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SOME IDEAS AND QUESTIONS REGARDING SPACE STATION DESIGN

FOR HUMAN USE

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As a designer and writer, I appreciate the creative thinking of the late Buckminster Fuller, who once referred to the earth as 'a spaceship on a gravity leash.' When astronaut Bruce McCandless recently separated from his umbilical cord and floated free, it seemed like a birth-- as though the gravity leash had been dropped and a new, human planet had been born.

If the earth is a spaceship, we are all astronauts. Fragile, tough, self-regulating and cyclically operating, we jump on and off of our planet all of the time, without needing to be rooted like plants. But too many people forget how interwoven with earth we are, how consistently we need not only food, warmth and a roof, but nurturing, meaning, spiritual sustenance, love, and human touch-- and humor.

What has struck me over and over when I hear reports from the scientists and pilots who have reached outer space is the laughter: the jokes these people crack, and the stunned, poetic reaction to the beauty they see, the whole earth in space. And how philosophical and inspired many of them become. This in spite of living in cramped tin cans with levers and buttons and flashing lights.

To optimize a long term outer space environment, I think we need to research and draw upon what is really human and humane; what individual

Raymond Loewy, William Snaith Associates, Industrial Designers in New York City. I was the only woman on the product design team. Though the others may have seen my colorful banners, multilevel strap-in tables, hanging plants and grow-lights as "feminine" and "untechnical", I am a female human and I addressed my design skills and analytical thought to the humanity of the passengers, the spirit of fun and play in a new kind of space. It is exciting to be able to present the idea now, 15 years later, when humanism and high tech are starting to interface.

Just because we are entering the realm of science fiction doesn't mean we need to stick with set designs, or send people out to live in a Greyhound bus station. On the other hand, the appointments of a luxury ocean liner, all polished woods and gleaming brass and palm trees, may be inappropriate where minimal weight has to do maximum work.

I think we need nests in the trees for a high flyers: private organic spaces if the outer shell is vast and cylindrical and people are floating; or else group gathering areas of large dimensions if the general milieu is tight little spaces. We need touches of whimsy, of softness, and lots of places for the individual to put or choose personal objects and images, to make the station homey for that person.

The human animal is not a machine. Maybe we need to study the animals' environments too.

Some specific suggestions my friends and I have come up with to humanize a space environment include:

-- Natural, not plastic, materials. Natural fabrics on the walls, with banks of subtly colored lights the passenger can change at will, since color is so

persons require and desire to keep them healthy, happy, productive and secure. What colors, shapes, spaces, what kinds of order or clutter make us feel good, therefore becoming more stable, optimistic and efficient.

I believe two places to look for applicable answers are the indigenous cultures of planet earth, shelter design and living patterns of native people: Plains and Southwest Indians, nomadic Semitics and Asians, and Polynesian sailors who spent long months on the high seas with their families, their thatched shelters, their domestic animals and some coconut trees.

That's one place to look, because people who can make a human environment from available materials in an economic, ergonomic way, while at the same time keeping their spiritual energies focused through meaningful ritual and reverence, have much to teach the high tech world.

The other place with some answers may be the prisons. What does not make for a human environment? What is oppressive, dulling, psychologically upsetting of balance, dehumanizing? How to avoid those traps on a mini-planet orbiting in space may let us know, ultimately, how to stop torturing human beings in various kinds of institutions on earth. It looks like environmental research for space could have some global repercussions as well, if it could be approached from an ethically high place.

Obviously the answers are not all going to come from the engineers and ergonomics experts and corporate white males over 50, or we wouldn't be here today.

When I designed a three-dimensional weightless cafeteria for the space station set to go into orbit in 1985, the year was 1969 and the place was

psychologically important for peace of mind. Pattern templates to create light patterns at will.

-- A lot of plant material and grow-lights, some plants growing in earth, so the smell and feel of earth is present. A few uncaged, well-behaved animals, shuttle-pets: birds; dogs; cats; turtles; fish...

-- Use of natural wood for built-in furnishings.

-- Muted, rear screen still-picture projection from a large library of paintings, textiles, sculptures and photographs, chosen by the individual or group to express current interests, ease tensions and share cultural images of personal value. One person might need to see a beach, another a Manhattan urbanscape, while a third might feel good in the presence of a punk painting or old masterpiece.

