriation of property rights play an important role on the spatial pattern of innovation and development particularly in remote areas where natural resources play a crucial role. In point 3 we synthesize the European Marine Strategy and describe the context of the maritime city of Horta, where we would like to perceive the interactions between knowledge, innovation, creative attitudes and property rights. In point 4 we look into the effects of changes in property rights implicit in the European Marine Strategy in the attitudes of key marine stakeholders. We conclude in point 4 by discussing the possibilities of innovation and place-rooted creativity [Florida, 2003] in remote small regions.

2. Property Rights, Rents, Innovation and Development in Remote Regions

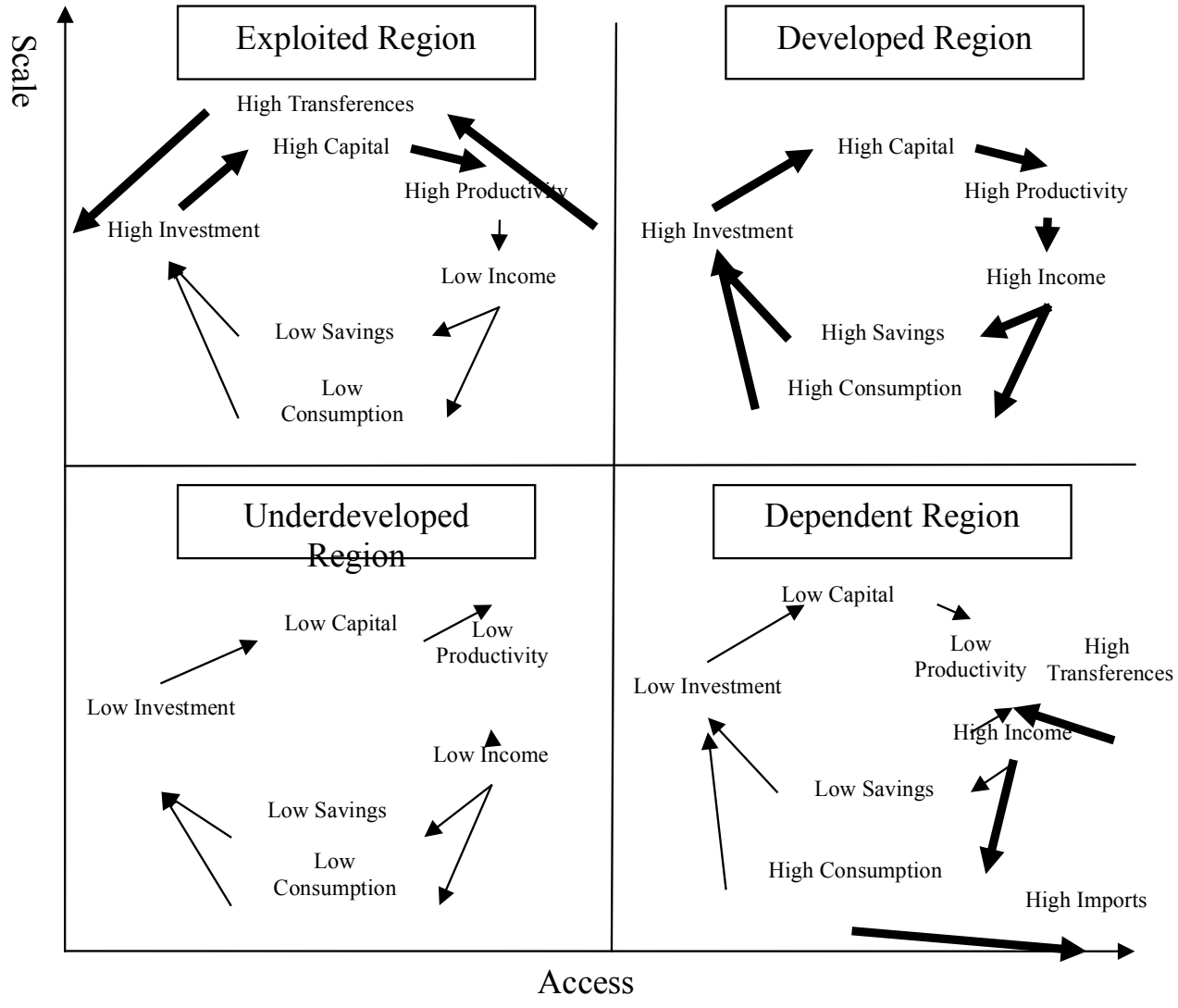
In the long term the payment of most production factors such as labor, capital and entrepreneurship must be made according to their marginal productivity to the places where those factors are based. Nevertheless this is not always the case for rents of natural resources, where spatial allocation is influenced by the spatial distribution of property rights and not necessarily by the territorial distribution of the natural resource. And if the spatial distribution of property rights is different from the distribution of territorial resources it is quite likely the existence of two types of permanent unilateral transferences: i) on the one hand, from the places where resources are used to the locations where their owners are established, following the old Von Thünen (1826) divide between farmers – located in the country side - and landlords – that reside in the city; ii) on the other hand, from the owners, usually central places, to those that control property and collect the rents in the periphery. The point is that the exploited user of the territory is not necessarily located in the same place as the fiscal of the property rights; and neither of those must coincide with the rent owner of the property rights, public or private.

Using the two geographical attributes proposed by Paul Krugman (1991): scale and accessibility, it is possible to define, not just two, but four types of development settings: developed, underdeveloped, dependent and exploited [Dentinho, 1995]. Developed regions are the ones that have accessibility and scale where the virtuous circle of development work as expected, with increasing productivity sustaining growing consumption and investment, allowing innovation and snowballing productivity, figure 1, NE. Underdeveloped places are those that suffer from vicious circles of poverty [Furtado, 1976], often because they lack scale and accessibility as can be testified in many poor regions where reduced productivity limits consumption, impedes investment, discourages innovation and keeps income at subsistence levels, figure 1, SW.

Nevertheless there are two other types of regions. Exploited regions have scale but lack access because part of the income generated is drawn outside; in this case the virtuous circle of development runs outside the region that receives investment but not the related income, figure 1, NW. Finally, dependent regions receive systematically unilateral transferences from outside which strengthen the access without reinforcing scale, innovation and investment, at least in terms of tradable goods and services, figure 1, SE.

Will the innovation process be different in each one of the situations presented in figure 1? Taking into account that innovation is mainly related to the production process it seems that both underdeveloped regions and dependent regions would

Figure 1: Typology of Regional Development.



Source: Authors

have less aptitude to experience effective innovations than exploited or developed regions; furthermore innovations in exploited regions would tend to favor central agents based in developed areas. Nevertheless entrepreneurial capacity is a characteristic of mankind and not of places by themselves. And some "windows of opportunity" can appear in relatively less developed regions because there is trust and creative interactions [Camagni, 1991, Storper, 1992,1993] that can promote flexible specialization [Geenhuizen e van der Knaap, 1994], suitable productive tissues to attract foreign investment [Amin, 1993], good places for ethnic entrepreneurs [Baycan Levent et al., 2008], or because there is some natural protection associated with remoteness [Nijkamp, 2009].

Nevertheless natural protection and remoteness is a relative concept since modifications in accessibility – technological, economic and institutional - can alter remoteness and change the natural protection that allowed some degree of technological innovation and development in those remote places where men and environment interact with each other to get the rents from natural resources augmented by far away markets. In the process of accessibility changes, the establishment and enforcement of property rights over natural resources can be crucial for the creation or destruction of "windows of opportunity" for innovation and development in remote places.

Regarding property rights of natural resources, namely property rights over remote marine resources, it seems important to pick-up and expand the systematization proposed by Schlager & Ostrom (1992) and Ostrom & Schlager (1996). Their message is that, on the one hand, within the idea "common property resources", very much used regarding marine resources, there are an all set of different situations including: a) property owned by a government; b) property owned by no one; and c) property owned and defended by a community of resource users. On the other hand, the authors claim that, those property rights – both private and common [Ostrom and Hess, 2007] can be allocated to different degrees of ownership from entrants, users, claimants, proprietor and owners. Owners, private and common, have the incentive to long term investment in the resources but do not guarantee the sustainability of the resource for higher discount rates. Proprietors have similar incentives but they are against multiple or alternative uses of the resources. Claimants tend to invest in government intervention to secure their revenues since they do not have the capacity to exclude complementary or alternative uses of the resources. Users do not control the rules so they tend to overinvest in withdrawals. Data collectors have the incentive to invest in government intervention for alternatives uses of the resources. And, entrants try to secure their rights to visitation and passage. The inclusion of data collector seems to be very important when resources are new unknown because they can challenge the property rights of users, claimants and proprietors; and if there are no established owners they can even claim ownership.

In the present paper we expand the analytical grid on property rights to include data collectors, table 1, and use it to look into the regulation of natural resources in Faial trying to understand the way it interconnects with innovation and development. Schlager & Ostrom (1992) applied their scheme to Main Lobster fisheries, [Yandle, 2003, 2007] used the same scheme to perform the analysis of marine resources in New Zealand. We pretend to look at a simple and yet European and Global Case such as the European Marine Strategy looking into the attitudes of creative and commercials spirits in the periphery and its interconnection with property rights.

