

SCIENCE OF REHEARSAL

Lender key:

- *The Theater of All Possibilities (TAP)
- ** Institute of Echotechnics (IE)
- ***Space Biospheres Ventures (SBV)

Around the room:

THEATER / INSTITUTE

- I. Window left: Costume ensemble (1970s).*
- II. Window center: Ecosphere (2018) a functional closed-system containing seawater, shrimp, algae, pebbles. Invented by Clair Folsome in 1968, commercialized by NASA in 1982.
- III. Window right: Suit and hat worn by biospherian Mark Nelson during Mission 1 (1991-1993). Courtesy of Mark Nelson.
- IV. Table: A selected Biosphere 2 bibliography.
- V. First bookshelf: Etched holo-foil "Blue Marble" clock from the offices of Synergia Ranch, New Mexico. Manifestations, Inc., (c. 1990). Courtesy Deborah 'Tango' Snyder.

Bookshelves left to right, top to bottom:

CAST / CREW

- I. "Attention! Attention! Attention! Opportunity!" recruitment flyer (1973) for the crew of Research Vessel Heraclitus, a concrete junker built by the Institute of Ecotechnics in 1975. For more than 40 years, the ship was used to conduct ecological research expeditions around the world, as well as isolation and group dynamics training for Biosphere 2.**
- II. Brochure (1985) announcing the search for candidates to join the crew of Biosphere 2 in Oracle, Arizona, the largest and most complex closed-system experiment ever created.***
- III. Two performance props: A costume fan (vintage) and Bios 2 uniform pin (c. 1990). Pin courtesy of Robert 'Rio' Hahn.
- IV. Production photo: The Wrong Stuff (1991). In the month leading up to the Biosphere 2 experiment, the members of the Biosphere 2 crew and the Theater of All Possibilities staged The Wrong Stuff -- a play envisioning the otherworldly challenges to come.*

- V. In their new roles as Mission 1 crew of Biosphere 2, the eight biospherians pose for a press photo before their two-year enclosure (1991). They would be the first crew to live for two years within a completely closed-system environment.***
- VI. Background: a view through the frame of the geodesic dome theater rehearsal space at Synergia Ranch (1969). Designed with Buckminster Fuller.*

REHEARSAL / TRAINING

- I. "The venues for our tour performances were as various as you can imagine. From a theater in the West End in London to outdoors on the volcano Popocatepetl in Mexico... in squats, in academies of art, for scientists on sand dunes at White Sands, in a Sufi tekkia in Istanbul in temples in Bali, for Aboriginal communities in the bush, a voodoo church in Paris, university stages, warehouse, street theater for the homeless, music clubs, at Second City in Chicago - the list goes on and on." — Kathelin Gray, Director, TAP, on performances that took place between the 1970s and 2000s. Image: Production of Gilgamesh, Mount Popocatepetl, Mexico (1982).

- II. Actors and scientists on the “Biomobile” Studio One tour bus (c. 1984) simultaneously on a performance tour and an ecological exploration.*
- III. “There was a painter, a French teacher, a graduate architect and town planner, a folk singer, a keeper of bees, a mining engineer, an anthropologist, a poet, and a cook. We were convinced that the world was not doing well, and we decided to change our lives, coalesce our wills and skills, and, by turning our attention to addressing questions of ecology and the environment, take steps to alter world history.” — Phil Hawes, co-architect of Biosphere 2. Image: Rehearsal, Aix en Provence, France (c. 1988).*
- IV. W. R. Bion’s highly influential book *Experiences in Groups* (1961) applied insights from group therapy amongst military veterans, revealing the underlying psychological drives of group behavior. TAP cite the text as a kind of manual that helped participants prepare for long research expeditions and the particular conditions of Biosphere 2.
- V. Studio One, TAP, France (c. 1982).*
- VI. *Dark Lady of the Seas* (2005) a play about the RV Heraclitus, October Gallery, London.*

- VII. The theater rehearsal space at Synergia Ranch has served as a laboratory for performing both probable and improbable scenarios (image c. 1972).*
- VIII. William “Freddy” Dempster inside of the Adam-and-Eve-o-sphere (2002), a small-scale closed system environment built on Synergia Ranch. Courtesy of William “Freddy” Dempster.
- IX. Built in 1986 in Oracle, Arizona on the construction site of Biosphere 2, the Test Module was a closed system for a single occupant: John Allen, aka “Vertebrate X.”***
- X. RV Heraclitus, maiden voyage in 1975.*

