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## Technical exploitation and 'ritual' management of resources in Napuka and Tepoto (Tuamotu Archipelago)

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From 1981, the atolls of Napuka and Tepoto in the Tuamotu Archipelago have been the site of an ethno-archaeological research project on the exploitation of the marine environment.<sup>1</sup> The study, covering a long time span and set in a period of economic and cultural alterations, makes it possible to analyse how the fishermen of the atoll reacted to upheavals and technical innovations. The length and continuity of this project allowed a detailed study to bring to light problems resulting from the contradictions between traditional mentalities and the use of a new technology.

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1 Conte, E., 1988. 'La pêche pré-européenne et ses survivances. L'exploitation traditionnelle des ressources marines à Napuka (Tuamotu-Polynésie française)' PhD thesis, Université Paris.

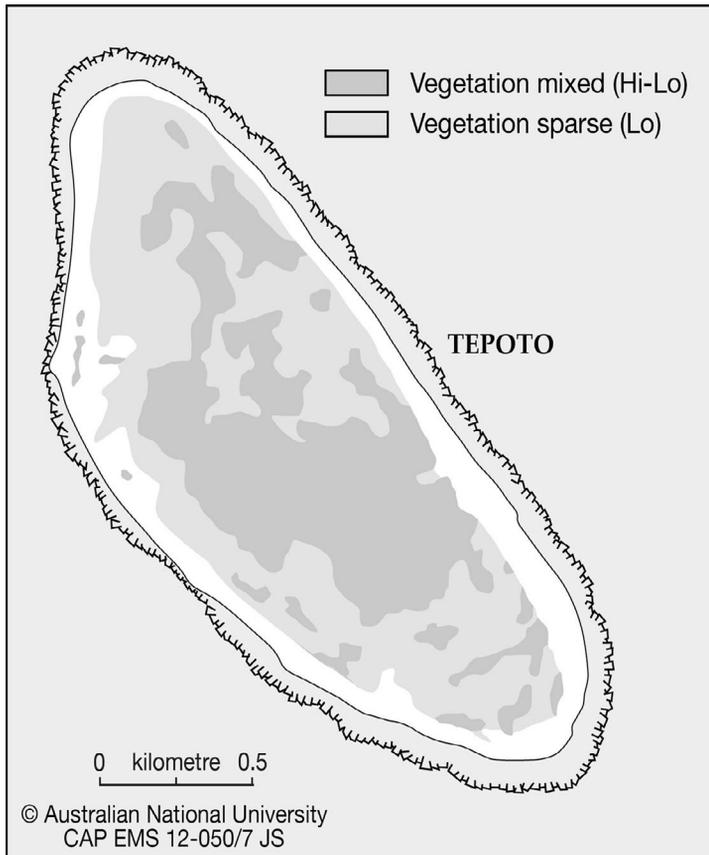


Figure 17: Map of Tepoto

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## Napuka — a Polynesian atoll

Traditional lifestyles in the Tuamotu Archipelago, including material and spiritual culture (except perhaps religious beliefs), were less severely modified post-European contact than in the other island groups of French Polynesia for reasons ranging from navigational hazards to the minimal economic importance of these islands for European colonisers. The eastern atolls, and Napuka and Tepoto in particular, can be considered as extremes in this general situation of isolation and conservatism since, in addition to the usual navigational dangers, their relative distance and isolation from Tahiti meant that European

penetration of Napuka and Tepoto occurred later than in the majority of atolls in the area. These islands were not really influenced by Catholicism until after 1878, colonial control was unable to take hold at all until the beginning of the twentieth century, and copra — that determinative source of social and economic transformations — was not exploited until after 1925. For these reasons in Napuka and Tepoto, as in other isles of the eastern Tuamotus, lifestyles that had undergone only slight changes due to Tahitian and European influence persisted until recently. These characteristics motivated the research conducted by K.P. Emory of the Bernice P. Bishop Museum in the 1930s,<sup>2</sup> and were especially conducive to the implementation of the ethno-archaeological approach that was adopted in the 1981 project. This ethno-archaeological research project on the exploitation of the marine environment as part of a doctoral thesis focused on four major research avenues.<sup>3</sup>

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2 Emory, K.P., 1934. *Tuamotuan Stone Structures*. Bulletin no. 118. Bernice P. Bishop Museum; Emory, K.P., 1947. *Tuamotuan Religious Structures and Ceremonies*. Bulletin no. 191. Honolulu: Bernice P. Bishop Museum; Emory, K.P., 1975. *The Material Culture of the Tuamotu Archipelago*. Pacific Anthropological Records 22. Honolulu: Bernice P. Bishop Museum.

