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LANDSCAPES AS PANORAMAS AND AUDIOVISUAL RHYTHMS: ENVIRONMENTAL PERCEPTION IN MULLET FISHING[1]

ABSTRACT

The project described in this article is a study of the knowledge, practices and interactions involved in watching for fish shoals and deploying seine nets during the mullet (*tainha*) fishing season in Florianópolis, Brazil. Through the use of panoramic photos, films, museum exhibitions and hypermedia, we challenge the audience to 'see fish' and enhance their perceptual skills.

keywords
environmental perception; landscape; panoramic photography; ethnographic documentaries; fishing.

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In the southern Brazilian island of Florianópolis. the use of seine nets on the beaches during the mullet fishing season brings to the fore the movement of a complex arrangement. In Barra da Lagoa, the area we selected to carry out our research, the use of the beach for leisure activities such as surfing, jet skiing and speedboats is suspended. Residents who have worked intensely over the hot months of the year take their holidays in May, June or July when the summer tourist season gives way to the autumn mullet season. Fishermen who waited for the end of the *defeso* (the ban on fishing imposed by environmental bodies) resume their activities. Mechanized fishing boats patrol the coast, while painted wooden canoes, some of them more than half a century old, are lined up along the seafront. Sheds and viewing platforms for monitoring the fish shoals are assembled and equipped on the sandy beaches, rocks, dunes and hillsides. The supposedly 'natural' or 'empty' areas along the beach or rocky outcrops, in front of the summer residences, guest houses and restaurants, change their configuration. They recapture the many past seasons that wove together fishing nets, groups of neighbours and kin, and carved out canoes, sand spits, rocks and cliffs with names resonant of fishing activities: 'Saragaço,' 'Ponta do Marisco,' 'Vigia do Passo,' 'Pedra da Baleia,' 'Vigia da Cruz,' 'Ponta do Siliveira,' and many others.

SEEING FISH

During the moments of waiting, all the fishing *camaradas* practice *seeing fish* in order to take the decision to send the canoe into the water, cast the net, circle the fish, haul in the net and the fish to the beach and share the *quinhões* (portions). In the company of the lookouts, with whom we learnt about the subtleties of environmental perception involved in this practice, we are challenged to see in another way – by looking around us (Gibson 1986), sweeping the panoramic coast of the sea with our eyes and ears, feeling changes in the climate on our skin and situating ourselves in relation to everything that moves and remakes the coastal landscape.

figure 1
A shoal of mullet off the rocky coast of Barra da Lagoa, Florianópolis. May 2013. Photo: Rafael Devos

figure 2
Serreta and Pileco on watch/ Passo Lookout/ June 2013 Photo: Rafael Devos

The lookouts are fishing *camaradas* who spend all day watching the sea, looking for the shoals to arrive, and then estimating the number of fish and their direction and speed. The lookouts also play a crucial role in synchronizing the movements of canoes and nets with the movements of the water and shoals, guiding the other fishermen in the canoe and on the beach on how to cast the net: the moment to enter the water, the direction and speed to follow with the canoe, the opening of the curve to be made and the return to the beach, the line traced by the net in the water and the positioning of the *copo*, the central part of the mesh of the net, which is the last part to be removed from the water when the fish are encircled. The performance of the lookout can make the difference between *matar* (killing) a *magote* (portion) with a few dozen fish or a *manta* (school) of thousands of mullet in a single *lanço* (cast) of the net.

All along the coast, taking advantage of the relief and disposition in relation to the sea and the incidence of marine currents, various lookout posts are re-erected in spots suitable for observing the sea and detecting the presence of fish. Constructed to shelter the lookouts from dawn to dusk throughout the fishing season, these lookout posts are assembled from benches, platforms and even small sheds located along the beach, on the sand dunes, or on rocky outcrops and hillsides. On the longer beaches, as in the case of Barra da Lagoa, some lookouts may spend the whole day wandering up and down on foot, by bike or by motorbike.

A lookout needs to be able to see very well, people say, which seems obvious. But when positioned several metres from the sea, the lookouts are unable to see the actual shape of a tiny and agile fish in the vastness of the ocean. And yet the good lookouts know when they have seen one or more fish, the approximate number of the shoal (200, 500, 1000, 5000) and its speed and direction. As the lookouts themselves and other fishermen assert, *seeing fish* requires more than the good functioning of the ocular and neurophysiological systems. It depends on an ability developed through the experience of interacting with the environment and the practice of fishing.

The task of the lookout is not limited to spotting the fish. Through their interactions with the beach, winds, sea and waves, the lookouts

can decipher the environment and perceive its variations, including the rhythms and movements signalling the presence of the mullet and how to catch them.