3. Knowledge, Innovations and Property Rights for the Marine Stakeholders of Horta

European marine strategy. The European Marine Strategy (COM, 2007) seeks the sustainable use of the seas and the conservation of marine ecosystems. According to the European Commission (COM, 2010) this is done by promoting the integration of governance structures; building the knowledge base and enabling the implementation of integrated policies. In practice it is consubstantiated in ten work plans: i) Elimination of maritime barriers; ii) Promotion of a strategy for European research (COM, 2010a; COM, 2010c); iii) Coordination of national maritime policies; iv) Creation of a European network for Maritime Surveillance Systems focused on the sharing of data related to fisheries, traffic, security and vessel reports (COM, 2009b); v) Implementation of maritime spatial plans and integrated management of coastal areas, to provide jobs, economic benefits, legal certainty, equal opportunities for all maritime sectors and environmental sustainability (COM, 2010b); vi) Development of policies to reduce the effects of climate change in coastal areas (COM, 2009a), looking into vulnerability, responsibility, national practices and expenditures; vii) Reduction of CO2 emissions by the vessels; viii) Elimination of illegal fisheries; ix) Creation of a European network of maritime clusters; and x) Addressing issues related to labor legislation in fisheries and maritime transportation (COM, 2007). Most of these actions are derived into European Directives that once transferred to the nationals sets of rules that, if and when enforceable, represent clear changes in marine property rights. The issue in this paper is whether and how those changes contribute to the process of innovation and development in the maritime city of Horta.

Knowledge, regulation, innovation and creativity in Horta. Horta, with 10000 inhabitants, is a small maritime city in the island of Faial that has 15000 persons. Faial is one of the nine islands of the Azores Archipelago, with 240000 residents. The economic base of the Azores is just 25.1% of the final demand and mainly constituted by dairy and beef exports (32.5%), unilateral transfers (28.1%), other exports – mainly from transport, financial services and other agricultural products (24.4%) – tourism (10.4%), and fishery (4.6%). Looking at Table 2 for columns "Faial", it is clear that fisheries (5,3% as opposed to 4,6%) and tourism (14,5% compared with 10,4%), mostly associated with marine activities, play a larger role in the economic base of Faial and nearby islands of Pico and São Jorge than in the rest of the archipelago. As pointed by (Santos et al. 2005a, 2009a) Marine research in the Azores is a recent phenomenon and almost inexistent until the end of the XIX century when Prince Albert of Monaco visited the islands in a se-

Table 1: Bundles of Rights Associated with Positions; adapted from [Ostrom & Schlager, 1996].

	Owner	**Proprietor**	**Claimant**	**User**	**Data Collector**	**Entrant**
	Individuals who possess collective - choice rights to participate in management and exclusion and can lease or sell them	Individuals who possess collective - choice rights to participate in management and exclusion.	Individuals who possess the same rights as authorized users plus the collective-choice management.	Individuals holding operational rights of access and withdrawal that can transfer or sell those rights	Individuals holding rights of access to produce knowledge that influence management, exclusion and alienation	Individuals holding operational rights of access
Access: The right to enter a defined physical property.	**X**	**X**	**X**	**X**	**X**	**X**
Data collection: The right to obtain information of a resource	**X**	**X**	**X**	**X**	**X**	
Withdrawal: The right to obtain the "products" of a resource	**X**	**X**	**X**	**X**		
Management- The right to regulate use and improve resources	**X**	**X**	**X**			
Exclusion: The right to say who has rights and how to transfer them.	**X**	**X**				
Alienation: The right to sell or lease either or both of the above collective choice rights	**X**					

Source: Authors

ries of research expeditions. Resident researchers began their work in the late seventies of the XX century and observed the collapse of the stocks of limpets that showed the importance of applied marine research to support the management of the sea. In the late nineties it was possible to propose, based on scientific grounds, a few marine protected areas and, following that, a network of Natura 2000 sites, indicating the capacity of "Data Collectors", table 1, to produce knowledge that influence management and exclusion. Interestingly that same capacity is used subsequently to design policies on seamounts and hydrothermal fields in the Mid Atlantic Ridge outside the territorial waters of Portugal [Santos et al. 2009b, Ribeiro 2010].

And because Horta, is also the place of Regional Parliament apart from headquarters of the Fisheries Department of the Regional Government and domicile of the Fisheries Department of the Azores University (Santos et al. 1995b), the process that goes from marine research to marine law is relatively straightforward [Calado et al. 2011], facilitating up the development of new property rights and new users, claimants, proprietors and owners of the marine resources. And with the whole sorts of economic activities are being developed, helping to define rules, generating rents, stimulating innovation and promoting development: whale watching, aquaculture in open sea and recollection of specimens for zoos at world scale.

Whale watching began a few years after the ban on whaling in the Azores in 1984/87 [Santos et al 1995a]. Entrepreneurs were able to influence and, with direct connection with the authorities, endorse rules that controlled the access for whale watching companies. For instance there are potential complementarities between whale sailing and whale watching that are not properly explored because the regulation assumes that whale watching must be done preferably from small motor boats [Dentinho e Machado, 2007], also deterring large boats to access the business. Whale watching entrepreneurs were also wise to involve former whalers showing the interesting capacity to reinvent the use of the marine resources [thr-Graça 2004, Oliveira et al. 2007a, b].

Aquaculture in open seas is another interesting initiative, just in the beginning, to produce barnacles, a crustacean much appreciated throughout the archipelago and part of the traditional cuisine in the Azores. There have been close contacts with Regional Directorate of the Environment on the permit applications and the feasibility studies indicate that, with more durable structures the profitability of the project is promising [Lopez 2010].

The recollection of specimens for zoos at world scale is another interesting example of a good combination between knowledge, innovation, creative attitudes and definition of property rights. The Flying Sharks, established in 2006 and owned by a marine researcher, catching fish to order, using the services of fishermen and divers, and with equipment suitable for maintaining the animals captured. Since its establishment, has exported animals to aquariums of Valencia (Spain), Georgia and Virginia (USA), Dubai (United Arab Emirates), Stralsund (Germany), Tokyo (Japan), Lisbon and Porto.

4. Stakeholders Attitudes

In this point we use a Q Method approach [Stephenson, 1953; Gil and Guimarães, 2011] to look into the effects of changes in property rights implicit in the European Marine Strategy, and related statements, in the attitudes of key marine stakeholders in Horta. A first set of 66 statements were taken from various sources (Annex 1); many of them are from documents on the European Marine Strategy, others are from the Roundtable discussion during: "Exploring the wealth of coastal fisheries: Listening to community voices" [Bulhão Pato et al, 2011]; finally more specific statements are from some innovative people in Faial. A second step involved the selection and synthesis of 36 of the 66 statements with the criteria of avoiding redundancies and including different marine issues: - fisheries; - whale watching; - aquaculture; - pollution; - biodiversity; - research; - marine policy; EEZ expansion;... In a third phase a grupo of marine stakeholders – fishermen, sailors, local and regional politicians, maritime touristic operators, innovative entrepreneurs and marine researchers were asked to rank the selected phrases on bell shape form (Annex 2) to force a normal distribution in the ranking of the phrases to facilitate . Finally we perform principal component analysis for significant Eigen Values with Varimax Rotation using the Kaiser Method, taking the stakeholders as variables and the phrases as observations; due to that the number of questionnaires should be lower that the number of phrases. The seven significant components explain 76% of the total variation; result in a synthesis of the 21 stakeholder attitudes into seven profiles that we will try to associate with the Property Rights Situations proposed in Table 2: owners, proprietors, claimants, users, data collectors and entrants.

Looking at the results in table 3 the first idea that comes up is that the first components do not explain much of the total variance indicating some lack of consensual positions on the selected phrases.

The association of each one of these composed attitudes with the classification proposed in table 2 (owners, proprietors, claimants, users, data collectors and entrants) can be attempt in this stage of the analysis and then reassessed by the analysis, in figures 3 to 9, of the implicit rankings of each one of these components. Component 1 is strongly linked to fishermen that are in fact "Users" of the marine resources since they are "Individuals holding operational rights of access, withdrawal marine resources and can transfer or sell those rights". Component 2, that gather the attitudes of touristic and shipping operators, can be more related to "Entrants" as they are "Individuals holding operational rights of access the sea". Following the same exercise Component 3, where the Principal Component Exercise located most marine researchers, is necessarily connected with "Data Collectors" or those "Individuals holding rights of access to produce knowledge that influence management, exclusion and alienation". Politicians are linked with Components 4, 5 and 6 and we will see whether to allocate them to "Owners", "Proprietors" or "Claimants". Finally, Component 7 can be an interesting outlier to highlight some revealing propriety rights still missing from the Property Rights Positions of table 2.

