CRYONICS

The Alcor CryoTransport Program

2nd Qtr. 2000 A PUBLICATION OF THE ALCOR LIFE EXTENSION FOUNDATION Volume 21:2

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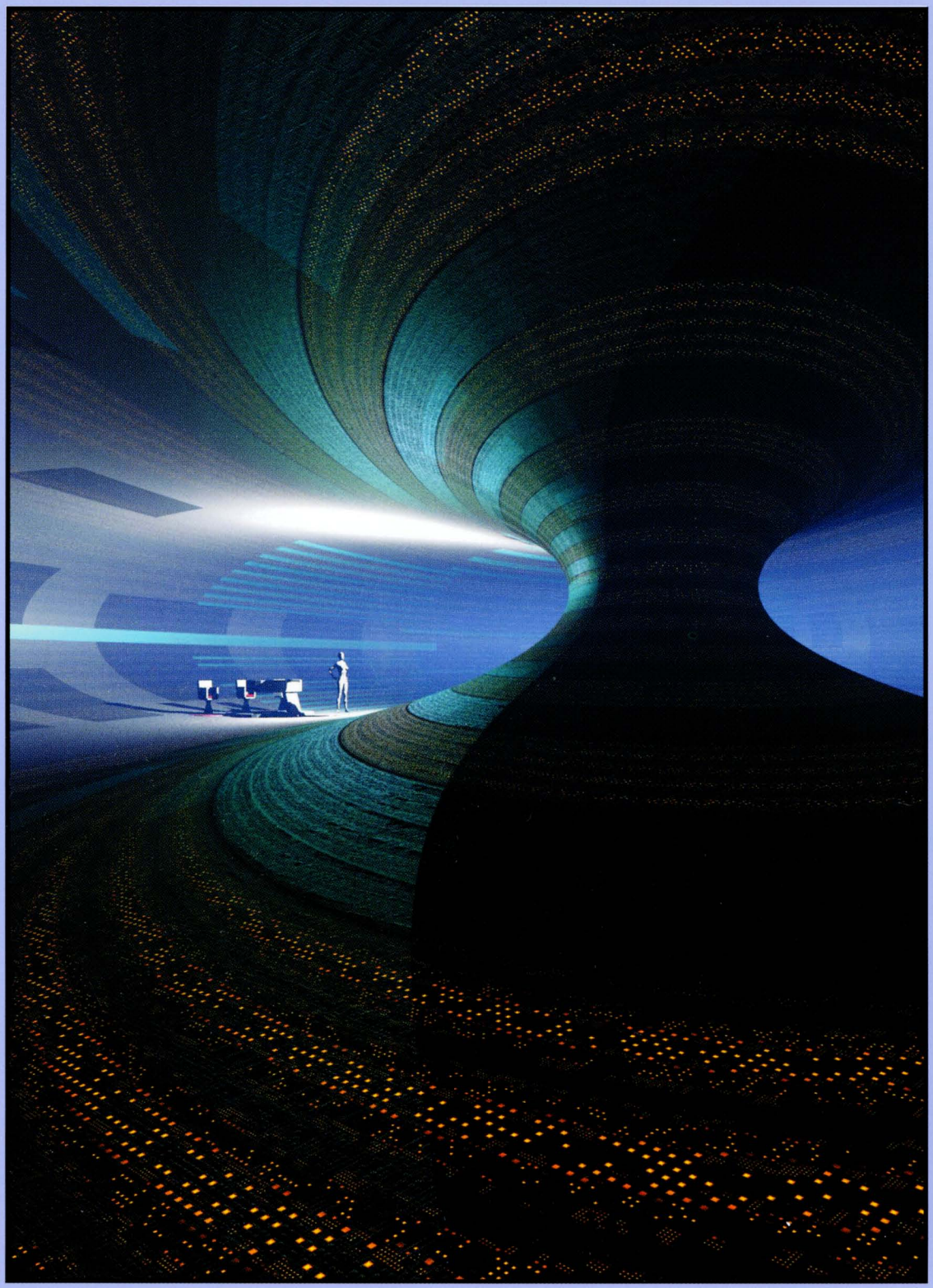
$7.50



BioTransport, Inc. An Update

During the past six months, BioTransport, Inc.'s development has been redirected.

Originally, the plan was to raise several million dollars added capital and offer cryotransport services to the public. Since then, Alcor has taken on several last-minute cases, and we can now see that liabilities and other difficulties could be higher than were earlier anticipated.

Instead, BioTransport will start by offering storage of viable cells for many uses, including pet cloning, genetic analysis, therapeutic cloning, and as a service to those who want fully viable cells stored for possible future cloning. Benefits expected are:

(1) More visibility for both Alcor and BioTransport, in areas where technological feasibility is well established.

(2) Positive cash flow, which can support the development of enhanced cryotransport systems and better training of teams.

(3) The likelihood that those who store cells cryogenically for future use are more likely to see the potential of cryotransport and then join as members.

BioTransport still plans to raise more capital and operate separately from Alcor, taking over its rescue services. At this time, however, our limitations of capital and qualified people necessitate Alcor managing BioTransport as a subsidiary, accepting shares in BioTransport for the assets BioTransport needs to assume rescue responsibilities.

In the long run, the quality of rescue operations you want must be developed by BioTransport, or other corporations like it. Alcor's growth, as the years pass, will be a side-effect of the availability of such services. We need this... So, we'll *do* it!

Fred & Linda Chamberlain

Mark Your Calendars Today! June 17-18, 2000

The Fourth Alcor Conference on Life Extension Technologies

Register and then make your room reservations with Asilomar immediately, to be sure of onsite lodging.

Asilomar

Conference Center
Northern California

Full details on pages 6 through 11, including information on conference location, speaker topics, abstracts, and registration forms.

For latest updates, see Alcor's website at http://www.alcor.org with large *"Conference"* link on entry page, maps of area, offsite lodging info, and links to Asilomar-related sites.

cryonics is a quarterly publication of the **Alcor Life Extension Foundation**

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Lisa L. Lock

Associate Editors
Fred & Linda Chamberlain

Volume 21:2

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Submissions may be sent via e-mail (fred@alcor.org or linda@alcor.org) in ASCII, Word, or PageMaker format. Mailed submissions should include a PC diskette with the file in any previously mentioned format (although printed text alone will be considered). All submitted media become property of the Alcor Life Extension Foundation unless accompanied by a self-addressed stamped envelope. The Alcor Life Extension Foundation assumes no responsibility for unsolicited manuscripts, photographs, or art. Send all correspondence and submissions to:

Cryonics Magazine
Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110
Scottsdale, AZ 85260

about the cover CGI art by Tim Hubley

letters to the Editors

Dear CRYONICS:

In the most recent issue of CRYONICS, Thomas Donaldson reviews P. Johnson-Laird's "The Computer and the Mind: An Introduction to Cognitive Science." As usual, I found Dr. Donaldson's review one of the most enjoyable parts of the magazine, and his comments on neural network models were very much on target. I would like to add, however, that a great many advances have been made in the neural networks field since the publication of Johnson-Laird's book in 1991.

Specifically, the symbols-versus-connnections dichotomy that has plagued cognitive science for the past few centuries seems finally to be yielding to a set of approaches that integrate symbols and connections in a principled way. Instead of taking a hybrid approach that simply "mixes" symbols and connections, some researchers (such as my colleagues and I at Brandeis University) are exploring new network architectures, especially recurrent (feedback) nets, that can support a rich variety of symbolic behaviors, including the crucial ability to compose symbols into language-like structures. Claims made by cognitive scientists such as Jerry Fodor about the inability of neural nets to perform this kind of symbolic composition were the strongest argument against connectionism as a cognitive framework, so anti-connectionists now find themselves in a much more difficult position than when Johnson-Laird's book was published.

Paralleling this research has been a move away from approaches like backward error propagation in feed-forward networks, which treats a network ("brain") as a black box that has to be trained to produce an input-output mapping for a given application. Instead, cutting-edge research on feed-forward networks has shifted toward understanding the abstract mathematical properties of these networks, independent of any particular mapping or application. Such research should contribute significantly to our attempts to understand, as Dr. Donaldson says, "how our brain works IN OUR BODY," or at least, how the brain could work, in principle.

What advantages such progress may present for cryonicists remain to be seen; however, any success that science has in explaining a physical basis for systematic human behavior (like symbol processing) shifts the persuasive balance heavily in the favor of people who, like us, believe that physical preservation of the brain is the key to preservation of our (spiritual, mental, conscious) identity.

Thanks to Thomas Donaldson for another thought-provoking book review!

Sincerely,

Simon Levy
levy@cs.brandeis.edu

* * *

Dear CRYONICS:

I ran across a disturbing article. "Brain Aging and Midlife Tofu Consumption" by Lon White et al. in the April 2000 issue of the *Journal of the American College of Nutrition* (vol. 19, #2, pp. 242-255) presents a well-researched study showing that moderate consumption of soy may cause senile dementia 5 years earlier than with little or no soy consumption. Since many Alcor members (such as myself) have been eating a lot of soy under the assumption that the stuff was healthy, it is somewhat shocking to learn the reverse may be true. This is only one study, but it appears sound. Hopefully, it's a false alarm, but... Time for this vegetarian to find some new protein sources.

Keith Lofstrom
keithl@ieee.com

Commentary

"Imagination Redux: A Joy-less Moment"

by Natasha Vita-More

When I read such attention-getting articles as "Why the Future Doesn't Need Us," by Bill Joy in *Wired* magazine's April 2000 issue, my first reaction was why imagine that we aren't needed (I like to be needed), and why involve all of "us."

A more attentive instant prompted my thoughts of the nakedness—the shear bareness—of exposing one's fear in such a public forum as *Wired.*

Thinking about the emotions of vulnerability and the baring fears, my thoughts turned to the human form of *David* while reading Michelangelo's poem placed neatly within the article. Michelangelo's expression of nakedness exposed strengths and reflected the Renaissance that brought new importance to individual expression and worldly experience.

"The marble not yet carved can hold the form Of every thought the greatest artist has."

(Michelangelo)

Although it is an entirely different quality of marble that distinguishes *David* from Marble Arch in London, Marble Arch is

where people publicly rant and rave about their fears. (Located at the western end of Oxford Street, by Speakers' Corner in Hyde Park. The tube station is on the Central Line.) I remembered passing that corner once in 1985. I had fear too, but it wasn't stirred by sophisticated future technologies. My fear stemmed from the mundane technology of the tube subway and the biological technology of my own faulty memory while a bit stoned and trying to recall the exit getting me from John Clute's flat to my own lodgings.

Regardless, there is nothing wrong with apprehension. It alerts us and warns us. Being apprehensive about the future warrants understanding. Being frightful about the future warrants a movie script. While a shaman might say that the frightened person is obviously facing his or her fears or "shadow" (that naughty child in humans that gnaws at uncertainty while tempting limbic-combat); the extropian might be a bit more intent at wondering what developmental dementia occurred in Joy's evolutionary trail. Fear is an emotion that humans inherit, that transhumans try to understand and refine, and that posthumans (whatever we may be) may use for verve, perchance, or only have a distant memory of.

Joy said, "For all its eloquence, Sagan's contribution was not least that of simple common sense—an attribute that, along with humility, many of the leading advocates of the 21st-century technologies seem to lack." Wha—Huh? Common sense is what "we" aspire toward, in deference to Sagan, and in deference to our own selves. It steers our intentions as we seriously try to understand and work with the technologies available and our possible future scenarios. Joy's anthropomorphizing of our technologies to reflect human ignorance appears to be a low-blow reflection on the designers of such technologies and those who support its positive means.

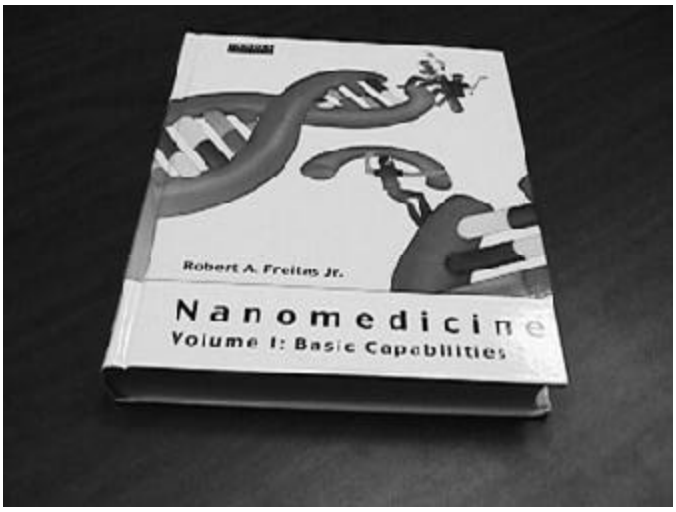
So many people hid behind fears while attempting to appear confident and clever. Not Joy-less. He exhibits his fears right smack in the middle of the guts of high-tech culture and carves out potent extropic names—Kurzweil, Moravec, and Drexler—for all to see.

Doesn't Joy read *Wired?* While I can sympathize with his concerns, "It's a moral and ethical obligation to see people in complex ways..." (Susan Sontag), I cannot accept his myopia. "But if we are downloaded into our technology, what are the chances that we will thereafter be ourselves or even human?" (Joy) This type of phrasing would take the hardest of marbles and the strongest of diamonds to carve through the denseness of its single-track and isolated thinking. l

NANOMEDICINE, Volume I

The first of a three-volume technology series

by Robert A. Freitas, Jr.



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Fourth Alcor Conference on Life Extension Technologies

www.alcor.org

The world is changing rapidly. Only a few years ago, most people considered the cloning of mammals to be no more than science fiction. Repeated successes in this area, however, have made it a reality today.

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Even aging itself is under very heavy attack by today's biological and medical technologies. The Fourth Alcor Conference on Life Extension Technologies is a meeting of scientists, technologists, and individuals who are working in fields leading toward the expansion of human health and longevity.

This conference will cover topics relevant to these pursuits.

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This Conference Registration fee is paid in addition to the cost of the lodging package, which must be reserved directly through Asilomar (381-372-8016) or see the Alcor website.

Make checks payable to Alcor. Checks and bank drafts must be in U.S. dollars drawn on a U.S. bank.

Because our own staff needs to travel to Asilomar, we cannot make online or fax registrations after Friday, June 9, 2000. After that time, registration must take place at the door. For your convenience, it is not recommended that registrations be mailed after June 1, 2000. Any registrations not received prior to June 9 will not be processed (and attendees will have to register at the door, at that price.

Refunds of registration fees are subject to a $50 administration fee, must be requested in writing, and must be postmarked no later than May 15, 2000.

Speakers

Glenna Burmer, MD, PhD
LifeSpan BioSciences

Identifying Aging Genes by Using DNA Microarrays

DNA microarrays, or "gene chips," are one of the most powerful methods in biotechnology for simultaneously analyzing the expression of thousands of human genes in human diseases. Data will be presented on genes that are up-regulated or down-regulated in aging, those that are drug targets or potential diagnostic markers, and those that are clearly aging associated. This technology is changing the way discoveries are being made in both antiaging and medicine in general.

Fred Chamberlain, BEE
Alcor Life Extension Foundation

Bioimpedance

Bioimpedance is an electrical characteristic of biological structures where tissues with intact cell membranes behave very differently from tissues that have undergone cell membrane breakdown. This characteristic is sustained for extended periods after cessation of heartbeat and breathing. Automated means of comparatively evaluating cryostasis protocols, as well as monitoring and comparing specific cryotransport operations, will be discussed.

K. Eric Drexler, PhD
Foresight Institute

The Conservative Treatment of Transient Inviability; or, Your Computer Crashed — Shall I Throw It Out?

Emerging nanotechnologies will lead to cellular-scale robotic surgical devices able to sense and repair tissues with molecular precision. Those of us who stay intact until this technology arrives could achieve and keep good health indefinitely.

Gregory M. Fahy, PhD
21st Century Medicine

Cryobiological Research at 21st Century Medicine

A broad range of problems in cryobiology is being probed. A central aspect is our attempt to demonstrate successful cryopreservation of mammalian organs, particularly the kidney. Construction of perfusion equipment, new surgical approaches, our new surgical staff, and initial results of perfusion with novel, low-toxicity vitrification solutions will be described.

James J. Hughes, PhD
Univ. Chicago, Dept. Medicine

Our Evolving Definitions of Death: Looking Ahead

The definition of "death" has changed radically in the West in the last thirty years. Cryostasis will be a part of a group of therapeutic modalities that will force a new personal identity-based concept of rights. One possible outcome might be that the resuscitated cryonaut would be legally and phenomenologically different from the person who was placed into cryostasis.

Ralph Merkle, PhD
Zyvex Corporation

Nanomedicine and Cryostasis

Human beings are made from molecules, and how those molecules are arranged makes the difference between good health and bad, between youth and old age, and between life and death. With nanomedicine, we should be able to rearrange molecular structures in most of the ways permitted by physical law, including the ability to reverse freezing injury, saving the lives of most of those put into cryostasis today.

Richard Morales, MD
Private Practice

Setting Your Internal Clock

Circadian rhythms are well-known scientific phenomena. Recently, we have learned how to reset our internal clocks with diet, exercise, sleep, and hormonal manipulation. Some of the breakthroughs in this area and their application to antiaging medicine will be discussed.

Fourth Alcor Conference on Life Extension Technologies

Robert Newport, MD
BioTransport, Inc.

The Fear of Death and Its Impact on the Rational Process

The fear of death interferes with an individual's rational process, especially in relation to acting to preserve and extend life, and possibly via cryotransport, be resuscitated. The work of Stanislow Groff, M.D., my own personal working with depressed and anxious patients in a private practice of psychiatry, and a review of current research on the effects of stress on early brain development will be discussed.

Tomas A. Prolla, PhD
University of Wisconsin

Gene Expression Profile of the Aging Process

The gene expression profile of the aging process was analyzed in mice, revealing that aging resulted in a differential gene expression pattern indicative of a marked stress response and lower expression of metabolic and biosynthetic genes. Most alterations were either completely or partially prevented by caloric restriction, the only intervention known to retard aging in mammals. Gene expression profiling of the aging process provides a new tool to test aging interventions.

Gregory Stock, PhD
UCLA, School of Medicine

Who's Afraid of Freezer Burn?

Long before biological reconstruction of a frozen body (or brain) is feasible, technology would have to advance sufficiently for uploading to occur. Moreover, such developments will be sufficiently powerful to dramatically transform the world in a way that would make biology a far less interesting substrate for life than silicon and its progeny. The incentives for a biological rather than a technological awakening from cryostasis are unlikely ever to exist, so cryonauts—if they are someday resuscitated—are almost certainly bidding adieu to corporeal existence.

Natasha Vita-More
Author, Artist

A Talent for Living: Cracking the Myths of Mortality

An after-dinner presentation by Natasha Vita-More on her current book project followed by a panel discussion. Many have written about the technologies of extending life but not why we would want to live longer. There is an art to living—how we maintain our well being and how we bring aesthetics into our lives. We can approach life merely as a series of events or as a creative and challenging exploration. The panel will examine the cultural myths preventing mainstream acceptance of extreme life extension and discuss how to crack them.

Michael West, PhD
Advanced Cell Technology

Human Therapeutic Cloning

Technologies such as the identification and isolation of pluripotent stem cells, genetic and cell engineering techniques, and advanced insomatic cell nuclear transfer, will lead to means for developing tissue therapies that will overcome the present difficulties related to immune compatibility and graft rejection, and thus the requirements for use of immunosuppressive drugs and/or immunomodulatory protocols. These technologies set the stage for human therapeutic cloning as a potentially limitless source of cells for tissue engineering and transplantation medicine.

Brian Wowk, PhD
21st Century Medicine

Molecular Control of Ice Formation

Antifreeze proteins and ice nucleating proteins found in nature are able to respectively prevent or catalyze the formation of ice while present in very small quantities. It has recently been demonstrated that synthetic molecules are able to perform similar functions. The availability of inexpensive synthetic molecules for blocking ice formation opens new frontiers for control of ice in industry and agriculture and for eliminating ice in cryopreservation.

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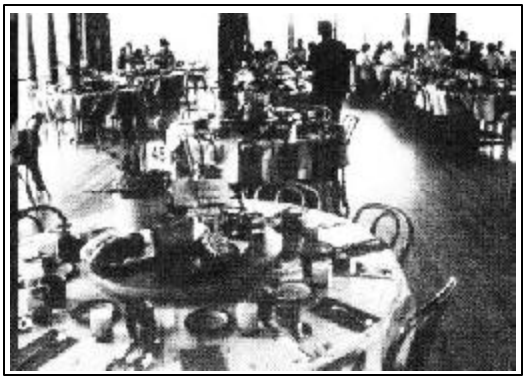

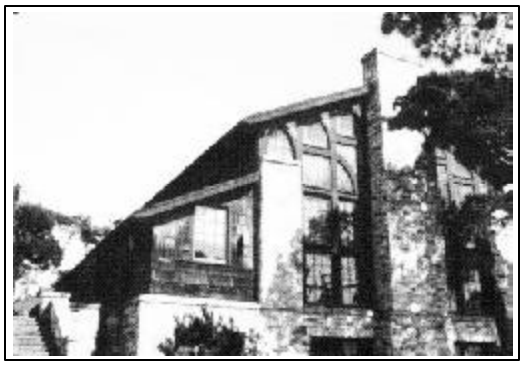

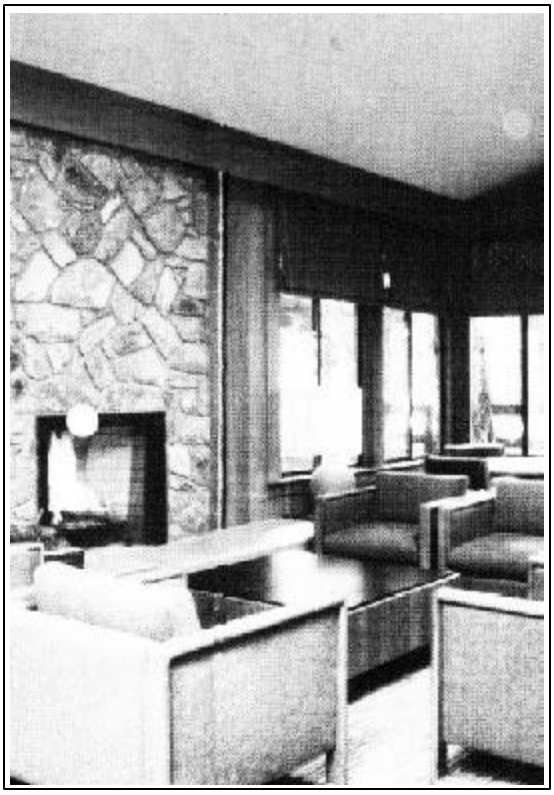

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To Register for Conference:

Includes Social on Friday evening, June 16, 2000, after-dinner Panel on Saturday evening, and presentations on Saturday and Sunday. The Conference will conclude with an introduction to Alcor Sunday afternoon, June 18.

