

How *atob* came to be - the evolution of stone tidal weir in the Philippines

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ABSTRACT

Stone tidal weirs suggest evolutionary stages of how the human-natural world interacts. From it, “commons” is reflected in the social and cultural milieus among indigenous/local communities. In the Philippines, an *atob* is a stone tidal weir built on a gradually sloping reef by piling up stones as a barrier to sift sea creatures carried by the receding tide. This presentation is based on three data sets that will explain how *atob* came to be. The first set consists of the *atob* itself. The second set is composed of four related versions of the *atob*: (a) a simpler weir namely *atob-atob* 1, a fish aggregating device (FAD) of stones where fish are caught by hand, (b) *panihod* which is like *atob-atob* 1, except that fish is caught thru a basket, (c) *atob-atob* 2 which is not exactly a trap, but an enclosure like a pool to stock live fish for later use, and (d) the *mirakolhol* (miracle hole), a dug-up hole like a basin. The third set is the *panapok* (< *pang-* ‘instrumental affix’ + *tapok* ‘to pile up’) or *pangatob*, (< *pang-* + *atob* ‘to trap’) built in shallow waters that combines FAD with an encircling net dropped from the boat. *Panapok* or *pangatob* is the missing link to the evolution of the *atob*. Two methods of analysis are utilized, i.e., a comparative study of material culture, and a semantic analysis of the terms used in naming and describing the weirs.

In archaeology, the simplest artifact is often identified as the oldest. Could these weirs with the same features - stone structure, reliance on the tide, and an enclosure - be one and the same, differing only in the stages of their development as trappers reckon their natural world? My data came from field research between 1990 and 2010, historical materials, and ethnography.

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INTRODUCTION

Traps such as *atob* are intended to lure fish like an aggregating device. The means of gathering the fish vary in many ways. Three data sets are presented here to connect them as an associated method of fishing, thus answering the possible transformation from a simple to a complex *atob*. The first set of data describes how the *atob*, in principle, can trap fish. An example of an *atob* with a catchment or mouth is presented. The second set includes *atob-atob* 1, *panihod*, *atob-atob* 2, and *mirakolhol*. For fish to take shelter and become stuck when the tide recedes, the *atob-atob* 1 waits for the tide to come in. A similar method, the *panihod* involves breaking up or scattering the stone pile in order to direct the fish toward a basket of the same name. *Atob-atob* 2, on the other hand, is a man-made pool surrounded by stone walls used to store live fish. In a similar manner, a *mirakolhol* is a man-made hole filled with tree branches and some coconut leaves to entice fish into seeking safety and thus, get trapped. The third set is composed of *panapok* or *pangatob*, piled-up the stones that are two fathoms below the water. Left alone for weeks, fishers return in a boat with a net after some time. A net is dropped around the pile of stones, then divers scatter the stones for the fish to swim toward the net.

1.0 *Atob*, stone tidal weir

On progressively sloping reef tides, long stone walls known as *atog* or *atob* are constructed in the form of a horseshoe. The stone walls are breached by seawater during high tide, confining the nearby marine life as the tide recedes (Zayas 2023). The "mouth" or *taun*, a crucial catchment element, is located at the lowest ebb. These fish weirs were constructed along the coastline of a few islands in the Central Philippines. Designed to catch fish swimming above the pools as the tide comes in and release

them as it goes out, imitating the ability of even the most primitive people to catch fish with their hands in natural pools, Nishimura described the weir as:

a man-made [sic] replica of the natural hollow found in rock or coral reef, which the ebbing tide fills with water. Copying the principle of the natural pool, in which even the most primitive [sic] people are able to catch fish by hand, piled-up stones are used to form artificial basins and are so positioned that fish swimming above the pool at tide are caught in the weir as the tide recedes. The more complicated construction of the stone fish trap, which also relies on the ebb and flow of the tide, includes a stone wing that forces the fish to enter the catching base (Nishimura 1968, 23).

There are four features of a stone tidal weir: it is dependent on the ebbing tide; it has a natural hollow or constructed basin on the reef; it has piled-up stones; and it has a wing (leader) that directs fish into the catchment (mouth). These features that can be gleaned in some of the fish traps in the following sections.