3 First of all, it was concerned with the analysis of fishing techniques. Present-day practices, both traditional and modern, were studied and, in some cases, filmed. Fishing techniques that are no longer in use were the subject of oral inquiries made among the elderly people and the necessary materials were fabricated for practical research. Sometimes these were redone for the occasion, as with the capture of sharks. In general, for each technique the information collection began with preparation through to the consumption of the catch. The fact that more than 100 fishing techniques were examined allowed, for the first time in French Polynesia, a study of all of the techniques that were traditionally used in the exploitation of an atoll's marine environment. Secondly, the ecological milieu and fishes were studied. In inserting the whole array of techniques into the ecological milieu of the atoll, we emphasised the fishermen's knowledge of their marine and terrestrial environment, their interpretation of the influence of the moon, the tides and the seasons on the behaviour of fish and on the conditions of their capture.

Thirdly, a general ethno-historical inquiry was undertaken. The techniques mentioned above were placed in their social and cultural contexts as they have evolved since the end of the nineteenth century, the period that has been recorded in historical and ethnological sources. The distribution of products, the types of preparation and the culinary practices applied to them were examined in detail as well as the former rituals intended to ensure good catches, and the forms these rituals took after the introduction of Christianity.

Fourthly, archaeological research was undertaken with the aim of extending the ethnographic inquiry in order to give it historical depth. Thus, considering only the exploitation of the marine world, a given type of mother-of-pearl fishhook that has been discovered may be related to a limited range of techniques and species, but also to a certain period of the year, a kind of fishing organisation (collective, individual, by men or women), culinary practices and rituals. An identical approach was taken for ichthyological remains (fishbones), which are the other main types of archaeological evidence relating to fishing. The project also sought to identify all ceremonial sites (*marae*) that ethnographic information indicated were used in ceremonies related to marine life, including the ones for turtles caught during their season. Some of these sites were also the focus of excavations (*marae* Marokau at Napuka and, especially, *marae* Te Tahata at Tepoto) (Conte, E. & Dennison, K.J., 2009. 'Te Tahata. Étude d'un marae de Tepoto (Nord). Archipel des Tuamotu, Polynésie Française'. *Cahiers du CIRAP* 1).

These four complementary approaches make it possible for us to apprehend, to some degree, the adaptive connections linking the particular environment of an atoll with the men who peopled it, and the techniques that allowed them to take advantage of its resources. After looking into the way the exploitation of marine resources affects the daily existence of people, this essay discusses traditional resource management and its underlying logic. Lastly, it provides examples of the negative effects of technological advances on a society in which a traditional conception of man's relation with the natural milieu still persists.

## Subsistence cycles and life rhythms

Several natural rhythms of variable duration influence the lives of the atoll's inhabitants as well as their marine prey: seasons, periods of northerly or southerly swells, lunar cycles, tides, and day and night. Other rhythms that are unique to fish impose certain constraints on men, as fishers, and women as gatherers, and offer certain opportunities as to available species and the means with which they can be caught. The conjunction of these elements determines what may be called 'the exploitation cycle of the marine environment'. Atoll dwellers define this cycle in terms of the opposition of two great periods: they distinguish between *tau tapiko* (the best season) from May to November, and *tau ati* (the bad season) from December to March. The period between March and May has no particular name but covers the transition between the end of the bad season and the beginning of the season of abundance. Taking into account the lack of food resources offered by the land, this cycle of marine exploitation is also the true cycle of subsistence of the group and of the individuals whose lives are entwined within this yearly cycle.

### ***Tau tapiko* (the best season, from May to November)**

This season, which corresponds to the southern winter, is the coolest, driest and sunniest season. At this time of year the southern swells are not strong, the turtles come onshore to lay their eggs, the fish in the lagoon reproduce, and large schools of bonito cruise close to the atoll.