Why Register Early? **Asilomar is a special, secluded environment that is highly sought after for conferences. They tend to sell out all rooms far in advance. Alcor was on a waiting list for one year before we received a confirmed date for this conference. Part of our contract with Asilomar is that we need to estimate the number of lodging rooms and meals 180 days in advance in order to make them available to attendees, and we have to guarantee the number of rooms 30 days in advance (or incur charges).**

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2. All rates are for full-time participation and include housing, tax and meals.
3. Any charges accrued with the processing of foreign checks or sending faxes overseas will be the responsibility of the conference attendee.
4. All cancellations are subject to a $25 per person processing fee. Cancellation **after April 14** is subject to forfeiture of all fees if space is not resold.

In the case of cancellation on the day of arrival or early departure, all fees are forfeited.

REMEMBERING MAE ETTINGER

by R. Michael Perry, Ph.D.

The wife of cryonics founder Robert Ettinger and a longtime cryonics activist herself, Mae, fell victim to a heart attack and stroke March 18 and was promptly frozen by Cryonics Institute. She will be missed by those of us like myself who remember the Ettingers' generous hospitality over the years, as well as for the direct contributions she made to cryonics, including a long tenure as editor of a major cryonics newsletter, *The Immortalist*.

Mae Annette Normandin, the future Mrs. Ettinger, was born June 18, 1914, in Jackson, Michigan, and lived in that state until moving to California at age 14. There she stayed long enough to reach adulthood and attend college for one year. Then she returned to Michigan where she married and, as Mae Junod, raised her two children, Patricia and Bonnie. (The marriage to Ettinger occurred later.) Early occupations involved office work, including operating a comptometer—a calculator and forerunner of the computer. When her children got older she returned to school and earned two master's degrees, the first in English liberal arts, the second in library science, and worked as a librarian and a teacher. Then, retiring from teaching but finding life boring, she obtained a third master's degree, this time in counseling, and received a limited license as a psychologist. All her degrees were from Wayne State University in Highland Park, Michigan, where one of her instructors was Robert Ettinger.[1]

Mae Junod from issue #1 (January 1970), *Cryonics Society of Michigan Newsletter*.

Bob's field was physical science. When she first returned to school after raising her family, on February 13, 1961, Bob taught the first class of the day on her schedule. Besides teaching and the more usual preoccupations he had another, very passionate interest involving the idea of freezing the newly deceased for a hopeful, eventual reanimation: what would soon become known as cryonics. At some point he communicated the idea; in an interview she said, "I think there was a fair, automobile show, or something like that, and he had a booth there, on cryonics. I helped in the booth and my daughters helped."[2]

This was before *The Prospect of Immortality*, Bob's famous book on the freezing idea, was completed. But as that time drew near, Mae found herself strapped for cash, "and he paid me to type his manuscript for him."[3] On June 5, 1964, *The Prospect of Immortality* was published by Doubleday, and the freezing idea soon gained wide exposure.

Mae remained in Michigan and became a workhorse for the cryonics movement there. The Cryonics Society of Michigan (CSM), started in 1966, was patterned after the Cryonics Society of New York

headed by Curtis Henderson, the first organization to publicly offer cryonic suspension. CSM eventually developed into Cryonics Institute (CI), which handles actual cryonic suspensions for members worldwide, and the Immortalist Society (IS, formerly Cryonics Association or CA) a sister organization involved in promotional work, including publishing a newsletter.

This newsletter has appeared under three titles during its long and eventful history. Starting prosaically, in January 1970, as *Cryonics Society of Michigan Newsletter*, the then-monthly publication was renamed *The Outlook* after just two issues. Finally the present title, *The Immortalist*, was adopted in March 1976. Mae was co-editor of the newsletter, with Patrick Dewey and Bob Ettinger, from the beginning in 1970 to March 1974, whereupon she resigned, and Dewey became the single editor. But she resumed the editorship, solo this time, in January 1977 and continued until her retirement.[4] (Patrick Dewey meanwhile became editor of a new publication, *Life Extension Magazine*, later *Long Life Magazine*, which, however, ceased publication in 1980.)

The cryonics movement had started optimistically in the 1960s, when humans first set foot on the moon, and perhaps almost anything seemed within reach to many thoughtful people. By comparison the decade of the 1970s was a time of great trial for cryonics. Organizations folded and suspensions terminated due to lack of funds or disinterest. Newsletters were discontinued or never started. One shining exception was *The Immortalist* whose regular publication continued throughout this difficult time, announcing to the world that cryonics was not defunct, that some were determined to see it survive.

The Immortalist remained a monthly until finally going bimonthly with the May/June 1996 issue. Mae retired as editor (and more generally) at the end of 1996, at the age of 82. Her long tenure is surely unique in the cryonics field—or perhaps is matched only by the considerable efforts over the years of her husband, whose writing is found throughout the newsletter. It is the more remarkable because, as far as I know, it was all volunteer work, done not at all for salary but only from pure motives of dedication to a cause.

Looking through the issues of this publication (and I am fortunate in having a complete set) shows that most of the time Mae is focused on impersonal things or others besides herself, as would be expected of an editor, but occasionally she tells us something of a personal nature. On one such occasion, in the issue of September 1972, she describes a trip she undertook to England the previous month, to visit a small cryonics group there, the London-based British Cryogenic Society.

Cover of September 1972 *Outlook*, relating to the London visit.

"As an innocent abroad (my first time) I found London completely fascinating. The sense of history is overwhelming. Westminster Abbey is magnificent. Trafalgar Square is the dignified and very British great, great, great grandfather of our own Kennedy Square. That is, it is a place for citizens and pigeons to use that is central to the city.

"London has restored its buildings to a large extent rather than destroy them and replace them with modernity. Consequently walking about in the city is a joy. Most especially the Georgian architecture is charming with a grace and simplicity which I have seen no place in America other than New Orleans.

"...Restaurants in that area are small and *cosy*. I had a delightful young haberdasher for a dinner companion at *Le Bistingo*. At *Wheeler's* I had to sit at the counter, next to a counselor so typically British and attorneyish he was like a character in a play.

"I also had a bottle of 1967 Hocheimer with my meal. This, along with the glass of Sauterne I had at *Le Duet* ... had nothing to do with my missing the curb when I started back to my hotel on Oxford Street. I was helped to my feet by a

most courteous gentleman who even let me lean on him a moment to get over the shock of suddenly sitting down on the pavement. He did not know the way to Oxford Street, but as it turned out I was pointed in the right direction and I eventually arrived all safe and sound, all the way on foot in high heels yet. It felt like twenty miles, but I think it was actually only about five.

"I brought back a choice collection of bruises along with a few other things that I *purchased*. I fell out of a bathtub in Westminster. It was 22" and I am used to one only 14". I also tripped over a flagstone in the sidewalk in Chelsea in front of Algernon Swinburne's former home. I consider it a minor miracle that I didn't break anything, falling about as I did."[5]

This visit, however, was not primarily for tourism but instead, as I've said, to contact a cryonics group. "I soon found out ... that the philosophical aspects of the cryonics concept are exceedingly important. ... It is difficult for a culture steeped in ancient and valued traditional ways of thought to accept something so radical ... There are many attendant areas of disbelief and objection that are going to have to be overcome. Granted a victory over the problem of successful resuscitation would obviate much of the philosophical resistance, nevertheless, much of it is not going to yield to even guaranteed immortality. For instance, much of religious belief is inherently nihilistic, holding that the life of the body is inferior to that of the 'soul.' Also, life is difficult for many people. It is not easy for them to believe that it will be any better in the future than it is now, or for that matter, that it might not be worse."[6]

Looming over the cryonics movement, and especially for Mae, one imagines, was the principal founder, Robert Ettinger. In a 1973 newsletter column on personalities in CSM she said, "Robert Chester Wilson Ettinger is an impressive name. The man who bears it is an impressive, though most unpretentious, man. Brilliant, intellectually daring and physically and psychologically courageous, he will go down in history as the man who challenged the inevitability of death and managed to make the concept of immortality not only assume a broader significance but to become both definite and real."[7]

By then Bob's book, *Man Into Superman*, a sequel to *Prospect of Immortality* had appeared. In a 1973 review Mae notes that Ettinger relies on the concept of enlightened self-interest to provide motives and meaning for a future existence beyond the human level. In particular it could help resolve a possible conflict of interest between the individual and society. But—showing her attitude was not simply one of unabashed hero worship—she then takes the author to task for not applying his own principle.

"The sad part of Ettinger's approach to this problem [society versus the individual] is that he has done so little more than merely *suggest* [enlightened self-interest] as being *necessary* [to its resolution]. He does not develop this idea, nor does he strongly enough advocate it. In line with his philosophy he does not consider the 'saving of mankind' as his bailiwick. Nevertheless, it seems enlightened self-interest should lead him to reevaluate his position."[8]

In another personalities column the same year Mae offers a self portrait that shows she was a strong advocate of premortem suspensions at a time when there was little likelihood that laws would permit them. "From the first time I encountered the concept of cryonics I have had one primary objective—to accomplish the freezing, before death, of those whose legal demise is near. Naturally, the reason I want this is to assure that at my own time of death I will be able to avoid as much damage and suffering as possible. However, to this date I have received no encouragement from anyone that such a procedure will ever be allowed. It is confused with mercy killing—which it is not in my mind."[9]

A few years later Mae would write a book, *The W-O-T Position or Self-Actualization for Women* (Impact Press, Roseville, Mich., 1981). It is not for or about women only but deals with human development more generally, as we progress into the future. How should we progress? This is a subject that only a few writers had tackled before, the principal one being Robert Ettinger with *Man Into Superman*. Some comments from Mae's own book, reprinted in the July 1981 *Immortalist*, offer an interesting commentary on Bob's better-known work, as well as a glimpse of her own thinking.

"Reading *Man Into Superman* I did not know whether to laugh or cry. The first sentence sets the tone:

'By working hard and saving my money, I intend to become an immortal superman.' Ettinger then proceeds to tear down just plain humans with a remorseless torrent of logic and a kind of offhand humor that leaves the reader both depressed and titillated. His subject titles are hilarious: 'Life in the Garbage Can' ('Many humans, he says, 'have adapted to it'); 'The Elimination of Elimination' ('... lice ... are incompatible with the better life, and so is the toilet'). His comments on human existence are outrageous, but they are true, and they sting.

"On page 8 he says, 'To be born human is an affliction. It shouldn't happen to a dog. Yet the disease is definitely enjoyable'; on page 9, '... homo sapiens is only a botched beginning ... .' On page 10 and 11 he is very nice and says all of the things I believe: 'Some say human potential, with the existing genetic basis, is virtually unlimited; man's brain is a treasure chest to which we need only find the right key ...' But when I got to the bottom of page 11, he was at it again: 'On the other hand, it is difficult to be patient with our cheap bodies, erratic emotions, and feeble mentalities ...'

"Ten pages later he writes, 'By now it should be clear man is an accident, not only his body, but his psyche a patchwork of makeshift adaptive compromises.' And later on: 'In sum, then, man ... can be considered only a beginning and a dubious compromise.' Then, 'Man is ... both limited and confused in his fundamental nature; the confusion of poorly reconciled instincts and emotions amounts to racial psychosis, a kind of built in schizophrenia.

"To this I say, 'Amen!' But Ettinger goes far beyond the simple solution I espouse. He considers not human development or even human evolution, but something far more drastic, creation of another, a far different, albeit superior, race. He is a male, an instrumentalist, a tinkerer.

"I say, at least first, let's see what we can do with what we already have."[10]

Mae Junod and Bob Ettinger were married in August 1988, following the suspension, the preceding November, of Elaine, Bob's wife of many years. They lived in Oak Park, Michigan, until moving to Scottsdale, Arizona, in October 1995. On the occasion of her retirement from editing in December 1996, Mae offered some remarks that seem appropriate now.

"In closing I want to thank the many contributors to the pages of *The Immortalist*, and [also] the loyal members of IS who have expressed so much appreciation to Robert and me for our efforts. We are still with you in spirit ..."[11]

Robert (Bob), now 81, continues his active work in cryonics, including contributing to *The Immortalist* and email correspondence. In announcing the suspension over CryoNet recently he said, "She was a good woman, a good wife, and a good friend. I miss her terribly, but retain hope for all our present and future patients." He also extends thanks "to the kind friends who have given their support and their condolences."[12]

Mae Ettinger about 1995 (from *The Immortalist* [November-December, 1996]).

I thank Bob Ettinger both for information he has provided and for permission to quote extensively and use images from The Immortalist *and its earlier incarnations.—MP*

REFERENCES:

1. Data on school attendance are from *The Outlook* (July 1973), 2. Birth data are from Robert Ettinger, private communication (2 May 2000). Names of children are from *The Outlook* (October 1970), 6. Other information will be found in "Interview with Mae Junod," *Venturist Voice* (Fall 1987), 32.

2. "Interview with Mae Junod," 32.

3. Loc. cit.

4. See, for example, *The Immortalist* (January 1980), 2, and (November-December 1996), 1-2.

5. *The Outlook* (September 1972), 1.

6. Ibid., 2.

7. *The Outlook* (September 1973), 1.

8. *The Outlook* (November 1973), 2.

9. *The Outlook* (July 1973), 2.

10. *The Immortalist* (July 1981), 7.

11. *The Immortalist* (November-December 1996), 2.

12. CryoNet message #13418 (23 March 2000) <cryonet@cryonet.org>.

Dr. Robert Newport

on communicating with your personal physician

April 26, 2000

To all Alcorians and other cryonicists:

You are aware that physicians require a complete health history from their patients in order to provide optimal health care. The more information the doctor has, the better the diagnosis and resulting treatment plan. Obvious, right?

It may not be obvious yet, either to you or to your personal physician, but your interest and commitment to cryotransport is an important part of the health history that your doctor needs in order to provide for your total health care. Cryonic suspension is beginning to appeal to many doctors, as an important treatment modality. Instead of "losing a patient" to death, the doctor can prevent death (biological death, not legal death) with the "therapy" of cryostasis. With planning and coordination with the physicians at Alcor, this "therapy" has a much better side effect profile, which will most likely mean much less time in the freezer.

I realize that it has been difficult for many of you to even think about talking to your doctor about cryotransport, fearing ridicule or perhaps worse, a referral to a psychiatrist. However, if you could have seen the response of most of the physicians with whom I spoke at the A4M conference, you might be a lot braver. Once the doctors understood the potential of nanomedicine they became enthusiastic, and once they had a chance to talk with a medical professional about cryostasis they became very interested in how they could help their patients. A large and satisfying number of them joined BioTransport's Physician's Referral Network.

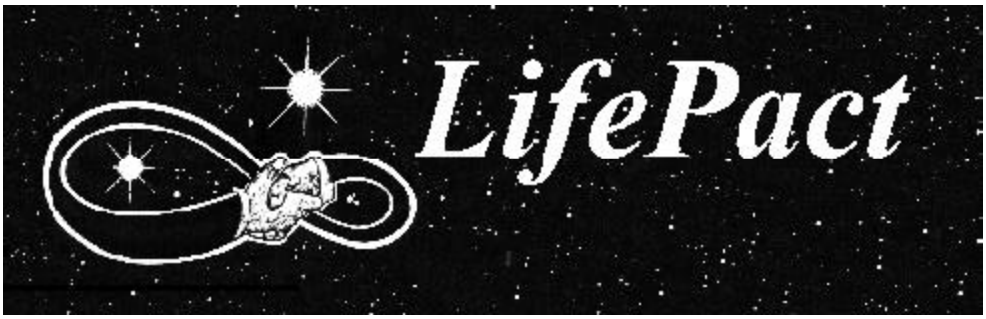
As a physician, I know that your own physician too, would respond positively to information regarding your health history and how to best assist you and us. We at Alcor are preparing a packet of information for personal physicians. We will include in it the details of how we can all work together as a team to help prevent biological death, not only in monitoring a patient's decline so that we may be at the bedside at the optimal time, but also with the administrative tasks as well as with the medications that can be given prior to pronouncement. We will make this package available upon request to any of you who would be willing to give it to your physician. (And if you are still a little fearful, doubting that your doctor would understand, then I invite you to involve me directly in this task. I would be happy to consult with your doctor regarding your cryotransport). Contact me via my e-mail, holodoc@pol.net, or through Alcor Central.

As you know, Alcor has the largest, best trained rescue teams in the world. BioTransport, when it comes online, will have the first "all professional" teams ever. We want your personal physician to be on your team. Please help us help you. Contact us and request the physician information packet, have your physician contact us, or ask us to contact your physician.

Also be assured that these communications on your behalf are provided as a standard part of your Alcor membership and are supported by BioTransport, Inc., as well. It is vitally important to Alcor and BioTransport that there be no impediments or obstacles to our "being there for you" with maximum effectiveness, if you need us...

Thank you,

Robert Newport, M.D.



Who will bring us back? Where will our friends be? Will we have things from the past, or must we start from scratch? Will our funding for CryoTransport (cryonic suspension) cover Reanimation, Rehabilitation, Reeducation, and Reintegration with Society? There are many facets, many words for pointing to these enigmas, and many, many questions, but they are all part of a single picture!

This picture takes us beyond initial arrangements for cryotransport. It requires that we talk about "coming back," whether that's more than a century from now, or much sooner.

At an earlier time, some held that this meant asking too many questions, too soon, about things which could not be answered. They claimed that it made cryonics sound as if it were "proven to work" (which of course it is not.)

Some held, and still hold, that answering questions about reanimation is the job of "our friends of the future."

But this ignores a profound reality: Our "friends of the future" may already be here. They could be among us *now*!

How can that be? Simple. Young people in cryonics at this time may not ever *need* to be suspended, except for fatal accidents or "incurable" diseases. They may, in fact,"never grow old." If they *are* suspended, it is likely that they will be reanimated before we who are presently older than they.

Remedies for aging may well advance more rapidly than young people of today "age!" Lifespan problems for them, in the ordinary sense, may turn out not to exist.

This does not mean young people are now "immortal." Far from it! Accidents and temporarily incurable diseases will not go away. Cryonics can seem even more reasonable, from the point of view that dying of old age is not inevitable.

For us, it means this: the future Managers of Alcor's Reanimation Teams may now be signed up. They may already be trained in cryotransport rescue. You could be sitting next to one of them at the next monthly meeting of your local group. You could *be* one of them *yourself!*

It is not too soon to be thinking about coming back. The people who will make it happen, if it is possible at all, are likely to be in our midst already, or will be soon!

There is one vital thing individual Alcor Members can do right away, and that is: record your thoughts, perhaps with a videotape recorder, helping reanimation teams fine tune what can be done to make the "coming back" process more effective and more satisfying.

For sake of simplicity, we'll use one term, "reentry," to cover reanimation, rehabilitation, reeducation, and reintegration. The term is *already* used for older people who are "going back to school," or "going back to work." (Ask for the "reentry" office at your local community college.)

Our program to make this a reality, within Alcor, we'll call "LifePact!" There's more to it than simply making video recordings. As the term suggests, it is possible for us to make "pacts" with each other, along with unilateral pacts for the benefit of those who are already frozen. Revocable donations can play a part. Backup funding placed with "patient advocate" organizations could fit into this, as part of networks outside Alcor.

A lot more needs to be said about LifePact than is contained here. What follows is just the opening of doors to develop and optimize the long range cryonics reentry programs you always *knew* would be needed!

PRESERVING YOUR MEMORY AND IDENTITY

by Linda Chamberlain
Alcor CryoTransport Manager

(Reprinted from LifePact literature distributed in a very limited way, during the late 1980s. Edited to reflect current thinking on this subject)

Have you ever tried to "go home?" Maybe you traveled to your home town after many years' absence, or visited an office where you once worked. You may have hunted up friends from your teens, or others "out of the past."

Most attempts to revitalize *sense of identity* by rediscovering roots this way are disappointing. It is not possible to step into a time machine and return to some beloved time (hated time, exciting time, or whatever). Things change. The longer between visits, the more changes occur. Seldom is "going home" comforting.

You can't *really* go home. You are no longer part of that environment, or the daily affairs of those people. You're into other things and so are they. You've grown and changed over the years; they have too. We are not static creatures, cast in concrete. We live in an ever-changing flow of activities and ideas, and our identities and personalities change and flow as well.

Memory and personality are basically physicochemical functions. Dendrites on neurons are developed in a biomechanical way, and then biochemical processes take over. This is, of course, a gross oversimplification of the process of memory, and a sweeping generalization about memory and identity. The purpose is not to argue the nature of memory or identity, but to talk about what might be done to hold onto one's memory, and with it, one's identity.

When my father-in-law (Fred Chamberlain, Jr.) was frozen, after his death in 1976, it sparked some questions in my mind: "When he's reanimated, which of the many 'Freds' that he has been, would he prefer to be again?" "This person has experienced many 'eras of being' during a single lifespan! To which of these eras would he return, if given a choice?" We know he can not really "go back," but if he looked into a mirror, what would be most likely to give him the feeling, "It's me!"

We have a picture of Fred Jr. taken approximately 25 years before his death, when he was about 50 years old and still on active duty in the U.S. Army. I never knew Fred Jr. during that vigorous part of his life. I only knew him later, during the years he spent in a convalescent hospital with most of his body paralyzed, after suffering several strokes and diabetes.

I'm certain my father-in-law would not want to be reanimated as an old, diseased man, condemned to spend his newly won years in the physical condition that once placed him in a situation of misery and finally ended his life. But I never thought to ask him these questions:

"When you're reanimated, Fred, what physical age would you like to be?"

"What part of your life do you most identify with? Which of the many 'Freds' that you have been would you most like to start with, again, after reanimation?"

"Would you like to be the person you were in the military? The retired owner of a farm? A young man just after World War I, working on a ranch and panning for gold in Arizona?"

The *"many Freds that he was from time to time"* turn out to be, psychologically if not physically, the totality of what he was. Most people would not want to choose just one aspect of their past lives and discard the rest. After all, every memory, every experience, is a part of the tinker toy structure that we call our identity. To throw away any part is to change the whole.

Most of us would not want to throw away any of our accumulated experiences, but would be happy to be rid of extra wrinkles and flab. Most of us would welcome that as if it were the result of a successful diet, along with rejuvenation.