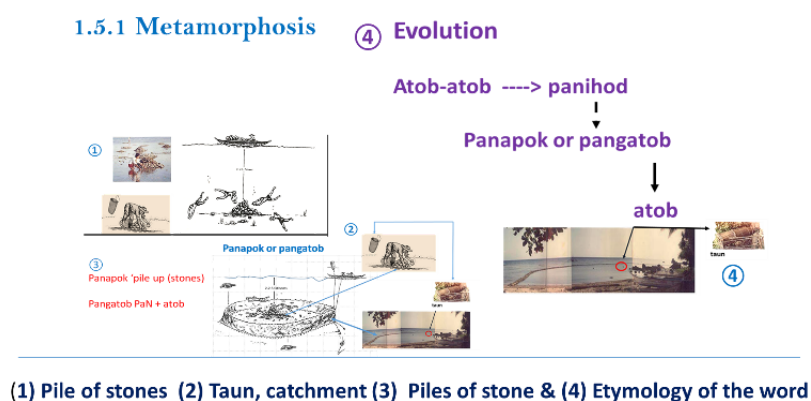


Figure 1 Metemorphosis

1.1 Origins of the term *atob*

Atol is a cognate term of *atob*. *Atol* is mentioned in 1711 CE a river fish trap in Mateo Sanchez's *Vocabulario de la lengua bisaya*. Francisco Alcina (2004) used a similar word, *atub*, to describe a large animal deadfall trap or snare roughly 60 years before Sanchez. Alcina described it as a device that forms a narrow passage with stakes and sets a trap between the stakes, adding some large stones on top for greater weight. The trap is suspended and falls by walking over or touching a smaller stick, which they refer to as *gisui*, catching the crocodile below and crushing it with the smaller stick.

1.5.2 Etymology and stone

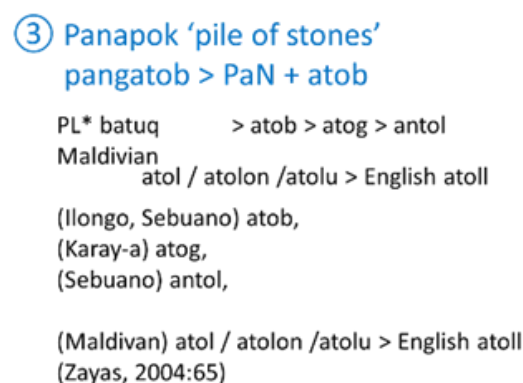


Figure 2 Etymology and Stone

1.2 Etymology of the term

Atol is cognate word for *atob* or *atog* in Eastern and Western Visayan languages. The English word *atoll*, defined as a ring of coral rock arranged around a lagoon, is a word that has been borrowed from the Austronesian languages where Philippine languages belong. *Atob*, *atog*, *antol*, and its variations are characterized as a coral stone wall built along tidal flats for the purpose of collecting fish during ebb tide. The two Hispanic sources mentioned above offer an intriguing perspective on the true purpose of the trap. The *atol* of the sea and the *atub* of the marshland alludes to specific concepts about trapping technology that may provide a hint to the theory of the genesis of hunting implements among pre-Hispanic peoples. Or, possibly, they allude to anything regarding a cultural tradition of the lithic age and the connection between land-based and marine traps. This is inferred from a belief that Megalithic culture originated in Southeast Asian mountains during the Mesolithic Period. Linguistically speaking, the nautical equivalent of the megalithic civilization on land is a stone tidal weir (Zayas, 2004:560).

1.3 *Atob* from proto-Philippine *batú? ‘stone’

It has been established that the word *atob* comes from the proto-Philippine *batú? ‘stone’ which is *bato* in many Philippine languages (Paz 1988). It undergoes metathesis, resulting in the initial consonant *b* ending up in final position, i.e., *bato* > *atob*.¹

Three fundamental components of a tidal trap are revealed by analysis of names given to variants of *atob*, such as *hubas* and *sada*, which are also close to the definition of the *atoll*. These components are a stone wall, an enclosure, and an ebbing tide. This suggests, based on linguistic data, that an *atob* can only be made of stone and that it may be one of the earliest types of fishing equipment in the Philippines, if not the oldest (Zayas 2004, 56-57). It is noted that *atob* construction is very versatile. As it is small-scale, it can be modified using other materials such as nets, bamboos and/or wood. I shall describe these later.