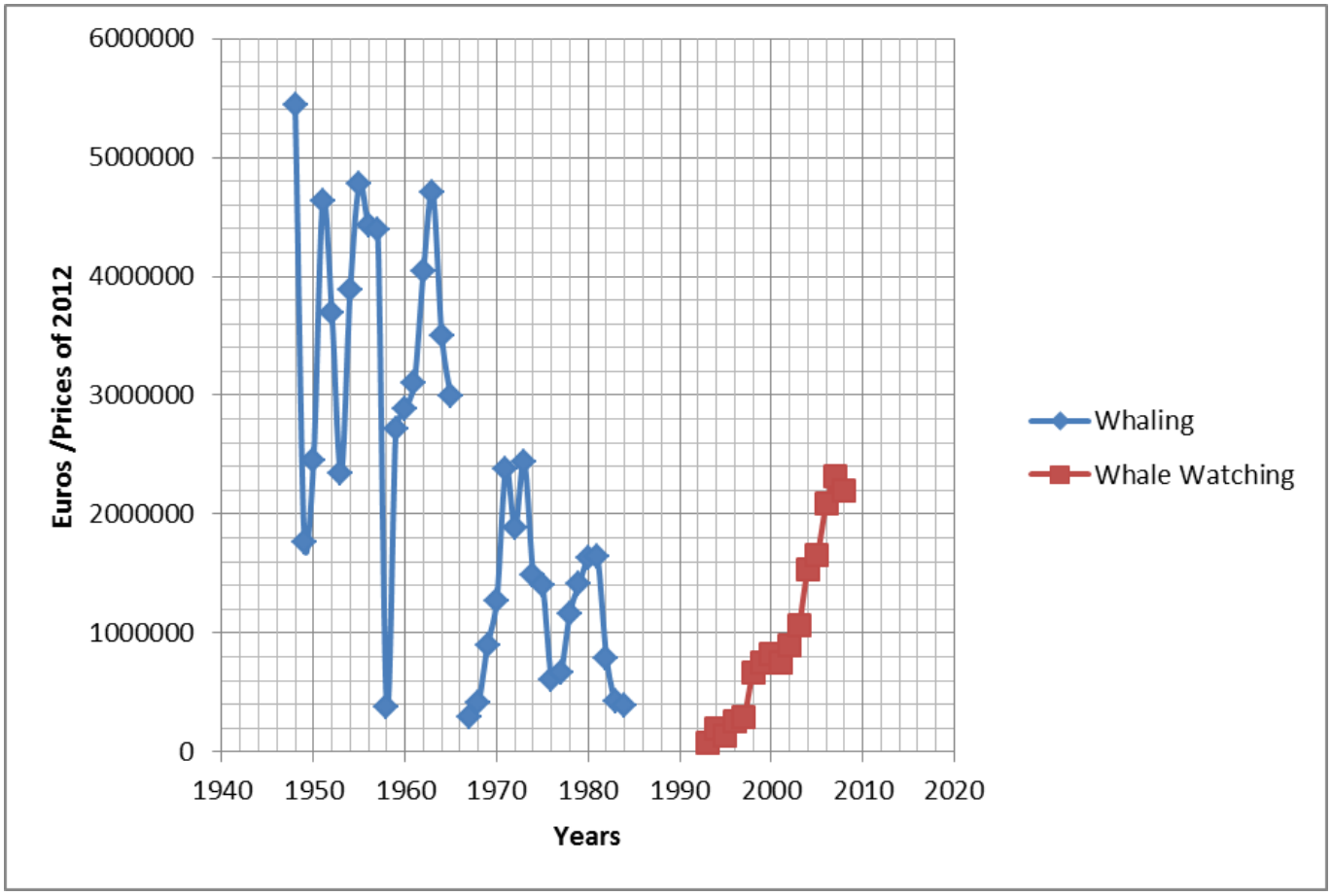
Table 2. Structure of the Economic Base of the Islands.

	Santa Maria	*São Miguel*	*Terceira*	*Graciosa*	*São Jorge*	*Pico*	*Faial*	*Flores*	*Corvo*	*Total*
Exports Agro Portugal	13.8%	31.4%	33.7%	51.1%	41.5%	33.9%	30.8%	29.6%	21.8%	32.0%
Exports Agro Other	0.2%	0.4%	0.5%	1.6%	0.4%	0.3%	1.1%	0.3%	0.1%	0.5%
Exports Fishery Portugal	1.8%	2.5%	1.8%	1.7%	3.9%	12.6%	3.4%	1.0%	3.1%	3.0%
Exports Fishery Other	1.0%	1.3%	0.9%	0.6%	2.3%	7.5%	1.9%	0.4%	1.2%	1.6%
Exports Other Portugal	44.6%	22.5%	9.6%	5.5%	12.8%	5.4%	17.1%	18.9%	4.9%	18.6%
Exports Other Other	14.5%	6.6%	3.6%	2.2%	2.5%	2.3%	5.7%	6.5%	2.6%	5.8%
Tourism Portugal	2.8%	3.9%	4.6%	4.7%	3.3%	5.2%	7.4%	6.0%	1.5%	4.4%
Tourism Other	2.8%	7.0%	3.9%	2.3%	3.2%	6.5%	7.1%	6.9%	1.0%	6.0%
Government (dependent)*	18.5%	24.3%	41.4%	30.4%	30.2%	26.0%	25.6%	30.4%	64.0%	28.1%
Economic Base	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Government expenditures financed by external transfers

Source: [Haddad et al. 2012]

Figure 2: Revenues from Whaling and Whale Watching in Pico Faial Region.



Source: Authors

Table 3: Total Variance Explained by Discriminant Analysis of the Statements Rankings.

Comp	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum. %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	6,26	29,80	29,80	6,26	29,80	29,80	3,02	14,39	14,39
2	2,56	12,18	41,98	2,56	12,18	41,98	2,64	12,59	26,98
3	2,20	10,46	52,44	2,20	10,46	52,44	2,63	12,52	39,50
4	1,52	7,26	59,70	1,52	7,26	59,70	2,43	11,56	51,06
5	1,29	6,17	65,86	1,29	6,17	65,86	2,05	9,76	60,82
6	1,15	5,47	71,34	1,15	5,47	71,34	2,01	9,59	70,41
7	1,01	4,79	76,13	1,01	4,79	76,13	1,20	5,71	76,13
8	0,90	4,29	80,42						
9	0,74	3,54	83,96						
10	0,58	2,76	86,72						
11	0,48	2,28	89,00						
12	0,46	2,21	91,21						
13	0,42	2,02	93,23						
14	0,36	1,71	94,94						
15	0,35	1,65	96,58						
16	0,25	1,21	97,79						
17	0,16	0,77	98,56						
18	0,11	0,53	99,09						
19	0,10	0,48	99,57						
20	0,08	0,40	99,97						
21	0,01	0,03	100,00						

Source: Authors

Table 4: Correlation of the Individual Attitudes with the Composed Attitudes.

		Components						
Occupation	Sector	1	2	3	4	5	6	7
Entrepreneur	Fisheries	,930	,088	-,044	-,049	,091	,004	,002
Entrepreneur	Fisheries	,866	,251	,021	,026	,041	,106	,083
Employee	Journalism	,566	,446	,156	-,194	,328	,305	,006
Researcher	Fisheries	,548	,122	,238	,211	,407	-,177	-,034
Employee	Journalism	,475	-,272	,324	,281	-,098	,244	,252
Researcher	Fisheries	,414	,152	,129	-,030	,445	,325	-,112
Entrepreneur	Tourism	,397	,808	,020	-,010	-,050	,138	,028
Consultant	Environment	,032	,727	,333	-,029	,344	-,118	-,004
Consultant	Shipping	,168	,715	,356	,139	,103	,249	,058
Employee	Administration	,024	,419	,192	,026	,098	,421	-,622
Researcher	Marine	,255	,014	,811	-,008	,015	-,092	-,255
Researcher	Marine	,050	,226	,728	-,196	,033	,342	,013
Employee	Journalism	-,091	,311	,681	,130	,284	,073	,234
Researcher	Marine	-,054	,283	,627	,379	,039	,337	-,024
Politician	Assembly	,008	,032	-,003	,959	,122	,042	-,038
Politician	Assembly	,031	-,020	,049	,957	,109	,075	-,037
Politician	Assembly	,101	,177	,161	,076	,809	,172	-,073
Researcher	Social	,110	-,007	-,087	,274	,743	,153	,352
Politician	Local	,279	,052	,251	-,103	,226	,737	,031
Politician	Local	-,054	,116	,041	,315	,119	,710	,075
Employee	Marine	,133	,344	,039	-,134	,189	,298	,682

Source: Authors

We can now look at the ranking contained in each derived component, figures 3 to 9, using the Property Rights nomenclature and comment the results.

Interestingly the phrase that obtained most agreement for the "Users" perspective is clearly related with withdrawal property rights "The management system has limitations and the total tradable catch quota system is a big threat to the fishing communities especially the small ones of the Azores" (Statement 20); and the same happens with Statement 16 that refers to the control of withdrawal property rights "Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal". All this associated with the benign statements concerned with sustainability "With an ecosystem approach to management of human activities, priority should be given to maintaining good environmental status of the marine environment in Europe" (Statement 2) and with education (Statement 29) "The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island". The attitude of the "Users" becomes much more clear when we notice the reaction against newcomers, reacting negatively to conflicts management (Statement 34) "The value of the sea is associated with having a good adjustment between conflicting uses of marine resources", innovation in the use of marine resources (Statement 35) "Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture" and to major changes on the regulated resources (Statement 36) "The expansion of the EEZ to 350 miles is fundamental to the sustainable development of communities Azorean". Statement 14 "Beautiful things is when we go in midsummer, in a motor boat, full of fish" is avoided by most of the perspective which is quite revealing because being a clear emotional statement, the general disagreement on it indicates the reasonability of the other rankings.

Perspective or component 2 is connected with – Entrants – Tourist and Shipping Operators (figure 4). Comparing with the "Users" perspective it is clear that most of its extreme statements move to indifference except for (Statement 34), related to conflict management that "Entrants" favor greatly which is understandable since they are new and developing activities somehow conflicting with fisheries. Interestingly "Entrants" make an alliance the "Data Collectors" to influence regulation (Statement 33) "Marine Strategy should provide for innovative activities that promote the sustainable use of marine resources", want to impose regulation on fisheries (Statement 10) "Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch"; and plan to get new propriety rights requesting that (Statement 4) "The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas". "Entrants" reinforce their disagreement with fishermen "Users" and other innovative stakeholders on statements latters agree (Statement 17) "When a fisherman sees a foreign boat fishing illegally and denounces it, it is too far away to do something", (Statement 27) "Vessels large and sophisticated cause great havoc on marine resources", (Statement 31) "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development".