IMPROVISATION / RESEARCH

- I. Yuri Gagarin Jubilee Medal (1993) for outstanding service to international cooperation in space and the environment given to Mark Nelson by Oleg Gazenko and the Russian Cosmonautics Federation. Courtesy of Mark Nelson.
- II. Three photographs from the Institute of Ecotechnics’ 1983 ‘Cosmos Conference’, Les Marronniers, Aix-en-Provence, France. Photographed against the backdrop of TAP production of “Deconstruction of the Countdown”

based on writings of W.S. Burroughs. The pictures show speaker Stewart Brand and a performance by TAP.* *

- III. Medal commemorating Vladimir Vernadsky, inventor of biospherics. Given in 1988 on the 125th anniversary of his birth, at events held in Leningrad, Kiev, and Moscow, where Institute of Ecotechnics members John Allen and Mark Nelson were honorary guests. Courtesy of Mark Nelson.
- IV. Johnny Dolphin (John Allen) as Federico Garcia Lorca. Poetry reading, Caravan of Dreams, Fort Worth, Texas (c. 1989).*
- V. Constantin Stanislavski, *Creating a Role* (New York: Theater Arts Books) 1988, used by TAP as a guidebook for embodied experience through theater.
- VI. Logo for the Institute of Ecotechnics, designed in 1973.* *
- VII. Buckminster Fuller at the IE 1982 ‘Galactic Conference’, Les Marronniers.* *
- VIII. William Burroughs, Kathelin Gray, and John Allen inspecting a succulent at the Caravan of Dreams theater dome in Fort Worth, Texas (1984).*
- IX. Conference participants of the 1983 ‘Cosmos Conference’.* *

X. IE conference brochures: Man, Oceans, and Opportunities (1976); Man, Desert, and Challenges (1977); and Man, Mountains, and Vistas (1978).**

XI. Kabuki Blues production by TAP (c. 1980s).*

SCRIPT / DIAGRAM

I. John Allen cosmological illustration (1973). Courtesy of John Allen.

II. John Allen diagram, 'Wholeness' (1973). Courtesy of John Allen.

III. First page of the script for 'The Wrong Stuff', a production in which members of the Biosphere 2 crew played out scenarios of everything they thought might go wrong while inside the enclosure during Mission 1 (1991).*

IV. Background: A sectional diagram (1989) showing the agricultural biome in Biosphere 2, designed by Sarbid Architects and Peter Jon Pearce.***

SET / ENVIRONMENT

I. Constructing the Theater of All Possibilities' Upside Downs, Fitzroy Crossing, Western Australia (c. 1980s).*

II. Environment inside Caravan of Dreams dome in Fort Worth Texas, opened in 1983.*

III. Rainforest Biome inside Biosphere 2, 1991.*

IV. "The Crow and the Cockatoo" (1997) a production by Studio 7, the theater group based at Birdwood Downs, a site operated by the Institute of Ecotechnics in Kimberley, West Australia.**

V. TAP settled in Santa Fe, NM, establishing Synergia Ranch in 1969. For over 40 years, Synergia Ranch served as the testing ground for a range of TAP experiments in theater, dance, ecology, farming and collective experience.*

VI. Road to Cambellen, Australia (c.1980). John Allen and Kathelin Gray, co-founders of TAP. After a chance encounter at a bus stop in 1969 in San Francisco, they set out to explore theater as the core of a new experimental life project.*

VII. Early photomontage depictions of the Biosphere 2 complex (1986) by co-architects Margaret Augustine and Phil Hawes.

STAGE / LABORATORY

I. Construction of RV Heraclitus, launched in 1975. For 30 consecutive years, the Heraclitus circumnavigated the Earth's largest biomes - the oceans. It also served as a stage upon which the crew of Mission 1 were trained and transported ecological samples from around the world to Biosphere 2.**

II. Construction of the Ocean Biome inside Biosphere 2 (c. 1990).***

III. Empty theater set - an alien landscape from Life is a Dream. Performance by Space Biospheres Ventures, parallel to Mission 1 inside Biosphere 2 (c.1992).***