These new lads, Leandro and Marquinho, they see well. But they rely on me to send the canoe out to sea and release the net. That's because I'm older, more experienced. [...] Sometimes the lookout can't see that well, but he knows how to encircle the fish. It's no use being able to see the fish if you've no idea how to catch them. You need to see the fish and know where they're going and how fast. Then you can tell them to put the canoe in the water right there [pointing to the canoe's position on the beach], cast the net, paddle further out. If [the lookout] doesn't know, the fish will escape. They'll run into the net and swim everywhere trying to find a way out. If they're not encircled properly, if it takes too long, then by the time the canoe reaches the beach all the fish will have already escaped. (Baía, verbal information) [2]

Obviously vision performs a crucial role in watching the fish. However, 'looking' and 'seeing' from the lookout posts is informed by multisensory perception and well-honed knowledge of the environment. The sounds of the landscape, the temperatures of the air and water, the clarity of the sky and sea, the direction and strength of the winds and marine currents, the knowledge of fish behaviour and the relief of the sea floor: all these factors and others are considered simultaneously by the lookouts, channelling their attention. They tell the lookout where to look and which perceptual signs (Bateson 1972) to search for as indices of the presence and movement of the fish. In a sense, the good lookouts are capable of anticipating the appearance of the mullet. "I already know where it [the mullet] is going to float. My uncle knew too. It's there, where there are no rocks. The fish swim over the rock. When they reach that bit where there are no rocks, they panic – I don't know – and float" (Pileco, verbal information) [3]

There are different ways of seeing the fish, or better, different way for the mullet to appear or 'show themselves,' depending on the lookout post's location (its altitude, direction and distance from the sea), the environmental conditions and the behaviour of the fish themselves: correndo a onda (swimming the wave), in the vermelhão (red) or the amarelo (yellow), in the aguada or arrepio, and in the pulo. Positioned on the beach, on the dunes or on a makeshift platform built by the

2. Interview on June 15th 2013

3. Interview on May 28th 2013.

camaradas, but not too high above sea level, the lookout needs to watch the length of the beach to catch sight of the fish in the waves breaking on the shore. Since he cannot see the sea bottom, he needs to wait for the moment when the mullet shine in the wave, revealed in contrast to the darker colour of the water, or when a dark spot formed by a large mass of fish, the red or the yellow, reveals the shoal in the clearer water. But not just the perception of a contrast is involved. The direction of the tide, the texture of the surface and the colour of the water itself are related to the speed and direction of the wind, which also indicates the direction in which the mullet are swimming. Knowing the depth and layout of the sandbanks on the sea floor, whether there are dips, rises or saragaço (mounds of shells, seaweed or other marine detritus) also aids in distinguishing the shoals of mullet since these other elements also form dark spots that can mislead the lookout, especially if he is unfamiliar with the locale. There are some periods of the day when the mullet 'show themselves' more, when they group together at daybreak, midday and late afternoon, or in the reponto da maré, the turn of the tide, the transition between the ebb and flow tides. This is a period of heightened attention. As Baía told us: "a lookout cannot abandon his post." He needs to be continually watching the sea. It is this attention that makes the difference between seeing on sunny or cloudy days, the difficulties in seeing well on days with high winds and an agitated sea. Other accomplices include the seagulls and other marine birds that hover over the shoals, mistaking the mullet (a fish that the seagulls do not prey on) for manjubas (smaller anchovies).

> Look there, they went past just now. It's a shame you weren't looking, you'd have seen them. About four or five went past in the sea. They swim by like that. It went past there in the sea, damn! Just when [the wave] came in, they swam by. You have to follow the wave, right? You follow the wave, the wave like the one cresting there now, it will fall, if it [the fish] swims there, you'll see it, it always swims in the wave. It was really white... If they're not swimming in the wave, [you can see them] only when there's a shoal. Two or three fish swimming by in the middle of the water, you can't see them. (Baía, verbal information)[4]

figure 3
Baía on watch/ Barra da Lagoa Beach / June 2013. Photo: Rafael Devos

4. Interview on June 2013.

On rocks, hillsides and sand spits some metres above sea level, the lookout can see further into the deep and spot the presence and movement of shoals in the shape of more or less compact coloured patches of water and/or alterations in the surface texture. Based on the size and tonality of these patches, the lookouts estimate the size of the shoals from the clearer and yellow patches of *magotes* with a few dozen of fish to the huge *mantas* (schools) in darker and redder tones with hundred or even thousands of mullet. When there is no wind and there are lots of fish, their agitation close to the surface can alter the texture of the water, producing *marulhos* (small waves) that the fishermen call *aguada* (watery) or *arrepio* (shivers). Whatever the circumstances, there is always the risk of the lookout mistaking the perceptual signs, taking red patches of shrimps and anchovies or wind-causes *aguadas* (watery patches) to be made by mullet. Finally, whether the beach, or the hillsides and rocks, it is also possible to see the mullet in the *pulos* (leaps) and *barrigadas* (belly flops), when they produce white and silver reflections on the water surface as they swim about.