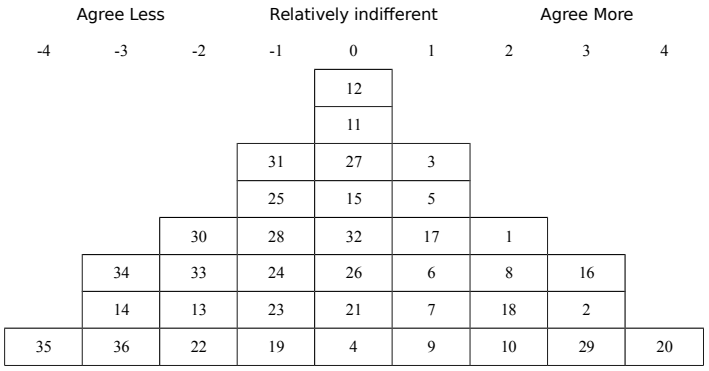
Component 3, linked with researchers of "Data Collectors" is represented in figure 5. The major difference from the "Entrants" is that "Data Collectors" consider that (Statement 31) "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development" but they strongly agree with "Entrants" with strong regulation on fisheries (Statement 10) "Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch". What "Data Collectors" add to the former perspectives is a more global view on marine resources and in the respective regulation (Statement 3) "Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy" including the cultural heritage (Statement 32) "All whaling heritage deserves to be restored and preserved". On the other hand "Data Collectors" strongly disagree with the dependence of human activity on marine resources (Statement 7) "Human activity at sea and in coastal areas is essential to economic stability", the capacity to influence the government on particular issues (Statement 15) "If we were strong together with our government we would not be discussing the 200 miles but a lower area of 100 miles" indicating some experience on that influence. Finally "Data Collectors", confirming their experience in dealing with regulators, also deny that "The power of money, the electoral power and influence of large companies reduce the prospects of small fisheries leading Europe to defend roach fishing instead of sustainable fisheries".

Component 4, linked with Politicians for Innovation, or "Claimants"of new property rights, is represented in figure 6. They defend the strong control of maritime property rights (Statement 16), and the innovative activities such as "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development" (Statement 31) or "The extensive and semi extensive aquaculture can help reduce the pressure on the marine environment and generate significant economic benefits" (Statement 11). Interestingly they are strongly against that "The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island" (Statement 22).

Component 5, associated with Politicians for the European Strategy, and can be identified with "Owners" of property rights since they are less worried about the control of the EEZ and more in tune with the European Marine Strategy (figure 7). They allocate all the property rights to European Control (Statement 3) "Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy" and, as Politicians for Innovation, they are also strongly against that "The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island" (Statement 22).

The last group of politicians, Component 6, is associated with Politicians worried with managing the conflicts between the various users; actually they can be identified with "Proprietors". Innovation is the result of the availability of a resource.

Figure 3: Component 1 – Users - Fishermen.

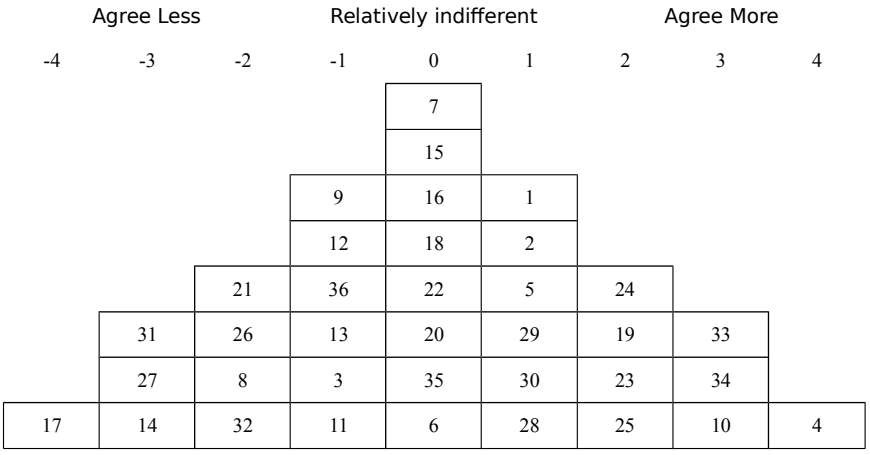


-4 -3 3 4

	34 The value of the sea is associated with having a good adjustment between conflicting uses of marine resources						16 Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal	
	14 Beautiful things is when we go in midsummer, in a motor boat, full of fish						2 With an ecosystem approach to management of human activities, priority should be given to maintaining good environmental status of the marine environment in Europe	
35 Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture	36 The expansion of the EEZ to 350 miles is fundamental to the sustainable development of communities Azorean						29 The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island.	20 The management system has limitations and the total tradable catch quota system is a big threat to the fishing communities especially the small ones of the Azores

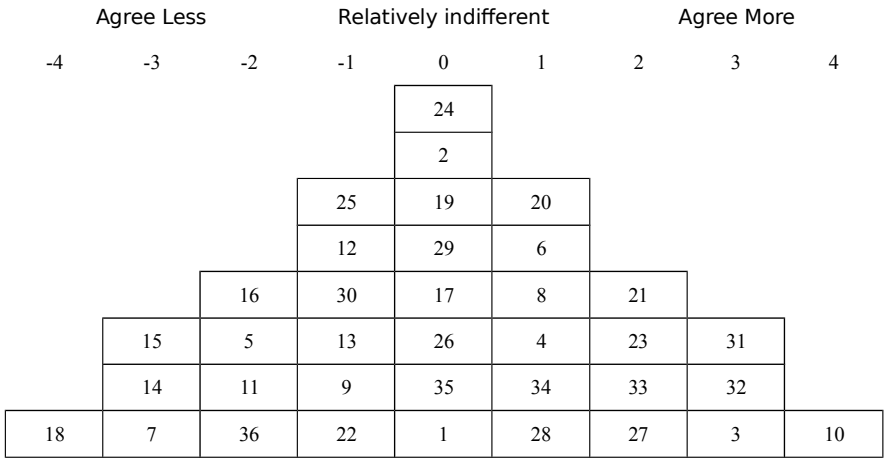
Source: Authors

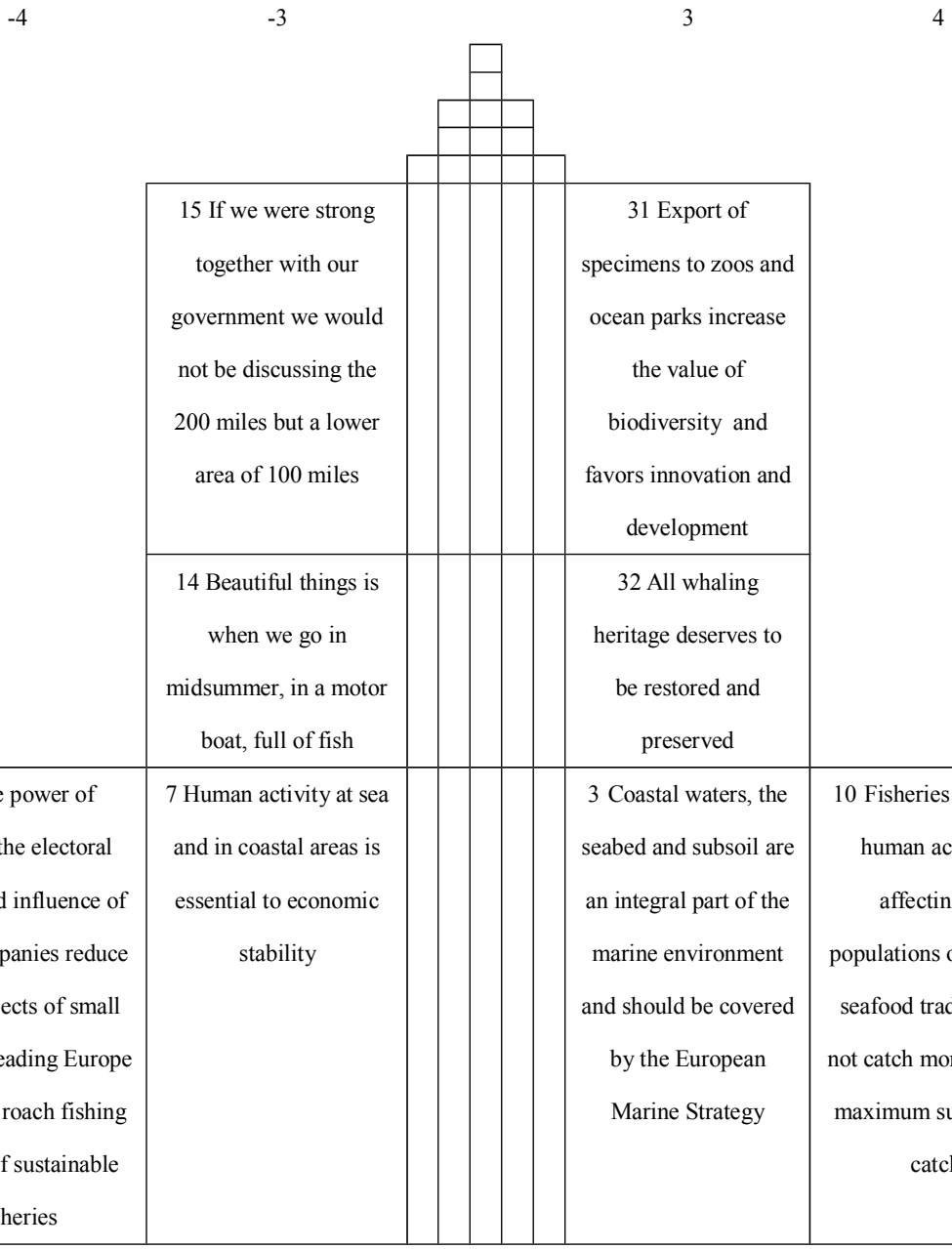
Figure 4: Component 2 – Entrants – Tourist and Shipping Operators.



