

Jane Poynter's interview with Mari Davis

Mari: Joining us this morning is Jane Poynter, one of the eight original biospherians and the author of a new book called *The Human Experiment: Two Years and Twenty Minutes Inside Biosphere 2*. Jane, thanks for joining us.

Jane: Good morning... and thanks for having me.

Mari: When I told people I was going to be speaking with you today, everyone – absolutely everyone's – response was along the lines of, "Oh yeah, the Biosphere... I've always wondered what it was like in there!" What do people ask you about the Biosphere?

Jane: The main question that I get from people is exactly that: "What was it like?" and that's a very open-ended question. But what everybody really wants to know about is, you know, were there couples inside? What was it like to be closed up for two years with seven other people? And that's when I tell them about the psychology. I mean really strange things happen to your psychology when you're enclosed. Really bizarre, to the point where I actually thought I was going quite mad.

Mari: And I'm sure it didn't help that relations between the eight biospherians got so bad. We'll talk about that in a second – you have so many interesting stories to tell – but first, let's cover a little background. What was Biosphere 2 created to do?

Jane: Biosphere 2 was designed to do two things. The first was to be a prototype for a space base on Mars, for instance. And the second thing that it was designed to do was to be, if you will, a test tube for life, so we can bottle up life and study it, so we might understand more about the earth.

Mari: How big is Biosphere 2?

Jane: Biosphere 2 is just over three acres – that's about three football fields. Within that area was a half-acre for us to grow all our food and what was called a Human Habitat with areas for us to live in. Then there was also a miniature rainforest, there was a savannah, a desert, a marsh, and a little mini-ocean. Mission Control was outside the Biosphere, and the team there monitored every environmental aspect of the mission using sensors that had been installed all over the Biosphere. They gave both them and us the temperature, humidity, the CO₂ in the air, where we had rained that day and a whole host of other parameters. They had someone on watch twenty-four hours a day to watch over our safety and the health of the Biosphere.

Mari: How old were you when you began your stay in there?

Jane: I was 29 years old when I walked into Biosphere 2.

Mari: Okay, let's go back to the interpersonal aspect. This is the part that so many people can't even begin to imagine: living and working with seven other people in a closed environment for two years. Before you went in, did you think that you were all going to get along?

Jane: I did... I really did. Part of our training had been living out in the Outback of Australia with small groups of people – way out in the middle of nowhere. Then another part was living on a ship in the middle of the ocean for a month at a time with just a few other people. I really thought that we were prepared for going inside Biosphere 2, into this isolated environment. And I knew all the other people – we were friends! So I had an incredibly idealistic idea of this utopian environment that we were going to create inside. Well, it didn't quite turn out that way.

Mari: What happened?

Jane: We broke into two factions of four people: two men and two women on each side. And it turns out that that is, strangely, a very normal occurrence for groups in enclosed environments. It happens in the Antarctic, it happens in space, it's just something that happens. It's incredibly uncomfortable though, and heartbreaking when it's your friends that are on the other side. And two of the people that were on the other side of this divide were my best friends when I walked into the Biosphere.

Mari: When did things start breaking down between you?

Jane: Things started getting a little dicey between the eight of us about six months into it. And that's when we broke into two factions. Though in the beginning we wouldn't even admit that this was occurring. I think we all wanted so much to be a happy family inside there. And it got really tough. I mean, really tough. It got to the point one day, I'll never forget: I was walking towards the dining room with another biospherian, Taber. Two of the other biospherians on the other side of this divide – who had been my best friends when we walked in – walked towards me down the corridor. As we passed we averted eyes. I mean, if you had told me that ahead of time, I would never have believed it was possible. And that went on for the next 18 months.

Mari: And then there was the whole hunger issue. You weren't able to grow enough food... what was that like?

Jane: We were hungry all the time. When I got up from a meal I was hungry. It was really quite miserable. And the most difficult part about that is that when you get that hungry you end up having to budget your energy. So, by four o'clock in the afternoon, I still had a whole field to weed or had to go into the rainforest and cut down a bunch of dead leaves or something, and I had no more energy left. That was the really hard part of being so hungry.

Mari: What happened when you started eating the emergency rations?