Others would go further, embracing enhanced bodies and minds, delighting in the thought of new, improved, more beautiful, more useful, and more efficient bodies than the original ones.

There could be other, opposite points of view. For some, changes more radical than dieting or minor plastic surgery might be seen as a terrifying loss of identity.

People would expect to remember (when reanimated) what they looked like in a mirror, shortly before death. If they woke up in any other form, how could they be sure it "was really them?" Does that seem ridiculous? For some, this might be more important than we would guess!

Suppose, lacking other information, reanimation physicians rejuvenated and repaired diseased structures, and then used plastic surgery to artificially age the patient, to "optimize adjustment." In many cases, they would find the reanimated patient would have preferred "pre-rejuvenation." What frustration! How to know in advance? Easy! *Ask* the question, *before* Members are suspended. (See the video interview form on page 16.)

Memory loss is another possibility we cryonicists face. Without memories and identity, do we really "survive" at all? Are we "being kept alive" or "being killed" by *life support* during a terminal illness, if our brains are being destroyed due to lack of sufficient circulation? Are there ways to deal with this, at the other end?

Quantity and quality of memories we recover are important, but each of us has a different outlook. For some of us, even a 10% loss of memory might seem intolerable. For others, a 90% loss would be far preferable to obliteration. How can we know what any of us would have wanted, at reanimation time? Again, we must *ask* the questions, and *answer* them, before we are suspended.

In all cases, whatever we can do to preserve memory represents a gain. We can speculate about future technologies to

store our memories moment by moment in safely located vaults, so we can resume our lives after plane crashes, supernovas, or accidently tumbling into black holes without our running shoes, but these don't do us much good, as yet. There are tough questions to answer, like:

When you are reanimated, if your memory recovery is imperfect, what percent of your memories and identity would you consider minimally acceptable? Would you want to be cloned, with memory implants, if all of your memories were wiped out? What do you consider "the essence of your identity"?

Just as with the question, "How old do you want to look when you're reanimated?" there's only one person who can answer these questions: *YOU!* This is part of the purpose of the video interview process. You have to ask yourself these further questions:

Might there not be new technologies by the time we are reanimated, with which to enhance memories using outside data?

Don't we want *our* personal data available, in the event this is workable?

What can we do *NOW,* without unlimited wealth, without waiting for technological advances such as nanotechnology?

How many times have you come upon an old scrapbook and been flooded with recollections, hidden in your mind for years, or even decades, memories you might have thought were faded away? It's fulfilling when these deeply buried experiences "come to life." This points to a possible way to protect and enhance our memories, for ourselves, upon reanimation.

The self-interview outlined on the following pages is only the first step in your making of an "autobiography" in video form. Such an video series can begin with historical data, discussions about your values and philosophy, and your reactions to current events (it will be history when you view it in the future, but it will tell you a lot about you).

Expand on it with time, update it once a year or so, and your "video-diary" can capture the ebb and flow of your personality, the decline with age, the return of sparkle and youth from time to time, and other important changes in your life and your personality.

Tapes are easy to store, and moving pictures tell a better story than stills. Video cameras and recorders are inexpensive to rent and readily available. Soon, you can convert all your video interview records into "full-digital" formats.

If this idea appeals to you, after you finish your first video self-interview, keep at it! Gather up all your old photos and scrapbooks, sit in front of the camera with your momentos and reminisce! Hold nothing back! Watching these tapes in the future, you will see yourself as well as other people and places. That should help keep alive valuable memories about who you were and are, in the most vivid form.

People would expect to remember (when reanimated) what they looked like in a mirror, shortly before death. If they woke up in any other form, how could they be sure it "was really them?"

Adapt the questionnaire on the next pages to your future "in depth" video sessions. Photos will accomplish this for your historical review. Prepared questions, clustered around key subjects, will keep things rolling during parts of the tape where you discuss thoughts and ideas.

Create and store "video copies" of your memories as a realistic alternative to "going home" after being frozen for decades or centuries. Even if you never deanimate, this video scrapbook will reward you by revitalizing your memories and your own sense of self by not letting your roots slip away as you age.

Each one of us experiences many different ages and different eras in our lives. Some positive, some less so, but they all go together to make up the elaborate biochemical latticework that differentiates us from others.

(Comments by Linda from the viewpoint of her present work as Alcor's CryoTransport Manager.)

The video interview forms on the following pages were created some time after the above article was written. Fred and I have used them in a number of interviews.

In four or more cases, such interviews have been made with persons now in suspension. If not for that, far less would now be available for future use by their reanimation teams. This is not just an academic notion. I suggest you get started now!]

We may live to see nanotechnology or an equivalent that allows us to be suspended and reanimated with recall functions far surpassing those we have today. Another very real possibility is that we will be reanimated with only a disappointingly small percentage of the memories we had when we deanimated. If the latter is the case, I, for one, hope to have hours and hours of memories to pour back into my head.

Final Note:

If you absolutely cannot get the use of a video camera, at least gather up all your old scrapbooks and photos and shoot them onto 35 mm film. Black and white film will last almost indefinitely, even at room temperatures, whereas color film deteriorates far more quickly. If you have a tape recorder, sit down and talk about the items that you have just put on 35 mm film. Number the photos so the narrative on the tape and the photos can be correlated.

Plan ahead. Take simple, inexpensive steps, now, to store as many memories as possible. You'll be assisting the restoration of sense of self when you are reanimated. If, when you are reanimated, you find your memories a little fuzzy, those nice people in hospital green (or mauve, or whatever color they use in the future) can fluff up your pillows and turn on your video machine for a history lesson about YOU! Even if all you had was a black and white camera and an audio recorder, you'll probably find that they've turned it into a magnificent panorama. No science fiction or futuristic technology is required, although perhaps you will be able to experience these things in a "virtual reality" way? But it won't happen unless your personal information makes it into your future.

VIDEO SELF-INTERVIEW QUESTIONNAIRE

by Fred & Linda Chamberlain

(Adapted from an early version by Linda, part of LifePact literature distributed during the late 1980s. It has been highly edited to reflect current thinking on this subject, and condensed to fit the space available.)

I. WHY THIS SELF-INTERVIEW IS IMPORTANT

This self-interview is a significant first step in preparing a soft landing for your personal reentry vehicle!

The following format permits you to video-archive a wide range of information and ideas in just two hours, reflecting your memories and thoughts in general, along with your expectations and preferences as to cryotransport and reentry.

Such information will be important in vital decisions about your reanimation (if such turns out to be possible). This data may also be helpful or even essential, in maximizing recovery of your memories and identity.

II. HOW TO USE THIS SELF-INTERVIEW QUESTIONNAIRE

(1) Keep Track of Time. Put a watch on the table where you can see it easily. A stopwatch is best. Keeping track will help you get the most important information on a two-hour videotape.

(a) Timing reminders are provided. Change the numbers to fit your preferences, but we suggest a limit of two hours the first time you use the questionnaire.

(b) As you go, check to see how much time you are using (at the reminder boxes). Make a balanced archive of useful length for others who might help you.

(c) Without this, some people would rush through and fail to provide much detail. Others would come to the end of the tape before the questionswere finished.

(2) Read Interview Questions in Advance. Before starting, review the interview questions and timing suggested. Highlight areas you don't want to miss, in case you run out of time.The sections on personal data are intended to be elastic. Use a separate sheet to note down key words on related topics (if you have a lot of relatives, list their names).

(3) You Are Communicating with Persons in the Future. Treat the camera as a one-way mirror to the future. Visualize reanimation specialists, seated at a table decades from now, using your video as a way to "see into the past." Talk as though you were having a conversation with them. They *want* to know what you think. They *need* to know what you think. Your tape will be *all they have!*

(4) Relax. This Is a *Private* Interview. Once you are satisfied with the video (you may want to redo it), a sealed copy should be stored with your suspension organization. This archive can be highly confidential, not to be viewed by anyone without your permission. You could mark the wrapping:

> *"not to be viewed except by a qualified reanimation team, at such a time as reanimation is found to be a possibility for persons suspended by methods such as are used with me, or by my suspension organization, as required by law or for my protection in case of legal challenges to my suspension."*

(5) You May Be the Producer, the Director, *and* the "Star"... If you are self-conducting this interview, you will have to turn on the video camera when you are ready; then walk to your chair.

(a) Don't feel rushed. It takes a few seconds for the camera to settle out anyway. You may want to do a short "dry-run" of the first paragraph or so and then stop and play back the tape.

(b) You will have a better feel for how you want to look and sound by playing back a short portion. This will also allow you to make last minute adjustments in chair position, volume, etc.

(6) Consider Sharing This Process With Your "Cryo-Allies." We have made interview tapes with other cryonicists as our interviewers. We have also interviewed other cryonicists, some of whom are now in suspension.

(a) There is no better way to "*get to know*" your "Cryo-Buddies." There is no better way to "*be known by them.*" These people may turn out to be LifePact Partners for you, with time. You need to know each other well, and interviewing one another is a good place to start.

(7) Read the Questions Out Loud before Answering Them. This truly *is* an interview, even if it's just *you* interviewing *you*. In the sections on suspension and reanimation, the questions become quite involved. Watching videotaped answers, without knowing the questions, could be very confusing.

(8) Do It However You Must. If you do not have a way to rent (or otherwise obtain) the use of a video camera, then try an audiotape recorder, or even write out the answers on sheets of paper. Anything is better than nothing. If you were suspended and went into a capsule without recording your thoughts, there would be many unanswerable questions about your preferences. Reanimation teams need more data about you than just "Name, Rank, and Serial Number."

(9) Re-Videotape At Intervals. We suggest that you redo your tape(s) every five to ten years, to document changes in your views. Before 1985, few would have thought of anything like nanotechnology in discussing reanimation expectations and preferences. Other technological advances in the near future could further influence our ideas and expectations. Personal thinking *evolves!* Your updated tapes are evidence of *your* personal growth and expansion.

(10) *Read the part between "INTRODUCTION" and "PAUSE" very carefully (if you plan to use it). These ideas may be entirely new to you.*

(a) Reanimation psychologists will almost certainly know if these words are merely being recited without being understood. They must base decisions on what they see and hear. If reanimation is possible at all (remember, it may <u>not</u> be), these decisions will profoundly affect your life.

(b) Call us (Fred or Linda Chamberlain) if you have questions about these ideas. We would be happy to discuss them with you before you make your videotape, or we can refer you to some other Alcor Member who has worked with us closely on doing LifePact video interviews.

INTRODUCTION

[NOTE: On the following page is a sample of an introductory statement you may wish to make. You could rewrite and personalize this, use it as it is, or "ad-lib" it. But we do suggest introductory remarks.

Remember, if you just "read the words," the viewers may think you do not understand. Add some comments of your own, if at all possible.]

(Time to Go... Check the box...)

[ ] START TIME: ("0" OR "Noon")

"This is a Lifepact interview. My purpose is to make a videotape containing information about my personal history, philosophical outlooks, and views, as well as my expectations and preferences regarding reentry (reanimation and associated activities).

"By using videotape, I expect to provide additional detail to reentry teams about who I am, what I think, and how I feel. My tone of voice or my gestures may reveal things I can't express in words. These could be subtle things, of which I am not even aware.

"Today is date):_____.

"My name is:_____.

"This Self Interview is being conducted at "(City/State/Nation)

_____.

"In a few weeks, you reanimation team members may begin procedures to undo damage done to me by cryonics procedures, and restore me to health. After I wake, I expect that you'll be able to help me get started in an incredible new world. That's why I'm answering these questions. I know that this is my chance to help you make my entry into your world easier and more pleasant.

"To begin, I'll read the following text to show on this tape that I understand one or more basic Lifepact concepts. Where confused, I have read about and have explored these ideas with others.

"One basic concept is this: If my funding arrangements do not suffice to support my reanimation, I agree to repay the costs of recovery, including reanimation, rehabilitation, and reeducation. Later on, I will discuss limits I feel are reasonable."

"Why do I think this statement is needed? It's obvious that my suspension organization can't require these costs be prepaid: (1) The costs are presently impossible to estimate, and (2) accepting prepayment for reanimation could imply a guarantee that it is going to be possible.

"I understand that some or all of the funds used to reanimate me may be loans from LifePact Partners, my family or friends, as well as commercial sources. Particularly in view of that, I pledge to do whatever I can to repay these loans.

"I recognize that it is not known if those suspended under the best of conditions today can ever be reanimated. I also recognize that we cannot know in advance if a suspension will take place under favorable conditions. As such, I recognize that all discussion of reanimation is speculative.

"All I can do is state my preferences and document them, and say that I see the sense of the basic LifePact idea. I understand that my suspension organization cannot guarantee to follow all the wishes I set forth, and can only use these preferences as guidelines to do the best that is practical under future circumstances, which no one can fully foresee.

"I understand that I must maintain my arrangements to be suspended, if these statements are to be meaningful. I recognize that it is my responsibility to keep my suspension organization aware of what backups, if any, I have with other suspension groups or trust organizations."

[Note: Alcor Members may wish to say "Alcor" vs. "my suspension organization" in the above text. The purpose of generic terminology is: (1) to make the questionnaire usable by all cryonicists, and, even more important, (2) to make clear that a LifePact self-interview by an Alcor Member does not create an "official" Alcor document. A self-interview of this kind is simply a unilateral statement, by the person concerned, about that person's life history, values, expectations, perspectives, views in general, and preferences.]

(PAUSE)

[Start of interview questions; we suggest reading the questions slowly and clearly before beginning the answers.]

(General Background Data:)

Date and place of birth?

Places you lived? Dates, locations, and with whom? Rural and/or urban environment?

Parents happily married? Divorced? Did these influences strengthen or weaken you? How?

Any brothers or sisters? Were these pleasurable or painful relationships? What are the best and/or worst memories you have of these people?

Other relatives? (Grandparents, children, grandchildren, uncles/aunts/cousins.) Other adults close to you?

Historical summary: times/events when you grew up? How did these contribute to your development?

Unforgettable memories of your early childhood: The happiest? Most unhappy? Most rewarding?

As a child did you have conflicts with family members or schoolmates?

Did you ever feel estranged from society or friends? What age were you? What happened?

Did you ever question authority? How? Was this painful or pleasurable for you? What age were you?

Were "accepted truths" bewildering or anger provoking? What age?

Did you like school? Favorite subjects? Pleasant and/or unpleasant aspects?

Did you acquire any major understandings or "life lessons" during your school years?

Recall the more important friends and acquaintances you have had. Start with early childhood and go on to adulthood. What people most affected your life?

Marriages: Happy? Unhappy? How were you affected? Any children? Want more someday? What about clones?

Medical History and Medical Records: Operations, major illnesses, allergies?

What were your early career interests? What career did you finally follow? Are you happy or unhappy about how your career(s)/business(es) turned out?

TIME USED:_____

MIN. LEFT:_____

[GOAL = 30 MIN. USED, 90 MIN. LEFT TO GO]

Any other work-related detail? Dates, places, education, degrees, companies, job descriptions, awards, military service, etc?

What about your political outlook?

What about your religious beliefs?

When you think about the future, do you have positive or negative expectations? What? (Discuss these.)

OPTIONAL QUESTIONS
(time permitting)

If you could relive any part of your life, for a day, a week, any period really... what would it be? Describe that era of your life and why you would want to relive it.

Describe your current lifestyle. Are you happy with it? Would you want to change it? Why?

Do you have a generally happy life? Why or why not?

Do you have any achievements or outstanding events in your life in which you take pride?

Any best "mental age?" Special skills? Likes and dislikes?

What things would you like to do you have not done yet?

What would you change about your attitudes, if you could?

What are your favorite hobbies? Sports? Spectator? Participant?

What were the most significant movies, books, and plays in your life?

Your favorite form of art and/or music?

Earliest romance: What age? Who? What was he or she like?

Happiness/sadnesses? Later romances? Joys to remember?

Would you rather have been a different gender? Sexual preferences? (Homosexual, Heterosexual, Bisexual).

CRYONICS: BACKGROUND INFORMATION

***[NOTE**: These next questions are extremely important. One day you might need your suspension organization to play this tape in a court of law to prove you understood cryonic suspension and wanted this on a personal basis; that you were not duped or pressured into signing up.]*

FURTHER NOTE: ***[From this point on, you may find that here and there, you need more background about the questions posed. If you do not feel fully able to cope with any of these questions, just say so. Next time, they will still be here, waiting for you to say what you think.]***

What are your ideas about the future? What do you think space, politics, medicine, and government will be like 100 years from now?

What kind of culture and recreation may advanced technology make possible?

Discuss nanotechnology. How do you see its possible applications? Do you think it is essential for reanimation?

Was nanotechnology a significant factor in your early interest in cryonic suspension? Why?

How and when did you first become interested in life extension in general and in cryonics specifically?

Was your interest in cryonics related in any way to deaths of family members or other loved ones?

When did you first make arrangements to be cryonically suspended and how long have you had such arrangements in force?

Which cryonics organization do you have your arrangements with? Was this the first, or were there earlier ones?

Are your arrangements for whole body suspension or neuro-preservation? Why? Discuss your understanding of the pros and cons of what you have chosen.

CRYONICS: RISK ORIENTED INFORMATION

Are you concerned about uncertainties and risks in cryonics? What do you think are the highest risks?

Are you an "activist" in cryonics and life extension? What kind of involvement do you have with specific organizations?

How important is cryonics to you? If it were not a workable idea, what would that mean to you?

How would you feel if your arrangements to be frozen were interfered with by others who do not share your desires?

Understanding that few people share your desire to be frozen, do you still feel you have the basic right to make such a decision for yourself?

Do you think that others have any right to interfere with your privacy in choosing your own medical treatment or the disposition of your own remains?

Do you have any other statement you would like to make about this subject?

EXPANSION ON LIFEPACT-RELATED ISSUES

Earlier, you made some introductory statements regarding the LifePact concept. Now, would you like to state in your own words what the LifePact concept means to you, in more detail?

[Note: You may want to discuss your motivation about making LifePacts both *for* others and *with* others. Make a "topic list" for yourself if there are many items you want to cover. If you are new to the LifePact idea and are not ready to make such statements, then say ***that!]***

REPAIR PREFERENCES

(1) Do you expect to be rejuvenated as part of the repair process at reanimation? Are you at all concerned that this would lessen your feeling of being "*you?"*

(2) Would "conventional medicine" brain repairs would be acceptable to you in restoring you to life?

TIME USED:_____

MIN. LEFT:_____

[GOAL = 60 MIN. USED, 60 MIN. LEFT TO GO]

[Assume all such procedures are commonplace, at the time of your reanimation, for all hospital patients having head injuries... like blood transfusions are "standard practice" (in the twentieth century) for traumatic injuries. Assume that no more repair would be done, other than that necessary to get you back to normal.]

What about repairing some or all of your neurons to make them work again? (This might include repairing cell membranes, repairing internal working machinery of the cell, repairing breaks in axons and repairing their coverings.)

How about replacing some of your neurons with functional equivalents?

(Like replacing worn fabrics with new, modern fabrics in restoring a classic car. Assume there is no perceptible effect on your mind, and that these repair procedures are already standard practice for all ordinary patients with nerve damage in major hospitals around the world).

What about replacing small networks of neurons with functional equivalents—or replacing groups of neurons?

(Remember that you have about 100 billion neurons.)

What about: 2-10 neurons?
Groups of: 10-100 neurons?
Bigger groups: 100-1,000 neurons?
Bigger still: 1,000-10,000 neurons?
Even bigger: 10^4-10^5 neurons?

And ultimately (???):
10^6 ? - 10^7 ? - 10^8 ? - $10^{9?}$ -10^{10} ?

[10^{11} ? = Whole Brain ?]

[NOTE: In all the "neuron replacement" examples, assume these repair methods are already used for treatment of patients with nerve damage in all major hospitals... No Unproven Methods!!!]

MEMORY LOSS POSSIBILITIES

(1) Assume that the best that can be done is to restore *part* of your memory. How much loss would be acceptable to you, if the outlook for improvement with more research was very discouraging?

(Select one; then discuss it.)

[ ] 10% or less memory loss is tolerable. *(Seldom noticeable by others.)*

[ ] 10-50% memory loss is acceptable. *(Gaps to be filled in, but not inconvenient.)*

[ ] Severe recollection losses acceptable. *(You "know it's you," but memories are fuzzy.)*

[ ] Near total memory losses acceptable. *(Photo recognition tests necessary to confirm identity.)*

(2) Suppose memory recovery can be improved by delaying your reanimation while more research is carried out! What delays for what improvements would be tolerable for you? Suppose this meant not being reanimated at the same time as others with whom you are close?

(These are not easy things to discuss, but they will be important to reanimation teams in figuring out how to make reentry as satisfying as possible for you.)

PAYBACK COST PREFERENCES

(1) What cost would you be willing to reimburse, by installment payments, in exchange for reanimation itself or a higher level and quality of reentry (reanimation, rehabilitation, and reeducation), if Alcor could not pay for this by means of the Patient Care Fund?

[Alcor's contract forms state, but do not in any way guarantee, that Alcor will be able to pay for reanimation.]

Would you be willing to pay back reentry costs on an installment plan if the cost were equal to what today's dollars would buy in the way of:

(1) An expensive television set?
(2) A new automobile?
(3) A home?

How high would you be willing to go? Discuss this if you wish.

(2) If you could reduce the payback cost by 50%, by *waiting longer*, how many years would you be willing to delay your reentry?

(years of delay; circle one)

[0] [10] [20] [30] [50] [75] [100]

SPECIAL CONDITIONS

(1) Do you have photographs, diaries, or other things like this you want to have after you are reanimated? Have you made arrangements to store these for that purpose?

(2) If reanimation *is* possible, do you want to be reanimated at just the same time as some special others? Who? Would you want to be reanimated slightly sooner than they? Slightly later? Discuss.

(3) Are any of the above people Lifepact Partners of yours? Do you want to discuss the arrangements involved?

(4) Do you have particular worries or hopes regarding reanimation technology?

(5) Do you have concerns or hopes regarding "up-loading" or being in a different form than the biological state you occupy right now?

(6) Do you have any apprehensions or hopes regarding the "augmentation" of mental capacities?

TIME USED:_____
MIN. LEFT:_____
[GOAL = 90 MIN. USED, 30 MIN. LEFT TO GO]

** CLOSING **

(If appropriate) We seem to have some extra time; is there something else you'd particularly like to say to those who are looking back at you from the other end of the time tunnel?