IV. Construction of the Rainforest Biome, Biosphere 2 (c. 1990).***

V. Construction of the frame of the geodesic dome theater rehearsal space at Synergia Ranch (1969).*

VI. Construction of the closed system of Biosphere 2 (c. 1990)***

VII. Aerial view of the construction site of Biosphere 2 (c. 1990).***

VIII. Early architectural model of Biosphere 2 by co-architects Margaret Augustine and Phil Hawes (1986).

WORLD-MAKING / CLOSED-SYSTEM

- I. Vector image showing the arches of the Agriculture Biome of Biosphere 2 (c. 1980s) by Peter Jon Pearce.***
- II. Performance of Oresteia, The Eumenides, Caravan of Dreams (c. 1992).*
- III. Biosphere 2 contained seven interconnected ecological biomes supported by a vast technical apparatus. It was conceived on the dual basis that it would test the feasibility of long-term human settlement beyond the Earth's biosphere (Biosphere 1) and that it would model in real-time the complex ecological and atmospheric adaptations between humans and a complex ecosystem.***
- IV. Faust Part 1, Studio One, Caravan of Dreams (c. 1990s).*
- V. Biosphere 2, worlds largest closed system, 1991.***
- VI. Acrylic CNC model of Biosphere 2, 2018. Courtesy of Mark Nelson.
- VII. View of the arched Agriculture Biome, Biosphere 2, 1991.***
- VIII. Constructing "the lung", Biosphere 2 (c. 1990).***

BACKSTAGE / TECHNOSPHERE

- I. Computer terminal showing the proprietary software management system developed by Sun Microsystems for B2.***
- II. Dark Lady production, TAP, Aix en Provence, France (c. 1997).*
- III. Flyer from Cyberspace 2 performance at the Institute of Contemporary Arts, London (c. 1990s).*
- IV. Documentation of the engine room in Biosphere 2, giving a glimpse of the vast "technosphere" apparatus (c. 1991).***
- V. Performers with a giant telescope, in Kabuki Blues. Kathmandu, Nepal (c. 1990s).*
- VI. B2 engineers and architects in the superstructure: Peter Jon Pearce, Margaret Augustine, Bill Dempster, Phil Hawes (1990).***
- VII. Acting out the drama of Biosphere 2 in Life is a Dream. Performance by Space Biospheres Ventures (c.1992).***
- VIII. Press photo of biospherian Taber MacCullum in front of the monitoring equipment within the analytic lab in Biosphere 2 (1991).***

iX. Cyberspace Institute, a Theater of All Possibilities production in Aix en Provence, France (1990).*

X. A technical flow diagram of Biosphere 2 Freshwater Systems, illustrating the water cycle within the closed system, made possible by the extensive pumping and marsh filtration system within the technosphere (c 1990s).***

SCIENCE / FICTION

- I. Crowds during the launch of Biosphere 2, Mission 1, 1991.***
- II. Mission 1 commemorative coin, 1990s. Courtesy of Mark Nelson.
- III. Mission 1 crew during a press photo shoot, 1991.***
- IV. Diary kept by biospherian Mark Nelson during Mission 1, 1991. Courtesy of Mark Nelson.
- V. Biosphere 2 commemorative tourist pin (c. 1990s). Courtesy of Mark Nelson.
- VI. Mark Nelson and Linda Leigh during telecommunication from Biosphere 2 (c. 1992).***
- VII. Deconstruction of the Countdown production by Space Biospheres Ventures (c.1991).***

VIII. "This is not a good omen!" cartoon by Nick Anderson for the Courier Journal (1993).* *

iX. Battle scene from Life is a Dream. Performance by Space Biospheres Ventures (c.1992).* **

X. "The whole venture is so confoundingly fantastic that it is certain to be enthusiastically misrepresented." - Curt Suplee, Washington Post, 1990. Object: Biosphere 2 New Years greeting card, 1992.* *

XI. Steve Bannon (left) hired as a financial consultant to Space Biospheres Ventures and subsequently lead the managment takeover of Biosphere 2 (c. 1993).* **

XII. Triptych of ownership brochures, Space Biospheres ventures (1991-1994); Columbia University (1995-2003); and Arizona University (2007 till present day). Courtesy of the Center for Land Use Interpretations.



Marie Harding (c. 1990s)

Timeline

1967

The Theater of All Possibilities (TAP) form in San Francisco (including: John Allen, Kathelin Gray, Bill Dempster and Marie Harding).

1969

TAP settles on Synergia Ranch in Santa Fe, NM (new members include: Judy Hawes, Mark Nelson, Margaret Augustine, Phil Hawes, and Ed Bass). The group establishes a working framework - a synergia of 'art', 'ecology', and 'enterprise'.

