

The emergence of institutions (rules & norms) in the case of a community lead turtle egg harvesting project in Ostional Costa Rica

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First draft, do not quote or cite

Paper to be presented at the conference: „Design and Dynamics of Institutions for Collective Action”
in honour of Prof. Dr. Elinor Ostrom November 29- December 1, 20012, Utrecht University

Keywords: grammar of institutions, institutional change, design principles

Introduction

In this paper, we are looking at a community lead or co-management scheme for extraction of turtle eggs. In many countries of the world turtle eggs are extracted. However, Ostional is the only place in the world, where there exists a legal right to extract turtles eggs under the supervision of the Environmental Ministry. Normally extraction of turtle eggs is formally forbidden and de facto made.²

Looked at it from far, Ostional is a dream case of community lead collective action for solving the tragedy of the commons (Hardin 1968). From a disastrous and fatal situation in the late seventies, which has been characterised by a formal ban and a de facto complete extraction and open access, the community managed to introduce rules and norms of use, which are sustainable in the sense that they persist since more than 25 years and there are biologists from the University of Costa Rica, from the State and from the community organisation, which also certify the sustainability from an ecological perspective (Campbell 1998; Campbell, et al. 2007; RNVSO-SINAC-MINAE 2006). Therefore, it makes sense to look at this particular case from an Ostromian perspective. The paper will focus on the following three questions in relation to the egg harvesting:

1. What have been some important emergent institutions in Ostional?
2. In how far are they in accordance with the design principles or other important preconditions for successful collective action?
3. Can we understand how those institutions emerged or changed over time?

The paper will develop in the following way. First, we give a more detailed introduction into the case, for having a background. Second, follows a short introduction into the theoretical perspective of the paper. Third, the applied empirical strategy is described. Then various institutions will be described using the grammar of institutions, the design principles and theories of institutional change to try to understand them.

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² The consumption of turtle eggs has a long cultural tradition and often provides a livelihood for poor people. However, many turtle species are due to many reasons (not only egg consumption) in risk of extinction. The olive ridley (*lepidochelys olivacea*) species, which arrives at Ostional is, as far as we know, not in risk of extinction. Due to its particularities – olive ridley turtles always come to the beach in groups of many 10.000s of female – a use of turtle eggs which seem to increase reproduction seems to be possible. For many Westerners, particularly conservationists it is morally unacceptable to extract turtle eggs. However, I ask the reader not to make any moral judgment on this. This is not my field of expertise and I do not know, if it is e.g. “better or worse” to extract those eggs, in comparison to eat, for example, tons of antibiotic chicken at Kentucky Fried Chicken or to fly roughly four times a year from Europe to the tropics, for doing research.

The case

Ostional, which until recently was not accessible during many months of the year due to heavy rains and rivers, started as an agricultural place. However, in the 1950s arrived more and more people, who earned their living by extracting turtle eggs (Chavarría Chavarría 2010). Overnight and without having any knowledge about it, the business of the people became illegal. Within the older generation (45 years onwards) it is told, how horrible it was that “we as honest people became suddenly illegal”. Most of the time de facto nothing changed, because Ostional was rather inaccessible at this time. However, the police occasionally monitored (coming e.g. with helicopters) and the conflict was severe.

In 1976 villagers had the idea to create a community organisation and in 1980 this group was formally founded. With the help of some scholars from the University of Costa Rica, which had a research interest in the species, they could prove that harvesting at the beginning of the arrival period would improve the hatchling rate and therefore sustainability. It reduces substantially “scrambled eggs” and thereby infections. Also it was proposed that some extra measures like community monitoring, cleaning of the beach and hatchling protection would increase the hatchling success. Fighting for the right was extremely important for the collective identity of the place, which clearly even holds today. Today, there is a problem of participation in the younger generation. But those who have lived through this battle still have a strong sense of pride and fight for their project.

Due to a lot of interventions in San José, the capital of Costa Rica, in 1983 a temporary right of extraction was given to the Association. However, this created a lot of controversy and particularly “ultra-conservationists” (ADIO 2004), which are rather common in Costa Rica (Interview with specialist on environmental history of Costa Rica), intervened. Finally, in 1987, ADIO³, the current community organisation, was founded and got the exclusive right to extract turtle eggs in Ostional. This beach is the only in Costa Rica, and to our knowledge world-wide, where there exists the legal right to extract turtle eggs.

