Interview and photos:
Peter Symes
Supplemtary product photos and historical images courtesy of Force Fin

Jean-Michel Cousteau tries out the Force Fin Design that Bob Evans designed for his team

Splitting Fins

A conversation with Bob Evans

Our talks with Bob Evans were just full of good ole plain fun, with lots of laughs and entertaining anecdotes, yet serious and focused on the subject. From the first impression, he was open, welcoming and very conversational. Inventor of the legendary Force Fin, multiple award-winner and industry legend with a long list of merits to his credit Bob Evans is obviously both multi-facetted and multi-talented and impossible to fit into any of the usual stereotypes boxes. Here are some of his thoughts on the connection between shape and function.

When were you first attracted to the ocean?

My great-grandmother had a summer house in Hermosa Beach, California. My grandmother taught me to swim in the sand troughs that remain full of water at low tide. I grew up in Hermosa Beach, California, home for California surfing and diving industries. The Ocean has always been there for me.

What sparked your interest in diving?

When I was a child, my family and I were having lunch on a breakwater in Marseilles. A truck pulled down the jetty, and a couple of guys in wetsuits with steel tanks on their backs jumped out of the truck and into the water. They reappeared about 20 minutes later dragging a box between them. As they passed, my father told us all not to look at them. It was there and then, I decided I was going to be a scuba diver.

What inspires you, and how do you get your ideas?

Dr Phil Nuytten (*see interview with Phil Nuytten in X-RAY MAG issue #9*) calls me "Bob by God". I like to think of inspiration as floating in the universe like seeds. Ideas are out there just looking for a fertile mind in which to grow. Take our new OPS fin that we are making for Jean-Michel Cousteau's Ocean Futures Dive Team. I conceived of this fin watching water wick to the end of a leaf of a tropical plant. The concept is before us everytime it rains.

What influence did your friends and family and your upbringing have on the choices you made in life?

I can credit my family for everything

profile

Force Fin
Extra with the
characteristic
whiskers

If you feel a fin, then it is working against the water. If you move or better yet, feel like you are effortlessly flying, but you feel no fin, then it is a good, maybe even great design.

Force Fins are shaped by hand We do not use computers.

Force Fin also
supplies the
military

An early
study of
vortex
genera-
tors

I have ever done. After Marseilles, my parents gave me a surf mat with a clear window that allowed me to look down into the clear waters of the Mediterranean and see all of the fish and creatures below. I became obsessed with the ocean at this early age. A cousin taught me to free dive. My father is an artist. He taught me to sculpt. Force Fins are shaped by hand; we do not use computers.

Explain what you percieve as the connection between shape and function?

Fins are a perfect example of the importance of this relationship. Engineers make other fins in a computer. They are all flat and their function is best understood 2-dimensionally—pushing and pulling the fin blade against the water. As I said, I sculpt the Force Fin shapes. There is a volume of water behind you, above and below, all waiting to be activated by the movement of your fins. The shape of Force Fin, its leading edges at the side of the foot pocket, its smoothness and curves, its structure combined with its flexibility, all work to draw the total volume of water over and under the blade, and the reaction of the water to the motion of the blade all work to accelerate the water through the V-split, no matter what position you move your leg. Our Extra and Excellerating Force Fins are longer and flatter than the Original models, so we enhance their effectiveness by adding winglets, Bat Wings, Whiskers, Speed Pods or Sharks' Teeth. These shapes are designed to increase the speed and volume of water travelling over a longer and flatter fin blade.

How do you sense or judge that a design is right?

By its lack of sensation. Earth is all water. Everything in nature is designed by and for the movement of water. Water always takes the path of least resistance. If you feel a fin, then it is working against the water. If you move or better yet, feel like you are effortlessly flying, but you feel no fin, then it is a good, maybe even great design.

Having fun making customized fit for Jean-Michel Cousteau

Bob Evans engaging X-RAY MAG editors Andrey Bizuykin and Millis Keegan in debate

What do various shapes mean to the performance of a fin?