From here [Pedra da Cruz] you can see them in the *arrepio* (shiver), in the *roda* (circle), how it [the fish] comes, only [in] shoals. On the beach people see two hundred, three hundred [fish]. They come swimming in the wave. Here there are no waves for them to swim. On the beach they swim and leap. The shoal [you can see] only from here. (Diquinho, verbal information) [5]

From the hill you can see further. From here [Pedra] da Baleia I once saw large shoals there at Ponta Grossa. But it was sunny, clear water, little wind. On the rock it's better [to catch sight of the fish]. But the advantage of the beach is seeing them in the wave, the mullet swimming in the wave. (Cláudio, verbal information) [6]

Accompanying the lookout is the radio, an instrument he can use to tell the *camaradas* on the beach the precise moment to head into the water. During the wait, people swap their impressions concerning the movements of the mullet, either with those who join the lookout, bringing him food and coffee, or via the radio, or even by mobile. They also monitor the movements along the neighbouring beaches. Sometimes they let the *camaradas* of the rival canoe know, in a tone of defiance, that the mullet have left their area of the beach and are heading towards the other lookout points. In contact with other fishermen from the south coast of

5. Interview on June 2013

6. Interview on June 2013

Brazil, they comment that large *mantas* (schools) of mullet have been seen off the coast of Rio Grande do Sul, or evaded the boats in Rio Grande, or have arrived from the cold waters off Uruguay, or that they have swam as far as the states to the north of Santa Catarina. It is as though the lookout can see much more than the beach in front of him, keeping track of the movement of the mullet for kilometres in the ocean, waiting for them to pass in front of his lookout post, hoping that the shoals evade other nets.

This dislocation in the imagined space of the movements of fish shoals also dislocates the lookout himself in time. Impressions that evoke other seasons when the lookouts themselves were training. Both Baía and Serreta recall their childhood when they would take lunch or a snack for their father who was the lookout at Barra da Lagoa. There they would learn the trade by joining him waiting for the mullet shoals. An apprenticeship that depends more on interactions between actors and between these and the environment and on observations of the landscape and its forms, rather than on the transmission of information or knowledge per se. It involves revelation, not transmission, as Ingold (2000, 2011) and Bateson (1972) both argue. A revelation of knowledge arising from a sensory ecology in which the world opens up to the body through the lookout's engagement with things and the landscape. This knowledge that is part of the becoming a lookout is discovered through the clues that he manages to recognize in the water, tides and winds, in the subtle transformations of the environment, a knowhow that is developed in the observation of other lookouts, what they show on discerning the fish in the sea, but also from how the mullet show themselves.

In the past, without the radio, the lookout had to wave a white shirt to announce the presence of the shoal in a chain signal that was passed on by the other lookouts posted at their strategic points. Watching, therefore, is more than perceiving with one's eyes the presence of the fish at a particular instant. We can situate what is seen in this context, in James Gibson's exploration (1986) of the environmental matrix involved in visual perception. The visual perception of the lookout is a gesture widely distributed between the lookout point and the other places connected to it. What is spatially seen takes into account the diverse positions bodily occupied in a place to produce a three dimensional and sensory image, orienting perceptions of what is in front, behind, beside, distant and close. In other words, the lookout does not look perspectively only, and is not by chance that he does not use binoculars or any other instrument to augment his vision, because his

vision is panoramic. Sweeping the complete area of the beach and relationally evaluating what is happening at each instant within his field of vision – what happens with the succession of waves and the small alterations that can indicate the presence of fish, the dark patches moving in the water that indicate the shadow of passing clouds or other movements that might indicate a shoal arriving. Likewise they assess the direction in which these alterations move, since they need to anticipate the moment when a shoal *enters* the space of capture where the net will be cast.

figure 4
Cláudio on watch/ Pedra da Baleia/ June 2013. Photo: Rafael Devos

LANDSCAPES, LOOKOUT SPOTS AND PANORAMAS

We took on the challenge of producing panoramic photos to present this environmental matrix where the lookout's perception is activated. More than the object of the watch, it is the place of the watch that stands out in the images, not as a point in the landscape but as a place that radiates connections with other places.