Jane: We had an emergency supply of food in the form of dried beans and wheat, I think it was, that was sitting in a cupboard somewhere in case we couldn't grow enough food. Well, the day came when unfortunately we had to start eating out of that food. We were just being run through the mill by the press at that time— everything was blowing up around us in the press. And for some reason Biosphere's management were keeping very quiet about this food thing, and I just found it very unwise. So I kept trying to say, "Come on, let's get a press release out. Let's at the very least tell our press people here so they know what to do about it." But nobody would, so eventually I did. And, that didn't go over very well. So, one day I'm walking up the stairs – going up to my bedroom or something – and all of a sudden one of the biospherians walks up to me and collects this big wad of saliva in his mouth, and just spits in my face. And then a few minutes later, another biospherian comes and does exactly the same thing. It was all because I had gone to one of our own people and talked about something that they didn't want to tell them about.

Mari: Tell us about your accident...

Jane: Well, I cut off part of my finger in a threshing machine – that's how you get all of the wheat seeds off the stalks so you can use them in food. I was cleaning the machine and my hand got stuck in it. When I finally got it out, the first clue I had that all was not well was when I saw blood spatter across Roy's face as I brought my hand up to look at it. It was surreal – like something out of a movie, with a piece of bone sticking out the end of one finger. But I hadn't felt a thing. Taber and another biospherian hunted around in the wheat chaff for my fingertip, and rushed it up to our clinic, where Roy – our physician – sewed it back on. Unfortunately it didn't take,

so I had to leave the Biosphere for hand surgery. I went out through the airlock. That's a chamber with two doors – one on the inside of the Biosphere and another on the outside. You only open one door at a time. That way only a small, measured amount of air escapes the Biosphere so the experiment isn't ruined. I was outside for about five hours. I was so lucky I didn't lose more than the end of one finger. I now type with nine fingers, and I can't play the piano any more. But aside from that it's fine. The two times I've had my nails done, the manicurist refused to give me a 10% discount, which I think is a bit much!

Mari: And if that wasn't enough – the problems between the biospherians, the hunger, you losing part of your finger – the levels of oxygen inside the Biosphere got dangerously low, right?

Jane: The oxygen started going down right from the word go, but we didn't see it until part way through the experiment. And all of a sudden it was this huge mystery: Where's all the oxygen going? After a tremendous amount of research, we finally discovered that it was caused by putting too much compost into the soil. So all the microbes were eating the compost up, and they were taking oxygen out of the atmosphere, putting CO₂ into the atmosphere. That CO₂ ended up going into the concrete, which was soaking it up like a sponge. That's where all the oxygen ended up – in the concrete.

Mari: How did that make you feel, not having enough oxygen?

Jane: The net result for us was pretty disconcerting, actually, because it turned out that we didn't really adapt to the lowered oxygen in the way people would expect. And we weren't adapting well. So, as the oxygen started going down – it eventually got down to about 14.2 percent, which is approximately the equivalent to 15,000 feet, or like the height of Lhasa, for instance, in high Tibet in the Himalayas. We started getting shortness of breath, and I think it was very disconcerting for people on the outside, because literally [*Jane takes a big breath*], you couldn't complete [*takes another breath*] a sentence without [*takes another breath*] taking a breath. So these poor people on the outside must have thought we were gasping for our last breath, when in fact we were just breathing.

Mari: It all sounds so incredibly difficult. What were the fun moments – if there were any?

Jane: We always tried to have a feast once a month, for whatever occasion. Whether it was somebody's birthday, and if it was a month without a birthday we made up a feast. We'd have a harvest festival of peanuts or something. And those were really great moments. Because, somehow – despite all the angst that was going on between everybody inside and all the turmoil at the project itself – we threw all that aside, and we always had a great party. They were really fun. So we'd go down to the beach for a picnic. One time it was really funny. Of course you can't burn anything inside Biosphere 2 because it would mess up the atmosphere. So we placed a TV screen on the beach, and we put a video of a fire on the TV screen. So we all sat around as if there was a campfire.

Mari: I'm sure it helped, too, that you had Taber – Taber MacCallum, a fellow biospherian...

Jane: Taber was my rock in Biosphere 2. I don't know what people did in there for two years that didn't have somebody intimate, somebody they were really close to, that they could talk about the highs and the lows with. I'd met Taber during training while I was on the Heraclitus, the ship out at sea. At that time I just thought he was

the most irritating American I had ever imagined. But somehow at the Biosphere, our love blossomed. And now we're married. We've been married for 10 years.

Mari: Okay, so you all make it to the end of the mission – to the end of two years. Tell us about those last minutes waiting to exit.