Everything. For example, holes in fins inhibit water flow. They create more work. We're terra creatures and our frame of reference for moving is resistance against the soles of our feet. That makes us comfortable with fins that offer that resistance. But for water to move quickly, it must be free. Shapes that are designed to freely move water from the front of the blade to the rear will give better performance than shapes that are designed to capture water.

How does one select which fin is appropriate for him or her?

We have found that the most important factor for fin performance is how it fits the personality of the diver. That is why we make so many models of Force Fin. All fins marketed today work. I believe that ours work better and our company is exclusive in its ability to explain how and why they work better, but the fact is that the fin must fit the diver's personality for it to work best for them. First, it must comfortably fit the foot of the diver. It must also fit their application. A soft flexible fin will be most efficient for a diver who is under light loads—diving for recreation in warm waters. A flexible fin may work in more demanding conditions, but it will have a fall-off in efficiency if the diver is carrying heavy loads, diving with doubles, wearing a drysuit, and if their kick is very strong. In this case, the fin must give more power, which we prefer to call leverage under load, and a stiffer fin is more suitable.

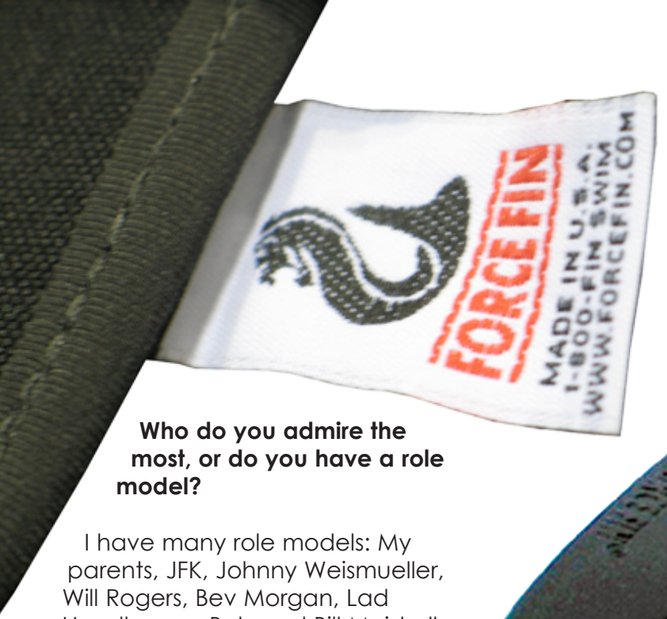
What do you consider your best idea?

I will not argue with experts. Our Tan Delta Force Fin, which is based upon the Original Force Fin design is in the New York Museum of Modern Art for changing the way in which we perceive moving through water. That is a very tough act to follow. I am excited about our new Launch Pad line of fins. They have a foot pocket to which you can attach many different fin blades, but with a new twist. At the point where they attach there is an interlocking gear surface, so you can easily turn the blade to change its relationship to your foot and the water. It can become stiffer or more flexible. You can change its pitch or orientation simply by turning it at its point of attachment. This can be done before you enter the water or when you are underwater and underway. It's the next generation of our Force Wings, Bat Wings, Whiskers, Speed Pods, Sharks' Teeth and their like.