-- A huge rear screen hemisphere might be used for total environmental effect: redwood forest or desert, as well as for movies, video and educational images for group conferences.

-- Ultimately, I can see the space station becoming its own little planet, with green plants growing on the outside surface under a greenhouse-like atmospheric outer shell. Why not grow food locally?

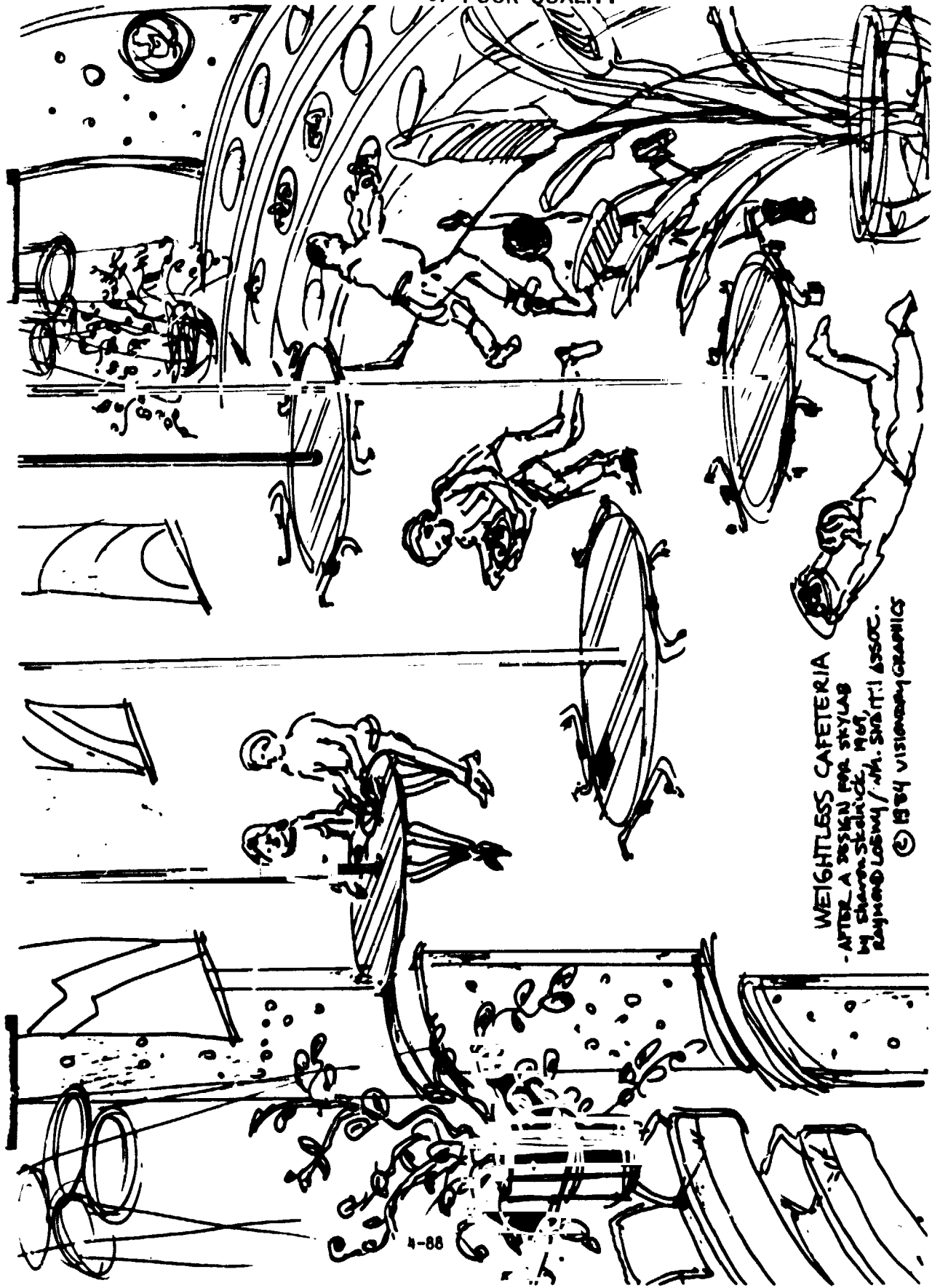
These little offshoots of earth could be wonderful, healthful spas for healing of mind/body/spirit as well as commercial and scientific pursuits. To achieve and sustain that kind of reality, I think the aims not only have to be of the highest human kind, but the accessibility of the station needs to be universal as well. This should not be a haven for the elite, but should be a sanctuary and thrill for all kinds of people: women, men, elders, kids, the

handicapped, all cultures, all colors, all opinions.