From May to September, the men devote themselves to the primary task of capturing turtles, which are highly prized on Napuka and Tepoto for their flesh and their fat. Turtles are taken either by diving into the deep waters close to shore during their mating season, or on land when they come onshore to lay their eggs. The research identified five ancient and modern methods of capture. Until recently, the turtle was the object of special consumption rules and vestiges of ancient rituals, which can be traced to various sources that refer to the era prior to European contact.<sup>4</sup>

In August, the lagoon fish enter their spawning period. This time is known as *tau hanu* (season in which the fish run) because the majority of fish assemble in schools of sometimes considerable size and circulate in the lagoon before moving on to the deep waters offshore where they spawn. The project identified 28 fishing techniques designed to catch these schools of fish as they make their way through the lagoon before heading out to sea. For instance, schools of fish can be caught in the lagoon by means of wreaths made with coconut palms, or with coral traps set in channels leading from the lagoon to the outer sea. The techniques for catching sharks while standing on the reef<sup>5</sup> and to encircle schools of fish that swam on to the reef were also recorded.

From October to December, bonito fishing is carried out from canoes in the deep waters close to shore with a rod and pearl-shell lure. Due to their number, the quality of their flesh and their seasonal character, bonitos are important to the economy of these islands and are also the object of specific alimentary practices and restrictions.<sup>6</sup>

### ***Tau ati* (the bad season, from December to March)**

Beginning in November/December, the weak swell that normally comes from the south turns northwards and increases. It renders fishing difficult or impossible on the reef or in the deep water near shore. In addition, fish in the open sea and in the lagoon are rare and often underweight. During this period, 48 fishing techniques were utilised: 36 in the lagoon or while standing on the reef platform, and 12 from

4 Emory, 1947; Conte, 1988, pp. 50–77.

5 Conte, E., 1987. 'Pêche ancienne au requin à Napuka (Tuamotu)'. *Bulletin de la Société des Études Océaniques* 238: 13–29.

6 Conte, 1988, pp. 245–90.

canoes offshore. Most of these techniques involve using use baits for fishing on the surface or in deep water (as with tuna). During this bad period, driven by the necessity of finding food, men are prepared to undertake more difficult and less profitable types of fishing. Most of the techniques, whether offshore or on the reef, are carried out on the south side of the atoll, which is protected from the swell. This has an influence on the distribution of settlements at this time of the year.

The gathering of shellfish, in particular giant clams (*Tridacna maxima*), also occurs at this time. Throughout the year, the giant clam is one of the food staples of the Napuka people, but during the bad days it becomes of prime importance and is often the essence of a meal.<sup>7</sup>

## The intermediate period (March to May)

Around March, the swell changes direction and once again comes in from the south. It is not as strong as that from the north, and this allows fishing on the reef and offshore. The techniques employed during the bad season are still practiced, but with greater ease. If sea conditions allow, rod fishing on the reef can be productive as the fish live close by, probably because of the calmer seas, and are able to feed better and go through a season in which they have more fat than usual. This more abundant period is also the season of the *makoto*,<sup>8</sup> a fish that is much appreciated in Napuka. Besides techniques used during the off season, 18 techniques of rod and handline fishing are known and utilised for reef fish and *makoto*, offshore as well as in the lagoon.

## Traditional management of marine resources

As with most of the atolls of the eastern Tuamotus, Napuka and Tepoto are not rich in fish resources and there are many difficulties encountered in obtaining fish. This relative scarcity raises the issue of whether there existed any real management of the marine environment, including measures to protect and, possibly, renew and augment these resources.

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7 Conte, 1988, pp. 479–92.

8 Black-spotted perch (*Lutjanus monostignus*).

Elderly people on Napuka remember certain coral clusters in the lagoon known as *kahui ngaiere*,<sup>9</sup> which, not many generations ago, constituted reserves of clams where it was possible to take clams for important occasions (collective feasts).<sup>10</sup> The chief (*ariki*) controlled these zones, prohibiting access to them or regulating their exploitation. This is a good example of conservation of an area, but only with respect to deferred exploitation, the coral beds being to clams what holding cages are to fish. Therefore, the principle of *rahui*, which was generalised throughout Polynesia and which is commonly presented as a traditional measure for protecting the environment was actually, in the form described here, a simple way to organise resource exploitation.

It must be pointed out that a zone depopulated by the use of an especially deadly technique (for instance poison) would be left to rest till such time as it was once again colonised by fish. If this form of 'fallowing' appears to be an effort to regulate marine exploitation, it can also be ascribed to the impossibility of obtaining good catches in these areas and not just a true concern for ensuring renewal of the fauna.

