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The Story of the Plastiki



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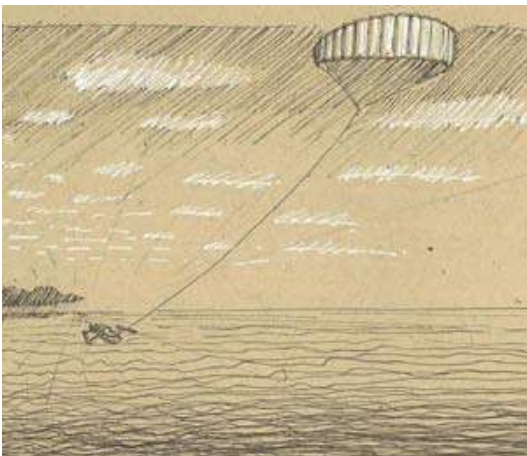




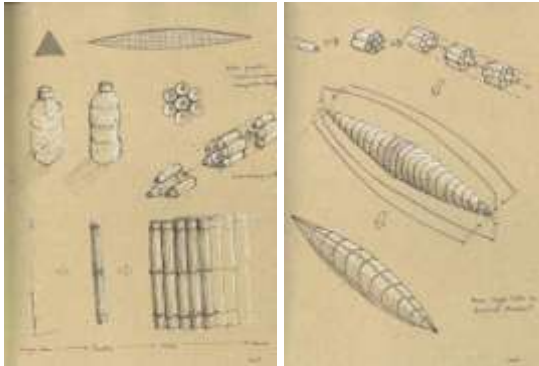
David de Rothschild conceived the idea of the Plastiki after reading a report 'Ecosystems and Biodiversity in Deep Waters and High Seas' by UNEP which indicated that the world's oceans were in serious threat from pollution, in particular plastic waste. During the first phase we invited a team of experts to help us in answering the question "could a fully recyclable performing vessel be engineered almost entirely out of reclaimed plastic bottles, cross the Pacific whilst demonstrating real world solutions?"



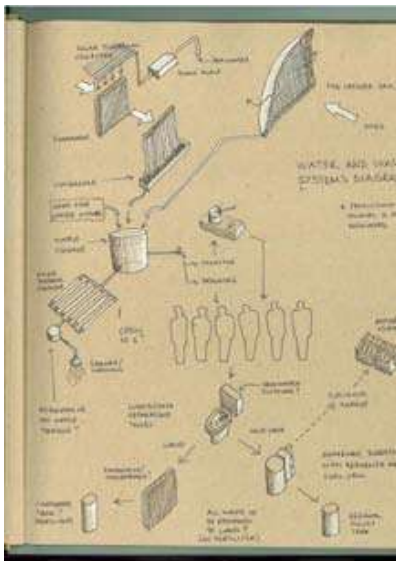
The Plastiki is part inspired by the famous Kon-Tiki voyage - the expedition, led by Thor Heyerdahl, sought to prove that Polynesian settlement by South American explorers was possible. He did this by assembling a raft made from carved out balsa husks, and then floating west from Peru utilizing the trade winds.



This is an early idea by the Plastiki concept architect, Michael Pawlyn; the Plastiki could be pulled along by a large kite sail. The kite was thought too cumbersome and it was decided that the boat should be a fully functioning yacht, with trimmable sails.



Fitting the bottles together in the right way was key to producing a solid structure. Inspiration was largely taken from the formation of a pomegranate which packs together many soft seeds to create a hard outer structure.



Even during these early day designs, the Plastiki aimed to be fully sustainable throughout, powered by renewable energy systems such as solar, wind and sea turbines. This sketch shows some of the original ideas for water systems on the boat which used condensation and desalination to provide water on board.



Based on the early designs Michael Pawlyn produced a model, providing a three dimensional example of what the final boat could look like.



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The Plastiki team tested out a lot of materials before producing a prototype. Here Expedition Coordinator Matthew Grey experiments with structures made from bamboo.



The Plastiki is made from approximately 12,500 reclaimed plastic soda bottles which have been fixed into the pontoons. These provide the boat with 68% of her buoyancy.



Fitting and keeping the plastic bottles in the pontoons presented a logistical problem. No other boat has been made of plastic bottles like this – the team would need some clever solutions to make sure the bottles stayed in and that the boat was controllable - as well as buoyant.





Various methods for grouping the bottles were trialed; they had to fit well together to provide strength and buoyancy for the boat.



The team set about building a prototype of the Plastiki; this was a new way of approaching naval design and required a lot of planning, testing and ultimately trial and error.