1.5.3 Imitating nature

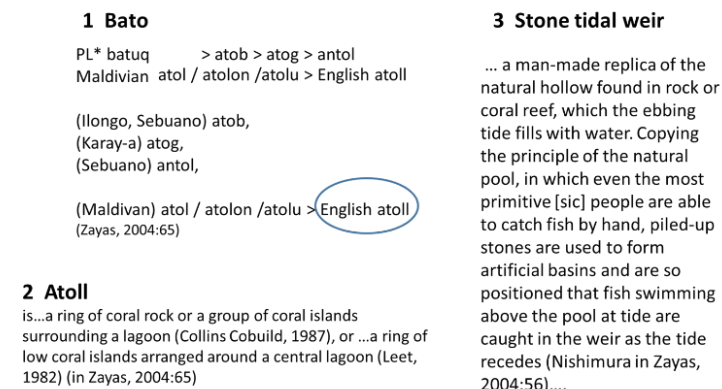


Figure 3 Imitating Nature

1.4 *Atob* of stone, reliance on tides, and an enclosure

An *atob* structure is made of stone. It is also a barricade of stones, a mound of stones, and a fish corral of bamboo matting reinforced with piles of stones. Its reliance on the tide can be gleaned from the Bikol languages that refer to ebb tide, i.e., *hubas* ‘ebb tide’, *hubasan* ‘place of ebb tide’, and *unasan*

¹ In my conversation with the linguist Yamada Yukihiro, he surmised that the metathesized form *atob* from *bato*, mentioning the word stone might have some taboo element.

‘ebb tide’. Finally, as an enclosure, the terms *panada*, *sada*, *sara* and *serada* are Bikol loan words from the Spanish word *cerrar* ‘to close’. These terms are defined as stone barricade built on reefs near the shore for catching rockfish during the receding tide. Literally, the term means the act of fishing with the *sada* or reef barricade (Umali 1950, 130, 147, 151, 152).

2. Atob-atob 1, Panihod with Atob-atob 2 and Mirakolhol

Along the tidal flats of Dumaguete City's renowned coastal promenade, Nisi Banay-banay's *atob-atob* 1 is piled high. When the tide is low, he visits these piles to collect any fish or other aquatic life that sought refuge. He scatters the stone to drive the fish out of the pile. He would later reconstruct his *atob-atob* after switching from one pile of stone to another. Nearby is an *atob-atob* owned by Antonia Teves. I learned that her catch in one pile consisted of a variety of coral fishes, native abalone, sea urchins, and a few shells.

Akin to Banay-banay's pile of stones, there is a mention of a similar method of fishing, except that a basket of the same name, *panihod*, is used as reported by my colleague Ms. Mary Jane Calderon-Hayhow (1994, 431, 458) on the same coast. *Atob-atob* and *panihod* are similar, but *panihod* harvesting requires knee-deep water and a basket. *Pan-+ ihod/sahod* is a Bisayan expression that means ‘to catch through the flow of anything with a container’. To guide the fish toward the container, the basket is placed between the fisherman's knees.

Despite sharing the same name as *atob-atob* 1, *atob-atob* 2 is designed to store fish for later consumption or to raise undersized catch for future use. It is built of stone piles, much like an *atob* (Zayas 1964, 91-92). Meanwhile, *mirakolhol* (< miracle hole) is a term given by those who introduced the weir from a government agency. It is a hole that has been dug, lined with stones, and filled with coconut leaves and tree branches. Its purpose is to draw captive fish into the pit, where they can find protection even if the rising tide forces them to leave.

Because they are not constructed on sloping tidal flats, *atob-atob* in Gigantes and Dumaguete are stone fish traps rather than stone tidal weirs. In addition, there are no stone walls with a horse-shoe shape there. The *mirakolhol* has elements of FAD incorporated in the shape of old tires and tree branches while physically resembling an *atob*. It also serves as a pond for stocks of live fish (Zayas 20004, 64).

3. Atob and taun, the commons, and other inhabitants

A non-return valve hidden in the deepest part of the stone walls is the *taun*, a bamboo trap owned by Tranquilino Chavez. Chavez's *atob* at Tinigbas, Antique was shaped like a crescent moon and measured roughly 109 meters long and 59 meters wide. Children, mothers, and some elderly folks gathered here during low tide for their supper's side dish. Not against the law for these gleaners to enter the *atob*, they picked up shells, little octopuses, prawns, and seaweed with their hands or some basic tools. However, they are forbidden from touching Mr. Chavez's *taun*. When the catch is good, he does share these with his family and neighbors. The *atob* is not privately owned, but the *taun* is (Zayas 2011, 72-73).

An *atob*, per se, cannot be owned by anyone. The village owns the reefs and intertidal flats as common property. The stone tidal weir's “accidental” presence does not imply ownership of the area. However, the builder can claim the catchments, known as *taun*, and the stones used to construct the weir as his, giving him the appearance of ownership because he can harvest from his *taun* and sell the stones if he so chooses. Sometimes, stones are just picked up and used again to construct a new *atog*. (Zayas 2009, 126).