That's what earth is, after all-- or could be.

I hope your consultants are indigenous people and healers and artists, people with a respect for nature's cycles and ancient human wisdom. This is a great opportunity to create a truly wholistic place, the fruit of global knowledge of what is good for human beings gathered in one revolving, evolving sphere. This is a great chance. I hope you take advantage of it, and I thank you for hearing my thoughts.

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WEIGHTLESS CAFETERIA
- AFTER A DESIGN FOR SKYLAB
by CHARLES STURGEON, 1969,
RAYMOND LOBBY / AIA. SMITH ASSOC.
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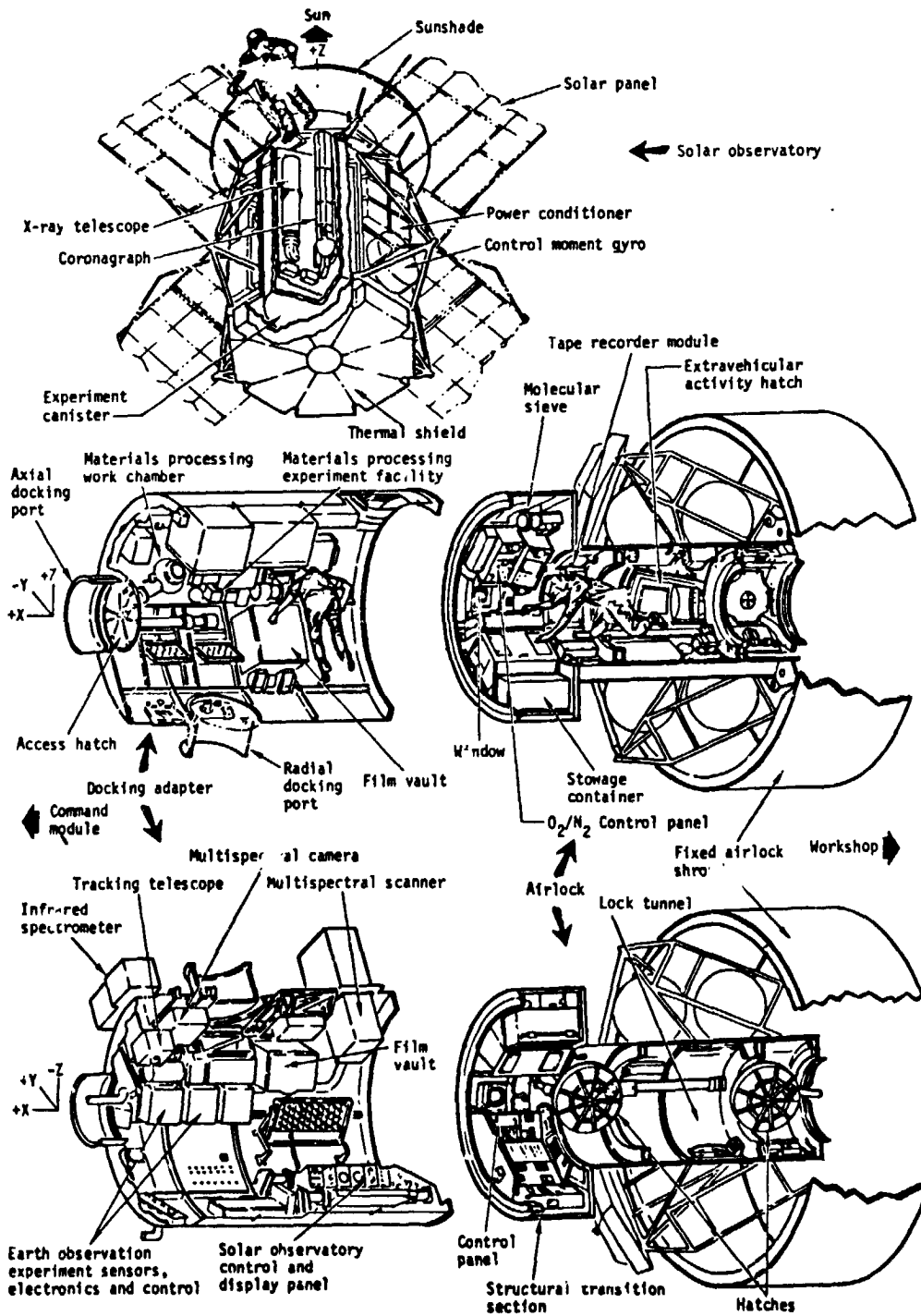


Figure 2-2.- Cutaway view of modules and launch configuration.