Source: Authors

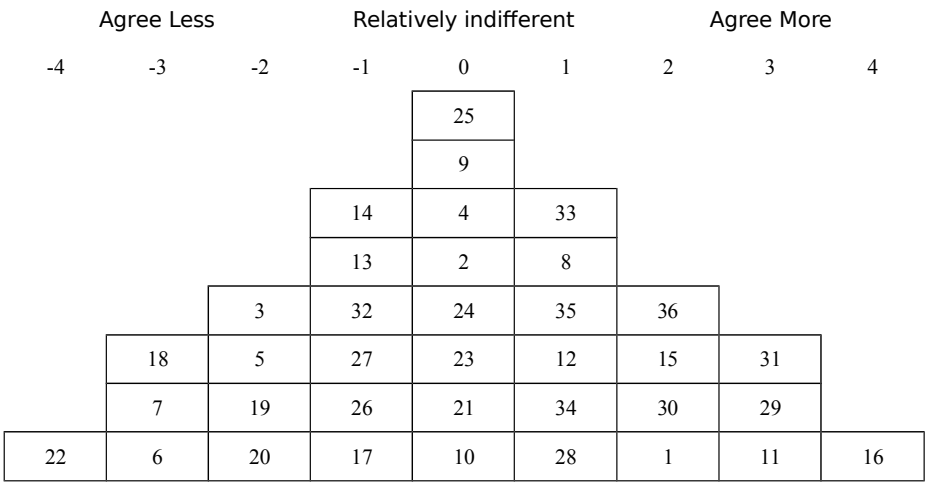
Figure 5: Component 3 – Data Collector – Marine Researchers.





Source: Authors

Figure 6: Component 4 – Claimants - Politicians for Innovation.



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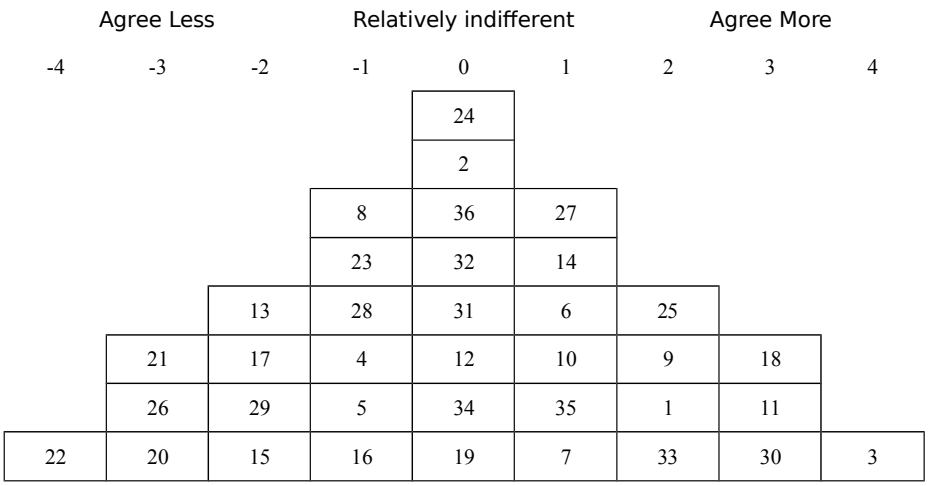
	18 The power of money, the electoral power and influence of large companies reduce the prospects of small fisheries leading Europe to defend roach fishing instead of sustainable fisheries		31 Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development		
	7 Human activity at sea and in coastal areas is essential to economic stability		29 The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island		
22 The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island	6 The activities that depend on the sea as fishing and tourism suffer the degradation of ecosystems caused by competition over resources		11 The extensive and semi extensive aquaculture can help reduce the pressure on the marine environment and generate significant economic benefits		16 Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal

Source: Authors

Figure 7: Component 5 – Owners - Politicians for the European Strategy.



Source: Authors

The whale watching resulted began rooted in a whaling culture and they recognize that there are market failures that is necessary to correct (Statements 21,26) and, the other politicians they are against the allocation of marine property rights per island (Statement 22).

Component 7 is an interesting one. On the one hand it cannot be allocated to any of the property rights groups define a priori in Table 2. It defends consistency "The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas" (Statement 4), truth "Europe seems to advocate regional differences on paper but not in practice" (Statemen 19), fairness "Vessels large and sophisticated cause great havoc on marine resources" (Statement 27) and ethics "It is important to establish ethical principles for negotiation between interests" (Statement 25).

5. Conclusion

Using the analytical framework based on the typology of property rights proposed by (Schlager and Ostrom, 1992) and the Q Methodology initiated by (Stephenson, 1953) we were able to interpret the attitudes Horta stakeholders on the property rights changes implicit in the European Marine Strategy. We conclude that there are windows of opportunity (Nijkamp, 2009) for innovation and development in remote areas if innovative entrepreneurs "Entrants", associated with "Data Collectors" and politicians for innovation "Claimants" can change the institutional status quo. Along the institutional and technological innovation processes, old "Users", "Proprietors" and "Owners" are challenged to redefine property rights over natural resources, pressured by the uses allowed by new technologies. All these changes on the allocation of rents can influence the path out of regional underdevelopment; either to regional development, exploitation or dependency (see figure 1). Creativity should be not only related to technological or cultural issues but mainly to institutional adaptations.

Annex

Phrases Collected and Selected to Avoid Redundancies

Statement 1 It is evident that pressure on natural marine resources and the demand for marine ecological services are often too high and that the Community needs to reduce its impact on marine waters regardless of where their effects occur.

Source of statement 1:
`http://eurlex.europa.eu/Notice.do?mode=dbl&lang=en&ihmlang=en&lng1=en,pt&lng2=bg,cs,da,de,el,en,es,et,fi,fr,hu,it,lt,lv,mt,nl,pl,pt,ro,sk,sl,sv,&val=473292:cs&page=`

Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (Text with EEA relevance)

`http://eur-lex.europa.eu/LexUriServ/LexUriServ.douri=OJ:L:2008:164:0019:0040:EN:PDF`

Statement 2 The marine environment is a precious heritage that must be protected, preserved and, where practicable, restored with the ultimate aim of maintaining biodiversity and providing diverse and dynamic oceans and seas which are clean, healthy and productive. In that respect, this Directive should, inter alia, promote the integration of environmental considerations into all relevant policy areas and deliver the environmental pillar of the future maritime policy for the European Union.

Source of statement 2: the same as 1.

Statement 3 The development and implementation of the thematic strategy should be aimed at the conservation of the marine ecosystems. This approach should include protected areas and should address all human activities that have an impact on the marine environment.

Source of statement 3: the same as 1.

Statement 4 Establishing such protected areas under this Directive will be an important step towards fulfilling the commitments undertaken at the World Summit on Sustainable Development and in the Convention on Biological Diversity, approved by Council Decision 93/626/EEC [7], and will contribute to the creation of coherent and representative networks of such areas.

Source of statement 4: the same as 1.

Statement 5 By applying an ecosystem-based approach to the management of human activities while enabling a sustainable use of marine goods and services, priority should be given to achieving or maintaining good environmental status in the Community's marine environment, to continuing its protection and preservation, and to preventing subsequent deterioration.

Source of statement 5: the same as 1.

Statement 6 The diverse conditions, problems and needs of the various marine regions or subregions making up the marine environment in the Community require different and specific solutions. That diversity should be taken into account at all stages of the preparation of marine strategies, but especially during the preparation, planning and execution of measures to achieve good environmental status in the Community's marine environment at the level of marine regions or subregions.

Source of statement 6: the same as 1.

Statement 7 Coastal waters, including their seabed and subsoil, are an integral part of the marine environment, and as such should also be covered by this Directive.

Source of statement 7: the same as 1.

Statement 8 This Directive should also support the strong position taken by the Community, in the context of the Convention on Biological Diversity, on halting biodiversity loss, ensuring the conservation and sustainable use of marine biodiversity, and on the creation of a global network of marine protected areas by 2012.

Source of statement 8: the same as 1.

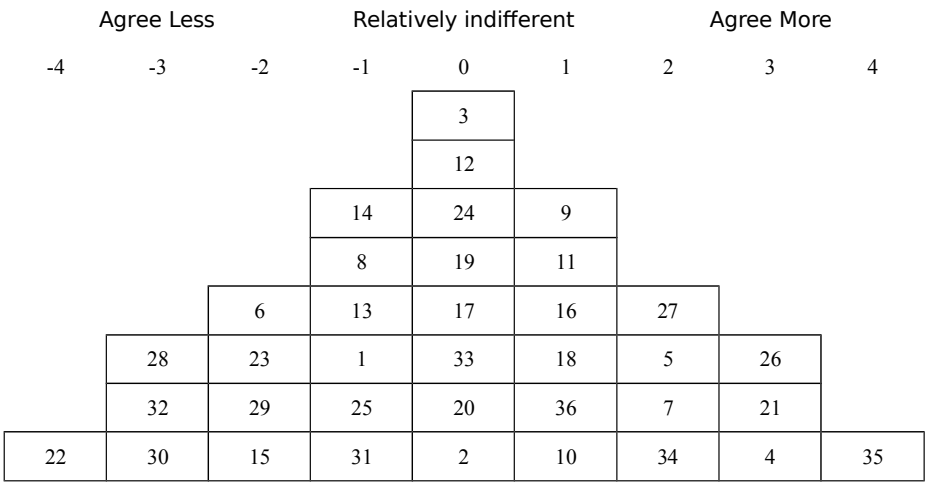
Statement 9 "promote sustainable use of the seas and conserve marine ecosystems".