The basic hull structure of the prototype is finished; the bottles will now need to be added.

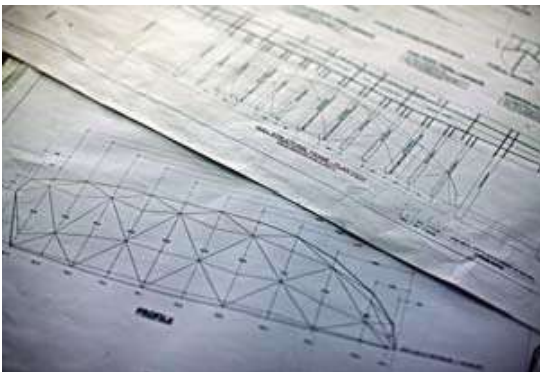




For boat builders, a smooth exterior to the hull of a boat is essential. To ensure the Plastiki is as streamlined as possible, the bottles are filled with dry ice, making them solid and consistent – whilst retaining their lightness and buoyancy.



A prototype was built and floated on the San Francisco harbour - while she floated well, the small catamaran was quite unwieldy. More work would need to be done to create an ocean going vessel that could handle the rigors of the open sea.



Early plans for the cabin of the boat





Architecture for Humanity - the international sustainable and disaster relief organisation were involved in the design process for the entire development. Here's founder Cameron Sinclair inside a 'sketch' of the cabin.



Nathaniel Corum, from Architecture for Humanity, is inspired by natural biomimicry, this incorporates designs already existing in nature. In this instance Nathaniel took inspiration from eggshells for the cabin design. Whilst thin, they're capable of withstanding tough outside pressure, the same as the Plastiki cabin.



After experimenting with a range of materials it was decided that the Plastiki structure would be made almost entirely out of a new material called Seretex, a self-reinforcing PET. Here is a beam being held together by a mould, this will then go into the ovens where it will be heated to very a high temperature.



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The finished Seretex beam being held up by a very happy Plastiki crew - developing this material was a huge corner stone in the project.



The beam will help form part of the structure of the Plastiki.



Key points reinforced with solid steel.



The Plastiki is made by welding sections of Seretex panels together to form the basic boat structure around which the bottles are fastened.



The skeleton of the Plastiki is made from a strong 'smart plastic' – Seretex, a plastic which is fully recyclable.

This image shows one of the large panels of Seretex which forms the basis of the pontoons.

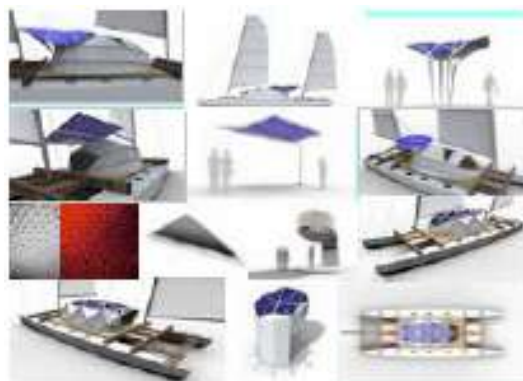


The components of the structure are interlocked for strength.





Bulkheads slotted along the pontoon centre panel.



The electricity systems on the Plastiki are crucial. The vessel will need to generate enough electricity to power essential navigation and communication systems. These solar panels, designed by Jason Iftakhar are one aspect of a mini power station which also includes electricity bikes and a wind turbine.



To allow the public to explore the Plastiki project; Mission Control, an exhibition showcasing the processes and ideas behind the expedition, was set up at Pier 45 San Francisco.



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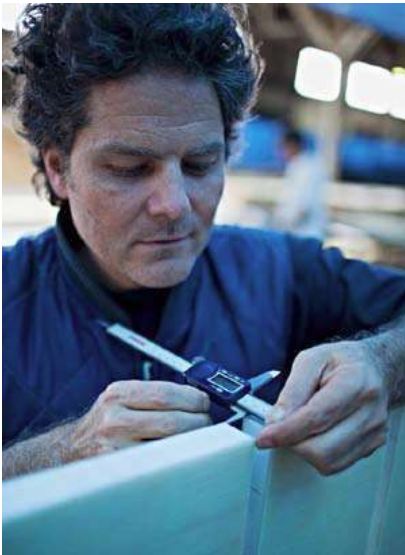


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Here the build team carefully measure and fit the Seretex panels.





The Plastiki plastics experts; Greg and Mike.



It was important for the Plastiki to avoid the toxic materials often used in boat builds. A special fully organic glue was developed using cashew nut husks and sugarcane and was applied at places within the structure that required secondary bonding.