For getting the right of extraction renewed every year – and this right is always questioned – the community has to fulfil certain duties in relation to monitoring, cleaning the beach and helping hatchlings, to get to the sea, without being eaten by predators, like dogs and birds. ADIO, which employs a biologist for this purpose, has to submit an annual report to the Ministry of the Environment about the work done in the last year. Also they have to present a scientific plan of use of approximately 30 pages, where it is shown how the community work has influenced hatchling success and what actions are planned for the next year (see Table 1 as an example of the information, which is provided for the government; e.g. (ADIO 2004)). Every month, when the “arribada” starts, the biologist has to get approved by the local office of the Ministry of the Environment, for how many hours this time, the eggs will be extracted. Extraction varies between nothing and the first 48 hours.

Table 1: table provided in the annual plan of use, about the biological measurements done over the last year

	PROMEDIO	T	gl	P
	ESPECIES			
L. olivacea	9990.00 ± 1455.21	1.06	3	0.37
Nidos falsos	3030.50 ± 62.40	11.94	3	0.001

³ Asociación del Desarrollo Integral de Ostional; Association of Integrated Development in Ostional.

D. coriacea	37.75 ± 25.02	1.06	3	0.37
C. mydas	18.00 ± 28.83	0.21	3	0.85
	DEPREDADORES			
Perros	1004.50 ± 193.90	1.68	3	0.91
Mapache	468.00 ± 172.77	3.84	3	0.03
Personas	20.77.75 ± 559.99	2.56	3	0.8
	ARRIBADAS			
Frecuencia	11.17 ± 2.29	2.46	22	0.02
Intervalo	30.58 ± 1.33	4.37	22	0.00
Duración	4.78 ± 1.02	0.55	22	0.59
Tamaño	86300 ± 29700	1.66	3	0.20
	DENSIDAD			
Nidos	0.83 ± 0.39	3.31	3	0.05
Huevos	72.02 ± 33.03	3.70	3	0.03
	ESTIMACIONES			
Nidos	429500 ± 66880	7.27	3	0.01
Huevos	37220000 ± 4945000	4.03	3	0.03
Crías	2932000 ± 1702000	1.50	3	0.23
Viabilidad	63.21 ± 12.14	0.30	3	0.78
Éxito de eclosión	29.35 ± 7.08	6.00	3	0.01

Source: Plan de Manjeo 2004

Theoretical background

For answering the first question about the emerged rules in Ostional the Grammar of Institutions of Crawford and Ostrom (1995) is used to describe rules and norms existing in the community. The first are mainly assessed via documents, like the constitution of the association, the latter, are more derived from interviews. In Schlüter & Theesfeld (2010) we argued that the distinction between rule and norms within the grammar of institutions is difficult to make, as norms might not have any legal sanction, which you could describe as the *or else*. However, the implied delta parameters of a norm could be also formulated as an *or else*. Additionally, according to Ostrom a rule only becomes a rule, if there is an *or else*. Otherwise, nobody would ever follow the rule, if no sanctions could be expected. However, we realise that often at least no explicit *or else* is given (Basurto, et al. 2010).

The detected rules and norms are compared with the design principles (Ostrom 1990) and other important factors (Agrawal 2001; Baland and Platteau 2000) determining the success or failure of collective action in common pool resource use. In the empirical assessment for making sure that many of these aspects mentioned in the literature have been assessed, the social-ecological system framework has been used as a device (Ostrom 2007; Ostrom 2009).⁴

However, this framework and also the principles mentioned above are largely static. They help to assess and diagnose a particular social-ecological system, emphasising particularly its institutional features. However, they are not made for understanding the dynamics, the emergence and evolution of institutions.⁵ Confronting the particular case with existing approaches to explain institutional change and emergence (Bromley 2006; Knight 1992; North 2005), one realises that explaining the observed, one needs to revert to various and sometimes competing theories. However, this diversity

⁴ See Schlüter A., Madrigal R. (2012) for a description on how the SES was used in this particular marine setting and what has been the advantages and disadvantages of using it.