The panoramic photo, which appears a recent sensation of the technology of sharing 'views' on diverse websites of panoramic photography worldwide,[7] is actually as old as photography itself. A technique that dates back at least to Robert Barker's invention in 1792 of a cylindrical building in London, the rotunda, allowing visitors to step into panoramic paintings 137m² in size of Edinburgh and London seen from afar (Grau 2003:62). Likewise, the painter Pierre Prévost produced panoramas set in immense halls of cities like Rome, Naples, Amsterdam and Jerusalem, as well as epic battles. With the invention of photography, the panorama began to include other similarly immersive devices too like the *cycloramas* in the USA, or the *dioramas* invented by Louis Daguerre and Charles-Marie Bouton that moved the audience, sat on fixed chairs, around two perpendicular screens.

7. Among others we can cite http://360cities.net , where we uploaded some of the panoramas that we produced, or also http://www.panoramio.com, which incorporates panoramic photos on the Google Earth and Google Maps platforms (last consulted 01/11/2014).

This 'panoramic experience,' which cost visitors a few coins to view, soon became a show for the masses, included in what the romantic poets called *phantasmagoria* – cheap magic tricks that appealed more to the perceptual senses that the erudition of the spirit (Grau 2003). Arguing in an opposite direction, Arlindo Machado (1997) in his 'Pre-cinemas and post-cinemas' shows us the extent to which these *phantasmagoric* inventions that fascinated crowds in dark halls – the *panoramas*, *dioramas*, *cycloramas*, *octoramas*, *uranoramas*, *diaphanoramas*, *neoramas* and *cosmoramas* (Machado 1997:19) – provoke us to see beyond a realist experience of the image.

Although its original commercial name seems pretentious – panorama refers to the Greek *pan* (all) and *orama* (sight) – we can return here to Gibson (1986), who shows how visual perception can be reduced neither to the panoramic view nor the perspectival view. Gibson argues that although human vision, with two forward-facing eyes, is subject to the effect of perspective in composing an image, the perception of the environment does not just involve a view, or a succession of views as we might suppose, but an optical sweep that we perform in the ambient in which we are moving about. These perceptual actions, which are made in a mobile system in the environment (by eyes, in a head, on shoulders and legs) allow us to evaluate what we see relationally, meaning that we can elaborate ideas of what is behind, next to, below, close to and far from the point where we are situated. The panoramic view also does not correspond immediately to this perception since for Gibson visual perception is an action, not a representation. However, the panoramic photo provokes us into action, into a gesture just as important as the one producing perspective. While depth vision provokes movements of the eyes as they focus on the foreground, middle ground and background, the panoramic photo provokes the movement Gibson calls 'looking around,' since it presents images in angles above 160° horizontal and 75° vertical, wider, then, than the human visual capacity (compared to a static observer). Information is arranged more laterally than profoundly in panoramic vision. The viewer needs to turn his or her head, move the body, see one part of the scene in relation to the rest, evaluating the directions of inter-related movements.

Among the panoramic genres or techniques, we can cite the planetary type, cubic and spherical, which present angles of view of 360° by 180°, and the cylindrical type, which range from 180° to 360° horizontal, maintaining a vertical angle close to 75°. We opted for the cylindrical panoramic views since these challenge precisely the panoramic vision relating above all to horizontal movements.

This sense of observation is reinforced by the inclusion of the lookout in the photographic image, with whom we share the gesture of looking around. This is another difference compared to the panoramic in which the supposedly perceiving subject is separate from the landscape being 'seen' at a distance. The panoramas that we produced above all register the places produced by the gesture of watching for fish, by the type of sensory engagement in question.