Until recently (about 2006), family members and neighbors shared the fish, shells, and other items trapped in the weir after the owner had his fill. While adults collected shells clinging to the stacked stones, children would play inside the weir. Essentially, weir construction is community-based on

large or small scales. Communities' social formation often revolves around the *atob*'s construction, repair, production, and distribution of catch. Ownership is not about the relationships among members of the community and the weir per se, but about customary relations among people that evolved as a result of constructing the weir and using it for their own benefit (Zayas 2011, 72-73).

Sharing the goods without having access to that area suggests that nobody truly controls the sea. Users never act as owners, just as stewards. The concept of the commons for weir owners partly involves sharing fish during ritual activities with other people, as well as with sea spirits. Fishermen think spirits or other beings who are not like us also inhabit the sea. Extensive festivities are held to usher in the fishing season. In a place with humans, spirits live alongside them.

CONCLUSION

A stone tidal weir called an *atob* is used in the Philippines to screen marine creatures brought ashore by the receding tide. It is built on a reef that slopes. Simpler traps, such as a mound of stones broken up to drive out fish and catch them by hand, or a similar pile of stones but with the disaggregation aimed at a waiting basket, a pile of stones can also show how an *atob* works. Specifically, it has a mouth where a *taun* basket, where the water emerges from the barricade's lowest point, is situated. As the name suggests, *atob* is shown here as the stone fish tidal weir. Looking at this trap's evolution from simple to complicated reveals how local expertise has enriched its more complex form across a range of situations. It isn't implied that this is how the *atob* evolved; rather, it merely describes some of the ways it might have progressed as the environment required. At first, there was a heap of stones at the coast, waiting for the ebbing tide to trap aquatic life. The identical pile of stones is then spread in a different manner when the tide is knee-deep. Organisms in the trap are steered toward a basket that is positioned between the trapper's legs. The same-named trap's *panihod* basket serves as a description of what it is. Two examples of innovations or adaptations to the environment are: (1) dispersing stones when the water is below the knees in place of dry tidal flats; and (2) using a *panihod*, a basket, to catch fleeing species. In deeper water of two fathoms, *panapok* or *pangatob*, the same stone pile is repeated. However, the divers' practice of spreading the stone while enclosing the pile in a double net is novel. Eventually, a traditional stone tidal weir resembling an *atob* or *atog* is created. This trap has the same features as the earlier ones. reliance on the tide, use of a stone barricade in place of a pile to scatter fish, removal of stones from the pile to replace the *panihod* basket, the replacement of the surrounding net with a stone barricade intended to trap fish, and finally, the return to the fundamentals of *bato* becoming *atob*, show how trappers have imitated nature.

This paper used the association of parts and functions of the weirs to show how similar fishing techniques can shed light on an ancient fish weir's origin and potential evolution. The Philippine counterparts are smaller in scale than the enormous ones found in the Penghu archipelago. It is also an individual or household-type managed fishing method, not clan- or community-based. Due to its portability, it may be modified according to the islands' weather, wind, and vegetation. In retrospect, the Philippine islands have this type of weir, which is characterized by small-scale stone tidal weirs. Due to their size, they can easily be recycled after usage or transformed into a different type of weir using various materials. Think about how little stones (in comparison to those in Taiwan) can be combined with bamboo and a net. By adding additional power in this way, it becomes stronger. The redesigned weir can also be relocated from one spot to another based on wind or current movement. The presence or absence of mangroves has an impact on where the fish trap is placed as well. The latter is crucial since over the past few decades, mangrove habitats have been transformed into fishponds because of demands from overseas. In particular, shrimp are in high demand. When mangroves are eliminated, fish stop reproducing because they no longer have a place to hide and food to eat. In the Philippines, stone tidal weirs function as fish aggregation devices and draw varied marine creatures, encouraging biodiversity both within and beyond their boundaries.

This communal fish weir embodies the notion of the "commons." To be clear, an *atob* per se cannot be owned by anybody; the reefs and intertidal flats belong to the village as common property. The “accidental” presence of the stone tidal weir does not suggest ownership of the territory. But since he can harvest from his *taun* and sell the stones if he so chooses, the builder can claim ownership of the catchments, or *taun*, and the stones used to build the weir give him the illusion of ownership. To build a new *atob*, stones are occasionally just taken up and put back together (Zayas 2009, 126).

Acknowledgments

Field research in Panay was undertaken with the assistance of Lilian dela Peña in 1992 and 2006.

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