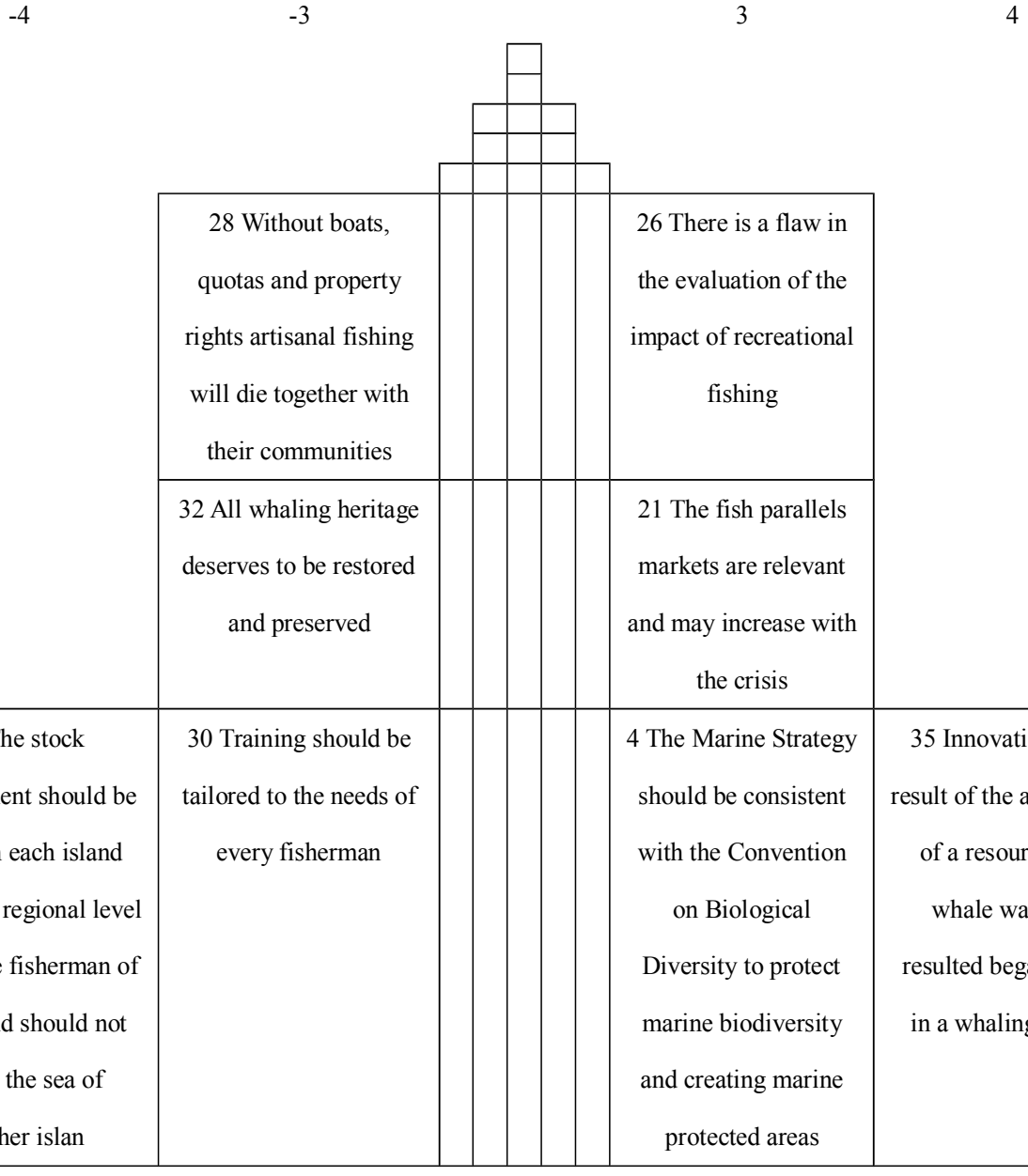
Source of statement 9:
EU Marine Strategy, of which the Marine Strategy Framework Directive

Statement 10 "The seas have enormous intrinsic value: unlike our cities, they provide us with a free horizon; we enjoy clean coastal and marine environments and the wildlife they support; and we benefit from their role in keeping our climate stable".

Source of statement 10:
`http://ec.europa.eu/environment/marine/index_en.htm`

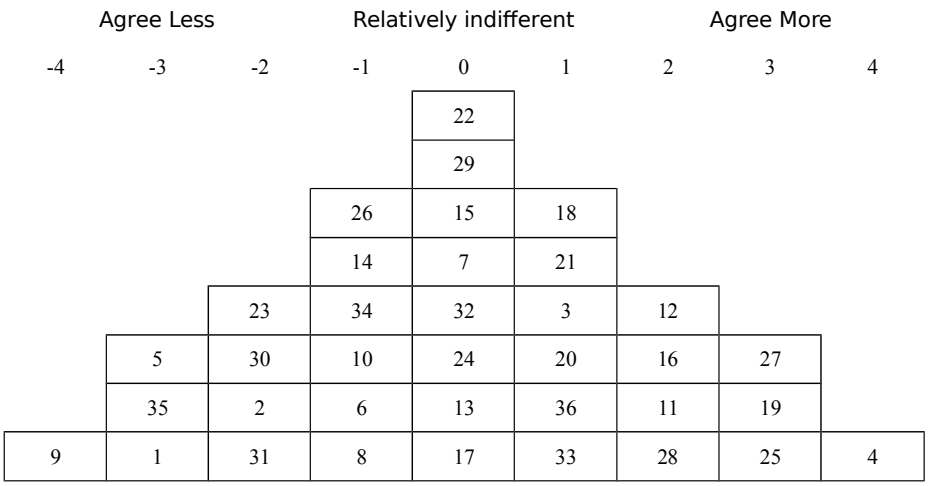
Figure 8: Component 6 – Proprietors - Politicians for Conflict Management.





Source: Authors

Figure 9: Component 7 - Ethic Attitude.



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	5 There is a flaw in top governance that ignores the knowledge of fishing communities at local level		27 Vessels large and sophisticated cause great havoc on marine resources		
	35 Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture		19 Europe seems to advocate regional differences on paper but not in practice		
9 The waste from land and boats generate increasing problems	1 Marine protected areas are an important step towards fulfilling its commitments on Sustainable Development and the Convention on Biological Diversity		25 It is important to establish ethical principles for negotiation between interests		4 The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas

Source: Authors

Statement 11 "Human activities that depend on the sea, such as fishing and tourism, suffer from damaged ecosystems and use-related competition will become increasingly serious".

Source of statement 11:
`http://ec.europa.eu/environment/marine/index_en.htm`

Statement 12 "Europe's seas and oceans are wild and wonderful places".

Source of statement 12:
Janez POTOCNIK, European Commissioner for Environment, forward to "Seas for Life PROTECTED – SUSTAINABLE – SHARED EUROPEAN SEAS BY 2020" EU 2011 ISBN: 978-92-79-18550-2 DOI: 10.2779/18719

Statement 13 "Human activity at sea and in coastal zones is essential to our economic stability".

Source of statement 13: the same as 12.

Statement 14 "Our seas and oceans are under pressure from pollution, such as oil spills or marine litter, from over-fishing and from climate change".

Source of statement 14: the same as 12.

Statement 15 "We have to protect our ecosystems and their biodiversity now, not only to conserve nature, but also to support the livelihoods of those that depend on them".

Source of statement 15: the same as 12.

Statement 16 "We need to deepen our knowledge to provide the scientific basis for protecting it [the ocean] effectively".

Source of statement 16: the same as 12.

Statement 17 "We also enjoy the beauty of open seascapes and distant horizons, the fresh air and the clean coastal and marine environments".

Source of statement 17: the same as 12.

Statement 18 "Unsustainable use of our seas threatens the fragile balance of marine ecosystems. Human activities that depend on the sea, such as fishing and tourism, suffer when ecosystems become damaged".

Source of statement 18: the same as 12.

Statement 19 "We can expect increasingly serious competition for marine resources".

Source of statement 19: the same as 12.

Statement 20 "Growing levels of shipping have a major impact on the marine environment".

Source of statement 20: the same as 12.

Statement 21 "Litter from land-based sources and ships is an increasing problem".

Source of statement 21: the same as 12.

Statement 22 "fishing and other human activities affecting populations of commercially exploited fish and shellfish should not push these populations beyond their maximum sustainable yield (MSY)".

Source of statement 22: the same as 12.

Statement 23 "although Europe's seas suffer from severe environmental degradation due to human pressure, human society is not separate from the marine environment that surrounds it: civilizations are dependent on, and part of, their ecosystems".

Source of statement 23: the same as 12.

Statement 24 "Traditional extensive and semi-intensive aquaculture systems can help to lower the pressure on the marine environment while providing valuable socio-economic assets".

Source of statement 24: the same as 12.

Statement 25 that money would not last forever and that "without boats, without quota, without the right or possibility to fish" small artisanal fisheries would die along with their communities.

Source of statement 25:
Women fishers in Rabo de Peixe during "Exploring the wealth of coastal fisheries: Listening to community voices" 21 -24 October 2011 Angra do Heroísmo & Ponta Delgada

Statement 26 submitting proposals to the European Parliament is not seen as sufficient for the perspectives of fisheries organizations to be considered, partially because of the strengths of certain lobbies within the government.

Source of statement 26:
From Roundtable discussion during: "Exploring the wealth of coastal fisheries: Listening to community voices" 21 -24 October 2011 Angra do Heroísmo & Ponta Delgada

Statement 27 that the Common Fisheries Policy and how it is implemented locally is not well understood. Who is in charge, and the workings of the various government structures are unclear, as is the effectiveness of the current administration

Source of statement 27: the same as 26.

Statement 28 There is a gap in knowledge that evolves from the top-down governance in which the importance of participation by the local community and individual fishers is not understood or acknowledged.

Source of statement 28: the same as 26.

Statement 29 It was to be based on restrictive measures to enable environmental sustainability, but the power of money, electoral power, and lobbying by big companies crush the perspectives of the small-scale fisheries resulting in the EU promoting a fleet whose chief purpose is to get fish cheaply, instead of a sustainable and equitable management of quota.

Source of statement 29: the same as 26.

Statement 30 the EU policy seems to respect regional differences on paper, but not when implemented.

Source of statement 30: the same as 26.