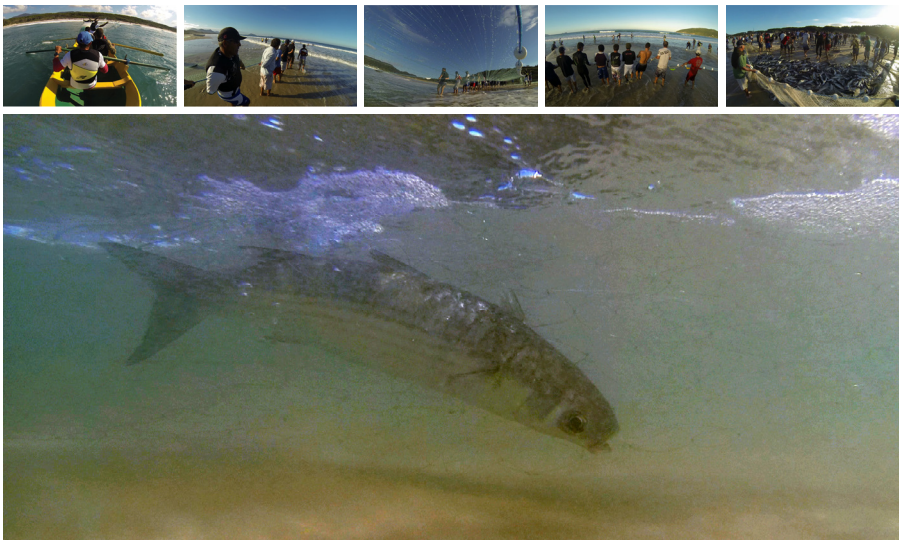
In terms of photographic technique, in order to produce these panoramic images, it was necessary to take the photos turning the body around the same axis to produce 8 to 12 photos, various times, until ensuring a reasonable number of equivalent shots in terms of photometry and composition to be processed later with specific software.[8] The number of repeated shots is large since it is difficult to find satisfactory join points for images in which the waves in the sea vary all the time. In ethnographic terms, this somewhat ridiculous gesture of spinning around on the same spot in front of the lookouts was compensated by long hours spent by their side staring at the sea, swapping impressions about the landscape in front of us and the other seasons of mullet fishing that have consolidated various places on the beach. We looked at each element in terms of its relation to the others, also evaluating the temperature and strength of the wind on the face, the subtle modifications of the landscape with the presence of birds, boats and so on.

Panoramas also allude to cognitive schemas that similarly try to use images to present complex systems of interaction between different sources of information. As an alternative to a cognitive map in which everything is held still, the panorama also allows us to reflect on systems of distributed cognition that, inspired by Edwin Hutchins (1995) and Gregory Bateson (1972), express a knowledge that is not recorded in the human mind to be transmitted as a representation, but in the diverse connections between agents who co-relate with each other technically and environmentally.

FROM PANORAMAS TO RHYTHMS

Indeed it is not the figure of the fish standing out from the oceanic background that the lookout sees, it is the environment itself in motion that he perceives. In the slow temporality of watching

8. The post-production of the panoramic photo using software like Adobe Photoshop CC 2014, or Hugin, allow different parts of the photograph to be creatively juxtaposed and distorted, enhancing regions of the image like the texture of the waves in the sea or the plant foliage, which the automatic resources in some cameras, tablets and mobile phones tend to lose.



figures 5 e 6
Lanço (casting the net) on Barra da Lagoa beach/ June 2014. Extracts from the videos available at: http://verpeixe.tumblr.com/
Photos: Rafael Devos, Gabriel Coutinho Barbosa, Viviane Vedana

at the lookout and in the frenetic pace of the *lanço* (cast), visual perception combines with the other senses, which cannot be conceived in isolation.

When the canoe is sent out, the lookout evaluates other bodily perceptions in play – the undulations, the size and weight of the canoe and the net, the movement of the shoal and the movement of the canoe, the speed of the *remeiros* (oarsmen) synchronized with the gesture of the *chumbareiro* (the 'lead thrower' who casts the net into the sea) and the synchrony between the two *braços* (arms) of the net pulled by many arms on land. The lookout, like the *patrão de rede* (boss of the net), divide their time between the two *braços* of the net in order to coordinate the discontinuities between so many different rhythms by shouting out orders to the *camaradas*. Participating in the watch and the net casting therefore demands an *education of attention* (Ingold 2010) to the rhythms of all these gestures.

The lookout needs to foresee these movements in order for the fishermen to *matar peixe* (kill fish). The many accounts of lost *mantas* and *magotes*, seen by everyone, recall that an experienced lookout is someone who sees them first, early enough to catch the fish, almost as though he guessed or sensed their arrival. An environmental perception that can be conceived in the context of what Tim Ingold (2000, 2011) develops from Gibson (1986) as perception bodily engaged in the environment, and from Gregory Bateson (1972) as knowledge depending more on revelation than representation. The signs revealing the shoal are found in the waves and currents, in the wind, in the place more than the mind or the eyes of the lookout. As Bateson proposed, these are signs that allow the beach to be understood as a set of meanings present in this landscape in motion.