NOTES:

_____

_____

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Alcor Update

Patient Care Bay Receives Face Lift

In the past, visitors to the Alcor Patient Care Bay often expressed disappointment, noting that it looked more like an industrial garage than the high-tech facility they expected.

This resulted from limited funds, necessitating that the emphasis be placed on practicality rather than cosmetics. Due to the efforts of the current Alcor staff, however, the Patient Care Bay now has a new, modern, high-tech look that is receiving raves.

As one visitor recently said, "as you look down the row of cryostats, it's almost like one of those infinite regressions!"

The Y2K security upgrades and bulk liquid nitrogen system (see article in the last issue) can be credited primarily to Mathew Sullivan and Hugh Hixon, with help from Mike Perry.

These upgrades in efficiency and security are a large part of the new image. The painting and care for details can be primarily credited to the good taste and hard work of Mathew Sullivan. The new decals, with a more medical look, were designed by Linda Chamberlain.

Not only is the Patient Care Bay more secure and more efficient (saving the Patient Care Trust about 50% on the cost of liquid nitrogen), but it is very impressive to visitors as well! l

GUARDING ALCOR'S LONG-TERM FINANCIAL SECURITY

by Linda Chamberlain
Executive Director and Membership Administrator

THE IMPORTANCE OF SECURE FUNDING

"How can I be sure that Alcor will not fall apart like so many other cryotransport organizations have over the years?"

"How can you assure me that you can rescue me in time?"

These are the two most frequently asked questions we receive. Some variation of these two questions are asked by almost everyone involved in the process of investigating the possibility of cryotransport and comparing service providers.

And, of course, there are many answers. These are not simple problems and they cannot be addressed with simple solutions. On the surface, they may look like they are entirely unrelated concerns. One relates to preparedness, skilled personnel, specialized equipment, sophisticated communications, etc. The other relates more to stable, mature management and responsible financial procedures.

However, they are also both, on a very fundamental level, related to the mechanisms being used to fund cryostasis memberships.

Compared to the cost of many surgical and other life-saving medical procedures today, cryotransport is very inexpensive. However, the fact that it is not yet covered by medical insurance plans means that those who chose to make arrangements for cryotransport need to pay for this service personally.

As cryotransport is still a small field and Alcor is not government funded or otherwise supported by large grants, it is necessary for funding arrangements to be made in advance. Some people can afford to simply prepay the cost or set aside the funding in advance. Most, however, find that buying life insurance is the easiest and most economical way to fund cryotransport for themselves and their loved ones.

Why does funding have to be paid or prearranged by such mechanisms as life insurance? Why can't Alcor just bill for the service like a hospital does?

As mentioned above, Alcor does not have large funding mechanisms and relies solely on private donations, individual funding arrangements and membership dues. Understanding this helps make it clear how these two issues (ability to rescue in time and long-term financial security) are so related.

If we accept funding that is faulty, Alcor would risk being put out of business by financial insolvency. In order to protect against that, Alcor has developed strict funding policies.

These sometimes seem restrictive to new members but allow all members to rest assured that every caution is being taken to make sure that Alcor remains strong and secure.

Additionally, to guard against the jeopardy of an unfunded cryotransport, Alcor must verify funding before launching a rescue effort. In a life-and-death emergency, minutes and hours count.

If a member needs cryotransport on a Saturday morning and funding cannot be verified until Monday morning, this would obviously be a serious compromise—either Alcor would have to place the organization at risk of proceeding without confirmed funding or tell a member that an immediate response is not possible! Neither of these possibilities is desirable to say the least.

The conflict represented by such a scenario was a major issue that the Alcor Board of Directors had to resolve. In order to do so, and after months of soul searching and discussions, the Board adopted the current Alcor Mission Statement in 1998.

The bottom line is this: In any conflict between the interests of

Alcor patients already in cryostasis (who can no longer speak for themselves, but depend on Alcor totally) and the interests or needs of a member still living, Alcor will defer to the needs of the patients already in cryostasis. Since these patients depend on the long-term stability of Alcor for their own safety, anything that threatens Alcor threatens these patients and must be avoided.

In order to address both the long-term security issue (making sure that Alcor stays in business for as long as it takes) and the issue of being able to initiate cryotransport procedures quickly and efficiently enough to prevent major biological damage (to the structures that contain memory and identity) funding mechanisms are clearly a major, central issue. They lie at the very heart of successfully addressing these issues.

GUARDING AGAINST INSECURE FUNDING

Understanding the critical importance of secure funding mechanisms, Alcor has over the years struggled with balancing this need against that of finding funding mechanisms that are sufficiently flexible and easy to obtain so that membership in Alcor is not overly difficult.

It must be observed that the strength of a large membership represents a form of security and stability for Alcor as well. Again, these are tradeoffs that the Alcor Board has had to balance over the years.

In 1999 Alcor staff members stumbled across a few funding deficiencies. It was decided that due to the paramount importance of the issue of secure funding, the whole issue be addressed again (and periodically), reviewing not only our standards and procedures but the existing membership files as well, looking for potential problems that could be waiting in the future.

There are several things members can do now to help make their cryotransport arrangements stronger and safer.

STRICTER FUNDING MECHANISM GUIDELINES

In the past Alcor has used various types of funding mechanisms that are no longer allowed. Currently, Alcor accepts only three funding mechanisms: (1) prepayment in full, in advance; (2) trusts (the guidelines for which are quite strict and are available on request); and (3) insurance, where Alcor is both the owner and the beneficiary of the policy. These funding mechanisms allow Alcor to have funding that is secure enough so that even if it is Saturday morning and funding cannot be verified, Alcor has sufficient confidence to proceed with the rescue effort.

Funding mechanisms that are no longer accepted include Alcor as the beneficiary, even an irrevocable beneficiary, without also being the owner of the policy. Alcor also no longer accepts collateral assignments. The reason Alcor no longer accepts these is simple. Only the owner of the insurance policy will be given any more information than "yes, the policy is still in force." Also, only the policy owner is notified of changes to the policy.

Mission Statement

The preservation of the individual lives of Alcor members, to be sought through the following prioritized list of fundamentals:

1. Keep the currently frozen patients in biostasis.

2. Get all current and future members into biostasis when and if needed).

3. Eventually retrieve patients from biostasis.

4. Fund meaningful research into developing more cost effective and reliable means for 1-3 above.

Linda Chamberlain and Diane Huper-Rocha work on updating the membership files and resolving funding inadequacies.

Unfortunately, if the insured has taken out a loan and depleted the amount that goes to the beneficiary, Alcor, if not the owner, will not find this out until it applies for payment.

Therefore, in order to keep Alcor safe and secure and to make it possible to launch rescue operations with little or no notice, Alcor must be the owner of the insurance policy. Alcor does give a Buy-Back Agreement guaranteeing to sell the ownership of the policy back at any time for any reason (for just a $25.00 administration fee).

WHAT YOU CAN DO NOW

If you use insurance for funding, you can help yourself as well as Alcor in making sure that your cryotransport arrangements are more secure.

1. Make Alcor the owner as well as the beneficiary of your life insurance policy *as soon as possible (although the billing must still be mailed to you).* This is easy. All you need to do is contact your insurance agent and ask for the form they will require to change the ownership and beneficiary statement. In the blank that asks for the "relationship," just put "contractual." You will need to mail the form to Alcor for signature. We will supply the tax ID and any other required information at that time.

Alcor is no longer accepting new members with insurance as funding without Alcor first being named as the owner and beneficiary (Alcor does not need to be the irrevocable beneficiary as long as it is the owner). ***By January 1, 2001, we will require that all our members have made this change.*** *Get a head start on this requirement and take care of this detail at your convenience during the next 20 months. Don't be inconvenienced by putting it off until the last minute.*

2. Many of the files have incomplete or outdated, superceded policies, etc. In a large number of cases, insurance policies and other insurance documents in our files do not have a street address or a phone number for the insurance company.

Please ask your insurance agent to send Alcor an updated "schedule" of your policy showing the policy number, owner, beneficiary, face amount, and, very importantly, the address and phone number of the insurance company.

WHY IS IT *NOT TO YOUR ADVANTAGE* TO OWN YOUR INSURANCE POLICY?

Unless resources are quite large, older individuals may find that long-term care services could be difficult to obtain without risking the ability to use their insurance to cover their cryotransport costs. Some may find themselves having to choose between long-term final care and cryostasis.

This results from the requirements imposed in order to qualify for Medicaid coverage. Individuals can qualify for Medicaid coverage in one of three ways: as recipients of SSI, as "medically needy," or by having incomes below a state-designated cap.

To-Do Checklist

1. Make Alcor the owner as well as the beneficiary of your life insurance policy.

2. Send Alcor an updated "schedule" of your policy showing the policy number, owner, beneficiary, face amount, and, very importantly, the address and phone number of the insurance company.

This income cap varies from state to state (and you will want to check the requirements where you live) but is usually something like "countable resources less than $2,000.00 and a monthly income that is less than the cost of their care." ***If you own your life insurance policy, it is considered a "countable resource" and you might not qualify for long-term care as long as you own it.***

The Medicare Catastrophic Coverage Act of 1988 (MCCA) mandated special Medicaid eligibility rules for couples when one member needs nursing-home care. The rules help protect income and resources for the other member of the couple. These rules are known as the protections against spousal impoverishment rules. They apply in all fifty states.

You may want to look into this issue to protect yourself and loved ones from "impoverishment." l

POSITION STILL AVAILABLE FOR MEMBERSHIP MANAGER

Requirements: computer skills, organizational skills, administrative experience; good at time management, strong people skills, and patience.

Please contact: Linda Chamberlain
phone: 480-905-1906
linda@alcor.org
Alcor Foundation
7895 E. Acoma Dr., #110
Scottsdale, AZ 85260

TV2k-Transhumanist Conference Planned for Summer 2000

For more information contact David Flude:
david@dflude.freeserve.co.uk

Alcor Membership Status

Alcor has 486 Suspension Members (including 109 Life Members), and 39 patients in suspension. These numbers are broken down by country below.

Country	Members	Applicants	Subscribers
Argentina	0	0	1
Australia	12	1	6
Austria	1	0	2
Brazil	1	0	0
Canada	12	5	11
France	0	0	1
Germany	3	0	2
Ireland	0	1	1
Italy	0	2	1
Japan	1	0	2
Netherlands	3	3	1
Russia	0	0	4
South Africa	0	0	1
Spain	6	0	0
Sri Lanka	0	0	1
Switzerland	0	0	2
Taiwan	0	0	1
U.K.	24	10	8
U.S.A.	423	75	240
TOTALS	**486**	**97**	**285**

No. of Countries: 19

Cryonics Magazine Editorial Staff Changes

You'll notice that page 2 shows Lisa Lock as the new Editor of *Cryonics*, with Fred & Linda Chamberlain as Associate Editors. We knew that we had to find someone pretty special for this role, but we didn't dare hope it would be an Alcor Member with professional experience in publications and seven years experience as a webmaster as well (take a look at http://www.winterthur.org/ for a sample of Lisa's work). Thanks, Lisa, for putting your talents and experience to work for Alcor. We're looking forward to meeting both you and your husband at the Asilomar Conference.

Linda Fred

Alcor Central Support for Northern California Group

Membership "Signup Party"

Local groups in Alcor always have the challenge of attracting new members and maintaining a rescue team. A key element in this is the holding of regular monthly meetings. Nowhere in Alcor has this been done with more dedication, for so long a time, as in Northern California. (The Alcor UK Group has recently begun to give Northern California a "run for their money.")

On Sunday, April 9, 2000, John Monts, D.O. (UK), D.C., Fred and Linda Chamberlain participated in the monthly meeting of the Northern California Group, helping with questions about membership. Linda presented an introductory talk on Alcor's program, using slides from a laptop computer and LCD projector owned by BioTransport, Inc. This is the same presentation given to those who visit Alcor in Scottsdale, Arizona. Dr. Monts, as part of his volunteer work

for Alcor, is in training to take over these tours. The trip gave John a chance to see how local groups respond to talks of this kind and how to tailor the subject matter for future events where Alcor supports local group meetings.

Contacting Mortuaries

This trip to Northern California by three persons from Alcor Central had a second, more serious purpose. It was to make contact with one or more mortuaries, for cooperation at times when a cryotransport operation might be needed. As we began to call every qualified mortuary in the area, we began to get a better idea of why this may have been a problem in the past.

Never have we encountered such negative attitudes from mortuaries. A few mentioned, "we have talked with cryonics people in the past." They gave no other reason for refusing to even discuss a working relationship.

(Considerable cryonics activity has taken place in the Northern California area over the past thirty years. There could have been negative experiences unrelated to Alcor that created the anti-cryonics mentality we ran into.)

When we finally did have a chance to speak with the owner of a mortuary, the picture changed entirely. We reviewed the many forms and other documentation used by our team members to coordinate with authorities, and explained in detail the division of responsibility between Alcor and the mortuary, as well as our protocol and procedures.

The mortuary we will now be working with referred us to a 24-hour removal service, which agreed to provide us with standby vehicle support throughout the Bay Area, as well San Diego. The relationship with the mortuary we finally located seems positive and firm. This is the level of preparation we need in all areas where we have a large number of Alcor members.

As a "lesson learned," future contacts with mortuaries should be made by staff members from Alcor Central, versus local Alcor groups or individuals. If resistance of this kind exists, we must apply our best efforts to it. If cooperation can be easily obtained, then it should not be a problem for Alcor to perform the communications work.

In numerous cryotransport cases with operations launched on short notice, Alcor has always managed to obtain cooperation with mortuaries by phone, throughout the country. From now on, we will take whatever steps are necessary to do this coordination directly from Alcor Central, without involving local groups or individual members. If, as an Alcor member, you feel a need to have a mortuary in your area alerted about your situation and arrangements, please call Alcor Central about this. l

United Kingdom ACT Team Carries Out Dry Run CryoTransport

by Linda Chamberlain
Assistant CryoTransport Manager

Photos by Fred Chamberlain

In October 1999, the Southern California ACT Team carried out a training exercise coordinated by Robert Newport, M.D., a member of the Southern California team.

This was a mock cryotransport beginning with a "call" from Alcor Central (part of the exercise) and including all aspects of cryotransport up to a washout.

Inspired by the writeup, the UK team had scheduled to hold such a training event at their May meeting.

As Fred and Linda Chamberlain were in the London area in early April on other last minute business, the UK team twisted their elbows to do some training while there (no chance to spend any time seeing the sights! Just work, work, work!)

As they had planned to follow the training exercise carried out in Southern California and described in the First Quarter 2000 issue, and since not all the ACT Team Members were able to gather on short notice, those who were able to participate decided to dry run the dry run.

The Team Members who participated will train those who attend the training session in May. l

Team members set up IV for medications and get the spray cooling device operating. *Left to right:* Maria Camacho, Jack St. Clair, David Flude, Linda Chamberlain, May-May Flude, and Tim Gibson (UK training leader).

Team members move mock patient from hospital bed into ice bath while scribes keep notes on events and times. Left to right: May-May Flude, Jack St. Clair, Alan Sinclair, Tim Gibson, Graham Hipkiss, David Flude.

Team members prepare to move "patient" from ice bath to OR table for washout and cryoprotection. *Left to right:* May-May Flude, David Flude, Maria Camacho, Alan Sinclair, Tim Gibson, Linda Chamberlain, Jack St. Clair, Graham Hipkiss.

Team members recap the day's events. *Left to right:* May-May Flude, Sylvia Sinclair, Tim Gibson, David Flude, Jack St. Clair, Mike Price, Linda Chamberlain.

Cryotransport Case Report, A-1755, Part II

Third Party Anatomical Donor
Year of Birth: 1920
Date initiated cryotransport:
August 28, 1999

Report by: Fred Chamberlain
CryoTransport Manager
Alcor Life Extension Foundation
Scottsdale, AZ

Part II - Cryoperfusion and cooldown at Scottsdale, Arizona

(Condensed for publication in *Cryonics*)

Background History and Synopsis

Cryotransport can be broken down into four areas: (1) patient acquisition and initial biological stabilization, with transport to Alcor Central; (2) cryoperfusion; (3) cooldown; and (4) long-term care. This report, Part II of II, covers (2) and (3). As mentioned in Part I, long-term care (4) is just beginning.

Recalling the situation from Part I, the Patient was not a member of Alcor. The Next of Kin (of the Patient) was in the sign-up process for Alcor Membership and made arrangements to have the Patient placed into cryostasis as a "third party anatomical donation."

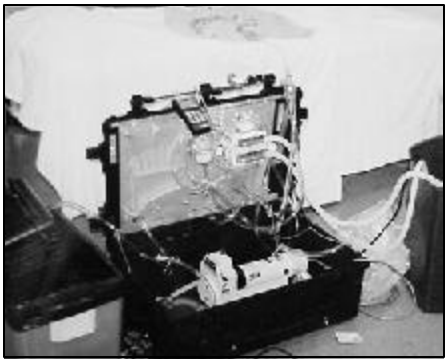
This was Alcor's most rapid response ever for a nonmember, other than one postmortem "straight freezing" in Scottsdale, Arizona. In no other case has an Alcor team been *on the scene* before the arrangements were finalized. Also, it was the first time Alcor's ATP (Air Transportable Perfusion) System had been taken on standby for a field washout.

Part I of this article ends with: "In Phoenix, Joe Hovey picked up the team at the airport, and Bruce Cohen took Alcor's ambulance to air cargo to transport the Patient. By late afternoon, all team members and the Patient were en route to Alcor. At that point, about 5:00 p.m. Scottsdale time on 8/28/1999, it had been about 57 hours since the first call had come in to Alcor."

Team Composition

Linda Chamberlain was Alcor's CryoTransport Manager at the time of this suspension. The surgeons were Jose Kanshepolski, M.D., and Nancy McEachern, D.V.M., Hugh Hixon, who has participated in more of Alcor's suspensions than any other staff member, present or past, was the OR (Operating Room) Assistant, meaning that he was involved in practically all aspects of what took place.

Rhonda Iacuzzo filled the role of Surgical Nurse, which she has handled skillfully many times in the past. Mike Perry managed the data collection and analysis for our first



ATP - First Time in the Field

Jose Kanshepolski, M.D., Nancy McEachern, D.V., and Rhonda Iacuzzo, R.N., in surgery.

experience with in-line refractometers. The job of assistant perfusionist went to Bruce Cohen, drawing on skills he developed at BioTime, Inc.

Peter Voss, a member of the So. California ACT Team, collected samples for analysis. Louise Murray and Russell Cheney, who had been part of the transport team in the Midwest, recorded what took place in the surgical and perfusion areas. My job was perfusionist.

Initial Observations

The patient's temperature on arrival at Alcor was close to 0°C. No edema or dehydration was observed. Ice was intact, surrounding the Patient. Apparently, very little had melted.

Preparations for Perfusion

Shortly after 6 p.m., the Patient was moved into the Operating Room, placed on a layer of ice bags, and preparations for surgery began. Surgical scrubbing and preparation of the surgical field took place, thermocouples were positioned,

Burrhole placement by Jose Kanshepolski, M.D., assisted by Rhonda Iacuzzo, R.N.

and burrholes were created. This was the first time burrhole surgery had been performed for Alcor by a neurosurgeon; Dr. Kanshepolski retired shortly before he started working with Alcor, after a long career with Barrows Neurological Institute in Phoenix.) From the burrholes (which expose small areas of the surface of the brain), we could see clear tissue with no indications of brain hemorrhage or edema.

Surgery (median sternotomy) was performed to expose the pericardium and ascending aorta, with the observation "Washout good; tissue devoid of blood!" (extracorporeal circulation in the field after remote standby was confirmed as successful).

Surgical table, with clear plastic hood connected to air sterilizing system for improved infection control.

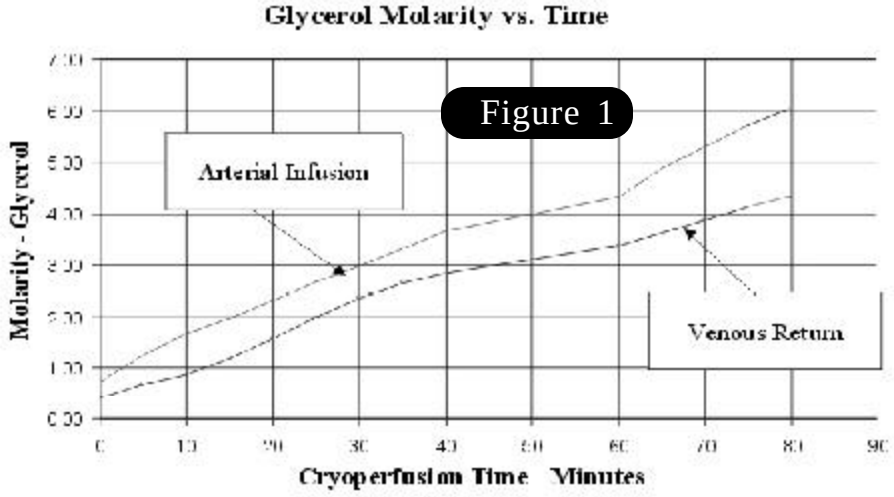
Connections to the system for cryoprotective perfusion took place in parallel with surgery to directly obtain samples of perfusate leaving the brain through the venous system (for better evaluation of cryoprotective levels). The intention was to establish a route for frequent sampling of this, but the complexity of doing so proved excessive, and this approach was not carried to completion.

Cryoprotection

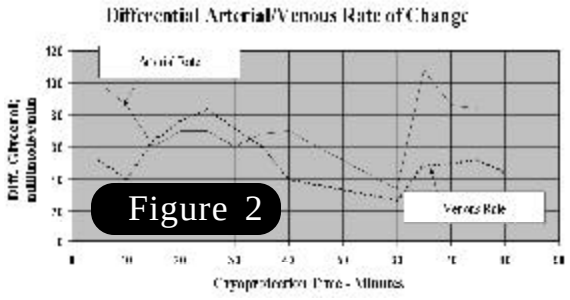
Surgical problems developed due to implanted catheters and other artifacts of earlier hospital treatments. This reduced the time for cryoprotection, since we were combatting leakage from earlier surgical sites and edema (swelling) that went with this.

Linda Chamberlain sets lines for monitoring of cryoprotective agent levels leaving the brain.

Notwithstanding, the level of cryoprotection at the end of the ramp reached 4.36 molar glycerol, as shown in Figure 1. A level of 6.00 molar glycerol was the goal, but many past successful suspensions were lower. For example, in



Data from inline refractometers was not yet automated and was plotted at five minute intervals. Notwithstanding this, clear trends of concentrations of arterial and venous CPAs (cryoprotective agents) are evident. The rates of change of the two concentrations were more sensitive, but both rates declined after initial upswings until a decision was made at sixty minutes to accelerate the ramp. This produced the rapid rise in arterial rate, then both rates again fell back to within the rates preferred in the protocol.