⁵ See Ostrom & Basurto (2011) where parts of the grammar are used to code change in institutions.

might be explained by the particularities of each individual rule or norm and its surrounding environment.

Methodology and methods

The paper uses a qualitative case study approach for making its argument (Schlüter 2010; Schlüter 2011). Literature, like scientific articles, thesis, minutes of meetings, regulations and bylaws of the organisation, is analysed. Schedule based interviews, using the SES framework as a diagnostic assessment tools have been made with key stakeholders in the community. Participant observation, attending on the one hand meetings and on the other hand observing the collective work has been made. Two students spent about three month living in the community, working with the “turtle business” and ran a survey there and collected many documents. I stayed three weeks in Ostional mainly speaking with different people and attending meetings. On the national level Gabriela Morais and I conducted interviews for a week, for understanding the relationship between the official regulators working with nature protection on the national level in the ministries and the local people living in or from the protected areas. The data is coded and analysed with the help of MaxQDA, qualitative data analysis software.

Discussion: design and dynamics

In this section we discuss a selection of institutions, which are of particular importance for Ostional. We describe first the evolution of rules, for then checking in how far the evolution corresponds to the design principles or other important factors, which allow for successful collective action in resource use, for then discussing the drivers of the change.

Right to collect turtle eggs

The first law which prohibited turtle egg harvesting in Costa Rica for commercial purpose was passed in 1948. It was followed by the prohibition of turtle egg harvesting for consumptive purposed by the wildlife conservation law passed in 1966 (Campbell 1998). However, until 1979 there was never any enforcement of the law (Campbell 1998) and therefore, de facto the resource remained open access. It became under pressure, as settlement in the area began in the fifties and more and more people came to Ostional to earn a livelihood from turtle eggs. The formal rule should be easily describable using the grammar of institution.⁶ However, as an institution according to Crawford and Ostrom always needs a deontic, de facto we obviously have no institution in the sense of the grammar of institutions until 1979. Looking at turtle legislation world-wide and its application, one can doubt if there exists already de facto an institution about turtle egg harvesting, as it is hardly enforced in any place. Nevertheless we try to formulate all rights according to the grammar of institutions⁷.

Formal Rule in 1966 onwards:

⁶ See Basurto et al (2010) about the actual difficulties to code legislation with the grammar, as often within the law the deontic is implicit and the or else is not found within the particular statement, but one can only understand the institutions by analysing the “grammatical interlinkages”. Imagine the constitution of your country. Article 3, paragraph 1 of the German constitution states, for example, all humans are equal in front of the law. There is no explicit mentioning of a deontic or an or else in that statement. However, I know, for example, if I employ somebody, and I do not take care of this institution, I will run into trouble and there are a lot of deontics, about what I must do and also a lot of or elses in case I do not stick to this rule.

⁷ Look at Siddiki et al (2011) who applies the grammar to an aquaculture context.

Anybody must not harvest any turtle eggs in Costa Rica, neither for commercial nor for consumptive use or else there will be a fine applied.⁸

De facto rule until 1979

Everybody can harvest turtle eggs on the beach of Ostional

De facto rule from 1979 onwards

Everybody can harvest turtle eggs, if he/she does not hear the helicopters of the police

Using conventional economic theory of institutional change is very difficult for explaining the emergence of those early and formal institutions. According to those theories, the reason for a move away from open access is an increase in scarcity, indicated by higher prices (Demsetz 1967/1988) or by any way found, which could reduce transaction costs (Barzel 1989; North and Thomas 1973). Scarcity might have changed since the 50ths, probably it was perceived scarcity, as I have the impression, looking at the little biological knowledge we even have today about turtles, that there has been definitely not been a proper assessment of turtle scarcity at that time. There might have rather been a political class in San Jose, definitely influenced by the international and particular US American conservation movement (Interview with specialist of environmental history of Costa Rica), which thought that it would be useful to protect turtles. This class might have been economically dependent on the conservation movement, but definitely from turtle eggs.

The community of Ostional at least reports (various interviews), that they have not been aware of the prohibition, but that they have been very astonished that they have been converted over night in the late 70s and early 80s into criminals, not being anymore able to earn their livelihood with this particular income source. Normally, they continued to harvest turtle eggs, without fearing any sanctions. However, sometimes there have been some serious confrontations, which culminated even in a dead person (Chavarría Chavarría 2010).