In the case of *pati* (milkfish),<sup>11</sup> which lives in the brackish waters at the edge of the lagoon and offshore, interventions are intended to assist in the reproduction of the species. The Napuka fishermen believe that the fish reproduces thanks to its scales and to *vare*, which is a secretion of its skin. Fishermen clean their catches immediately after having caught them, at the edge of the sea, where they throw the scales back into the water so that they give birth to new *pati*. This tentative form of stock management, regardless of whether its underlying assumptions are true, is not the common attitude amongst the islands' fishermen, which is not generally characterised by a sense of proportion or by foresight. Of course, the capture of a number of fish in excess of personal needs explains the necessity to distribute food to those who cannot fish, but cases of waste are frequent during

9 *Kahui* has the same value as *rahui*, which is better known in French Polynesia. In the areas known as *kahui ngaiere* it is prohibited to harvest clams (*ngaiere*).

10 In the twentieth century there was no prohibition on the harvesting of clams. Yet people still knew about *kahui ngaiere* and access to those ancient reservations was forbidden to menstruating women who were not allowed to harvest giant clams for fear that the remaining ones would become too lean.

11 Milkfish (*Chanos chanos*).

the season when fish are abundant, as if to compensate for the hardships endured during the southern winter, when resources were few. Contrary to logic, the spawning season is the main time for fishing on the atoll, and the fish are captured even before they have spawned.

The same contradictory logic applies to the harvesting of turtles (*Chelonia mydas*), which occurs during the mating period and, for females, at the time they lay eggs. Fishermen take advantage of this occasion to immobilise the females by turning them upside down on their shell, without waiting for them to lay their eggs. Moreover, the eggs were avidly sought to be eaten. Yet complex rituals existed, in particular for the first turtles of the season, together with certain practices and strict rules of consumption — some of which have persisted until recently — in order to guarantee that the turtles return on a seasonal basis and to ensure their abundance. Therefore, there seems to be a contradiction between the desire and the interventions to obtain numbers of turtles and the conditions of capture, which directly jeopardise the reproduction of the species. This apparent paradox, however, gives insight into the concepts that govern the relationship between men and their marine environment. For the people of the archipelago, there is no causal link between the reproduction of turtles under good conditions and their return the following year — the arrival of turtles, their number and their quality depends solely on the good will of the ancestors. As the ancestors grow turtles in the hereafter, they send them to earth as gifts to their descendants. Prior to the arrival of the missionaries, the rituals that were performed on the *marae* symbolically associated ancestors with the consumption of the first tortoises of the season.<sup>12</sup> If they were satisfied with the strict observance of the rituals, the living had proved themselves worthy descendants who fully merited their gifts. Therefore, through ceremonies, one engaged the ancestors to offer turtles in large quantities. Various more recent practices, less ‘pagan’ amongst the now devoutly Catholic population, derive from these same concepts. As with turtles, all fish are more or less considered as presents from the ancestors who were the subject of various individual and collective rituals, and were invested with important powers over the world of the living. Therefore, if one can speak of a form of management of marine

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12 Emory, 1947.

resources amongst the fishermen of these islands, this did not consist in actions taken to manage or protect the environment, but in rituals that today have become 'superstitious' practices.

Environmental protection through measured exploitation is in opposition to another concept of the men of these islands: to make the maximum use of the resources offered by the ancestors ostensibly demonstrates one's interest in them and one's need for them. For instance, if the fishermen who had captured a school of fish let part of it go free to keep only what they strictly needed, would not their gesture be interpreted by the ancestors as contempt towards their gift or proof that it had been too generous? Their fear was that in response, their ancestors would be deeply hurt by their descendants' attitude and might deprive them forever of those species of fish for which they had shown such little appreciation.

Therefore, in order to get more of a marine resource, it is necessary to harvest all that is available at any one time; the intensive or, even, excessive exploitation of marine resources is, then, paradoxically viewed as a determinative factor in the renewal of resources.

As far as we know, however, for all these concepts and acts of extreme predation, there has not been any significant decrease in resources in the past, or even the disappearance of certain species due to overfishing. Such changes have occurred only recently. It is also significant that these ritual practices in regard to the marine environment were not an attempt to preserve men from the disasters of diminished supply, in fact, they purported to bring about abundance, conserve the taste and quality of fish, and ensure their return the following year. One must remember that the limited needs of a reduced population and the relatively weak destructive capacities of these traditional fishing techniques have never placed the marine environment in peril. As the available resources have not been depleted, the practical management of the said stock did not prove necessary.