Andy Fox, the Plastiki boat builder in discussion with expedition leader, David de Rothschild.

The Plastiki superstructure. The boat is almost ready for the 12,500 reclaimed plastic soda bottles to be added.





Matthew Grey, Plastiki Expedition Co-ordinator seen here working on the solution to filling the Plastiki pontoons with plastic bottles.



Matthew carefully positions the plastic bottles.





All the lower quarters of the boat now have bottles attached using Matthew's intricate system of PET tubing, sleeves and brackets. He now works on fitting the upper section with bottles, which is more straight forward than the tapering underside.



Most of the bottles have now been positioned in the hulls.



The Plastiki cabin under construction.



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Nathaniel Corum from Architecture for Humanity, with Plastiki skipper Jo Royle.



Cabinets fitted within the cabin, including cooker, storage - and an escape hatch!



Construction of the bunk beds within the cabin area. The Plastiki is designed for six people to live and sail on board at any time.



A proud moment for the team. Before dawn, the Plastiki is wheeled out of Pier 31.



The Plastiki being hoisted before being carefully placed onto the water for the first time.



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Water rushes through the exposed bottles of the Plastiki hulls as the boat courses through Pacific waters in the first days of sea trials.



The Plastiki is moored at the San Francisco marina during sea trials.



The sails, some of the first in the world to be made from recycled PET, are installed atop the Plastiki.





The Plastiki sea trials in full swing in the San Francisco Bay harbour.



David stands on top of the Plastiki cabin taking in the sights of the harbour.



Plastiki skipper Jo Royle and crew plan out their route for another day of sea trials.



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Co-Skipper David Thomson sailing the Plastiki through the San Francisco bay.



The sails are one of the first to be made from recycled PET. The masts are made from aluminium irrigation piping and consist of 98% post consumer billet.



Some 12,500 reclaimed bottles fill the hulls of the Plastiki - providing approximately 68% buoyancy.





Jo Royle, skipper of the Plastiki, sails her through the bay during a session of sea trials.



The Plastiki sailing in front of the Golden Gate Bridge.



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Expedition leader, David de Rothschild and Skipper Jo Royle stand aboard the Plastiki



The crew; David de Rothschild, David Thompson, Jo Royle, Olav Heyerdahl and Josian Heyerdahl meet the press to answer questions with San Francisco Mayor; Gavin Newsom (second from left).

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The Crew take part in a traditional Polynesian blessing of the PlastikI.



The crew take the PlastikI for an extended sea trial into open waters for 3 days; testing her capabilities to ensure that she's ready for the expedition.



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The crew wave goodbye to family, friends and supporters as they leave San Francisco Bay on day one of the Plastiki expedition.



Here David tends the vertical hydroponic garden. Plants and leaves that will thrive in a salty atmosphere have been chosen to ensure that they provide the crew with nutritious greens throughout the voyage.



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Here Skipper Jo Royle packs the fresh fruit and vegetables that will last a couple of weeks into the voyage. Without a fridge onboard the team have needed to be innovative in their preservation methods; sourcing local, sustainable produce to be canned, dried and stored pre-departure.



Co-Skipper David Thomson keeps an eye on the navigation centre during a watch.



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A number of systems are constantly in use on the boat; here a crew member pumps fresh water.



Keeping in touch with the on-shore Plastiki crew is important to ensure the safety of the crew as well as staying on the correct route. The crew also spend some time writing blogs about their experiences to update the watching world and the Plastiki community.





The 12,500 reclaimed plastic soda bottles remain tightly secured to the catamaran.



The crew constantly assess the boat for ongoing maintenance and repairs. Here the crew are presented with a rare opportunity to check the underside of the hulls.





The Human Dynamo bike provides not only exercise for a 6 person crew living in 60ft x 20ft of space but also produces energy to sustain the boat's electrical systems.



Whilst at sea the crew maintain a gruelling 3 hours on 3 hours off watch rotation. Here the cabin is illuminated during a night watch.



The crew have managed to catch only 3 fish in 40 days, whilst during the Kon-Tiki expedition 40 years previously the crew ate freshly caught fish every day and couldn't enter the water for fear of sharks. The Plastiki crew have seen no sharks during their expedition so far.



Coming closer to the Line Islands the crew were grateful of a tropical downpour. After 40 days at sea they were running low on drinking water. The water catchment system filtered the rain into the tanks, tiding them over until they reached Christmas Island 5 days later.



The crew's first sight of land on the approach to the Republic of Kiribati, Christmas Island.



A very warm welcome was extended to the Plastiki crew from the local community of Christmas Island.