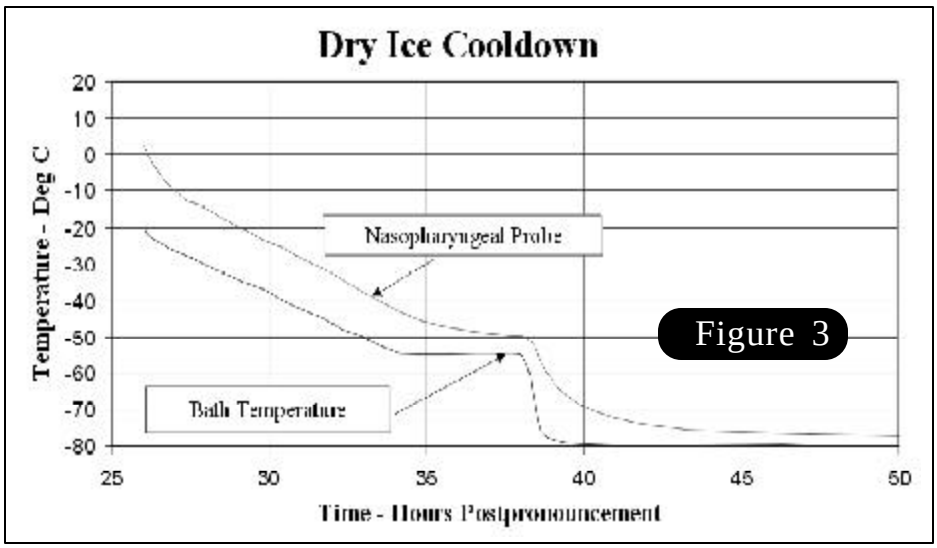


Figure 3

the highly successful suspension of Arlene Fried in 1991 (this was Linda Chamberlain's mother), the final glycerol concentration at the end of the ramp was 4.30 molar.) Figure 2 shows variations of the ramp rate with time. Rates were within acceptable limits.

Cooldown

Cooldown to the temperature of dry ice took place immediately after cryoprotection. The patient was submerged in a Silcool bath, precooled to -20ºC. Readings immediately after submersion in the Silcool were: pharyngeal, 3ºC and Silcool bath, - 20.3ºC.

The patient's cooldown to dry ice temperature, as charted in Figure 3, was controlled by a temperature ramp of the external media at -4ºC /hour down to a temperature of -55ºC. At -55ºC, controlled rate cooling was terminated, and the bath was filled with dry ice. This temperature descent to -79ºC took place over a period of about twenty (20) hours. This data is based on the pharyngeal probe. Readings on the burrhole probe were erratic during cooldown to dry ice temperature. By the time cooldown to liquid nitrogen began, the burrhole probe was operating normally.

Figure 4 indicates the profile of cooling to liquid nitrogen. The Bath Probe was calibrated at liquid nitrogen temperature, and the other probes were adjusted to this one at dry ice temperature. Computer controlled temperature descent began at -1ºC /hour and continued at this rate down to liquid nitrogen temperatures.

Cooling from dry ice temperatures to the temperature of liquid nitrogen took approximately 120 hours.

Crackphone Analysis

Three cracking events were recorded during the descent to LN2 temperatures. The first two (the only two of major amplitude) occured at approximately -100 ºC and -126 ºC.

A third and final cracking event, of such low magnitude that

Above: Fred Chamberlain and Hugh Hixon check the perfusion system. Inline refractometers *(right)* provide continuous monitoring of levels of CPA in both the arterial and venous lines.

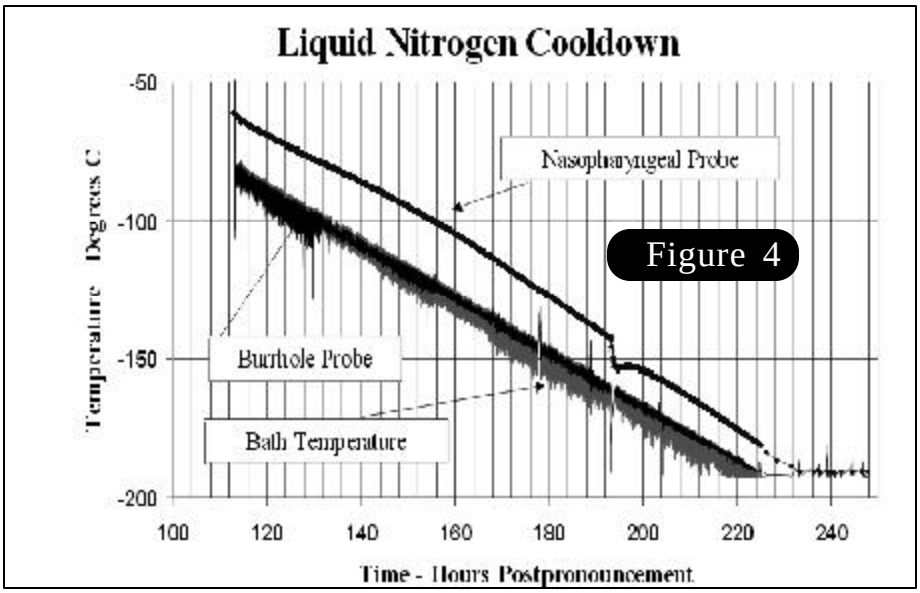


Figure 4

it only recorded on one of the two channels, was at about -186 ºC.

The small number of cracks observed is probably due to the lower level of glycerolization. Higher levels (6-7M is now considered best) usually result in (very roughly) 20 cracking events. l

Blood Sample Analysis

Although blood samples taken at the start of washout do not serve a purpose directly in the procedure used for cryostasis, they may help later in interpreting physiological roadblocks encountered. We are sometimes asked, "Why do you want to obtain medical records for people whose illnesses will surely be well understood by reanimation teams of the future?" The answer is that our purpose is to understand better how to carry out procedures here and now. Medical records, in conjunction with the data obtained during field stabiliziation, may be of great value in the improvement of what we can do in future cases to anticipate the problems we will have in suspensions, and to try to circumvent them.

Transport Blood Sample Data

Test	Normal Range	Units	Sample#A	Sample#B	Sample#C
GLUCOSE	82 to 115	MG/DL	138	81	141
BUN	8 to 25	MG/DL	45	32	39
CREAT	0.5 to 1.5	MG/DL	0.9	0.5	0.5
BUN/CRE	12.0 to 20.0	MG/DL	50	64	78
URIC ACID	2.2 to 7.0	MG/DL	7.2	3.8	5.4
SODIUM	135 to 145	MEQ/L	100	75	83
POTASSIUM	3.5 to 5.1	MEQ/L	21.5	24.6	23.1
CHLORIDE	96 to 110	MEQ/L	80	63	68
CO2	22 to 30	MEQ/L	7	11	9
GAP	4 to 16	MEQ/L	13	1	6
OSMO-CALC	275 to 295	MOSM/K	248	198	217
T PROT	5.9 to 8.4	G/DL	3.0	0.6	0.6
ALBUMIN	3.6 to 5.2	G/DL	0.9	0.2	0.2
GLOBULIN	1.9 to 3.4	G/DL	2.1	0.4	0.4
ALB/GLOB	1.1 to 2.2	MG/DL	0.4	0.5	0.5
CHOL	0 to 200	MG/DL	43	5	6
TRIG	30 to 175	MG/DL	86	69	90
CALCIUM	8.5 to 10.5	MG/DL	5.9	3.6	4.5
ION CA-CAL	3.5 to 5.2	MG/DL	3.8	3.2	4.1
PHOS	2.5 to 4.5	MG/DL	9.4	4.6	5.8
GGT	0 to 65	IU/L	14	3	3
ALK PHOS	30 to 130	IU/L	39	7	13
SGPT (ALT)	0 to 40	IU/L	53	100	170
SGOT (AST)	0 to 41	IU/L	204	73	210
LDH	95 to 250	IU/L	418	199	587
CPK	25 to 225	IU/L	290	51	86
T BILI	0.2 to 1.2	MG/DL	0.1	0.0	0
D BILI	0.0 to 0.3	MG/DL	0	0.0	0
I BILI	0.0 to 1.2	MG/DL	0.1	0.0	0
IRON	40 to 150	MCG/DL	0	0	0

Note: This report conveys a realistic picture of some of the the many challenges and uncertainties involved with cryotransport.

Alcor's rescue teams are presently its only means of responding, if your life is endangered. Someday, such rescue efforts might be launched by calling "911."

Until then, we ask that you encourage and support all of the Alcor CryoTransport Team (ACT) Members you know. Your life might depend on them, and they have pledged to be there for you, if you need them.

Visions of the Present, Visions of the Future, Visions of Unbounded Life

LifeQuest

Fictional stories reprinted from the late 1980s

The stories that follow appeared in LifeQuest, a semi-annual collection of life extension fiction, from May 1987 to November 1990. They ranged from practical cryotransport dilemmas to far-reaching possibilities of uploading, nanotechnology, and the deep-time aspects of living in space colonies. The contributors comprised a rapidly broadening group of authors at the time publication ceased in 1990.

Now, in a special section of each issue of Cryonics, we bring you reprints from past issues of LifeQuest, along with new stories contributed by authors from our wide readership and other sources. If you are a professional science fiction writer, or even if you are not, we invite you to submit your stories for possible inclusion.

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KITTY
by Linda Chamberlain

"Hi, Kitty!" Breezy brought music and magic with her as she danced into the ochre and dandelion-hued hospital room. The two girls, just about the same age, around fourteen, were different in every respect. Kitty groomed her long golden hair meticulously and often, and had long graceful elegant arms and legs to compliment her quiet, well-bred demeanor. Breezy on the other hand was short and squat, with dark hair always in need of a good brushing as she bobbed about in bursts of energetic enthusiasm.

Kitty was cheered by the music of Breezy's voice, happy her friend had come. This morning had been far worse than most, cloaking her with a dark morbid fear, that vast and desperate feeling of being alone, lost without her memories, cast out with no roots to bind her securely to sanity. She raised red, swollen eyes to Breezy and forced a smile.

Running to the hospital bed, Breezy jumped up alongside Kitty and encircled her with sympathetic arms. Kitty rolled her long limber body into a ball, hid her face in Breezy's lap and wept, unable to stop. "Why can't I be like you, Breezy? Why do I always feel depressed?"

Breezy picked up the brush lying nearby and stroked Kitty's silken locks. "Breezy's here," she cooed.

"It happened again," sputtered Kitty through a swollen throat. "I dreamed I had six other brothers and sisters, all of us in the same bed. I couldn't see them but I could feel them, all warm around me. I could smell them. A soft loving smell. I could hear them, sucking and nursing and making happy contented sounds." She started to cry softly again.

Breezy smoothed Kitty's hair with her palm and listened quietly.

"It was almost like the last time. When I dreamed of tumbling around on soft sunlit grass. Me and... Oh, Breezy, I don't have any brothers or sisters! If I lost my memory when they reanimated me, why can't I just be blank? Why do these fantasies haunt me? Why can't I be excited about being reanimated like you are? To you it's just all one big exciting wonderful adventure. Why can't I feel like that?" She clung to her friend's thigh and wept. "I wish I could feel like that."

After a wordless while, Kitty sat up, wiped her face with cupped fingers, pushed her long hair back from her puffy face and forced another smile. She took the brush and smoothed the dark tangles around Breezy's square face.

Breezy grabbed a contraption from the pocket in her baggy pink hospital gown. It was an octopus of wires and chips. Except for the dangling suction cups, it was small enough to lie inside the bowl of her two hands. "My latest invention!" She smiled expectantly at Kitty.

How I love her, Kitty thought to herself as she warmed under the sunshine from Breezy's words and smile. How she helps me through these terrible spells. For all the help and love that mother and the doctors give me, I would be lost if it weren't for Breezy. "What is it," she asked, sniffing.

"A spy device!" Breezy's eyes flashed playfully wicked. "What you need is more information. You're depressed because you can't remember anything, and you don't know what's going on. So, with this doodad and the genius of Breezy Bond, we're going to get you out of here and..." Breezy closed her mouth and tucked the wire octopus back into her baggy pocket when she heard the door open behind her.

She winked like a conspirator when she saw Kitty's mother enter the room. "Hi, Ms. Miller," she said with great flair as she rose from the bed. "I gotta go, Kitty, see you later. Don't tell anyone about my secret!" She patted the bulge in her gown and was gone from the room like a whirlwind across a Martian plain.

Kitty's mother kissed her on the cheek and said, "Have you given any thought to our trip?"

Gloom and depression closed back in on Kitty, tight and terrifying. Her mother wanted to visit Calisto, the ice moon of Jupiter, and if they liked it, to move to that world. In order to do so, they would have to do something called uploading. Have their minds and memories mapped and transferred into another body.

Kitty had seen videos of others who had undergone the transformation—bodies of metal that did not require protection from the constant cold, brains of wires and computer chips not unlike that creepy thing Breezy had. Kitty was terrified. She couldn't explain why. With no memory, she was like a person who had just inhabited this flesh and blood body a few months ago. Nonetheless, giving it up terrified her. Becoming a cold steel robot chilled her. Would her memories and her identity—wrapped in gold and ceramic instead of biological dendrites and axons and warm little chemical nodes—would that really be her? Or would she disappear in the process? She didn't understand her own fear, and she had never been able to tell her mother about it.

Her mother pulled her close and stroked her hair. "Kitty, Kitty, dear. You were much happier when you first met your friend Breezy. But you seem to be falling into your depressions again. What can I do? Tell me how to help you, Kitty."

"Help me get my memory back, Mama. I don't have any roots. How can I risk turning myself into something else, when I don't even know what I am now?" She curled up into a ball and began to cry again. Her mother leaned over and covered Kitty lovingly, protectively, with her own body, and kissed her long, soft hair. "I'll talk to the doctors. We'll find a way to make you whole again. I promise you, Kitty. I never wanted you to be unhappy. I never wanted that." Then she rose and walked from the room.

Kitty pulled on her robe and ran into the hall, driven by panic. She needed to escape the terror crushing against her hollowness. She had to escape her room even though she knew full well the room itself was not the cause of her depression. It was painted with lively golden and daffodil hues, papered with a cheery flower print, and had large windows to let in the babbling morning sun. But Kitty often escaped her depression by pretending she could flee into the garden, trapping her depression back in the room. This little game was frequently her only salvation.

Bright sunlight dripped from the overhead canopy of lush soft leaves, draining the tension from Kitty's tight muscles. This was the most peaceful and most beautiful part of the whole space colony. At least the part she had seen so far. She bent to drink in the aroma of a clump of scarlet flowers sprouting white tendrils. A lacy, intricate orange and black butterfly fluttered past. Forgetting her panic, Kitty reached for it, hopped happily after it, stumbled over a root and spilled onto the soft green carpet of grass below her. Her closed eyes became contented slits as she rolled her fingers into a ball and rubbed the side of her nose. Sunlight warmed her shoulders.

Plunk, plunk, plunk. Opening her eyes and sitting up straight, Kitty saw a small boy throwing pebbles into the nearby pond. His body was tense. His wrists hurled the pebbles with fury. He

muttered as he threw the stones, but Kitty could not make out his words. She rose with the grace and stealth of an ebony panther and moved closer on hands and knees. Plunk, plunk, plunk. The angry pebbles continued to punish the surface of the pond. The small boy continued to grumble.

Kitty watched his fury for a long while before joining him and putting the toes of one foot playfully into the water. "Okay if I join you?" she asked.

The boy, no taller than Kitty's waist, looked up with annoyance. "That isn't possible!" His voice was the soprano of a boy child, but his words were strangely mature and his eyes harbored the weariness and experience of an aged monk. He turned, slowly, heavily, and walked away from the pond, dropping three pebbles from his limp hand.

"Wait," called Kitty, suddenly infused with intrigue by this babe with an old man's cloak. "What do you mean?"

"How old are you, child?" asked the boy.

"Fourteen," came Kitty's confused answer. "How old are you?"

"That, my dear, is a good question! I was once an accomplished pianist, the toast of the music world. But my brain was so severely damaged by a prolonged period of ischemia before I could be placed into cryonic suspension, that all my motor skills were wiped out. I was reanimated as a child again so I could train my hands anew." He raised fingers before him that were long and elegant for a boy no more than four years old. "Can you imagine the frustration of once having had the ability to play Beethoven and Bach... and now to struggle with children's tunes?" His voice was high and shrill as he let his hands drop to his sides.

"At least you remember," said Kitty. "You're lucky. I don't remember if I could play the piano, or if I had brothers and sisters... I don't remember anything. At least you have something to work toward. All I have are dreams, conflicting dreams, made-up memories to haunt me and torment me. I'd trade with you in a moment."

"No you wouldn't," the boy said sullenly. "I have to grow up again. I have a beautiful wife and I can remember sharing nights of bliss in the woman's bed, but my small body won't serve me now. I have to wait. My wife is willing to upload; then we would be equals again. But I would have to give up being a pianist. Oh, they tell me they can program the skills into a mechanical body. But that wouldn't be ME! It wouldn't be MY music! It would just be some computerized robot at the piano! I'm trapped. I'm stuck. No, you wouldn't want to trade places with me, my young friend."

A whirlwind blew across the grassy carpet behind them. They both turned to watch Breezy stumbling and running breathlessly up the path. "Kitty!" she called. "Kitty. Come on! Oh, hi, Arturo. Hey, come on. Both of you. Kitty's mother is going to see the head psychologist." She held up the wire octopus she had shown Kitty earlier. "With this, we can listen in."

Breezy rambled non-stop for several minutes introducing Kitty and Arturo and telling them both about each other. There were few people in the rehab hospital that Breezy did not know, and there were few who could keep their problems from her. Above both their objections, Breezy dragged Kitty and Arturo through the grounds and across the great square to the psychiatric offices. They rearranged the stuffed velvety chairs in the reception area to make an alcove in one corner. It was also a hiding place next to the wall of Dr. Willingham's office. Breezy licked three suction cups, stuck them to the wall, tucked one earphone into Kitty's ear, one into Arturo's ear, and another into her own. The first voice they heard was Kitty's mother. "I still think we need to tell her, Dr. Willingham. I'm her ward and I have the right to override you on this. I hope I won't have to, but if necessary..."

"Ms. Miller, please, we only want the best for Kitty. I think she has made a great deal of progress, especially since her friendship with Breezy (that made Breezy puff and grin), and I think it would be better to continue as we have for a little longer. Then, if you still feel we should tell her, we will do as you like. Would you agree to wait just another week?"

"It was your suggestion that I try to talk her into uploading from an Earth human into a Calisto environform in the hope that particular adjustment would then make it easier for her to accept the knowledge that she was my pet cat before she was frozen and reanimated, but it doesn't seem to be working, doctor. She seems to be terribly depressed by the idea of uploading, but I can't get her to tell me why."

Dr. Willingham said, "We blocked her earlier memories because our tests lead us to believe she would not be able to handle it just yet..."

That was the last Kitty heard. The smashing, crushing effect of those words were like acid eating at her mind. Could that be true? Did she lack a memory of her childhood because she never had one? Could they somehow block all her memories as a kitten, and then a cat, in order to keep her from going mad? Was such a thing possible? Were her memories of brothers and sisters real? Was she remembering litter mates? Was she not really human then? Her mind fell into a vortex of pain and confusion, falling, spinning. She pulled the wire from her ear and ran.

Arturo and Breezy followed but could not keep up with her long bounding legs. She ran and ran, oblivious to her direction, unaware of her destination, one thought and only one thought occupied her mind: I have to escape! She ran faster and farther than she had ever gone before. She ran until she was outside the familiar area of the hospital grounds. She realized only dimly that she had left the cultivated area and was running into one of the maintenance areas of the space colony. She still ran.

When they did catch her, she hid back under a thick cluster of building beams stacked against a partition. Her eyes were wide with terror. She crept back into the dark protection of the lean-to of beams as her friends approached and coaxed her to come out. "Go away," she hissed at them.

"This is Breezy," cooed her friend. "Come on, Kitty..."

"Don't call me that!" she screamed with panic, her eyes all they could see of her in the shadows. "I'm not a cat! But I'm not human, either. What am I? Oh, what am I?"

Breezy held out her hands, palms up and pleaded. “Please. Come out and talk to us. We’re your friends. We want to help.” Kitty just stared out at them, unmoving, confused, terrified.

“Ki...” Arturo started to use her name, but stopped. “I will always remember this day. And I hope I can find the words to explain what you have given me.” His tone was soft, full of awe and understanding, all his earlier anger gone. He still looked like a four year old boy child, but something in his voice made Kitty’s fear fall away as he spoke, softly, hesitatingly as he searched for words, but with growing confidence.

He continued. “I felt so sorry for myself. Being trapped inside this body. You said you would trade places with me. I would have given anything to trade places with you. But, don’t you see, we were both making the same mistake. I saw that when I heard your mother and the doctor speaking. We were both afraid of losing our identity. I was afraid that artificial fingers playing music wouldn’t be “me” somehow. It wouldn’t be “my” music! And you. First you wished for memory and now, knowledge of your past terrifies you even more.

“Doesn’t this all come down to the same question? Doesn’t this reduce to ‘what is me’? Maybe the music wouldn’t be mine the very first moment, but won’t I add to it each and every time I play? Doesn’t it become my music as I add myself to what the artificial limbs are creating? And my music today won’t be the same as it will be a year from now, or a decade, or a century. See? We grow. We change. We’re never the same from day to day. I was once a small boy who didn’t know how to play a piano. Then I was a man who made music for the gods. Now I’m a small boy again who can’t play the piano. But tomorrow? What will I be then? In another century? It’s up to me. Don’t you see? It’s up to me!

Breezy did not say a word. She listened and watched as Kitty’s face softened.

Arturo continued. “And, you, Kitty. Once you were a beloved pet. Must have been loved a lot or you wouldn’t be here, now, reanimated and uploaded into the body of a gorgeous young girl. Your mother must be looking forward to the time when you can remember being her pet, talking about what it was like, how you saw things then, and a million other fascinating things. What a wonderful background! What a fantastic experience! I would still trade places with you, Kitty! You not only have that to explore, you also have your future. What you become is up to you, no one else. Right? It’s up to you, Kitty. I think you’ve got to be the luckiest person I ever met!”

Breezy chimed in. “Wow! I wish I could have been a cat! What a neat thing to be able to tell people!”