1973

At Synergia, the Institute of Ecotechnics (IE) is established to study man, his culture and technology in relation to nature. (founding members include: John Allen, Kathelin Gray, Mark Nelson, Bill Dempster...)

1974

For the next 10 years, IE hosts yearly conferences on humans and the earth's biomes. (Speakers include experimental ecologist Clair Folsome, Gaia theorists James Lovelock and Lynn Margulis, marine biologists Hank Truby and Dr. John C. Lilly, William S. Burroughs, R. Buckminster Fuller, astronauts Joe Allen and Rusty Schweickart, and a host of artists, jazz musicians, and ethnobiologists.)

1975

IE builds Research Vessel Heraclitus in San Francisco. Ship sails for the next 30 years as the ocean research biome. (Currently dry docked for major repair in Roses, Spain.)

IE obtain land in Kimberley, Western Australia as the savannah research biome.

1978

IE build Vajra Hotel in Kathmandu, Nepal as the mountains research biome.

Laurence R. Veysey publishes a chapter about the group called "New Mexico, 1971: Inside a 'New Age' Social Order" in *The Communal Experience: Anarchist and Mystical Communities in Twentieth Century America* (Chicago: University of Chicago Press). This anthropological critique of communes becomes widely used to discredit the group's transdisciplinary practice by mainstream media.

1979

IE launch the October Gallery in London, UK - a site for transvanguard art and the urban research biome.

1980

IE establish an experimental farm and a Mediterranean research biome at Les Marronniers, Aix-en-Provence, France.

1982

Architect Phil Hawes proposes a model for a space base life-system at the IoE Galactic Conference at Les Marronniers.

1983

IE build a geodesic dome theater in Fort Worth, TX.

The Institute establishes Space Biospheres Ventures (SBV) - the decision team behind construction of Biosphere 2 (B2) (including: John Allen, Mark Nelson, Margret Augustine, Edward Bass, William Dempster, Marie Harding, Kathelin Gray, Robert Hahn).

1984

SBV buys land in Tucson, AZ for the construction of B2.

1986

SBV travels to Moscow to research closed-system experiments for cosmonauts conducted at the Institute of Biomedical Problems.

1988

John Allen spends three days in a Test Module closed system.

1990

Biosphere 2 - a 3.14-acre closed-system model of the Earth with 7 diverse biomes, including a human habitat and farm, ocean, rainforest, desert, savannah, marshlands, all inside a steel and glass shell is under construction. The project is designed to last 100 years with crews rotating every two years.

1991

Mission 1 crew (including four men and four women: Roy Walford, Jane Poynter, Taber MacCallum, Mark Nelson, Sally Silverstone, Abigail Alling, Mark Van Thillo and Linda Leigh) are sealed inside B2 for a two-year mission.

John Allen publishes "Biosphere 2: The Human Experiment" (Penguin).

1992

Marc Cooper publishes an article titled, "Take This Terrarium and Shove It" in the *Village Voice* (Issue 36, No. 14, April 2), spreading allegations of mismanagement and pseudoscience at B2.

Ed Bass, the CEO and financier of B2 establishes a Scientific Advisory Committee to rebuild credibility.

The Biosphere 2 Scientific Advisory Committee issue a "Report to the Chairman, Space Biosphere Ventures" in which the committee itself is split between their interpretations of the research program at B2. The committee disbands...

1993

Mission 1 ends with reports of weight loss, lack of oxygen, and pest infestation.

Ed Bass hires former Goldman Sachs investment bankers Steve and Chris Bannon as financial consultants to evaluate possible new directions for B2, leading to direct conflict with the original project objectives.

1994

Mission 2 begins with crew members Norberto Alvarez-Romo, John Druitt, Matt Finn, Pascale Maslin, Charlotte Godfrey, Rodrigo Romo, and Tilak Mahato.

Half-way through Mission 2, Bass and the Bannons persuade a U.S. District Court judge in his hometown of Fort Worth, Texas to serve a restraining order to the rest of the B2 management,.

In protest, two biospherians from Mission 1, Abigail Alling and Mark Van Thillo break the seal on B2 from the outside, symbolically ending the closed-system experiment.

1995

Ed Bass rents the site to Columbia University.

2003

After delinquent rent payment by Columbia, Bass takes over management.

2007

Bass donates B2 to its present owners, the University of Arizona for climate research.



View inside the Human Habitat of Biosphere 2 packed up in boxes after Columbia University takes over management. Photograph by the Center for Land Use Interpretations, 1995.