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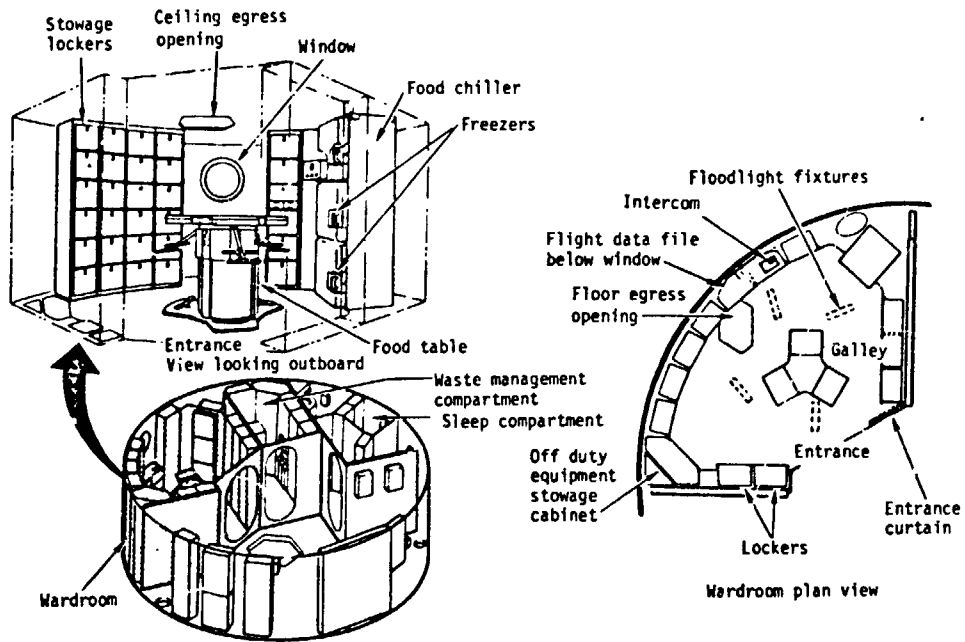


Figure 10-4.- Wardroom arrangement.

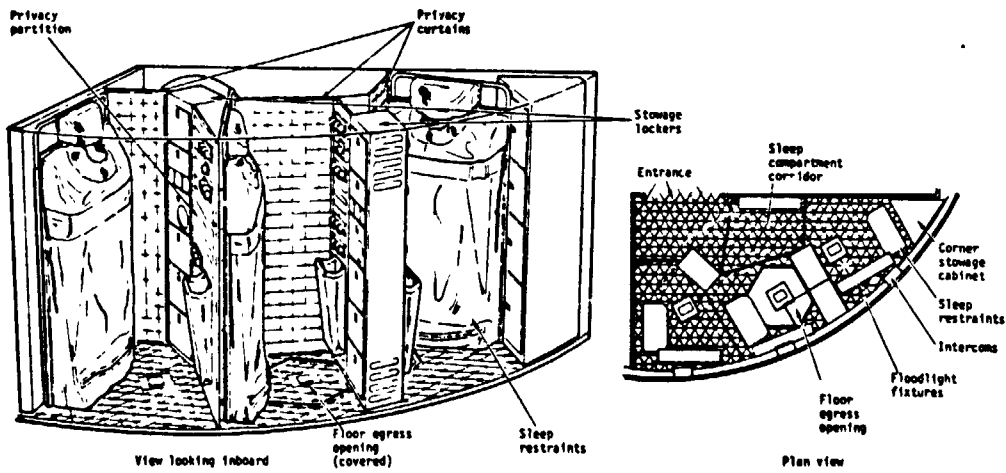


Figure 10-7.- Sleep compartment arrangement.