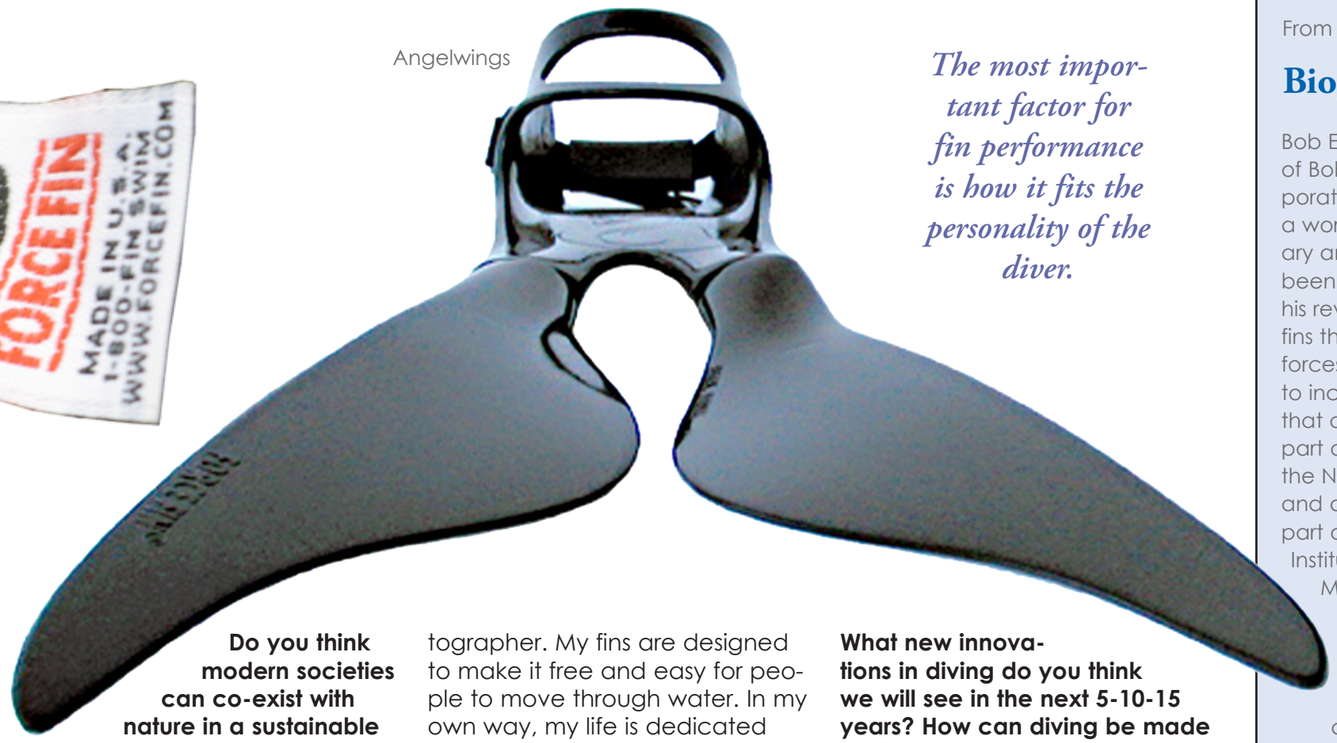
Tinkering in the wizard's workshop

I can credit my family for everything I have ever done

"...to help people move through the water as freely as the marine inhabitants that inspire our fin designs."



Angelwings



The most important factor for fin performance is how it fits the personality of the diver.

Who do you admire the most, or do you have a role model?

I have many role models: My parents, JFK, Johnny Weismueller, Will Rogers, Bev Morgan, Lad Handleman, Bob and Bill Meistrell, Stan Waterman, Jacques Cousteau, Jean Michel Cousteau, Hans Haas and Malcolm X.

What can we learn from nature?

Everything.

Inspiration comes from many sources. Malcolm X was a prominent black nationalist and charismatic human rights activist in the U.S. in the 1960's

Do you think modern societies can co-exist with nature in a sustainable manner i.e. through implementation of new laws, conventions and new technology?

We're at a very difficult time. There are many of us who acknowledge that this is imperative, but there are so many conflicting forces polarized in their positions. Technology or laws will not achieve the necessary change. A change in global consciousness is required. The majority of the world perceives the water as cold and dark, with inhabitants that are alien at best. They are more frequently understood as monsters. The funny thing is that everything is water, and we are the ones that are in an alien environment when immersed.