They want to help, thought Kitty. But, they just don’t understand. How could they. They’re both human. But what am I? “Breezy, I love you,” Kitty said, choking back tears, “but you can be so insensitive sometimes. How can you say such a thing? How can you say it’s neat! It’s the most horrible thing I could have imagined! I’m not even human! I’m...”

Kitty’s words were cut short as a weak structure beneath Arturo gave way. He grabbed at the edges around him as they, too, began to fall inward. Breezy grabbed his shoulder, but his falling weight pulled his shirt from her fingers. Her legs sprawled across the top of the widening hole, then she, too, disappeared.

The impact of what happened smashed into Kitty. She crawled out from under the beams and looked into the exposed hole. Breezy and Arturo were on a maintenance structure eight feet below her. “Breezy! Arturo!” she gasped.

“We’re okay,” they called back. “Just bruised. Can you go get us some help?”

Kitty nodded and stood. She looked around her wondering where she was. She felt lost and desperate. A cold breeze surrounded her and she realized the mirrors overhead were closing out the sun. It would be dark soon, and if she couldn’t find her way back to the hospital, Arturo and Breezy would have a long, cold wait on that ledge.

What if one of them really was hurt? There had to be something she could do! A thick and sturdy-looking girder just a few feet from the hole gave her an idea. She pulled off her baggy hospital gown, tore it into several pieces, and knotted them together. Tying one end of the makeshift rope to the girder and the other around her ankle, she tugged and tested her safety line before crawling back to the edge of the hole.

Kitty looked down at her friends. “Breezy, let Arturo stand on your shoulders.” Kitty reached out her hands. “I’ve tied myself to a girder.”

“Oh, you’ll get hurt, Kitty. Just go get someone from the hospital. They’ll know what to do.”

“I don’t know how to find my way back. I’m scared. What if I get lost. You’d have to stay here all night.”

“But...” Breezy was not allowed to protest.

“No!” yelled Kitty. “Hurry!”

Breezy leaned over while Arturo hopped up on her shoulders. Retrieving him was easy. Once he was out of the hole, they added his clothes to the rope so Kitty could be lowered far enough to clasp hands with Breezy.

Arturo’s job was to pull up the rope and the two girls. He puffed and panted and pulled with all the might of his little arms. The bare and broken metal edges tore Kitty’s thighs and stomach as she was pulled up. Arturo gasped. “Oh, Kitty! You’re bleeding!”

“Pull, Arturo, pull!” Kitty yelled.

Once on top, they were all quiet while they caught their breaths. Breezy hugged Kitty and began to bandage the bleeding wounds on her thighs. “And you don’t think you’re human? Kitty, you got all cut up to help Arturo and me. I don’t care what you call yourself, you’re one of us!”

A cool fresh evening breeze flowed along the top of the cliff as the mirrors overhead shut out the last glow of sun. Kitty shivered in her nakedness. “Here, Kitty,” said Breezy, “take my gown.”

“No thanks,” said Kitty, standing and reaching toward the stars reflected by the night mirrors. The breeze felt good and so did Kitty. It washed her fear from her. She felt as if she were stepping clean from a muddy crust. She knew she would never be depressed again. Yes, Breezy was right. It was what she was inside that counted—not the form in which she traveled—be that cat or be that human or be that metallic. Arturo was right, too. She could be anything she wanted to be. It was all up to her. l

How to Submit Stories to LifeQuest

Please send submissions to *Cryonics* magazine, Alcor Life Extension Foundation, 7895 E. Acoma Drive #110, Scottsdale, AZ 85260, or email them to fred@alcor.org.

If in hard copy format, please also include a diskette (textfiles or one of these: Microsoft Word 97 & 6.0/95, or Pagemaker 6.5. Graphics (jpg/gif preferred) should be in color if available, as these are compatible with Alcor's website. LifeQuest stories may be published on Alcor's website barring agreed restrictions to the contrary.

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You *can* help others see why what Alcor does makes sense, by sharing your feelings, your deepest insights with them, in the form of LifeQuest fiction (short stories) or poems. If you have a vision, put it in writing, and submit it for consideration.

Nothing's Impossible

by Fred Chamberlain

Arnold Devore smiled, his eyes still closed. Suddenly it didn't seem to hurt anymore. His throat had been burning with each gasp of terminal pneumonia. Now he could breathe easily. The air seemed filled with the scent of flowers, and he felt an urge to stretch. Closing his fingers tightly, he sensed the rippling of great muscles in his arms. Was it a dream?

Gripped by an incredible notion, Arnold threw his body upward and forced his eyes open. Moments before he could barely have rolled over in bed; now he flew instantly to a sitting position and found two people in the hospital room, a large man with a powerful chin and a slender young woman whose hair fell softly to her shoulders. Both were smiling. Their faces seemed vaguely familiar. Then he knew who they were, Judy and Sam.

"Damn!" said Arnold, grinning as he sorted out what had taken place. It was as if he were witness to a transformation where two old people, shrunken and shriveled a moment ago, were flung forward in time, into youthful states.

Sam had been a gaunt, hairless ghost, smiling as he fought the final stages of an illness which ended many years of futile suffering. Seven years later Judy, a white haired, diminutive old lady, whispered, "Arnold, you've held on through more than anyone could have asked. Now, my love, it will be over before you know it. I'll be close behind, and I'll see you soon!"

The last thing Arnold recalled, other than struggling for air, fluids strangling his lungs and throat, was the pressure of Judy's hand holding his; then

he fell away into blackness. Awake again, this time, he sensed the agony was over for good.

"Welcome back!" cried Judy, tears forming in her eyes. She hesitantly approached the bed, then she hurled herself into his arms. Arnold ran his fingers over her trim body, feeling the wiry strength beneath her female softness. "Don't hold me so tight," Judy giggled, "you're stronger than you think!" They tumbled laughing to the carpeted floor, rolling over and over.

After a few moments, Arnold gently held Judy away from him, drinking her in with his eyes. She was dressed in something like a dress suit with no looseness of material, almost indecently draped and molded to her form. Then he noticed Sam was wearing a tight fitting male garment and was pointing to one for him, hung over what surely must be a chair. Arnold felt himself flush, as he suddenly glanced down and realized he was nude.

"Don't you at least put your patients in pajamas?" he mumbled, slipping into the snug apparel.

"That went out a long time ago," Sam chuckled. "Others like you and I convinced the world it was useless. Oh, for a while we put gowns on people waking up from deep sleep, but they just tore them off to see what their bodies looked like."

Judy smiled. "We have so many ways of looking good there's little reason to conceal anything. Clothes are more an art than a necessity, now. In other ways, you'll see, appearance is less important than ever before."

"Judy's getting ahead of things," Sam interrupted, a trifle nervously. "Why don't you finish zipping that sheath and we'll show you the town."

Getting around had changed, during the many decades Arnold had been frozen. The room's door opened without contact, as he would have expected, but outside Judy and Sam waited while he experimented with his boots, on which he could glide effortlessly along magnetic repulsion strips running down each side of the hallway. At the inner edge of each strip, he found a glittering ribbon which would tug at his boot, speeding the glide, while another at the outer edge would slow him to a halt after a few seconds.

It took only a moment or two to get the hang of it. Had they given him 'sleep learning' before he woke? Many things he seemed to know without asking, like how the intricate zippers on his sheath worked and what was in the belt pack he wore. Words came quickly, more easily, it seemed. Detailed pictures jumped into his mind at the slightest association, and he raced endlessly over ideas and interpretations of what Judy and Sam had said, with no noticeable pause in the conversation. Arnold sensed he was on an extreme caffeine jag, yet there were no jitters. Was all this simply his imagination?

Hospital personnel smiled and greeted Sam and Judy as they passed, and several times Sam stopped, introducing Arnold to old friends he might not have known otherwise. Maybe they wouldn't have recognized him either, he mused after a few such meetings. "Flyin' high!" and "Headin' out!" were common greetings, but he sensed there was more to it than he knew. Had they dosed him with 'uppers' to help him adjust? If so, they all appeared to be taking it themselves.

"Sam, I feel like I'm on some kind of drug," Arnold observed. "And what does 'Flying high' mean? 'Heading out'? Everybody's saying those things!"

Grinning, Sam said, "Arnold, get used to it, it's the way we are, now. No drugs, no withdrawal! 'Flyin' high'? Look, you were out of circulation sixty years. Be glad the lingo didn't shift on you more than that!"

At the center of a larger hallway, they boarded an unoccupied personal carrier, magnetically levitated, Arnold assumed, since even his shoes embodied this technology. Then they sped through the huge hospital to an exterior ramp where the small vehicle flung itself down a launch track, locking to the side of a long module traveling along what appeared to be a monorail.

Arnold judged the speed to be several hundred miles per hour, as the transportation module hurtled among broad based buildings on guideways suspended in midair. It was like flying without wings; the guideway's points of support were far apart, with no cables. Then the transmod guideway tilted up into a climbing spiral and Arnold saw buildings extending for miles above them.

The spiral ended in a vast network of nearly level guideways winding among slender upper extensions of buildings which, miles below, had bases hundreds of yards across. This was a higher terrace of the city, Arnold saw, where the wide spaced structures appeared to be enormous, thick needles hanging in the sky.

The monorails seemed structurally joined where they crossed, but Arnold suspected there would be a noticeable swaying if they weren't traveling so rapidly. Sam commented about how better materials would soon eliminate "all this clutter." Then without warning, the transmod veered into a huge tunnel through one of the spires and the small carrier detached, racing toward an outer wall. Sam had punched in a code for the destination before they left the hospital, and that's all it took, apparently.

Before he knew it, Arnold was seated at a table with Judy and Sam, in a restaurant some eighteen thousand feet above the floor of the city. Gazing out the window, the effect struck him as a futuristic mural, except he knew it was real. The scale was the difficulty. He remembered his first view into the Grand Canyon, looking down a chasm several

miles deep. It was the same, here. Then Arnold remembered he'd traversed more than half a century in the wink of an eye and was already beginning to take that for granted.

"So you fixed the freezing damage and gave me a new body?" Arnold asked. He looked first to Sam, who was studying the menu on a video screen in the surface of the table, and then to Judy, who was doing the same thing.

Judy nodded, but her mind seemed more on the food than the question. Arnold studied her features, an almost hypnotic portrait in delicacy and strength. They'd been married fifty years; everything that made sense told Arnold it was the same Judy he'd grown part of, but there was a new element, intangibly foreign. Judy's energy and her physical youth, driven by eighty seven years' experience, were awesome; still, it was more than that.

Arnold remembered Judy as she looked when he first met her. A picture flashed to mind, almost unreal in clarity. Then he saw images of Judy as she aged. Like the first picture, they were sharp, unfaded. It became like watching a movie, seeing Judy grow old and then jump to the present, with a shift of some kind he could not pinpoint. He sensed it had to do with the crystal clear pictures which filled his head. He could feel it—his brain was better somehow. What had they done to him? Had they done something like that to her, too?

"So how did they fix the ice crystal damage in the brain?" Arnold prompted, again. He did his best to ask the question as if it had no particular significance.

Sam had already ordered, selecting his choices via the touch pads below the video menu, and Arnold and Judy had done the same. There were no remaining distractions, yet, shaking his head, Sam seemed stumped.

"We're psychologists, aren't we?" Sam said, as he looked up.

Arnold nodded.

"Whatever I tell you has to 'fit' a framework in your mind, doesn't it? If things are missing, explanations have to include them, right? Suppose you asked questions I could only answer in terms of factor analysis, but you had no knowledge of statistics? I'd ask you to be patient, wouldn't I?"

Arnold's face took on a hint of worry.

"Smile, Arnold," Judy laughed. "You pioneered that therapy, remember? Use it yourself!"

Arnold began smiling again; yes, the James-Lange law still worked as well as it always had, maybe better! Closure patterns in his mind shifted subtly; everything took on glowing, positive overtones.

"Go one step at a time," Sam went on. "You have a new body, like you said, a clone. That part worked out as you would have expected. Your brain, of course, is a reconstruction."

"But the damage? How did you fix it?"

"Forget the damage! How do you feel?"

"Fine!"

"No question of who you are?"

"Never crossed my mind."

"Think about your childhood. Do you have consistent, clear memories?"

Arnold thought, visualized. The old farm was there, along with his high school days. An earlier marriage, then his first memories of Judy. The very act of visualizing those things had a familiar feel. The strange thing was the sharpness, the ease of it. He remembered the old wives' tale about one's life "flashing before the eyes" at the moment of death. It certainly hadn't happened with him, when he died of pneumonia, yet now it seemed the effect was achievable by a simple act of will.

"Sam, it's all there, but it's so definite, so godawful sharp, and there's so much of it!"

"But no gaps? No missing elements? Places you think you should remember something but don't?"

"No, but I want to know about the brain damage. When I was frozen, crystals still tore apart the cell membranes. There were huge cracks across dozens of neurons in the ice matrix. They must use exotic applications of nanotechnology now, right? Do the replicators fix frozen brains while they're still solid, or is the reconstruction done at higher temperatures?"

Sam sighed. "Arnold, do me a favor. Look around and soak up the surroundings for a few days. Relax, and enjoy being with Judy. We had a professional partnership before, and we'll pick up there again, if you like, but for the moment just let yourself acclimate."

Arnold eased back and his eyes narrowed. "Why don't you want to talk about this, Sam? You know I have the background. You were still up and around when molecular assemblers started making copies of themselves. They were starting to use them for medical repair while I was still alive, years after you were frozen. In some ways, my background is better than yours."

Sam smiled implacably, "Let me be the therapist for two days, and you can go on from there."

Arnold grinned back. "All right, Sam, but you know what I'm asking. Tailor your 'therapy' around that!"

Judy reached out and softly stroked Arnold's arm. He turned; she winked and said, "I'm the first part of the 'therapy.' This evening is mine!"

*****

The apartment was spacious, even higher above the city than the restaurant, so it seemed one looked down from the dwelling's balcony into the depths of an endless complexity from a vehicle suspended in midair.

"Our place," Judy said softly. "I've spent the last five years here. Your brain damage complications were terrible, and it took a lot more to get you back than Sam and I. I can't tell you how lonely I've been, but all these things of ours have kept me company."

The lofty home was filled with possessions Judy had stored for them. Handling them helped Arnold grasp that his past life was real, not a dream to be tossed aside for new experiences, as if he'd suddenly sprung to life with no former existence.

His books, printed paper, were now antique treasures. He turned pages in an old leather binder filled with handwritten ideas of his that might seem naive now, but they were roots, the foundation of his mind. The ancient folded optics telescope made him chuckle, as he opened the wooden box and cradled the cylinder in his hands. He could tune dozens of space observatories from their apartment,

viewing with screens so sharp they exceeded the resolution of his eyes, but he knew he would never get rid of the old relic he'd purchased more than a century before.

Arnold finally stood looking down from within the balcony's sliding glass doors, gazing as if in a trance at the ceaseless motion of the city's evening lights miles below. Then curtains swept across the panorama, blocking his view, the lights dimmed, and strange, pulsating music filled the air.

An undercurrent of drums with melodies and harmonies of their own supported a magical tapestry of flutelike tones in higher domains. The blend was a brutally strong base with layer upon layer of finer and more delicate structures above it. The music reminded Arnold of the city; then other forms took shape and the city vanished.

The effect was incredible because there were so many visual components. Arnold found he pictured a fabric of astronomical size woven from burned out stars, which enclosed others still burning, pouring out mass and energy to be efficiently funneled to the use of stellar developments beside which the city below would have been a microscopic anthill. Never before had music led so directly to graphic concepts, and Arnold found himself wondering if new pathways in the brain had been found for music to evoke ideas of an abstract, geometric kind. Then he detected movement of light on the curtain which now concealed his view of the city, shadows cast from immediately behind him.

Arnold turned and Judy was moving toward him. All he could see was a dark red glowing wall behind her, the color of a desert sunset, silhouetting the sensuous motions of her bare figure and drifting loose hair as she advanced on her toes. Even as he felt his body respond, Arnold found himself fascinated, watching Judy match her actions to the music, arching her back and lifting her hips in ways which followed the pulsating undertones while her fingers danced against the burning red wall so as to echo the highest pitched flutes.

Judy crawled into Arnold's arms and hungrily wrapped herself around him, unzipping his sheath so it fell away like a cape from his neck. He lowered her to the cushioned floor and for a moment paused, absorbed in the glow of the wall softly lighting her perfect form. Then he felt his body drawn down, gripped in the field of an irresistible force. Over the hours that followed there were waves of rapture and spells of calm. It was as if they drifted on a sea torn by a chain of storms. In the end, exhausted, they slept.

Arnold woke. He'd dreamed someone came to take his new body away, a formless shape leaving him not with an older body but no body at all. He was a wraith, hiding in the information content of old hardbound books, moving from appendices to index sections and from book to book, fearful of being erased, slipping from one shelf to another as great hands reached out, snatching books by the dozen to find him. He sprang into a computer only to find it on fire, hid within a buried depository of microfilm even as it was engulfed by magma, and then took refuge in the crystal core of an asteroid hurtling into a star, evaporating in a sudden flare with so little warning there was no escape from oblivion.

Still shaking and drenched with sweat, Arnold found he'd rolled over several times on the carpet from the point where the last love making with Judy had left them sleeping. Judy's form, outlined against the deep red wall, gently moved in the rhythmic pattern of dreamless sleep. As Arnold tucked his hands under his head and stared at the ceiling, he realized for the first time it was a dimly glowing celestial map. Why did Sam balk whenever the subject of brain repair came up?

Arnold squinted at the ceiling, tracing patterns of stars to the edge of the room where they faded into the luminescent walls. The chart was oriented on the galactic plane, bespeaking concern with travel rather than with sky watching. There were dots with a vectorial character which could not have been stars. Pulsing gently, they reminded him of beacons or buoys like those needed for navigation among shoals of an uneven coastline, but he sensed they were something altogether different.

For a while, he tried to work out where the sun lay and what would be there if the ceiling were extended. It was unexpectedly easy, but there was no satisfaction in it. On a sudden urge he sprang to his feet, imagining himself a caged jungle cat, pacing the room, visualizing bars which might have separated him from invisible onlookers. Finally he stepped into the bathroom and entered a shower enclosure shaped like a huge, flat bottomed egg. A cloud of needle-like water streams impinged on him from all angles and he relaxed in the hot vortex, his mind spinning like a flywheel with no friction to slow or restrain it.

Things seemed out of place. Sam and Judy had steered the discussions all day, avoiding many topics other than just brain repair. Judy vehemently denied that anything was wrong after a lengthy stop in the restroom; all he had done was ask if she were all right. At one point on a tour through an entertainment park, upon coming to a show titled "Ideas on Identity", Sam and Judy had hurried him on to a different attraction.

It was just before they fell asleep that Arnold's sense of uneasiness came to a climax. Lying with Judy on the cushioned carpet, he ran his hand over the top of her head and noticed a slight indentation in her skull. He stroked the area a second time, tracing its contours, and Judy suddenly jerked and said, "Arnold, don't!"

There was a shocked silence; then Judy continued in an embarrassed tone, "They do surgery, and it leaves a spot under your hair. You shouldn't touch it while you're still healing."

"But you've had five years, and it feels like it's not solid, as if there's an opening!"

"It's still sensitive; I don't want you to touch it." She looked away, cornered and at a loss for words.

Arnold felt the top of his own head. Yes, there was an area like that where his scalp was loose also; it almost had an itchy sensation.

"Arnold, please don't touch your head," Judy insisted. "Wait 'till your checkup next week." She continued to fumble for words and he let the matter drop.

Arnold finished his shower and

returned to the dimly lit room, opening the drapes so the city's lights flooded up from the lower terraces. Judy was breathing peacefully as he slipped on his sheath, picked up his belt pack with entry passes and credit cards, and went out into the world.

A twenty four hour world, they'd told him, and it was more apparent now, gliding down crowded feeder halls of the gigantic apartment building at four in the morning. Arnold's use of the glideways had become so automatic he was not worried he would stand out in some way. "Flyin' high!" he smiled to a couple leaving a hallside communication booth, still unsure of what it might mean. Then he entered and began searching directories.

Libraries were under 'Information Services.' Arnold called; they were open around the clock. Hailing an unused carrier, he tapped in a destination code; minutes later he stepped out at a large building which was still, clearly, a library. Inside, it took only minutes to master the use of access terminals for files not available in any home. Dawn was just breaking outside the huge, vertical slabs of glass which lined the library's walls when he hit pay dirt.

Except it seemed more like a horror story. Arnold called up newspaper files and raced back in time to the year he was frozen. Then he crept forward, sometimes glimpsing only headlines and sometimes stopping to read, unaware even of where newspapers ceased being printed and became exclusively accessible through video displays.

"Cryonicists Riot in the Streets!" "Right to Ice!" "HEW Approves Freezing for Social Security Recipients!" These things he might have guessed, but then the chilling part started. "No Way to Fix Frozen Brains, States Surgeon General!" "Research Group Licks Brain Damage Problem." "Religious Groups Horrified At Brain-Fix Solution!" "It isn't Human!"

He sped forward to the present date, July 16, 2076. No sign of controversy. Backward again. Things were still chaotic as of twenty years ago. Forward a little. There! "Artificial Brains Get Surgeon General Acceptance." Five years further, the titles shouted, "Hyperbrains And Omnibrains Approved As Transplants." Two more years; now, sarcasm ruled. "You're Still Biobrain? You're Braindead, Bozo!"

"Oh no!" gasped Arnold. He ran his fingers through his hair. Except for the unnatural depression, his head felt fully normal. The sensation of his fingers digging into his scalp seemed real enough. He swept his eyes around the room. The resolution was excellent; could it be video?

His memories? He pictured the old tree in the back yard at the farm where he grew up. It was crystal clear. He imagined the rope ladder hanging from the entry hole in the floor of the tree house and saw the texture, felt the old scrap boards from which the tree house was built. He heard cows in the pasture a hundred yards away, on the other side of the vegetable garden, smelled the dew on the fresh cut grass below the tree...

He had to get out of there. What about that show at the entertainment park? As Arnold got to his feet, he felt unsteady, and his vision seemed to flicker. What was wrong? He smiled, strongly and voluntarily, and the flickering disappeared. The James-Lang feedback principle seemed embellished, enhanced. What about other brain functions? Did they operate in an upgraded way also? He glanced at his watch, a film adhering electrostatically to his thumbnail, and was shocked; he'd been in the library less than two hours. After a moment, his equilibrium restored, Arnold proceeded to an exit.