Members of the community thought of organising a protest against this illegality and they had the idea to organise a community project. Scholars of the University of Costa Rica, particularly under the lead of Prof. Robinson supported the community, and helped to make the argument that under close supervision and with the help of a clear concept, turtle egg extraction could be done in a sustainable way.

In 1983 for the first time the right to community members was given to extract turtle eggs. For having the right the person must have been member of the community association. This right was challenged but in 1987 it was put into a law (Morera Ávila 2008). However, this right is given to the community on an annual basis and the community organisation has to proof with the help of studies that they increase the productivity and they fulfil certain duties.

De facto institution since 1987

Everybody apart from an ADIO member must not collect turtle eggs from the beach of Ostional or else he might be observed by the monitors of ADIO, which might report them to the police and the police might punish them.

⁸ There is a monetary or a prison fine existing for turtle egg poaching, however, this old law is not yet online available.

Members of ADIO can⁹ extract turtle eggs from Ostional under the condition that the Environmental Ministry has granted the right for this particular year.

To become a member you must be older than 15 years and you must have lived in Ostional since 5 years and there must be less than 150 members so far.

This regulation created clear boundaries in relation to who is in and who is out. The precondition, for avoiding the tragedy of open access, is that rights are given to a clearly defined group of people. This has definitely been the case. The rule established, as all the other rules, by the general assembly that only 150 people can be members was not transferred into a de facto rule, but membership increased. Therefore, they introduced an entrance fee for coming into ADIO of 77 US\$. Privilege was given to the children of members and the maximum allowed membership number was raised to 200 (Campbell 1998). There are many more rules on who is when allowed to extract turtle eggs, we just present some of them.

Every member of ADIO must not extract turtle eggs on his or her own account and outside the designated time period for harvesting or else he/she will be immediately expelled from ADIO and reported to the police ((ADIO 2007); Article 17 a).

Somehow this rule does not seem to follow the principle of “graduated sanctions”. However, it might have been the case that for such a severe action, which puts into danger the entire project, a very high sanction has to be put in place.¹⁰ There have been already people expelled from ADIO due to not following the established rules. However, we do not know if this rule is always applied. In other areas graduated sanctions apply (see particularly the rules regulating collective duties).

A member should not sell the eggs, which have been given to him/her by the Association for own consumption or else observed the first time, he will lose benefit for one arribada, if observed for the second time, he will be excluded from three arribadas, if observed for the third time, the person will be expelled from ADIO (Article 17 c)

The granting of the right to the community also solved somehow the monitoring problem they had before, which lead to the fact that de facto Ostional was still most of the time open access. On the one hand, ADIO is obliged to monitor by law. On the other hand ADIO has now an intrinsic motivation to monitor the beach and to protect *their* turtle eggs from outsiders. This intrinsic motivation might hold for the time of arribada, when ADIO has the right to extract. However, it might be a lot lower when single turtles arrive, which ADIO is not allowed to use anyhow. However, for this monitoring, there is the potential threat that the permission to extract will not be extended in case the monitoring is not done properly.

The monitoring is an interesting area to study the de-central evolution of institutions (Alchian 1950). The rules governing the monitoring have been changed many times, for trying to improve them and

⁹ Daniel Bromley (Bromley 1989) explains how New institutional economics, always sees institutions as constraints and do not see, how they also can enable. Many rules give the option and do not constraint or oblige people, as a deontic would always indicate.

¹⁰ We found this sanction in the status of ADIO in 2007. The Rules of ADIO have developed over the years. I tried to get all the different versions of the different valid stati of the Association. This was not possible. In some interviews, I got reports on how rules have changed over the years and got adapted to the needs. However, until now, I am not able to really develop a full chronology of the evolution of institutions of ADIO.