If we think in terms of the concept of distributed cognition formulated by Edwin Hutchins (1995, 2011), the environmental perception of the lookout can be understood as a system of perceptions distributed among the fishing *camaradas* through their radio exchanges, but also among the other agents present in this environment, emitting signs that provide clues to the behaviour of the shoals and the fishermen: seagulls, small birds, dolphins, wind and tidal currents, technical objects, the topography of the ground and coast, and so on. The lookout does not make use of specific knowledge, not of the mullet species and its properties, nor of the geography of the locale. His knowledge is distributed in the relations between different elements that reveal the presence of shoals in relation to the canoe and the *camaradas* positioned on the beach ready to fish.

By switching between the panoramas depicting the places used to watch fish through the practices of the watchers themselves, we can produce images of this cognitive system in action. Indeed, on showing the first printed panoramas to the fishermen, we noted their surprise at our valorisation of this little known aspect of their practice, the lookout. We were also caught by surprise, though, when they presented their photo albums of past seasons showing an element absent in our images: the shoals of fish, in great quantities, on the seashore. We therefore decided to go about producing images of these other actions, ranging from the moment when the fish is first glimpsed, to ordering the *lanço* to begin, setting the canoe in the water, rowing, casting the net, circling the fish, starting to haul the fish towards the beach, pulling with the two parts of the net with same intensity until the shoal is concentrated in the net's *copo* (its central part) and depositing the catch on the beach to distribute the *quinhões* (the quantity of fish to which each *camarada* has a right) to everyone who took part. Using small waterproof 'action cameras,' we set ourselves the challenge of producing images based on these other places of engagement in the environment: standing around the canoe waiting for the *lanço*, inside the canoe in relation to seas, in the water between the net and the fish, among the hands hauling in the net, on the beach and in the *balaios* (fish baskets) amid the exchanges that take place after the haul has been made.

We were inspired by the recent production of Harvard's Sensory Ethnography Lab, (Sensory 2014), especially the film *Leviathan* (2012), which was received as a hybrid of horror movie and documentary at some festivals. Produced by Lucien Castaing-Taylor and Véréna Paravel in 2012, the film aims to amplify the viewer's sensory experience: the film throws us into the sea, catches us in a

fishing net, hauls us onto the deck of the boat, mixes us with blood and the leftovers of the catch, incarcerate us in the cabin with the tired captain and takes us flying with the seagulls that follow the boat everywhere. Presenting an industrial fishing trawler as the legendary monster Leviathan, we are provoked to join the parts of this disturbing collective – sometimes the camera adopts the position of the fishermen, sometimes we are captured like the fish, at other times the film follows the flight and diving of the seagulls, or the fishing net itself comes to life and scoops us out of the sea.

Placing our cameras in the canoe, in the fishing net, in the sand or in the sea, therefore, became another way for us to present the fishing practice beyond the viewpoints and representations of the fishermen. Thinking of Merleau-Ponty, via David MacDougall (2006), our idea was to position the camera like a body that could touch and be touched by everything around it. The camera touches the canoe and the bottom of the sea, it touches the net and the fish in the water, the hands of the fishermen and the sand, the last breaths of the mullet, the death of the fish and the life of fishing.[9] These rhythms of gestures and actions thus come to narrate the interactions between all these agents. We also posed ourselves the challenge of articulating, between the panoramas and the audiovisual sequences, what is in play between seeing fish, killing fish and knowing fish, between the wait of the lookout, the force of the *lanço* and the effectiveness of the mullet in shaping the socialities between city and sea.

The various modalities of seasonal fishing – by boat, with seine nets on the beach, using round cast nets and so on – are linked to particular environmental cycles. The mullet are perceived in motion, the fishermen trying to spot their *corrida* or 'run.' This *corrida* involves the formation of large shoals of fish where the cold currents flowing from the south and the *corrida* of the mullet are interrupted by their *entrada* (entry) into contact with the currents and winds from the north and northeast as they approach the rocky shores, beaches and estuaries. The mullet season also sees the shoals of fish re-appear in the nets, boats, fishmongers and barbecue restaurants, as well as the exchanges between customers, neighbours and relatives. While some fishing modalities far from the coast are more efficient in terms of tons captured, other techniques closer to the shore are more effective in

9. Rosemary Gerber marvellously discusses this expression in her thesis 'Mulheres e o Mar' ('Women and the Sea,' Gerber 2012). As a fisherwoman described to her, "the death of the fish is the life of fishing" (Gerber 2012: 244).

bringing large numbers of people together. Among these practices, it is seine net fishing on the beach shoreline that most clearly marks the encounter between the city and sea. By accompanying the *parelhas* of painted canoes, nets, *camaradas* (comrades), *patrões* (bosses) and *vigias* (lookouts) we can learn about one type of engagement with the sea that redesigns the city's coast.