Statement 31 There is a problem with the concept of common rules and regulations; application of policy regulations and inspection does not match regional realities.

Source of statement 31: the same as 26.

Statement 32 suggestion that fishers and fishery communities should be involved in decision making about policy development and implementation.

Source of statement 32: the same as 26.

Statement 33 The Azores would be a perfect place to make a case study on the effectiveness of common fisheries policy as the territories are discontinuous with each island having different needs, but yet still managed together, based on a standard policy, following the logic of administrative management.

Source of statement 33: the same as 26.

Statement 34 management system based on Total Allowable Catch, TAC (quotas) as a weakness and transferable quotas as a major threat to fishing communities, especially small-scale ones as in the Azores.

Source of statement 34: the same as 26.

Statement 35 There should be regular communications between scientists and the fishing communities, including presentations of scientific results and reports to fishers. Fishers have more respect for the scientists when the subject is conservation than for the politicians discussing it.

Source of statement 35: the same as 26.

Statement 36 In the Azores, many fishers merely place the best looking fish on top of the box hiding below-quality fish on the bottom. This practice is supported partially because no one in the Lota evaluates the quality of the fish received for auction.

Source of statement 36: the same as 26.

Statement 37 Better communication is needed in order to create a system in which there is sufficient good quality fish to be sold and bought.

Source of statement 37: the same as 26.

Statement 38 Parallel markets were one of the most important issues discussed, not solely because of its current magnitude but the fear that the economic crisis would greatly expand this activity.

Source of statement 38: the same as 26.

Statement 39 Management of stocks should be controlled by each of the islands and not at the regional level, thus meaning that fishermen from one island would not be allowed to fish within the local waters of other islands.

Source of statement 39: the same as 26.

Statement 40 Monitoring is usually associated with environmental indicators, but it is essential to define social and economic indicators as well because cause-effect relationships exist between various indicators.

Source of statement 40: the same as 26.

Statement 41 One of the barriers identified was the discrepancy of the directions from the European Commission applied to national or local/regional level. This was considered a negative aspect in achieving shared goals, because directions for Europe, which do not take in account the reality of each member state, create obstacles to consensus.

Source of statement 41: the same as 26.

Statement 42 It is essential to strengthen communication between the management at a European level and at the local community level.

Source of statement 42: the same as 26.

Statement 43 through their daily activity, fishers have valuable data for monitoring economic indicators.

Source of statement 43: the same as 26.

Statement 44 While management needs to be supported by solid scientific knowledge (and empirical data from fishermen), broader types of knowledge from the fishers can be complementary to empirical scientific knowledge and when properly associated enable exceptional results.

Source of statement 44: the same as 26.

Statement 45 Another obstacle is the existence of conflicts caused by the diversity of marine interests in the resources. As such, it is necessary to identify and manage these conflicts in order to manage natural resources. In this sense there is a need to establish ethical principles as the basis for negotiation of interests.

Source of statement 45: the same as 26.

Statement 46 Differences in gender, age, economic status and educational level influence the level of participation of various stakeholders; participation of less educated older fishermen and females is of most concern. The level of discussion at the EU level is different and involves a variety of powerful players who can easily safeguard their own interests.

Source of statement 46: the same as 26.

Statement 47 Historical knowledge of fisherman (important source of information) is a strength

Source of statement 47: the same as 26.

Statement 48 Prospects for the short term vs. long-term (interests change with the perspective, as such) is a weakness

Source of statement 48: the same as 26.

Statement 49 Lack of supervision (some activities are poorly supervised and this intensifies the shortage of resources) is a weakness

Source of statement 49: the same as 26.

Statement 50 Failure to account for the impact of recreational fishing (studies show that activity can have a big impact) is a weakness

Source of statement 50: the same as 26.

Statement 51 To respect the anonymity of fishermen is essential in order to create a relationship of trust and improve the quality of data used for monitoring

Source of statement 51: the same as 26.

Statement 52 Various people from different islands in the pre-conference consultations identified fishing tourism as a topic of interest, and numerous participating researchers listed tourism as an area of their interest as well

Source of statement 52: the same as 26.

Statement 53 Women as key factors/guarantee of the authenticity of the activity [fishing tourism] is a strength

Source of statement 53: the same as 26.

Statement 54 the feasibility of fishing tourism was questioned, mainly in terms of the analysis of all costs involved in the operation. In many cases, costs were unexpected and excessive, especially the ones related to insurance specific to the practice of tourism and those related to safety equipment. The lack of a comprehensive study of the fishing-tourism including a market study and the costs of the activity affected the initial attempts at this tourism.

Source of statement 54: the same as 26.

Statement 55 the need to increase the visibility of fisheries and to recognize the value of fishing communities.

Source of statement 55: the same as 26.

Statement 56 There are unique skills that can't be found outside these communities because much of the training in fishing is done "from the cradle" in the local area. The collective memory of these communities should be preserved at the same time its value as knowledge important locally, regionally, nationally and abroad. The sharing of experiences and information and use of "memories" is crucial to break the isolation of these communities in regard of the rest of the population.

Source of statement 56: the same as 26.

Statement 57 The inclusion of the sea and fisheries in formal education would help highlight and validate much in these communities in each of the islands, contrary to what happens nowadays.

Source of statement 57: the same as 26.

Statement 58 If the need for more training of fishers is clear, it is also clear that such training should be adapted to be relevant according to the needs of the fishers (types of communications, technologies used in fishing, etc) so that fishers do not see it as wasted time.

Source of statement 58: the same as 26.

Statement 59 There are young people in fisheries today who want to remain fishing, who deserve a solution to problems of illiteracy and lack of education, as this problem is not theirs alone, but is a problem of the entire island community.

Source of statement 59: the same as 26.

Statement 60 integrate the sea and fishing into the entire curricula of formal education

Source of statement 60: the same as 26.

Statement 61 develop strategies for to recognize the value of communities

Source of statement 61: the same as 26.

Statement 62 increase participation of communities and their representatives in the process of political decision-making.

Source of statement 62: the same as 26.

Statement 63 The European Maritime Strategy should provide the existence of innovative activities that promote the sustainable use of marine resources

Source of statement 63: proposed by the autors.

Statement 64 The value of the sea is associated with a good adjustment between conflicting uses of marine resources

Source of statement 64: proposed by the autors.

Statement 65 Innovation is associated with the access to an available resource. Whale watching resulted from a whaling culture adapted towards maritime tourism.

Source of statement 65: proposed by the autors.

Statement 66 The expansion of the EEZ to 350 miles is fundamental to the sustainable development of the Azores

Source of statement 66: proposed by the autors.

Q Sort on Marine Strategy

I The Q Sort Method aims to structure the discourse of development agents in a community on a specific topic.

II From documents and interviews we identified 36 phrases.

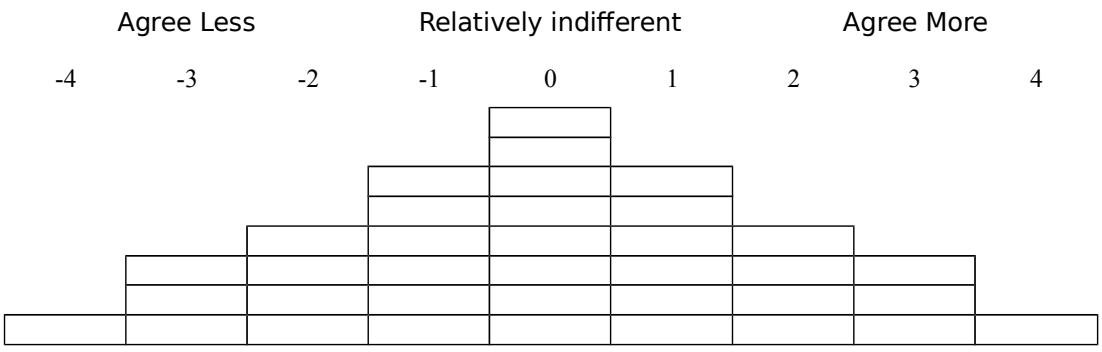
III Using the numbers of the phrases, rank them from the right to the left in the pyramid of the figure 10.

IV Identification, we use the table in figure 11.

The 36 phrases identified are:

1. Marine protected areas are an important step towards fulfilling its commitments on Sustainable Development and the Convention on Biological Diversity.
2. With an ecosystem approach to management of human activities, priority should be given to maintaining good environmental status of the marine environment in Europe
3. Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy.
4. The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas
5. There is a flaw in top governance that ignores the knowledge of fishing communities at local level
6. The activities that depend on the sea as fishing and tourism suffer the degradation of ecosystems caused by competition over resources.
7. Human activity at sea and in coastal areas is essential to economic stability
8. Increasing levels of maritime traffic have big impacts on the marine environment
9. The waste from land and boats generate increasing problems.
10. Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch.
11. The extensive and semi extensive aquaculture can help reduce the pressure on the marine environment and generate significant economic benefits
12. You need more and better communication so that the fish of good quality can be purchased
13. The costs of fishing tourism are rampant especially those associated with insurance and safety equipment
14. Beautiful things is when we go in midsummer, in a motor boat, full of fish

Figure 10: Q Sort on Marine Strategy. Item III



Source: Authors

Figure 11: Q Sort on Marine Strategy. Item IV

Gender		Age		Residence		Education		Occupation		Sector		Aim	
Masculine		-30		Faial		Other		Entrepreneur		Fisheries		Socio Economic	
Feminine		30-45		Azores		Lic		Public Service		Tourism		Socio Environmental	
		45-		Other		PhD		Employee		Other		Economic Environmental	

Source: Authors

15. If we were strong together with our government we would not be discussing the 200 miles but a lower area of 100 miles

16. Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal

17. When a fisherman sees a foreign boat fishing illegally and denounces it, it is too far away to do something.

18. The power of money, the electoral power and influence of large companies reduce the prospects of small fisheries leading Europe to defend roach fishing instead of sustainable fisheries.