in 2001, for example, the list of rules governing the monitoring activity already comprised 10 pages, where many things are clarified. For example, what happens, if a monitor is stealing eggs (ADIO 2001). At the moment of investigation, ADIO was thinking about increasing substantially the salary of the monitors, as the payment was not seen as enough to really make people work there all the night and really taking properly care. For this salary one needs to sleep, for being fit for another job during the day. We obviously could not observe, if the monitoring is effective, as stealing takes place over the night and can only be watched by the people patrolling the beach. We could only hear what people told us and we cannot really proof. Employment possibilities are sometimes really low in Ostional and then the monitoring jobs are, even being badly paid, relatively attractive. At that time the monitoring team had recently been exchanged. The head of the monitors did become a man, whose brothers and fathers, are, according to what others said, deeply involved into poaching activity¹¹. It is impossible for us to judge what is right and wrong in this case, but the fact that there are clearly identifiable person living in Ostional who can live on poaching activities since many years at least tells us that monitoring can't be perfect. At that time ADIO lived through a very rough phase, with a lot of bargaining taking place. For example, the house and the car of the former president got burned down. And it was told that the new president had installed the new monitoring team for striking a bargain.

Those limits in monitoring might be particularly due to two reasons. First, poaching activity has a certain social security function for poor people in Costa Rica. Somehow a norm exists that poaching is OK, as long as it is really done for satisfying the basic needs of a person. You cannot really prohibit people to poach, if otherwise they would not have enough to eat. A very understandable norm.

Second, ADIO might have the right to harvest turtle eggs, but it has not clear exclusion rights (Ostrom 2000), which might be due to the fact that the right belongs to a beach, which by law (law of ZMT; Zonas Marinas Terestres) belongs to the state. Whenever ADIO finds somebody poaching eggs, ADIO cannot expel people from the beach. The only thing they can do, is calling the state authorities, which then have to take care of. Dealing with poachers, which often use machetes for their own defence, is not a nice issue. In the past, the state often did not have the capacity, or according some interviewees, did not have any interest in really prosecuting those people. From this perspective the ADIO monitoring team is powerless.

Obviously ADIO risks a new institutional change due to internal reasons. If ADIO does not accomplish the duties described in the 'Wildlife Conservation' Law 6919, which also grants the privilege to ADIO. However, the more important risk of a new institutional change might come from the outside. The government of Costa Rica is very committed to protecting the environment. Internationally it is renowned to be a master class student in relation to nature conservation. Internationally and nationally conservationist put sever pressure on the government to stop with this unique granting of legal right to extract turtle eggs. We are no biologists. Therefore, we can just trust, what biologists say. Normally currently, any form of turtle egg extraction activity should be prohibited, from a purely ecological perspective. However, in the case of the Lora turtle there seems to be an agreement of

¹¹ When some of the community members came up with the idea to create a community association, which asks the state to get the right, a lot of suspicion was brought forward. First, hardly anybody could believe that it would be possible to get a permit from the state and that this would be advantageous for the people. As those community members had good leadership skills (Chavarría Chavarría 2010) they have been able to convince the large majority of the community. However, one family – and the entire village operates with a handful of clans – continued to oppose to the community project and are still not member of ADIO, but everybody knows that they live from turtle egg poaching.

ecologists that sustainable extraction by humans is possible. A valuable argument against the extraction of turtle eggs rather seems to come from a cultural economic perspective: Ostional creates with all its certification procedures a legal market for turtle eggs, which at the end makes it difficult to distinguish between legal and illegal turtle eggs. However, this is not the dominating argument in the battle about institutional change. ADIO and the Ostional solution gets attacked on many conservation meetings (interviews with various ADIO leaders). Since our research on turtles in Ostional, we got many times already an email message, which campaigns strongly about the extraction of turtle eggs. As summary of the text and some pictures of this mail are given below.

“Now they call it victim of climate change. Is it possible that those people are stealing turtle eggs, for selling them to the big hotel chains, for that tourists are consuming them? Is it possible that every bag of eggs, is paid with little money. In this chain of custody, one might ask, who are the culprits? The turtles? NO!!! Surely those who are extracting the turtles? I dare to confirm this. Those who are creating hunger and the loss of consciousness??? Finally I am not sure about it, but it is worth to know the reality: WORLD SHAME IN COSTA RICA. At the end they will say that turtles are getting extinct due to climate change. “



Picture 1: image of the email campaign against egg harvesting in Ostional



Picture 2: image of the email campaign against egg harvesting in Ostional

Obviously, the community also tries to influence as much as they can the political process. They have organised various protests, where many community members got on a bus and went to San Jose or other political collective actions.¹²

Looking at this process of institutional change one gets the impression that among different theories, on the one side ideology and mental models as explanatory factors could help to understand (Denzau and North 1994; North 2005), on the other hand it is political bargaining power, and the management of modern communication tools, but definitely not transaction costs, efficiency or scarcity.