On various beaches one can watch the spectacle of the nets being hauled in from the sea by a long line of arms, working together to complete the catch and see the *quinhões* (portions) of fish land and circulate among colleagues, clients, friends and relatives. Scenes that are repeated many times over, showing the city's love for mullet and the sea. But there is also another moment that precedes the fast pace of the *lanço* (the casting of the net), barely perceptible to the uninitiated. This is the time spent waiting for the shoals when the fishermen can pass hours or even days carefully monitoring the movements of the sea, looking for the signs through which the mullet eventually reveal their presence. This wait is dissipated in the conversations in the *barracão* (shed) while mending nets, in card games and dominoes, in the laughter and pleasure of conviviality in the *rancho de pesca* or fishing shack. A wait that conceals another fundamental practice of fishing: the observation of the cycles assumed by the dynamic relationships between earth, sea and sky; sand, water and wind; groups of people, nets, canoes and fish. Anyone who visits the beach unfamiliar with this period of waiting may fail to understand why the sand and sea need to be calm, free of any noise or bustle that could scare away the fish. Everyone is quietly absorbed, concentrating on *seeing fish*.

During the 2013 and 2014 seasons we accompanied artisanal fishing *parelhas* (collectives) on a number of the city's beaches. We took notes and photos and filmed the wait for the fish on video, along with the casting of the seine net and the skills needed to see and recognize the movements of the fish within the temporality of this landscape (Ingold 2000). Inspired by the distributed cognition of Hutchins (1995), by the ecological approach to perception developed by Gibson (1986) and Bateson (1972) and by the practices of space explored by Michel de Certeau (1998), we decided to use the production of panoramic photos and audiovisual recordings of this landscape as a way of presenting the research challenge of engaging with and transposing the rhythms and arrangements of the fishing landscape to the landscape of images in dynamic patterns of correlation. The first results were shown in the exhibition 'Ver Peixe' (Seeing Fish) and on our website[10]

10. http://verpeixe.tumblr.com

as an initial attempt to highlight the contemporary importance and vitality of the mullet season on the beaches of Florianópolis and the many abilities and dynamics involved in the relationship with the marine environment that it devolves to the city each year.

The beach of mullet fishing is not the same beach of summer tourism: the beach formed during the mullet season is part of the technical system involved in the fishing. The lookout and fishing points reveal their existence during the mullet season, making explicit the meanings of the toponyms associated with the rocks, pools, quiet spots and dunes linked together through the practice of fishing, marking how traditional practices along the coastal landscape precede its function as a coastal resort.

In the company of the lookouts and their colleagues, we learn to perceive the presence of mullet shoals and other fish species along the Florianópolis coastline. We discovered the presence of whales, penguins, dolphins and other sea animals that also "show themselves" for those who are tuned to the sea. More than a tool in the fishing technique, the lookout posts are places that bring the city closer to the ocean, with such appearances at the beach.

The lookout posts are 'places that happen,' to adopt the apt expression of Casey (1996). The landscape reveals its form through the inscription of diverse rhythms and repeated movements in particular places. Rhythms and movements not only of people and not only of animals, but of anything capable of producing reports of a place (Certeau 1998). Report here has the sense of relate – reconnect, relate, produce associations (Latour 2012), since the report, whether a narrative or a picture of a landscape, reveals an arrangement, a connection, which is temporal (before, after, simultaneous, repeated, interrupted or continued) and spatial (next to, below, above, behind, in front, against, inside, outside). These arrangements are active in the production of places, and it is in this sense that "places happen" (Casey 1996), marking their character as an event, signalling the narrative dimension of their structure (Ingold 2011), as well as their enunciative dimension (Certeau 1998).

The videos and panoramic photos that we discuss here are an experimental approach with the perception of the environment and the visual etnography. We use the fishing skills to think about new techniques to catch the fish with the camera. We share with the fishermen expectations, frustrations and readiness, from the first perceptual signals to the decisive moment to turn the camera and the microphone to the meeting places between the fishing collectives

and fish shoals. There were many days when the camera was set in the canoe prow or in front of the beach, capturing fast moments between the time of "seeing fish" and start the cast.

Because the mullet are the big attraction, the images are made alongside fishermen, according the relation of *camaradagem* (camaraderie). There is no speeches of fishermen in the movie. Their practices enunciate the role of the fishermen as inhabitants of the coast in the creative production of the coastal landscape through the temporalities that fishing sets in motion. The coastal environment is not just represented symbolically by the fishermen: both fisherman and environment are known and produced by the interactions in which fishing practices are inserted. The concept of landscape is a guiding principle of the investigation: the landscape as design, trace, arrangement of marks left by these interactions between the movements of the winds, tidal currents, shoals, sand banks, boats, nets, fishermen, tourists and inhabitants of the coast in seasonal rhythms on the seafront.