The mission statement of our company is "to help people move through the water as freely as the marine inhabitants that inspire our fin designs."

One diver can make a difference

I began my career as an underwater photographer. My fins are designed to make it free and easy for people to move through water. In my own way, my life is dedicated to educating the public that the underwater environment is a place of beauty and freedom. When we raise the collective consciousness to understand the oceans in this way, that will result in the change necessary to our own survival.

What role do you think recreational diving can play in raising the public's awareness in the future?

Divers sharing their underwater experiences is part of the educational process necessary to raise global consciousness. Our current administration has one of the worst environmental records in history. A private showing to the President and his staff of a "Voyage to Kure", the first of the new television series by Jean Michel Cousteau and his Ocean Futures Dive Team, catalyzed the President into designating the Northern Hawaiian Islands as the world's largest marine preserve. It is true. One diver can make a difference.

What new innovations in diving do you think we will see in the next 5-10-15 years? How can diving be made easier and safer?

Masks. They are due for an update. Methods of carrying less weight.

Do you consider doing other types of dive equipment but fins?

Yes. I have a great mask design, but I think my energy is best spent applying what I have learned to making ships more efficient. I also have some great ideas on how to make underwater current generators better.

What legacy would you like to leave behind?

Creativity is a gift we all have. To learn how to tap into it you must push forward with positive solutions in response to the negative.

What's next for Bob Evans?

Efficient ships and clean energy. ■

From Academy of Underwater Arts and Sciences:

Biography

Bob Evans is Founder and President of Bob Evans Designs, Inc., the corporate entity behind Force Fin. He is a world class photographer, visionary and noted inventor who has been awarded over 33 patents for his revolutionary fin designs, including fins that use lift as opposed to drag forces to propel a diver, fins that snap to increase diver efficiency and fins that are split. His Tan Delta Force Fin is part of the permanent collections of the New York Museum of Modern Art and along with his Extra Force Fin, is part of the collections of the Costume Institute of the New York Metropolitan Museum of Art.

Bob has devoted his life to sharing the oceans. His company's mission statement reflects his vision to help people feel as free as those who inhabit it. His diving career began in 1964 when he learned to free dive and purchased his first Nikonos. From 1966-73, he was employed by Dive 'N Surf in Redondo Beach, California, and was certified by Bob Meistrell, County of Los Angeles Instructor No. 1. In 1967, he was trained as a commercial diver and over the years, he has made over 850 dives documenting life below platforms in Santa Barbara Channel under contracts with Exxon, Shell Oil Company, Atlantic Richfield, Union Oil, Western Oil & Gas and the American Petroleum Institute. As a photographer he is best known for his Channel Islands Collection, which includes images he took on and in the waters surrounding the California Channel Islands.

Bob Evans is an original SSI Platinum Pro 5000. He was awarded an Honorary Masters of Science by the Trustees of his alma mater, Brooks Institute of Photography for extraordinary contributions to art, science and photography.

Evans' photography has appeared in over 300 publications including Time, Life and National Geographic. He has published two books, *The Living World of the Reef* and *The Channel Islands Collection.*

Bob Evans has designed underwater camera housings for time-lapse systems, camera towing systems and a buoy system to carry cameras to preset depths. He was Chief Photographer of the SCCWRPP's study of artificial reefs managed by Willard Bascom and John Isaacs of Scripps Institute of Oceanography. Atlantic Richfield Foundation funded Evans' productions for the Cabrillo Marine Museum.

Santa Barbara's Sea Center opened with an exhibit of his photographic work. In the 1980's, Evans received a research grant from Kennedy Foundation to study the feasibility of harvesting and canning mussels from the offshore oil platforms of the Santa Barbara Channel.

Bob Evans is best-known for his fin designs, the most popular of which is his Force Fin, which he patented in 1981. His day job is serving as President of Bob EvansDesigns, Inc., a research and development company that also manufactures and distributes Evans' fins. ■