Benefit Sharing

Above we have described the general rules for becoming a member of ADIO. Once you are a member the general distribution rule is as follow:

First 40% of the benefits are used for INCOPECA (state agency which regulated fishing). Then, 30% of the remaining is used to finance the running of ADIO and to contribute to community projects.¹³ The remaining money is equally split among all community members (Campbell 1998). In 2008 close to 6 Million turtle eggs have been harvested. In 2009 4 Millions have been harvested. In 2009, for example, this led to an earning for ADIO of roughly 280.000 US\$ in 2009. Which resulted in the relatively small some of 193456 US\$ to be distributed to all members. However, this provided every

¹² In the annex 2 you find a document, where people are asked to come to the district capital for protesting against a law amendment.

¹³ Nearly every community investment is supported by ADIO. They helped for example financing bridges, which allow for motor cycle access to Ostional for the whole year.

member with roughly 1000 US\$ in this bad year. Many families have obviously many ADIO members. Many members live only on the money of ADIO and for others it is at least an important part of their income. Additionally to the payment every member receives 200 eggs per month in kind (Morera Ávila 2009).

Everybody who is a member and who provides work to the ADIO becomes an equal share of the benefits.

This general sharing rule was changed mainly in two important respects. First of all monetary sanctions have been introduced for people, who did not contribute properly to all sorts of collective action, which is duty of ADIO. This change in how costs and benefits are distributed is described in more detail in the section below. Second, in 2007 a lot of people got the right to the benefits of ADIO without working. ADIO is following social goals with these payments. The most important change was the introduction of a kind of retirement for people above the age of 70. They have the right to all benefits without working. Pregnant women get paid for a four month period without working. People who can present a health certificate from the doctor get a payment of 50% in case of illness. Students are excused for all collective duties, in case they have to study at the same time. In general in 2008 15.000 US\$ or rents have been paid to members, who did not work for its contribution at this particular time. These institutions are all institutional statements without a deontic. As the association of costs and benefits are not given, one could think that this change contradicts the design principles, however, as the change of rules is done by vote, we can expect that the majority just believes that this is right.

Collective Duties

The law states that members of ADIO have to fulfil non paid community duties, if they want to continue to have the right of egg extraction.¹⁴

Members of ADIO must fulfil collective duties without payment like beach cleaning and hatchling protection or else they might lose the right to extract turtle eggs (Morera Ávila 2008).

This is a collective or else in this institutional statement. However, it did not take long before the Association converted this into individualised or elses. In the interviews I asked various people, how the sanctioning really was more and more introduced into the process over time. People had difficulties to remember how the sanctions evolved over the years. It only seemed natural for them that they evolved. Always suggestions about rule changes were made to the annual assembly and often they have been approved. Today the following rules are valid:¹⁵

The institution above has proliferated into a statement with various or elses

Members must help in cleaning the beach, harvesting the eggs or protect the little turtles and have to arrive in time or else

- they will get a sanction of 2000 Colones (4 US\$) for every hour missed (rule) (Morera Ávila 2008)
- if they do not appear six times during a year or three times in a row, they will be expelled definitely from ADIO ((ADIO 2007) Article 17)

¹⁴ See the annex for a list of community works and its values.

¹⁵ See Madrigal Schlüter (2013) for an extended description of the sanctioning and an analysis, on who breaches the rules and does not contribute to collective action.

- they will feel guilty, because they do not support the collective cause, they have fought for (norm)
- others will complain about her, being a free rider (norm)
- they will pay a compensation in a common pot, which is then used for collective projects (norm)

The first or else is applied in most cases. It is very easy to be monitored and a collective supervision process takes place that no fraud is possible. Everybody sees who is coming late and this is well marked by every group leader on a list (ADIO is organised in teams).