Jane: The last twenty minutes were fairly excruciating. We were standing in these prickly blue suits, wool suits, and we were standing outside the airlock door, on the inside of the Biosphere, just waiting to go out. And eight o'clock comes – which was the time we were supposed to walk out – and it goes. And then eight-oh-five comes, and it goes. And we were all in there saying, "Come on, people, let us out!" Well it turns out that dear Jane Goodall, who I have tremendous respect for, was out there giving the keynote speech and went on a little longer than was anticipated. So we're like, "Come on, Jane, let the monkeys out of the cage!" So finally we hear all this radio crackling, "Okay, folks, it's time to come out the airlock." And finally, it was such a relief. And we opened the airlock door. And aside from all the fanfare, and hundreds of people out there, which was pretty exciting, suddenly there's no bars. We'd been living in this glass-and-steel structure for two years and, all of a sudden, there were no bars over your head. You could see the sky. It was the most extraordinary feeling.

Mari: Was it hard to reintegrate into society?

Jane: When I came out of the Biosphere it was really quite an exhilarating experience, in many ways. It's what I imagine it must be like being a young child because everything was new. It was so exciting going to the store. All of a sudden, not only was there tomato ketchup, but there was 20 different brands of tomato ketchup. Not only was there wine, but there was a whole rack of wine that I had to choose from. It was so exciting!

Mari: What do you think was accomplished at Biosphere 2?

Jane: When we started Biosphere 2, people really didn't think this was possible. I think many of *us* didn't think it was really possible to encapsulate life in the way that we were attempting to do. Some people thought we were going to get some terrible lung infection or who knows what from living inside there. So as Biosphere 2 was growing out of the ground – and there were at some point as many as 400 people working out there madly putting in plants, and designing everything – I mean, it was an extraordinary feat to build this thing. And in many ways, when I look back I really think of it as doing the impossible. We really did the impossible at Biosphere 2.

Mari : What is some of the scientific work that happened inside Biosphere 2 that you're the proudest of?

Jane: One of the things that was big in my mind when we went into Biosphere 2 was, is this even possible? Can you really take all of these little areas, a mini-rainforest and miniature ocean and agriculture, and put it all together – bottle it up – and have it work like a biosphere? Or will something happen that causes it to fail that we either don't understand or is irreparable? So I think that one of the major accomplishments while we were inside Biosphere 2 that I'm really proud of and excited about is that we actually proved it works. We had some dreadful problems, but we know what they are, and we know how to fix them. And that's the important part.

Mari : What significance does what you accomplished in there have for planet Earth?

Jane: The project did some groundbreaking research. For instance, the Biosphere's coral reef was part of a very precise experiment. The scientists wanted to mimic

what it would be like on the earth in 50 years with global climate change, for instance. And so they measured the corals under this environment and they found that their growth didn't just slow, some actually stopped growing. Now, the problem with that is, not only are there many countries around the world that rely on coral reefs for their tourism, it also affects things like clams and oysters and snails – or any of those types of animals. It will have huge ramifications, not only for the ecosystems in the ocean itself, but also on our food supply. And we are beginning to see evidence of this in natural reefs.

Mari : Before we let you go, just a couple more questions. Why did you write the book?

Jane: There's been so much nonsense written about the project over the years that I really wanted to set the record straight, and put a bunch of silly issues to bed once and for all. I mean, I didn't take food back into the Biosphere when I went out for hand surgery, as was in the papers... that's something people still say to me. On the other hand, I don't want to whitewash what happened there, either. It wasn't all good. And that's the other reason I wanted to write this book. I wanted to understand for myself what happened. Why are we not still all there, working on the historic project that we created to take humans into space and help the earth? You might say this has been an incredibly cathartic experience for me.

Mari : Why'd you wait ten years to write it?

Jane: You know, I thought about writing a book when I first came out of the Biosphere, and I'm really glad I didn't. It has taken me ten years to get to the point where I have some perspective. It was a harrowing experience in many ways, and I needed time to think about it – understand it from the point of view of someone with more life experience – which I now have. I really wanted this book to be a balanced view of what happened, of what we accomplished, and of where we went wrong. There's no way I could have done that ten years ago with the whole experience so fresh and raw.

Mari : Well, it clearly was an amazing experience, and your book is certainly full of interesting stories. Congratulations, too, on all the advance praise it's received.

Jane: Oh, thank you.

Mari : Jane Poynter's new book is *The Human Experiment: Two Years and Twenty Minutes Inside Biosphere 2* – and it'll be available starting in September. Jane, thanks so much for joining us.

Jane: You're so welcome – it's been fun!