## Damage to the milieu and men

Two examples will demonstrate how this predatory mentality resulted in detrimental consequences when it was underwritten by the more efficient technology introduced by Europeans.

In the 1930s the method of catching turtles at sea with bare hands (*tango*) was replaced by a method using a metal hook (*takatu*), which the men would attach to the turtle as it started to dive towards the bottom of the ocean. The hook was tied to a rope and allowed the fisherman, once he returned to his canoe, to haul up the animal to the surface. As this new method requires less strength, breath and know-how than the traditional one, more people on the atoll were able to employ it. The number of captures increased considerably, all the more so since this type of fishing could be done from a canoe. A fisherman was now able to catch up to four turtles, which he would attach to the canoe as he captured them. In the 1950s, lifestyle and attitude changes resulted in transgressions of the consumption rules for turtles, especially that of sharing with the entire population. A merchant from Tahiti encouraged people to sell turtle meat and, with the introduction of this commercial aspect, an increasing number of turtles were caught. It was probably as a reaction to this excessive fishing that, since 1955, turtles have practically deserted Napuka and Tepoto and now reproduce on more hospitable islands. Today, even in the best years, captures are limited to only a few turtles.

The fishermen propose other reasons for the disappearance of the turtles. They trace the origin of this phenomenon, described as a catastrophe, to the abandonment of former customs, which has caused the ancestors to cease bestowing their gifts,<sup>13</sup> or to sorcery practices attributed to the population of the neighbouring atoll, or else to a curse placed by a visiting Catholic missionary who, in the heat of a dispute with the community, threatened to cause all turtles to disappear from the island.

Through these explanations, one can ascertain that, for these men, the causes of abundance or dearth are not of a material nature, or man-made, but of a spiritual and religious order and determined by supernatural forces. The mentality of the fishermen who first made use of metal hooks did not prepare them to foresee such disastrous consequences. Their habit of exploiting the environment with little concern for its depletion, their management of resources through rituals alone, the sense of excitement created by new fishing facilities and greed drove them into a hitherto unknown situation, which they perceive in non-material terms even today.

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13 According to the fishermen, individual rather than collective consumption, as well as the sale of turtle meat, represented a considerable departure from traditions.

More recently, the use of the underwater spear gun has also had debatable effects. As underwater fishing is linked with sports requiring certain physical characteristics, young people have turned away from the practice of several fishing methods, especially the deep-line fishing that is traditionally carried out where the seaward edge of the reef drops off into deeper water. For these young people, the spear gun made it possible to catch several types of fish easily, quickly and using a single technique whereas, in the past, several methods were required to obtain a similar catch. The gradual displacement of such fishing techniques by a better performing one is a normal process if taken from the point of view of technical progress, even though one may regret the resulting loss of memory of ancient methods.

More significantly, underwater fishing, which causes fish to bleed profusely, has attracted many sharks to the atolls. This endangers the fishermen themselves and hinders or even prevents certain types of fishing in deep waters (for instance tuna fishing) as the catches are almost always ripped away by the sharks even before they are brought to the surface. The fish that are captured by these techniques are generally of larger size and better quality than the ones caught with a spear gun and, thus, inhabitants of the atolls suffer indirect harm from this practice.

Easy and seductive technical innovations sometimes have negative consequences for those who were ill-prepared to foresee all their implications. In addition, technical transformations induce a new relationship with animals and, beyond that, a change in the way that men view themselves in nature. With regard to the turtle, catching and subduing it, bringing it to the surface, and restraining it on the ground, implies a close fight, a struggle between equals the outcome of which remains uncertain. The fisherman has some form of intimacy with the animal, and a great sensitivity to its reactions. Indeed, man's rapport with the turtle — a prey to be killed — was paradoxically enough in the sphere of affectivity: it was offered to him by his ancestors and it was described as gentle-natured and feminine, regardless of its sex.

Moreover, in several settings, turtles were identified with fishermen's wives and were, thus, to be treated with due care. It should be noted that the positions (*tango*) used to keep control of the animal were named like the postures of a man lying on a woman (Figure 18). Thus, in gripping a turtle, the fisherman mimicked having sexual

intercourse with his wife and, by the same token, acted like a male turtle impregnating the female. This form of symbiosis with the turtle is a compelling illustration of man's broader relationship with nature.