Outside, the fragrant air of a summer morning greeted him. He had noticed before the profusion of trees and flowers, woven into exposed areas everywhere, but now the smell of fresh cut grass was especially pungent. For a moment Arnold paused under an overhang which would shelter those who might emerge into a rainstorm, observing the whole area might as easily have been enclosed. The only explanation was a craving for exposure to the elements on the part of the designers, integrated into the general architecture of the entire city.

Arnold entered an empty carrier and used his credit key to indicate the entertainment park as the destination. As he moved off, just before the carrier sped down its launch track to lock with a transportation module, Arnold glanced back. Two figures resembling Judy and Sam had emerged from the library, but Arnold couldn't be sure. During the several minutes it took to reach the park, he leaned back and relaxed, letting himself doze.

This time, Arnold did not hurry. He bought a snack and sat on a bench among flower beds, reminded of the old Disneyland parks. People flowed by; from what he knew, most of them didn't have biological brains. He was nearly certain, now, that the same was true of him. What had gone wrong?

After awhile, he entered the "Ideas on Identity" show and took a seat near the back. The seat adjusted itself to his form perfectly, lights dimmed and his seat tilted back, lifting his feet. The ceiling was the screen, the theater designed as if for use as a planetarium. Titles began appearing, awesome holograms which seemed to be almost within reach of his fingers. This was an expensive production even in terms of the present technology, Arnold observed. Why spend so much money on a topic like this?

The show began and a face appeared. It was Sam's, aged and wrinkled; he must have been seventy. What could Sam have said which would fit with this show?

"We know the brain is composed of independent entities, tens of millions of clusters of neurons, hundreds of different types, interacting to produce what we call 'consciousness'," said Sam. "But few of us are willing to accept the conclusion which so obviously follows. If we were to synthesize these clusters and unite them properly, according to specific maps of our brains, we would be duplicating our minds."

It's true Sam said that, thought

Arnold, but it was only an abstract idea at the time; everyone laughed at him. Even after he was frozen, few really thought it would someday be possible. Then a young Sam's face appeared, not the Sam of half a century ago, but the Sam who greeted him in the hospital room only the previous day.

"Ladies and Gentlemen, this idea is old," the young Sam went on. "It's been waiting in the wings almost a century, but it's central to all the turmoil we've faced in the last thirty years." The huge holographic picture exposed minute details in Sam's face, and Arnold saw more continuity with features of the man who had been his partner so long ago. There was a student of Sam's, he recalled, Sjmansky, who published a number of brilliant papers on artificial brains after Sam died, but Sjmansky had a terminal illness himself, and was near death when Arnold was in the final stages of pneumonia.

"Initially, everyone tried to avoid artificial brains," Sam was saying. "No one could have guessed we would converge on them as a final solution, but having crossed over, now, there is no way back. We must try to understand how it happened. We must be completely confident we have not 'dehumanized' ourselves. Watch the pictures which follow. We'll take you for a journey you'll find absolutely fascinating."

The story of artificial brains took shape. One narrator's voice, not Sam's, was uncannily familiar even though the speaker was not shown. Then Arnold was startled by a picture flashing to mind, one of the people to whom he'd been introduced as they left the hospital. Why was he so sure? The association between the narrator's voice and the image was as firm as his memories of his childhood, but how could he have such a clear recollection on the basis of a momentary meeting?

Conceptually, things became clearer as the show progressed. Early "hyperbrains" involved only strict duplication, neuron by neuron. Then the term became generic for all artificial minds. "Omnibrains" were more recent, where large groups of neurons as units were functionally synthesized on higher levels.

"Omnibrain" was trademarked, claims being it provided higher speed of thought, easier updates, and better modularity. The subjective experience was indistinguishable, and people were now switching back and forth, using different modules day to day the way they changed clothes for different occasions. There were 'rate of thought' limits due to interfaces with biobodies, but Omnibrain was working around these. With Omnibrains, the story continued, there could be interchanges. A pianist and violinist exchanged submodules; now both could perform equally well on both instruments. Higher level transfers were nearly ready; it looked like memory exchange without an audio-visual bottleneck would be available by Christmas.

Arnold felt a desperate anxiety, a panic reaction. Now he sensed what mental patients he treated must have felt. He began exploring the top of his head with his fingertips. As he did so, a pair of small hands began squeezing his tense neck muscles from behind; Judy brought her head up next to his and began nibbling his ear.

"You broke and ran!" she whispered. "We couldn't tell you; all the studies show it's better if you find out on your own. I'm sorry I snapped when you touched my head! I didn't know how to keep from letting the cat out of the bag."

Arnold turned and his disorientation increased; then he let Judy cradle his head in her arms and bury him in kisses, feeling himself swept back to the evening before. In a few moments his sense of reality returned. When he finally untangled himself, he saw Sam in the seat next to Judy's, smiling.

"We knew you'd take off," Sam said in a low voice, "but we didn't know when. Do you want to come outside and talk, now, or would you rather see the rest of the show and figure it all out for yourself?"

Arnold hesitated. Then he said quietly, "Oh, what the hell! Are you ready to level with me?"

Sam grinned. "Let's go!" he whispered.

Outside, they settled themselves on benches among the flowers again. "You can see now why we hustled you past that show," Judy laughed. "You weren't ready to see Sam's face on the screen."

"The term 'brain' has a lot more latitude than the old days, doesn't it?" Sam added. "They'd already switched to hyperbrains by the time Judy and I woke up. It was even a shock for me, even though I'd always thought it would be possible. Of course, the raw data is still there for all of us."

"Raw data?"

"You know, the original frozen brains. They map them and replicate neurons and interconnects in an identity module about the size of a pack of cough drops. No more hard wiring as of two years ago, they just put an interface in your head. Slip in the module and guess what? Ta-Dah!!! 'Arnold Devore, in the flesh!' The pun is intentional."

Sam looked like an incarnation of the Cheshire Cat. Judy was chuckling as if it were a joke. Their brains were still frozen, yet here they were as if that were perfectly normal. And what of him? He was beginning to take it for granted! Arnold shuddered, still coming to grips with it. "My real brain is still frozen, in a capsule somewhere?"

Judy laughed. "Solid as rock... except where replicators squeezed in to trace neuron interconnects and record synapse characteristics. Maybe someday they'll be able to fix neurons biologically; for now, that's beyond the state of the art."

"Beyond the 'state of the art'? But then how..."

"Simulating neurons is easy," Sam filled in. "If we were pressed, we could pack a human brain into a cubic centimeter. Memory mapping is easy. People hated the idea of artificial brains in the beginning, but ten years later almost everyone switched over. Those people's brains are frozen, too, along with ours, but we can't imagine why any of us

would ever go back to them."

"But I'm nothing but a machine!" Arnold objected. "You and Judy are machines; all these people around us, these cities—full of them! Is that all there is? Are there any people with normal 'biobrains' left? Anywhere?"

"Look, Arnold!" said Sam. "Even now, there are tribes of primitives which don't use immunization; some people in this city still think their minds are spirit things running around in their heads independent of brains. Of course there are biobrains... a vanishing minority. Still, even a hundred years from now it wouldn't surprise me if there were a few around."

"But to just switch over to a 'machine' brain? To go back and forth from one type to another, all the time? How do you know what's 'you' anymore?"

Judy took Arnold's hand and drew him close, turning him to her, and he gazed into her blue-gray eyes. She'd outlived him seven years before she was frozen. Now she'd spent five more years waiting. What about last night, in the room with the sunset walls and the star filled ceiling? Her sultry magnetism was irresistible, even now, sitting on a park bench surrounded with flowers. How could she be a machine? It didn't make any sense!

"Arnold," she said, "When you get a chance to dig more into the 'transformation,' as it's called—Sam has a whole historical series on it—you'll get a better sense of the horror the world went through. First, artificial brains were used to get back researchers they thought could help develop ways to repair brains biologically; it was supposed to be very limited, used with only a few great minds of their times, before they were frozen. There were endless objections, but all the people with frozen relatives kept screaming 'bring back the artificial brain researchers,' to speed up reanimation development work.

"But you see, it backfired. The scientists they brought back with artificial brains showed how much more technology was needed for repairing frozen biobrains, beyond anything expected. Then there was the real clincher... they said they wouldn't go back to biobrain anyway, and told everybody else they were crazy to keep them."

Arnold began to grin. "Sjmansky?"

"Yes, Sjmansky!" Sam laughed. "Can you imagine how that made them feel? They brought him out with an artificial brain, hoping he'd want to be rid of it... and he loved it! He was the first to say he wouldn't go back to biobrain, and challenged opponents to bring others back, every level of intelligence, to see what they had to say about it."

"Was that the study the Surgeon General based the conversion decision on?"

"No," said Judy. "That was only on people who were already frozen. Sjmansky settled that, once and for all. But then the conversion thing was..."

"Let me tell it, Judy," Sam interrupted. "Arnold, I'd give anything to have been there. One of Sjmansky's people wanted to make the jump, so they bootlegged it; no one knew until it was done. He woke up with an early hyperbrain. It could have been reversed; they'd have switched him back if he'd wanted them to. His biobrain was still at normal body temperature, artificial circulation, sedation, ready to go back in if he'd had qualms.

"Anyway, he took one look at the biobrain and said, 'I never want to see the damned thing again; freeze it!' When news of that hit the videos it was the last straw. All the people without hyperbrains were jealous; we think faster, memories more vivid, you know what it's like! Now there was incredible public pressure for conversions; no way the agencies could hold out. Almost everyone made the jump as soon as it was approved."

Judy raised her hands. "At first, people like us—from the past—think it's awful, but after five years, I have a hard time trying to see why. So many advantages!"

"Like what?"

"Like having copies of the modules, updating each night. If we got wiped out by accident, like orbit entry collision or solar flare with too little shielding? We lose a day or so, but..."

"But I still don't get it!" Arnold objected. "It's not the same 'you,' starting over like that!"

"Oh no? What do you suppose you're doing, right now? What about all those hyperbrain conversions when they made the jump? What happens when someone updates an 'Omni' from a 'hyper' and then switches back the next day?"

Arnold was thoughtfully quiet for a moment.

"There are other things, too," Judy added, grinning, "like new ways to enjoy life. We're going for a swim this afternoon, but it won't be like any swim you ever took before. We have a choice of outer forms, now that we have identity modules."

Arnold watched, fascinated, as Judy took from her belt pack a slim rectangular object and handed it to him. Its texture was that of black glass, its weight a bit less than if it were a solid bar of metal. About a half inch thick, he judged; maybe two by five inches in surface area.

"That's me, Arnold. The 'real' me," Judy said. "It's like what's in my head, except it's been four hours since updating. That's what I was doing in the restroom; my first moments with you were so precious I couldn't take any chance on their being lost."

"So if something happened to you..."

"You'll never lose me, now, Arnold, and I'll never lose you! Now, let's go for that swim."

*****

When they alighted from the carrier at the seaside resort, Arnold was mystified. Judy had made a point of being secretive about it. One thing she showed him on the way, however, was the updating process. Simple! You placed two clips on an earlobe with a fine wire to the spare module. Three minutes later, a low tone sounded, and the update was complete. Judy insisted Arnold bring an extra module with him, and now she was telling him he would be 'going to sleep' in some way. What was she up to?

Within the resort, they were shown to a private room, where an attendant asked for their modules. Then they were requested to lie down and the attendant connected them as if an update were to be performed. Arnold finally said, "Judy,

what's going on? What does this have to do with swimming?"

Judy smiled. "Arnold, I know we're rushing you, but this is the latest fad; everyone's doing it. The updated module goes in a vehicle, and the module in your head is on hold, like you were sleeping. You have a swim in the vehicle; then the module in your head updates to add the experience. It's like you were teleported into the vehicle and then back into your body."

"But why don't we just climb into the vehicle and ride? Is it so dangerous?"

"Trust me, Arnold," Judy said. "This is one vehicle you can't just climb into. Now come on; this is going to be more fun than a barrel of fish!"

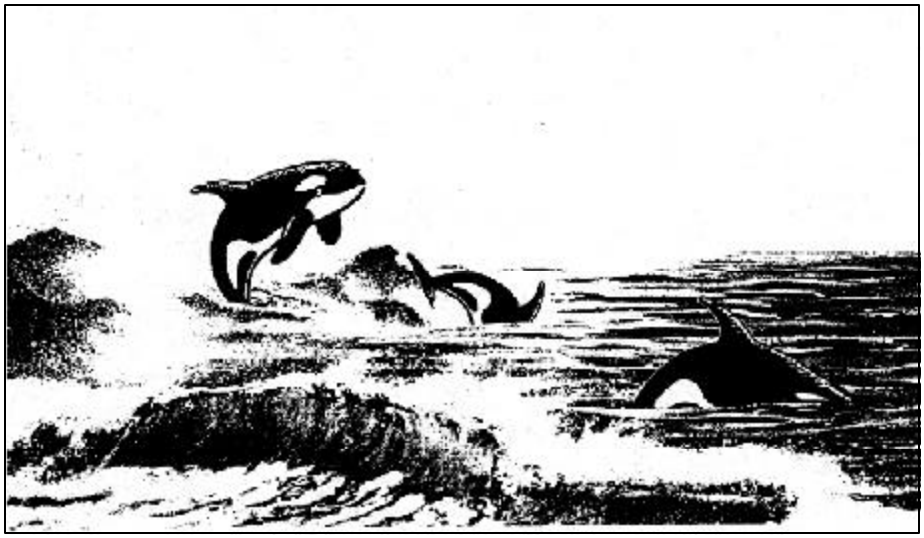
The open ocean was clear and cool as Arnold surged through it at thirty five miles per hour, closely followed by Judy and Sam. He flexed ten thousand pounds of muscle and headed for the surface five hundred feet away. As his huge Orca body hurtled a dozen yards into the air, he had a spectacular view of giant waves breaking on all sides; then he plunged back into the water and raced down to the canyon they were touring below. Through sonic links, he spoke with Judy and Sam as easily as if they were seated beside him at a cocktail table.

There were physical sensations he could never have imagined. Frigid ocean water rushing over his dorsal fin was like a cool breeze on a human face, but there was a difference, as between butterscotch and chocolate. As he whipped his tail and shot down an underwater gorge it reminded him of jumping a log in a forest, magnified a thousandfold. He halted before a crevice, his great eyes peering into it, pectoral fins shifting his mass back and forth so he could get a better view. With a slim eel's body and auxiliary lights, he knew he could probe its depths. Next week, perhaps.

*****

As evening fell, they were back at the apartment and Arnold sat holding an identity module, awed by the idea that he could move from body to body and even from module to module as if by magic.

"Sam, all that familiarity when I woke up, was it some kind of implant learning?"



Laughing, Sam shook his head. "We had talks with you under hypnosis, to give you a sense of what you'd find when you woke up. People from the past have adaptation problems; a lot of the therapy we do these days is in that area."

Arnold placed his identity module on a glass table, studying its appearance. If it were within a small space vehicle, could his memories be recovered as he plunged into Jupiter's atmosphere or even into the sun? He understood, now, the meaning of the ceiling's star maps. People like himself were already out there, no time limits holding them back. At destinations they would construct suitable bodies or vehicles. En route, visible to those on Earth only as anomalous points of light on star maps, they were bathed in a continuous stream of media flowing after them at the speed of light.

"Sam, what's research in psychology like these days?" Arnold asked.

Sam shrugged. "Some of us want to see if purely artificial intelligence can be made sentient. There's still a long way to go, there. I'm working on add-ons for Omnibrains, with extra memory, communication links, you name it. It's a kind of 'inner space' adventure. By the way, the most exotic treat yet is going up in large birds. Seems like everyone's done it at least once; that's where 'Flyin' high!' comes from."

"Flyin' high!" mused Arnold. "Compared with riding on an interstellar probe, that's like a microbe going for a swim near the bottom of a culture dish!"

Judy smiled happily. "I'm glad to hear you say that," she said, "because one of those probes out there has 'seats' on it for us. All we do is transmit data for making a set of modules and updating, and it will be like "beaming aboard." When someone says, 'Headin' out!' now, you know what they're talking about."

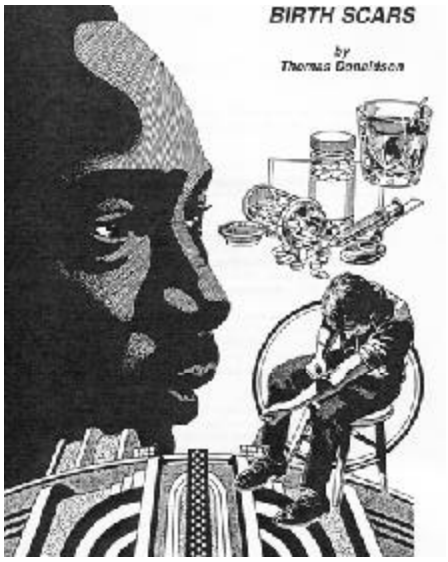
Arnold tickled her. "And if we want to come back?"

"Simple," she laughed. "Beam an update back here, and let the modules on the probe sleep awhile."

"What if we want to be out there and back here at the same time, Sam?" Arnold asked. "Can we recombine later, or will we have two people who stay apart permanently? And what if Judy and I want a total exchange of memories and other modules? Except it would be like merging, wouldn't it, no need for two of us?"

"Fascinating questions, Arnold!" Sam replied. "Maybe you'll stick around for at least a little while and help with a sequel we're working on for the "Ideas on Identity" show. We're going to call it 'Nothing's Impossible'!" l

Note:
To view a web version of this story with additional graphics, go to http://www.alcor.org/lifeqst4.htm



Birth Scars
by Thomas Donaldson

Platosmith, a major businessman of Skastowe, was immersed deep in linpro, wearing his kasa to help calculations, when the message came through that a barker had arrived from Arthu. From Arthu! Forty light-years away, the original home of Mankind. Many people were three or even four generations away from Arthu, so much time had passed. Many had never even walked on a planet and looked up at its Sun. And now, by so many chances of history and forethought, he, Platosmith, had some keys for this message from Arthu. It had been a very long time.

And so, in his room walled with prices and statistics, Platosmith fell to remembering his life long ago on Arthu.

He remembered how he had made arrangements to be made acrushta. He'd been only 23 years old, with no experience of life but much experience of the streets. Even at 23 he'd made a name for himself: the Black Plato, the Philosopher. Not only a name but a lot of money or what seemed to him then to be. He dealt in cocaine, crack, heroin, speed, any drug his customers wanted he could get for them, immediately if it was "normal," in 24 hours if not. But still, looking over his BMW, his stereo and television wall, his pearl cufflinks and silk shirts, still...

And that was why so long ago the thin clerk at a cronic society had looked up one day to see a gigantic black, wearing clothes that dripped money, standing over him at his desk. Platosmith remembered the slight fear in the other man's eyes as he reached into his Italian leather briefcase ... to pull out $100,000 in cash. "I want suspension," he said.

They looked at one another. The clerk haltingly told him, no, he could not buy suspension, he must join a society. He was handed a set of forms as thick as a book. You must fill these out, he was told. And then (deep breath!) we must accept you as a member. Platosmith had glared at him then, but inside he remembered how he felt. "It is the Man again, always the Man.." he was saying to himself, mulling over whether to waste this tiny clerk on the spot. "Always the Man..."

The clerk had looked at him. We all had to do this, he said. If you need a Notary Public there is one next door.. And so Platosmith had sat down in that lobby, with the photos of patients looking at him in rows, and filled out the forms, one by one. He spent an entire afternoon at that and handed them back to the clerk when he was done. "Thank you, Sir," the clerk had said. "Here is your money back, for now. You will hear of our acceptance in two weeks."

He had gone away then in his chauffeured BMW. One day (he had almost forgotten about it as one more futile act ...) a letter arrived in the mail, with a bracelet he was told to wear always, even during sex or in the bath, and he was told he was accepted into this cronic society. Welcome, it said, to immortality. He put on the bracelet. I guess I showed them, he thought. Black Plato is dangerous, you give me what I want ...

He didn't remember what happened then except by what he was told. He remembered vagueness and confusion for months after, and then one day it was morning on a summer day, he awoke in a strange room with triangular windows (open to the summer air), in a bed which seemed to adapt itself to him like a live and sensuous animal. A man sat next to the window where he could be seen. The man was wearing perfume and clothes as if he were made up for a masquerade, with very high collars, lace and embroidery everywhere. He could not place the man's age, not young or old. A woman came in, dressed in the same kind of fantastic embroidery. I am Pool Hammon, the man had said. You have been crushed and scattered. We have put you together again. You would say that it is now January 12, 2554. He spoke English Platosmith could understand, but with an odd smooth accent, and changes to the vowels, that he couldn't place.

And they told him what had happened, how he had been machine-gunned and left dying on the sidewalk only a few months from his acceptance (they seemed very respectful about it, for some reason). How he had been autopsied and the embalmed pieces of his brain put with the rest of his organs, back inside. How the cronic people had stored him anyway, and now after many years they had brought him back, to life. He had thought for a moment that this was some fantastically elaborate show. If Clown Larry was doing this to him for some reason, he'd escape somehow and make Clown Larry pay for it, triply, quadruply ... But no, no one could do this. Somehow it was Reality.

He had by now forgotten a lot, due to simple time. But he could still remember Pool telling him these things, and the breeze through the triangular windows. He was one of the earliest people to be acrushta, and the earliest to join. In 2554 people still spoke of the first hundred people to join cronic as "the Saints." He was not a Saint, but not far from one. That had been a new feeling indeed ... to walk about and see the respect in peoples' eyes, the way they'd ask his opinion about new things ...

But what, exactly, could he DO? A few Saints had made a business out of the future, but he wasn't a Saint. He had to spell out anything written, slowly, before he understood it. The only thing he knew how to do was hustle drugs. But they gave him some of those silly clothes, allowed him to come and go through the Return Center, and gave him meals and clothing, always identical. Would you like some education, they asked, and gave him some leaflets in bright colors.

When he looked through them he only saw honkies. No thank you, he said slowly and politely. I will manage on my own. (He remembered how Pool had looked uncomfortable when he had said that).

He knew how to hustle drugs. OK. He started watching people closely for his opening. He kept a knife that had come with one of his meals (nobody ever asked him about it at all). It was surprisingly sharp, though it wasn't made of metal at all.

But even then he had to keep coming back with questions. People talked a lot through TV phones, with a screen half the size of the room. How did he work these? How could he move about? Was there public transport? (No, everyone just had their own private computer-chauffeured helis. On busy routes they all fit, wings folded, into another gigantic airplane, all done. He didn't even have to learn to drive!).