As one realises, there are clear sanctioning rules existing and they are also graduated. Repeated infractions get a higher and even a very high sanction (complete exclusion from the Association, a sanction which has been executed various times already)¹⁶. However, we observed a huge diversity in rule compliance of different members (the height of sanction varies between 0-40% of the entire individual income from the Association). We observed that age and family membership are important factors determining the height of rule infractions.

Participating in those collective action duties, we realised that internal and external deltas definitely play an important role in rule enforcement. However, the delta parameters seem to play a different role for different people.¹⁷

Getting to know this background on different individual rule compliance shows, how institutions in use are actually determined by the understanding, the mental models and ideology of people using them (Denzau and North 1994). Once installed by the management of the Association, the tough punishment was thought to be an effective tool of coercion for collective action. However, it has been interpreted differently by various members. Occasionally it might be even evolve into a tool, which allows to manage flexibly the contribution of members according to their preferences (you can choose freely if you contribute or you get a reduction): in the official documents the payment reduction is called a sanction (ADIO 2007), in conversations many of the people don't call it a sanction but a reduction (rebaja).

In 2008 all members together invested 5060 hours in collective work, according to ADIO this corresponds to a value slightly over 10.000 US\$ (see ADIO, Informe 2008).¹⁸ Additionally to this, women are investing 12. 225 hours what converts in the calculated value of 48.000 Dollars. This work is done for protecting the little turtles when they hatch. They do not get paid for this additionally. In case they do not participate in this additional duty, they face an extra sanction. According to the design principles it is important that there is a clear equivalence between benefits and costs for a long sustaining collective action. It should be that either in the long run, they do not contribute anymore, or they protest against the rule. What we observe, however, seems to indicate the opposite. Women are much more reliable, when it comes to the fulfilment of collective duties. They face in average a much smaller amount of sanctions (Madrigal, et al. 2013), than men. When I

¹⁶ The average earning per month and member varies around 100 US\$. This results in a rather high payment for every hour invested. For many members this represents a substantial amount of their income, for many it is even their only income.

¹⁷ We observed the same for the monetary sanctions. There is a high correlation between high income sources and the amount of sanctions a member is paying see Madrigal et al (2013).

¹⁸ This is a rather high estimate. Labour costs for unskilled people are starting at 2 US\$ an hour.

participated in the cleaning up, it was very obvious, who arrives more in time and who puts a greater effort in cleaning the beach. Why are the women accepting such an “institutional deal” which rather looks unfair from the outside? Taking the bargaining theory of institutional change, one would argue that this is due to the different amount of power, which women and man have in the association. However, the rule for voting is everybody gets a vote. As first membership was open to everybody, who lived in Ostional since 5 years and now membership is inherited and you get it once you are 15 years old, it is rather unlikely that there are more men than women. Additionally, since two years the president of the association is a woman, and also other members of the board. One important woman, who was already key when the community fought for the instalment of ADIO and for getting the right of extraction, told me how ADIO brought a revolution for women in Ostional. It was the first time when women got a *nearly* equal right to income than their husbands, or better said they got for the first time the opportunity to have a regular monthly income and they do not depend anymore totally on their husbands, in relation to money. From this perspective one could probably argue that the perceived equivalence between benefits and costs is given. However, there is also a cultural mental model explanation, which might help us to understand, why this “unfair” institutional rule was chosen and why it persist. In many talks men were making clear that apart from putting away the heavy branches of the beach and carrying the huge bags of turtle eggs, the clean-up and the protection of hatchlings is clearly a women work. Some of them are so often not appearing that they seem to prefer to pay the sanction/reduction instead of working. For women on the other hand, external and internal seem to exist which even make the monetary sanction (the or else) not as necessary. Being a good women in Ostional means to appear, when collective work is done. For many men it was clear that not appearing to the collection of eggs, would also be not a good thing and they try to avoid it. It was not openly argued, but not to appear to the cleaning up events, for a men rather seems to indicate that you have better things to do and better opportunities, for example in construction, and that it is well your right, to recuperate on a Saturday, when the others are cleaning up the beach.