The adoption of new fishing techniques has shattered the deep empathy with the animal. The use of metal hooks has made the struggle unequal, tipping it in favour of man; it is no longer a man-to-man fight, as it were. The animal, now an inferior at the fisherman's mercy, has been demeaned. Flesh-piercing hooks are a form of violence that is not in the least reflected in ancient methods of bodily capture. The new aggressiveness foreshadowed the arrows of the spear gun.

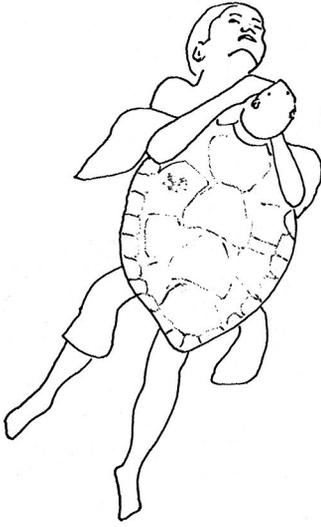
Physical distance from the animal and unequal struggle has created an affective distance, and the memory of the past sacredness of the turtle has diminished in the minds of people who have turned to Christianity. The turtle has become little more than a prey, a source of meat. It is hardly surprising, then, that individual consumption of shared or sold pieces of flesh has supplanted the collective consumption of an animal that was once viewed as the ancestors' gift to the community. The export of turtle meat from Napuka to Tahiti, as has occurred, would have once been unthinkable.

Technical changes have a broad impact on society, be it on material practices or ideas. In small island communities, their effects are sometimes harmful, especially when innovations brought in from outside conflict with traditional usages and conceptions. Traditional methods of managing resources, whether they are practical (as with the conservation of giant clams) or based on alimentary taboos or rituals, are no longer observed these days. Conversion to Catholicism and opening up to the twentieth-century world has gradually, albeit at an uneven pace, eroded the old ways of thinking and acting. The broad transformation of society encompasses technical changes and the shedding of some taboos and practices as part of a process in which the people of the archipelago are indissolubly both the agents and the products.<sup>14</sup>

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14 I would like to thank my friends, Pr. Pat Kirch and Dr Léopold Mu Si Yan for translating the French version of this text into English.

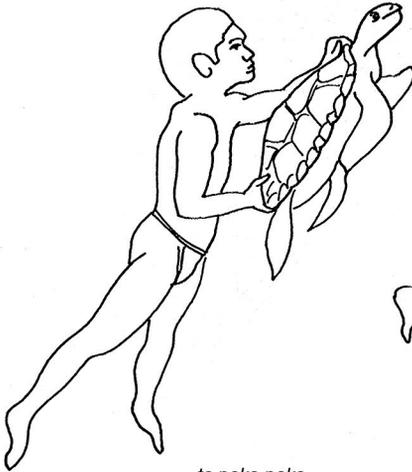
5. TECHNICAL EXPLOITATION AND 'RITUAL' MANAGEMENT OF RESOURCES



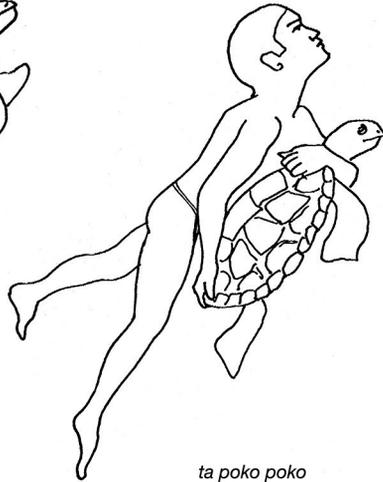
*ko aro*  
(face-to-face)



*faka urunga*  
(to hold on)



*ta poko poko*  
(by the cavity of the shell)



*ta poko poko*

Figure 18: Various turtle-catching methods used by divers (the two in the lower part are variants with a similar name)

Source: Conte, 1988, Part 2, Vol. 1, p. 24

This text is taken from *The Rahui: Legal pluralism in Polynesian traditional management of resources and territories*, edited by Tamatoa Bambridge, published 2016 by ANU Press, The Australian National University, Canberra, Australia.