Strandbeests

Theo Jansen, Animaris Percipiere, Ijmuiden, The Netherlands, May 2005
Animaris Percipiere (morning).

Dutch artist **Theo Jansen** has created his own genesis, raising fantastic beasts out of plastic tubing. Photographed on the beach near his lab in Ypenburg, these great sculptures have a mythical resonance far beyond their physical make-up. Here he explains the inherent qualities and restrictions of working with this ubiquitous yellow electric cabling that lends itself to playful experiment and accidental evolutions.

Animaris Percipiere (evening).

In Germany they have grey plastic tubes, in America they make them of metal. Every country has its own kind of tube. Today, Dutch plastic tubing is yellow. In the late 1940s the insulation used for electric cabling was nowhere near as satisfactory as it is today, so it was decreed in the Netherlands in 1947 that all electric wiring must be encased in plastic tubing (or conduit as it is known in the UK). The country has produced something like 6 million kilometres (3.7 million miles) of tubing since then. It can be found among rubble in skips, tied to the roof racks of delivery vans, or lying about in the street. In the 1980s Dutch manufacturers changed the colour of the tubing from white to the yellowish hue it still has today.

I first used tubing as early as 1979 to make a flying saucer that flew over Delft and caused a near riot. Hula hoops were made from this tubing in the 1960s, and it was also popular among kids who used it to make blowpipes for firing paper darts with messages on them. The mere possibility of this form of airmail delivery fascinated me.

Exposure to sun and rain causes the current yellow tubing to fade to the same white it once was. It also becomes brittle and bone-like with time. In the beach animal boneyard at my lab in Ypenburg near The Hague, fossils of extinct species can be seen bleaching in the sun. Their age can be estimated from their colour.

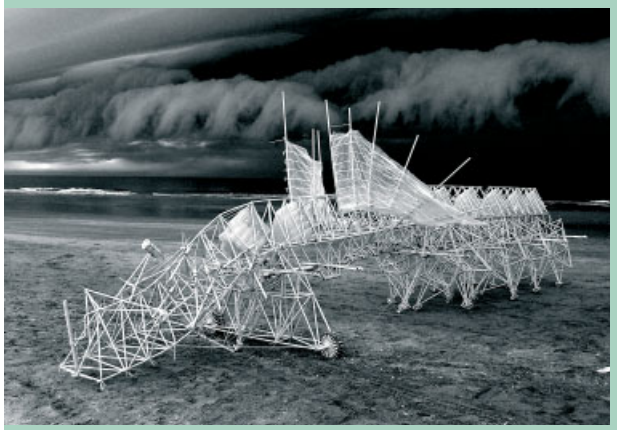
In the Netherlands, plastic tubing costs 10 eurocents a metre, which means that a large beach animal 10 metres (32.8 feet) long, 4 metres (13.1 feet) wide and 4 metres (13.1 feet) high uses about 100 euros of tubing. The first obstacle on the path to artificial life was the problem of connecting the tubes: how were they to be fastened together? I started by sawing pieces of tube and winding adhesive tape around their extremities. Out of this first means of fastening came the first beach animal: Animaris Vulgaris. This adhesive tape period was brief, lasting only a year.

We know that nature consists largely of protein. I, too, want to make my own life forms from a single material. You can use protein to make skin, eyes, lungs. Protein is multipurpose stuff. And so is tubing. It is flexible, but exceedingly rigid when used in a triangular construction. You can run pistons through it, store air in it, all sorts. I only discovered the wide range of its uses after many peregrinations through what I call ‘being-able’ country. Given the restrictions of this

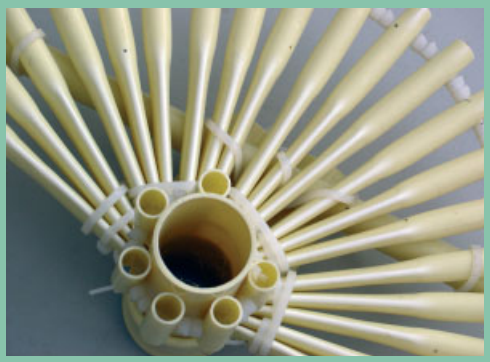
Animaris Percipiere (sea foam).