Conclusion

This summary paper just tried to give a first impression on how the case study will help to better understand the design and dynamics of institutions for collective action. It shows that for structuring our understanding, the grammar of institution is of considerable help, as it analytically dissects institutional statements. It also shows that qualitative data is necessary for properly evaluating the application of the design principles or other factors determining success or failure of collective action. Complex configurations of institutions, the combination of rules and norms determine the success of collective action. Therefore, we do not expect that the list of more than 30 factors determining the success of collective action in the use of common pool resources mentioned by Agrawal (2001) could be reduced very easily in the near future, if ever.

Acknowledgment

I have very great respect towards the community of Ostional, which is trying to live from and with the resource, nature has given them. A community process is never easy and obviously, you might find people who, for example, think that the best strategy is to continue extracting turtle eggs in an organised or an unorganised manner, and other might think that focussing on tourism might be the best alternative. Collective action often requires conflict. When I describe conflicts I tried to avoid making any normative judgement, because as an outsider, I cannot judge what is right and wrong. The purpose of the paper is just to try to understand, using an institutional perspective. Thank you

very much for all the openness brought forward by all the stakeholders involved in the process, might it be the old or the new leadership, might it be the people from the government or anybody else. I hope that the observations of an outsider can help to reflect on the own situation and are not the reason of more conflict.

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Annex

Cuadro 1. Actividades para el mantenimiento y manejo del hábitat para el desove de las tortugas y nacimientos de tortuguitas durante el 2008

MES	ACTIVIDAD	# DE PERSONAS	HORAS INVERTIDAS	VALOR (¢)
ENERO	- LIMPIEZA DE PLAYA Y CONTROL DE VEGETACIÓN	210	420	840000
FEBERO	- LIMPIEZA DE PLAYA, SE HICIERON RONDAS Y RECOGIÓ MATERIAL SECO (TRONCOS Y OTRO MATERIAL) PARA QUEMAR - SE QUEMÓ EL MATERIAL RECOGIDO	213	426	852000
MARZO	- LIMPIEZA DE PLAYA, SE HICIERON RONDAS Y RECOGIÓ MATERIAL SECO (TRONCOS Y OTRO MATERIAL) PARA QUEMAR. - SE QUEMÓ EL MATERIAL RECOGIDO	208	416	832000
ABRIL	- LIMPIEZA DE PLAYA, SE HACIERON RONDAS Y RECOGIÓ MATERIAL SECO (TRONCOS Y OTRO MATERIAL) PARA QUEMAR - SE QUEMÓ EL MATERIAL RECOGIDO	190	380	760000
MAYO	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN (RECORTE DE MAJAGUA EN LA PPA, CHAPIA Y QUEMA DE MATERIAL VEGETAL).	219	438	876000
JUNIO	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN Y RECORTE DE MAJAGUA	198	396	792000
JULIO	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN Y RECORTE DE MAJAGUA	205	410	820000
AGOSTO	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN Y RECORTE DE MAJAGUA - SIEMBRA DE ÁRBOLES Y PIÑUELA	209	418	836000

SETIEMBRE	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN, SIEMBRA DE ÁRBOLES Y PIÑUELA	214	428	856000
OCTUBRE	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN Y SIEMBRA DE PIÑUELA	222	444	888000
NOVIEMBRE	- LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN Y SIEMBRA DE PIÑUELA	215	430	860000
DICIEMBRE	LIMPIEZA DE PLAYA, CONTROL DE VEGETACIÓN	227	454	908000
TOTALES		2530	5060	10.120.000,00

Annex 2



Este viernes 13 de marzo a las 10 de la mañana, en el Parque de Nicoya, vamos a manifestar nuestro apoyo a las comunidades costeras e islas de Guanacaste, Puntarenas y Limón, que luchan por el derecho a vivir en sus tierras, muchas de las cuales han sido heredadas por sus antepasados.

Este día el FRENTE NACIONAL DE COMUNIDADES AMENAZADAS POR POLITICAS DE LA EXTINCION, presentará a los diputados y diputadas el PROYECTO DE LEY DE TERRITORIOS COSTEROS COMUNITARIOS.

Este proyecto ha sido redactado por 27 comunidades y es un eslabón más en la lucha nacional por el control de los recursos estratégicos para beneficio de las mayorías de costarricenses.

Esperamos el apoyo de todo el movimiento social, los esperamos en Nicoya.