> Everything has a name, man. Over there is Siliveira. There are those pebbles over there... That's Tajuvera. There's Pedra Redonda, Passo, Pedra Preta. Over there is Banquinho, before Piscina. Over that way is Mamica, and where that pool is over there is called Pedra de Mamica. Over there is one rock placed on top of another. In the past they'd fix a net there and wait for the catch. And so it goes on. There's Pedra da Luzia, Ponta do Marisco, Pedra do Frade, Pesqueiro, Lado do Matias, Canal Redondo, Testa do Burro, Lado Degolado and so on. Buraco do Sagres, and on it goes... Lavador, Baixio, and so on. Every spot has a name.
>
> Pileco / Passo Lookout / May 2013.

translation
David Rodgers
text received
04.15.2015

figura 7
Pileco on watch/ Passo Lookout Post/ June 2013. Photo: Rafael Devos

BIBLIOGRAPHY

Bateson, Gregory. 1972. *Steps to an Ecology of Mind. Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*. São Franciso: Chandler.

Casey, Edward. S. 1996. How to get from space to place in a fairly short stretch of time: phenomenological prolegomena. In:_____. *Getting Back into place*. 317-348. Bloomington: Indiana University Press,

Certeau, Michel de. 1998. *A invenção do cotidiano: artes de fazer*. Rio de Janeiro: Vozes.

Devos, R. V. 2009. "A crise ambiental sob a perspectiva da memória e dos itinerários no mundo urbano contemporâneo". *Ambiente & Sociedade* (Online). , v.12, p.05.

Devos, R., Ana Paula Marcante Soares, Ana Luiza Carvalho da Rocha. 2010. "Habitantes do Arroio: memória ambiental das águas urbanas". *Desenvolvimento e Meio Ambiente*, Vol. 22.

Grau, Oliver. 2003. *Virtual art: from illusion to immersion*. Cambridge: MIT Press.

Gerber, Rose Mary. 2013. *Mulheres e o mar: uma etnografia sobre pescadoras embarcadas na pesca artesanal no litoral de Santa Catarina, Brasil.* 418f. Tese (Doutorado) – Universidade Federal de Santa Catarina, Florianópolis.

Gibson, James. 1986. *The ecological approach to visual perception*. Nova York: Psychology Press.

Hutchins, Edwin. 1995. *Cognition in the wild*. Cambridge: MIT Press.

_____. Cognition, distributed. 2001. In: Smelser, N e Baltes, P. *International encyclopedia of the social & behavioral science.* Amsterdam; New York: Elsevier, 2068-2072.

Ingold, Tim. 2000. *The Perception of the Environment: essays on livelihood, dwelling and skill.* Londres: Routledge.

_____. 2010. Da transmissão de representações à educação de atenção. *Educação*, Porto Alegre, v. 3 n. 1, 6-25.

_____. 2011. *Being Alive: essays on movement, knowledge and description*. Londres: Routledge.

_____. 2012. Trazendo as coisas de volta à vida: emaranhados criativos num mundo de materiais. *Horizontes Antropológicos*, Porto Alegre, n. 37, 25-44, jan.-jun.

Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Action-Network-Theory*. Nova York: Oxford University Press.

MacDougall, David. 2006. *The corporeal image: film, ethnography, and the senses*. Nova Jersey: Princeton University Press.

Machado, Arlindo. 1997. *Pré-cinemas & pós-cinemas*. Campinas: Papirus.

Merleau-Ponty, Maurice. O olho e o espírito. 1984. In:_____. *Merleau-Ponty*. São Paulo: Abril Cultural, p. 275-301.

Paterson, Mark. 2009. Haptic geographies: ethnography, haptic knowledge and sensuous dispositions. *Progress in Human Geography*, v. 33, n. 6, 766-788.

Simmel, G. 1996. A filosofia da paisagem. *Revista Política & Trabalho*, João Pessoa, n. 12, 15-24,

Sensory Ethnography Lab. Disponível em: <http://sel.fas.harvard.edu/works.html> . Acesso em: 20 mar. 2014.

FILMS CITED

Paravel, Véréna e Lucien Castaing-Taylor. 2012. Leviathan. EUA/UK/França, cor, 87'.

SITES

Verpeixe. http://verpeixe.tumblr.com. Consulted 20.11.2014.