19. Europe seems to advocate regional differences on paper but not in practice

20. The management system has limitations and the total tradable catch quota system is a big threat to the fishing communities especially the small ones of the Azores.

21. The fish parallels markets are relevant and may increase with the crisis

22. The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island.

23. Monitoring is typically associated with environmental indicators but it is also important to define economic and social indicators and the relationship of cause and effect between them

24. It is essential to strengthen communication between local management and management at the European level

25. It is important to establish ethical principles for negotiation between interests

26. There is a flaw in the evaluation of the impact of recreational fishing

27. Vessels large and sophisticated cause great havoc on marine resources

28. Without boats, quotas and property rights artisanal fishing will die together with their communities

29. The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island.

30. Training should be tailored to the needs of every fisherman

31. Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development

32. All whaling heritage deserves to be restored and preserved

33. Marine Strategy should provide for innovative activities that promote the sustainable use of marine resources

34. The value of the sea is associated with having a good adjustment between conflicting uses of marine resources

35. Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture

36. The expansion of the EEZ to 350 miles is fundamental to the sustainable development of communities Azorean

References

Barca (2009): An agenda for a reformed cohesion poliacy a place-based approach to meeting European Union challenges and expectations Independent Report prepared at the request of Danuta Hübner, Commissioner for Regional Policy by Fabrizio Barca `http://ec.europa.eu/regional_policy/policy/future/pdf/report_barca_v0306.pdf`

Bulhão Pato, C., Neilson, A., & Sousa, L. (2011): *Exploring the wealth of coastal fisheries: Listening to community voices*, unpublished final report, 21 -24 October 2011, Angra do Heroísmo & Ponta Delgada, Portugal. (English/Portuguese).

Capello, R. (2002): *Entrepreneurship and Spatial Externalities: Theory and Measurement*, Annals of Regional Science 36 (3), pp. 387-402.

Calado H, Ng K, Lopes C & Paramio L (2011): *Introducing a legal management instrument for offshore marine protected areas in the Azores-The Azores Marine Park*. Environmental Science & Policy, 14 (8): 1175-1187.

COM(2007): 575 final, 10 Oct 2007: *An Integrated Maritime Policy for the European Union*.

COM(2009a): *The economics of climate change adaptation in EU coastal areas Summary report*. ISBN 978-92-79-12065-7.

COM(2009b): *Legal aspects of maritime monitoring & surveillance data*. Summary report. ISBN 978-92-79-12062-6.

COM(2010a): *Marine Knowledge 2020. Marine data and observation for smart and sustainable growth*. ISBN 978-92-79-16449-1.

COM(2010b): *Maritime Spatial Planning for the EU's seas and oceans: what's it all about?*. ISBN 978-92-79-14284-0.

COM(2010c): *Marine Data Infrastructure*. Executive summary. ISBN 978-92-79-15210-8.

COM(2011): *Study on the economic effects of Maritime Spatial Planning Final report*. ISBN 978-92-79-19791-8.

De Groot HLF, Nijkamp P, Acts Z (2001): *Introduction. Knowledge spill-overs, innovation and R regional development*. Papers in Regional Science 80, 249-253.

De Groot HLF, Poot J, Smit MJ (2007): *Agglomeration, Innovation and Regional Development*. TI 2007-079/3 Tinbergen Institute Discussion Paper.

Dentinho TP e Machado L (2007): *Sustentabilidade Rural e Desportos Tradicionais. O caso das regatas de botes baleeiros dos Açores*. Actas do Congresso de Estudos Rurais. Sociedade Portuguesa de Estudos Rurais.

Dentinho TP (2012): *New Challenges for Sustainable Growth*, Chapter 11. Evolving Networks, Spaces and Competitiveness Policies: Challenges for a Sustainable Growth. Edited by Roberta Capello and Tomaz Dentinho. Edgar Elgar (forthcoming).

Diamond J (2005): *Collapse, how societies choose to fail or succeed*. Penguin Group, New York.

Florida, R (2003): *Cities and Creative Class*. City & Community. Volume 2, Issue 1, pages 3–19, March 2003.

Florida, R (2005): *The World in Numbers, The World Is Spiky. Globalization has changed the economic playing field, but hasn't leveled it*. The Atlantic Monthly, October, 2005.

Furtado, Celso (1983): *Accumulation and Development. The Logical of Industrial Civilization*. Martin Robertson. Oxford.

Gil, F and Guimarães, H (2011): *Avaliação de atitudes e valores de agentes de desenvolvimento regional*. Capítulo 20 de Compêndio de Economia Regional, Volume II: Métodos e Técnicas de Análise Regional. Editores JS Costa, TP Dentinho and P Nijkamp, Principia. Portugal.

Eduardo Haddad , Vasco Silva , Alexandre Porsse and Tomaz Dentinho (2012): *Multipliers in an Island Economy: The Case of the Azores*. NEREUS, 2012.

LeSage JP, Fischer, MM, Scherngell, T (2007): *Knowledge spillovers across Europe: Evidence from a Poisson spatial interaction model with spatial effects*. Papers in Regional Science 86: 393-422.

Lopez DA, Lopez BA, Pham CK, Isidro EJ & De Girolamo M (2010): *Barnacle culture: background, potential and challenges*. Aquaculture Research, 41 (10): e367-e375.

Lucas RE (1988): *On the mechanics of economic development*. Journal of Monetary Economics 22: 3-42.

McCann P, Simonen J (2005): *Innovation, knowledge spillovers and local labour markets*. Papers in Regional Science 84, 466-485.

Neves-Graça K (2004): *Revisiting the tragedy of the commons: Ecological dilemmas of whale watching in the Azores*. Human Organization, 63 (3): 289-300.

Nijkamp, P. (2009): *Empreendedorismo num contexto espacial: Retrospectiva e Perspectiva*. Compêndio de Economia Regional, Capítulo 25. Edited by Costa JS, Dentinho, TP and Nijkamp, P. Principia, Lisboa.

Oliveira C, Gonçalves J, Magalhães S, Prieto R, Silva MA & Santos RS (2007a): *Whale watching management in the Azores: An updated review of the regulations*. International Whaling Commission. Anchorage, Alaska. SC/59/WW7: 4pp.

Oliveira C, Filla G, Gonçalves J, Silva MA, Prieto R, Magalhães S & Santos RS (2007b): *A socio-economic perspective of the whale watching activity in the Azores*. International Whaling Commission. Anchorage, Alaska. SC/59/WW8: 8pp.

Ostrom, E., and Schlager, E. (1996): *The formation of property rights*. Pages 127-156 in S. Hanna, C. Folke, and K.-G. Mäler, editors. Rights to nature: ecological, economic, cultural, and political principles of institutions for the environment. Island. Press, Washington, D.C., USA.

Ostrom, E. et al. (1999): *Revisiting the Commons: Local Lessons*. Global Challenges Science 284, 278 (1999).

Ostrom, E. Hess, C. (2007): *Private and Common Property Rights*. Research Paper No. 2008-11-01 . Scholl of Public and Economic Affairs. Indiana University.

Ribeiro, MC. (2010): *The 'Rainbow': The First National Marine Protected Area Proposed Under the High Seas*. International Journal of Marine and Coastal Law, 25 (2): 183-207.

Romer, PM. (1986): *Increasing returns and long run growth*. Journal of Political Economy 94: 1002-1037.

Santos, RS. Hawkins, S. Monteiro, LR. Alves, M. & Isidro, EJ. (1995a): *Marine research, resources and conservation in the Azores*. Aquatic Conservation: Marine and Freshwater Ecosystems, 5 (4): 311-354.

Santos, RS. Gonçalves, J. & Isidro, E. (1995b): *Marine Research: The role of the Department of Oceanography and Fisheries of the University of the Azores*. Higher Education Policy, 8 (2): 25-28.

Santos RS, Afonso P, Colaço A, Morato T, Silva M e Tempera F (2009a): *Scientific research and marine conservation in the Azores: From origins to present*. Boletim do Núcleo Cultural da Horta, 18: 29-60 (in Portuguese, English abstract).

Santos, RS. Christiansen, S. Christiansen, B. & Gubbay, S. (2009b): *Towards the conservation and management of Sedlo seamount: A case study*. Deep Sea Research - Part II: Topical Studies in Oceanography, 56 (25): 2720–2730.

Schlager E and Ostrom E (1992): *Property-Rights Regimes and Natural Resources: A Conceptual Analysis*. Land Economics, Vol. 68, No. 3 (Aug., 1992), pp. 249-262.

Schumpeter, J. (1934): *The Theory of Economic Development*. Harvard University Press, Cambridge MA.

Stephenson, W. (1953): *The Study of Behaviour: Q Technique and its methodology*. Chicago. University of Chicago Press.

Solow, RM. (1956): *A contribution to the theory of economic growth*. Quarterly Journal of Economic 70: 65-94.

Von Thonen, J .H. (1826): *Der Isolierte Staat in Beziehung auf Landwirtschaft and Nationalekonomie*. pp. 11-12. Hamburg (1966 edition, Stuttgart : Gustav Fischer).

Yablon, M. (2004): *Property rights and sacred sites: Federal regulatory responses to American Indian religious claims on public land*. Yale Law Journal, 113, 1623–1662.

Yandle, T (2003): *The challenge of building successful stakeholder organizations: New Zealand's experience in developing a fisheries co-management regime*. Marine Policy, 27 (2), 179–192.

Yandle, T. (2007): *Understanding the consequences of property rights mismatches: a case study of New Zealand's marine resources*. Ecology and Society 12(2): 27. URL:`http://www.ecologyandsociety.org/vol12/iss2/art27_/`