Animaris Rhinoceros.

Animaris Percipiere (sea foam 2).

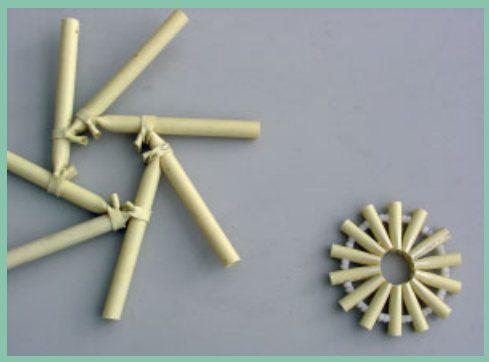


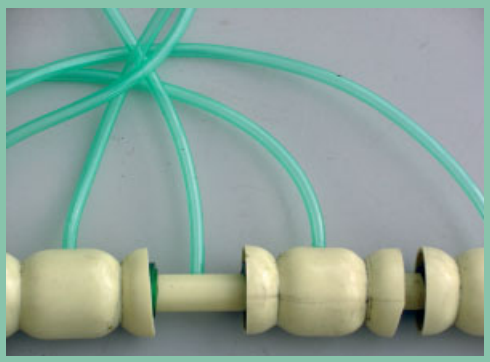
Animaris Percipiere (storm).



Animaris Percipiere (storm 2).

Test components and joints in yellow plastic tubing.





material, I was forced to seek out escape routes that were neither logical nor obvious. The strategy I followed is the reverse of that taken by an engineer.

Suppose that engineers at a university of technology were to be commissioned to make something that could move of its own volition along the beach. What would you expect them to do? You can bet your life they would respond in months and also that they would have assembled stainless-steel robot-like devices armed with sensors, cameras and light cells. Devices that are first thought out and then assembled. That is how engineers work. They have ideas and then they make the ideas happen. First they pore over books, then they open all the drawers in their workplace and take out what they need. It is a working method that, no two ways about it, gives rapid and reliable results.

However, the idea for the beach animals was not determined this way. They evolved from an accident after I had been fooling around with plastic tubes for quite some time. It was as though the beach animals led me to make them by sheer chance. Remarkably, chance is more likely to play a role when there are restrictions. Financial restrictions, for example, may mean that drawers in the workplace stay closed. This necessitates looking for other possibilities elsewhere. During this search, new ideas automatically emerge, ideas that are often better than the ones you first had.

Searching and fooling around is a long way of going about things; your destination has yet to be decided. You park your car along the hard shoulder and scramble down the bank, machete in hand, hacking a path through the undergrowth. You will probably never arrive at a destination in the accepted sense of the word, but you are very likely to call in at places no one has ever been before. What is handy about this method is that found materials are made to devise or invent.

Though I did my best to escape nature, I could not avoid resorting to its principles at times.

One occasion was when I was developing new legs for the Strandbeests. I could find no better, energy-efficient device for perambulating across sandy surfaces than those already in existence. I do not think there is anything that can beat good old legs. Now I am working on muscles, nerves, brains. I was not looking for them, but they happen to come in handy if you wish to survive on the beach. Survival is also reliant on food, defence and reproduction. The food of Strandbeests is wind. They get their camouflage from sand clinging to the adhesive tape (Animaris Sabulosa), and they reproduce by cannibalism (Animaris Geneticus).

I take comfort in the thought that these parallels have occurred in biological evolution. Consider the fish and the dolphin. They are unrelated. But as we know, the dolphin is a mammal, the fish is a fish, and yet they still have more or less the same shape. Evidently nature could not come up with an aquadynamic form other than that of the fish: fattish at the front and gradually narrowing to a point at the tail. I have come to empathise with creations such as this. Not just in the tussle with stuff, but also in the sheer pleasure of evolving and making. You cannot imagine the excitement that possesses me when something works, even though it may be a mere detail. Δ