How could he get to the nearest city? That one was interesting and disappointing at the same time. The Return Center was very large, with many buildings, trees and grass between the buildings. People would sit outside a lot. He had asked a lady walking by, who had merely said: "Ask your heli" and hurried off. Beforehand, he thought the voice was just a recording. He felt just a bit silly asking the heli where the nearest city was, but it answered him. And then, when he asked to go there, it took him there and he learned that it was... a museum. Hardly anyone was there, just streets which ended outside the city, quite abruptly, in grass, and tall buildings kept in immaculate condition. Nobody could have lived there for a hundred years. Where, then, do people go who want to buy drugs? For that matter, where are the people?

There were markets where people crowded together to buy things. But he saw no market for necessities, like food. Many restaurants, where a chef would design a meal for you individually. But no grocery stores. And much more to the point, no liquor stores. (Sure, the chef designed the drinks too. But that's not quite the point).

He thought about the problem again. One day he woke up, happy that he'd finally found a solution. "I want a woman," he told his heli. "Take me to where I can get a woman." The heli was silent for about 30 seconds. Finally it said, "Please be patient. I have not had such a request for many years. I am searching." He waited. What were these people all about, anyway? Where are the whorehouses, by God? It was about 30 seconds later that the heli livened up. "I've found where to take you," it said. "We're going there now."

The journey took hours. His heli went first to a joinheli of a kind he hadn't seen before. It was shaped like a tower, with many floors where helis could link on. "Many people enjoy the view. Do you want to see out?" it asked him. Puzzled, he answered yes. They hooked into the joinheli. After a short time it was full. He remembered the anticipation he'd felt. At last. At last I've got a hold on them! Whorehouses are eternal, for always. I'll get back into business quick smart. I'm not Plato Smith for nothing.

There was a slight shudder. The entire tower lifted upwards. It was going up into the sky! He felt a weight pressing on him. The Earth turned into a child's blue ball hanging in space. "Where are we going?" he asked his heli. "What are you doing?" He felt the first stirrings of panic. But the heli said quietly that everything was in control, they were going to Heaven. Would he like some music, or perhaps to watch a video on the way? Do you want a little to eat? Oh, he thought. So there are whorehouses in Heaven?

From the window Heaven turned out to be a fantastic collection of shapes, all floating together against a background of stars brighter than any stars he had ever seen. The joinheli docked at one of them. His own heli took off its rotors and replaced them with something else. "Where are we?" he asked. To which the heli gave a quick summary. He was going to a shop for women. Heaven was ... not one, but a collection of artificial satellites in space.

Platosmith thought about that for a while. Once when he was a boy, no more than eight, his primary school class had gone on an outing to the country. He remembered the trees, and that so few people lived in the country. It was late when they were to return, late enough that night had come. The teacher made clucking sounds as she tried to get them all into the bus. Suddenly Platosmith had looked up at the sky. The stars! There had been so many stars, so bright, so beautiful. They gave him a sense of endless depths, beauty, distance ... He had stood and looked up for many seconds. He had never known they even existed before.

So now he had gone to Heaven, among the stars, to look for a whorehouse.

The final leg of the trip did not take long. They arrived at a rather shapeless satellite. The heli docked carefully. He heard air filling up the room into which they had landed. "You may get out now," his heli said. He went through the door. On the other side a small fat man was standing. "Very good," the man said. "We get so little business nowadays." The man led him into another room, where he saw models (very well done) of body parts. All body parts. And faces. There were photographs too. A video came on, large and covering half the room. It showed a nude woman, standing and smiling. "We can make you a woman to suit any taste," the man said. "Would you like to try out some combinations?" Then the fat man stopped again. "It's been 250 years since someone has come by." The fat man shook his head. "They just don't appreciate good craftsmanship any more. I don't understand it."

Platosmith looked at the body parts and the pictures silently while the little fat man went on. "We can make them any color you want," the fat man was saying. Platosmith was silent for many minutes, looking at the video, the models, the faces on the wall. "No thank you," he said finally. "I'm sorry but I came here by mistake."

Once he asked his heli to simply wander about. "Would you like a tour, sir?" it replied. "What kind of tour?" he asked suspiciously. "Just wander aimlessly around." The heli rose and took him to the next mountain. Almost all the country was wild. There were no roads. Here and there, buildings. He could see some were very tall, he wasn't looking at

peasant villages. He could see other helis on some errand or other, and high in the sky a joinheli passed by. "This is going to be much much harder than I thought," he thought to himself.

But he had kept up his search for months. They didn't try to throw him out of the Return Center, and every night his clothes were taken away and washed, lace and all, then returned in the morning. Meals cycled weekly, Monday breakfast always the same as last Monday's. He could come and go as he pleased and no one ever asked him for money. Lonely for any human talk, he started speaking to Pool and then later to a nurse, Karn. He could see in their eyes that they both wanted him to take the education, he was slowly rotting inside. "You'll have to learn about this place, even if you want to go five miles." But he still was never open with them. "Where are you going?" they asked. "What are you trying to do?" That's my business, that's private, he said.

On a day like any other (the days here never seemed to vary), he woke up and breakfasted in his room as usual. He then dressed in the lacy clothing, ready to go out. But Pool came by instead, always civil. "I've brought someone I'd like you to meet," he said to Platosmith. Platosmith came out of his room dubiously, to meet a young black woman, dressed in the same lacy clothes they all were. "Hello, Platosmith," she said, and looked at him with big eyes. "I think you'd like to talk to her," Pool said.

Her name was Varna. She spoke with the same funny smooth accent as the others. "I've wanted to meet you," she said. "I know you're just returned." He had shrugged. This was just a black honky. She was very pretty, though. "Did you know that you were the first black ever to be frozen? Did you know that we all respect you, that you're famous?" And she smiled. "We know how you worked in the old days, too. But you see, you brought immortality to blacks, too." But Platosmith had merely shrugged.

One day he had an idea. If the heli could talk, why not the telephone? After all, it understood him when he asked to phone Pool. So he said: "Describe yourself." He learned with surprise how the telcom was much more than a telephone, it was a reference center, a computer, everything. It could put out text, too, for those who wanted to read. "Alright," he said. "Show me some text." He found it even harder to read than in the old days, not only did he have to spell it out but the letters had changed. Not so much that he couldn't read it, though. Very slowly. "Thanks," he said to the machine. "I don't feel like reading now." Is this machine watching me? he thought. Then: "Can you show me things, and tell me about them?"

From that point on he started staying in his room for hours, asking the telcom questions. It showed him a map of where he was. It told him (haltingly, only when asked, and he had to ask the right questions. It was hard to ask the right questions) how he had come there. "Where IS everybody?" he asked after his trip to the mountain. Everyone was elsewhere. Some had gone to the stars, many had left the Earth, people had been drifting away for centuries now. It showed him pictures of wild forests and a flat prairie stretching away under the sky.

Whenever he spoke to Pool or Karn he started asking guarded questions. Without letting them know it, he was trying to find out if they were watching him through the telcom. As we were talking last week, he said, introducing a conversation he had with his telcom as if it were with them. "I don't remember saying any of that," Karn would say. He watched her very closely for signs she was lying. He saw none. Gradually his questions to the telcom got bolder.

"Where's the nearest liquor store?" he asked. The answer was disappointing and interesting, just like the city question. It did not understand him at first. He had to explain. There were no liquor stores. If people wanted basic supplies of that kind, their houses could be set to call for them regularly and accept the shipment. ("If the telcom talks," he thought, "why not the house?" He looked about his room with interested eyes). But these people would drink liquor socially.

Well then. "Did many people drink large amounts of liquor?" This too led somewhere he wasn't trying to go. Yes, but then many people had modified themselves so as not to be affected by it. They'd added a whole set of enzymes to degrade it and turn it into energy. They could literally run on alcohol. Not everyone had done this, of course. It was most common in professional entertainers, who would perform at private parties. He learned that there were no public performances any more, another interesting fact, but less disappointing.

"What about drunkenness," he asked. Drunkenness? the telcom had replied. What is that? Oh boy, he'd thought then. I'm really in for it now! So he had explained how people might want to be drunk. The telcom was silent then for a whole second, a long time for it. "I am recalling old records," it said. "Please

(continued on page 57)

BACK ISSUES OF *LifeQuest*

If you're enjoying these stories, you'll be happy to know that issues #1 and #2 of LifeQuest are already available on Alcor's website, under "links." For ease of finding them, the URLs are:

http://www.alcor.org/lifeqst1.htm
and
http://www.alcor.org/lifeqst2.htm

Issues #3 through #7 will, with time, be reprinted in Cryonics Magazine, but an influx of new fiction could make this a drawn-out process. If you would like to see the back issues posted to Alcor's website more quickly, let us know. We try to give first priority to projects we know will make the most Alcor Members safest and happiest.

Why Life Insurance Is Not Boring Anymore

by Rudi Hoffman
Certified Financial Planner

I would venture to say that most people do not like the field of life insurance.

Most find it confusing, complicated, and harbor the same concern that many of us have when flying in airplanes, "I wonder if my neighbor is getting a better deal?"

The purpose of this short article is to give you a better understanding of life insurance. It will be straightforward, concise, clear, and interesting.

The concept of life insurance is simple enough. Similar to other insurances, a small amount of money, (the premium) is paid to a company to create a much larger amount of money (the proceeds) upon a specific event happening.

Let's suppose you are a merchant shipowner in England in 1604. You engage in the high-risk business of sending ships and cargo into dangerous seas, hoping to make a profit. But a storm could wipe out your ships, cargo, your entire business! What if you and your fellow sea merchants could pay a small amount of money to a company that would promise to restore the full value of your ships and cargo if your ships are lost at sea? This would clearly be a boon to your business! And thus the concept of insurance is born.

The concept of risk sharing starts with merchant ships, and soon spreads to many fields. What a tremendous idea! We know there are circumstances that may happen, and if they do happen a terrible loss will result. For a fixed and predetermined premium, we can insure ourselves against these losses.

The concept of insurance is clearly a boon to individuals and businesses, which is why insurances of all types are such an integral part of all modern and developed societies.

Howard, a friend of mine, lived in south Florida. Hurricane Andrew destroyed his home. The insurance company immediately cut him a check for $125,000. He had paid less than $2,000 in premiums over the previous 5 years. When everyone is bragging about how much they hate insurance companies, Howard is often the lone dissenting voice.

But what about LIFE insurance? Insurance companies have mortality tables that tell them your LIFE EXPECTANCY, the odds of your dying at a given age. And in the early years the cost to insure you is really low!

This brings us to why the cost of term insurance is so low, especially before age 50.

Term insurance, as the name implies, is simply insurance that stays LEVEL for a TERM of time, such as 10 years or 20 years. The premium does not go up for this period of time, and the FACE AMOUNT of the policy does not change. At the end of the term period the policy may provide a guaranteed RENEWAL as term insurance for another period of time at a specified rate without evidence of insurability. But the premium will take a big jump, from 3 to more than 20 times the earlier premiums.

But because it is inexpensive, it allows people to have insurance at really affordable rates in the early years. (For instance a 45 year old might pay as little as $29.26 per month for a 20-year level term with a $120,000 face amount).

But why are some cryonics organizations less than enthusias-

tic about term insurance for the purpose of funding biostasis? Cryonicists are hoping for a long life, and the term insurance rates become extremely costly, often taking a huge increase at age 70 when an individual may have less money to pay premiums. Paying $15,000 a year in life insurance premiums does not meet most people's definition of a good time while they are in their eighties!

So insurance companies have developed ways of keeping the cost level for the WHOLE of life, called (not surprisingly) "Whole Life" policies.

Basically, one overpays substantially in the early years of a whole life policy for the purpose of keeping the premiums level to age 100. A CASH VALUE builds up in the policy, allowing the company to not increase the premium even if you are 97 years old.

Many whole life policies accumulate enough cash that they do not require additional premium payments at all. They become "Paid Up" whole life policies.

This is the concept of "WHOLE LIFE" insurance...but why has it been so badly discredited?

I personally got into the insurance business 22 years ago because the WHOLE LIFE policy I owned turned out to be such a TERRIBLE DEAL! I had bought my policy partly as a savings plan. But the savings part of the policy was only growing at about a 1% rate of return! And this "savings" would be kept by the insurance company if I died, not go to my family on top of my insurance amount!

I grew incensed about how the insurance industry had sold old-fashioned WHOLE LIFE policies to young families, who needed big amounts of coverage they could only afford with term insurance.

And so the first 12 years of my insurance career were spent REPLACING whole life insurance, with "Buy term and invest the difference in a mutual fund."

I still sell lots of term life insurance when it is appropriate. This sometimes includes the purpose of funding cryonic suspension, but I always make sure that the client understands two things. (1) Your premium will take a big jump at renewal; and (2) This policy can be upgraded to whole life or universal life without evidence of insurability, something you may want to consider as your cash flow increases.

The insurance industry has designed much more consumer-oriented policies that are still "permanent" (i.e., not term) insurance. Modern whole life policies grow the cash value at current interest rates, the cash accumulation growing tax-deferred and creditor-proof under the policy. They consequently cost much less, build much more cash value, and can become "paid up" sooner.

This also means more people can afford whole life policies to fund their suspensions. The best policy to own is the one that is in place when you need it.

This is why most people who can afford it fund their suspension with some form of "permanent" life insurance policy such as "interest sensitive whole life" or "universal life."

Universal life is a plan where your money is growing with the insurance company at competive rates of tax-deferred growth. The internal cost of term insurance comes out of this savings amount, and you maintain the flexibility to change the policy premiums, face amount, and period of payment.

In closing, it makes sense to use the technologies that are available to do a given job. Most people reading this article are highly enthusiastic about the potential of technology, science, and human cooperation to improve their lives.

We can think of life insurance as a technology. It is a mechanism that allows us to leverage a small amount of money now to instantly and certainly create a huge amount of money in the future. And it means that nearly everyone reading this article can afford to sign up for the life changing potential of cryogenic suspension. It has truly become LIFE insurance!

A small commercial may be appropriate. I would be happy to provide information and life insurance quotes to anyone...without obligation... who wants to call my toll-free number: 1-800-749-3773. I hope to meet many of you at the Asilomar conference this June, where I am a corporate sponsor. Till then, LIVE WITH PASSION!

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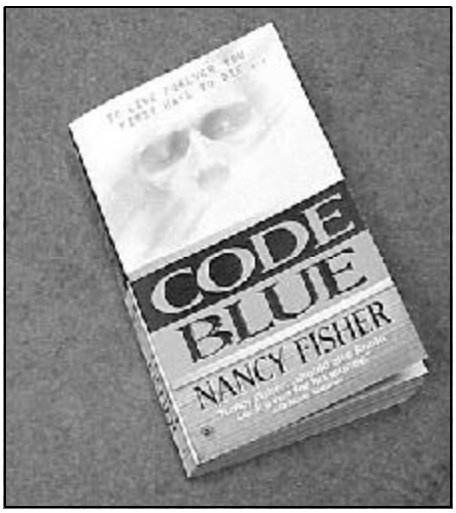
Code Blue

By Nancy Fisher

Onyx Fiction, Penguin Putnam, 2000

Book Review by Linda Chamberlain



A medical thriller. A love story. And throw in cryotransport, too.

It definitely is one of those books that is hard to put down.

Nancy Fisher, an Alcor member who has written four other medical thrillers (*Code Red, Special Treatment, Side Effects,* and *Vital Parts*) creates characters you can't help but care about and puts them into a Sherlock Holmes-type mystery that keeps you guessing to the end.

Well, Alcor members will have a definite advantage over the general population in figuring out what is going to happen, but Fisher does an exciting job of surprising even this long-time cryotransport enthusiast.

I think the most important thing about this book is the fact that it is not science fiction.

It is a mainstream novel that will appeal to a huge audience of readers—those who like love stories, mysteries, and medical thrillers. Although there have been a multitude of science fiction novels that incorporated the idea of using cryostasis to save lives, or to reach remote interstellar locations, science fiction still appeals to only a small portion of those who read fiction novels.

Like James Halperin's novel *The First Immortal, Code Blue* brings the ideas of cryotransport into the livingroom quietly, and unobtrusively without raising defenses by slowly raising the reader's curiosity. The reader keeps noticing that people (a plastic surgeon, a famous movie star, etc.) have these neck tags and bracelets.

It is done so subtly that it doesn't seem to have much to do with the plot for most of the book, but it sure raises the curiosity of the reader. "What are those medic alert tags for?" "Why are these people wearing them?" "Does it have anything to do with the murder plot?"

I recommend *Code Blue* as a very enjoyable evening. You won't be able to put it down, so wait until you have a full evening free in front of the fireplace to curl up and enjoy. You will be happy you did, and you will probably fall asleep with a smile on your lips. l

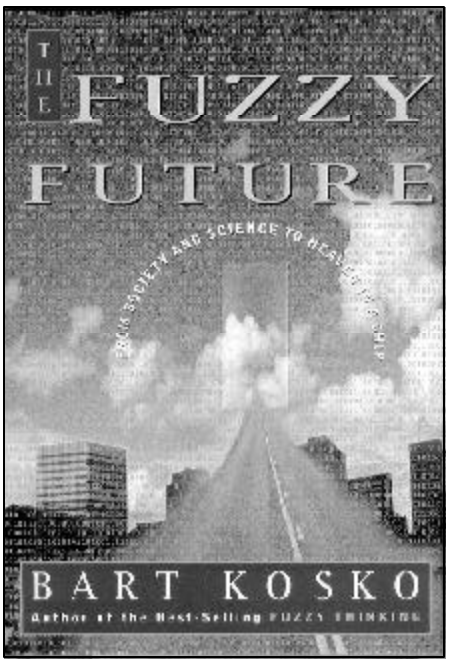
The Fuzzy Future: From Society and Science to Heaven in a Chip

By Bart Kosko, Ph.D.

Harmony Books (Random House), 1999

Book Review by Mike Perry

Dr. Kosko is a leading authority on fuzzy systems who also happens to be a cryonics advocate and a dedicated libertarian. He has written both technical and popular books on fuzzy logic, along with a spate of research papers and some science fiction. Fuzzy logic deals with issues where an answer or property is not a clearcut choice between one alternative and another one but intermediate conditions apply. If I have an apple with a bite out of it do I have an apple or not? What if it's a crab apple? What if I have to consider probabilities? And so on. Outside his main field the polymath Kosko has distinguished himself in such diverse areas as music and the martial arts. His wide-ranging interests do not overlook such issues as the philosophical and ethical implications of our rapidly developing technology, to which his work with fuzzy systems has contributed. *The Fuzzy Future* expands on a similarly titled section of an earlier popular book, *Fuzzy Thinking.* Politics, science and culture are treated in the three major sections of the new book. It is shown how their problems frequently go beyond the simple yes or no of binary logic, and how these problems can be understood and maybe resolved by the right sort of fuzzy approach.



In American politics, to take one example, we have a two-party system, suggesting a simple polarization between alternate views, call them liberal and conservative. The reality of course is not so simple. There are degrees of liberality or conservatism, and complex mixtures of the two views, all to be found in one individual. Different political parties and candidates endeavor to represent the major patterns of interests that occur. Even there, with much simplification and overlooking of side issues, there is substantial complexity. You have not just "Democrats" who can be said to favor civil liberties but be restrictive on economic freedoms, and "Republicans" who take the opposite tack, but "Populists" who are conservative on both fronts and "Libertarians" who are liberal on both. Instead of two simple stances or a one-dimensional continuum going between them, you have a two-dimensional continuum or "fuzzy square." The square, as usual, has four corners or extremal points, as represented by the more dyed-in-the-wool among the four contending factions. "This," argues Kosko, "helps explain why no single third party has emerged that stands for the large number of voters who do not support the left-right choices of liberalism and conservatism." A third party—an alternative to the Democrats and Republicans who dominate—must satisfy the two very disparate groups, the Populists and Libertarians, who stand at opposite corners of the square with opposing views on two fronts—an impossible task.

More generally, fuzziness can help us understand the difficulties with our system of government, and sometimes suggest remedies, as in the issue of how one's tax dollars are spent. (This assumes that one must pay taxes in any case, which itself is a difficulty but one not likely to change soon—one must

make the most of it.) As a possible remedy Kosko proposes the "fuzzy tax form" in which a sizable percentage of one's taxes is to be spent as the payer chooses. In particular it could make funding of scientific research more responsive to the public interest. Research bounties could be set up—prizes awarded for designated scientific breakthroughs—using funding that has been voluntarily assigned.

Meanwhile things are not standing still. Fuzzy systems are finding increasing use in science, industry, and medicine, as progress in these areas continues. Such systems appear to complement rather than supersede other approaches to automated problem solving. Nonfuzzy or bivalent reasoning systems, for example tend to emphasize "depth-first" searches for solutions. Such a system might explore a long, involved chain of deductions in looking, say, for an optimal design for a machine part but be limited in the number of basic approaches it can consider in this way. A fuzzy system in turn will usually be a "breadth-first" searcher, repeatedly looking at many different ways of attacking the problem but limited in how far it can pursue each line of inquiry before moving on to the next step.

The third and last part of the book, "Fuzzy Digital Culture," explores the author's intuitions about where it is all leading. Basically, we shall become immortal and we will be better off than was possible before. Smart, fuzzy chips in particular could gradually replace our brain tissue and free us of the limitations of wetware. Or some other method with similar effects will be used. No small changes in attitudes must accompany this transition, however.

"Most people are deathists," notes the author near the end. "They think death is as natural and inevitable as taxes." End of paragraph. Then: "That helps explain why fewer than a thousand of us have so far signed up for cryonic suspension in liquid nitrogen upon our death. Cryonics involves many gambles about the future of society and molecular engineering and it is not cheap. But this 'deanimation' technique of today freezing and someday rebuilding cells remains the only known technique that has even the slightest scientific chance of beating death."

An important point, and perhaps a subtle one for many readers, is that Kosko himself has signed up for cryonic suspension. He is not a deathist, but has serious wishes to be part of the open-ended future he envisions, and has taken steps accordingly, something that lends further credibility to his basically optimistic stance. The book can be read as a stand-alone, but the earlier book, *Fuzzy Thinking*, makes a good reference and background. The new book, while written for a general audience, also has extensive endnotes that delve into the mathematical complexities of fuzziness, for those wishing to explore the topic in depth. l

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(continued from page 49)

wait a moment." Old records! Platosmith felt a chill. Slowly his stomach started clenching.

"Here it is!" the telcom answered brightly. "I see." Well? Platosmith had asked. "It was very primitive," the telcom answered. "There are antiquarians who still do that, sometimes, to write about it and know what it was like." So there were no liquor stores, no drunkenness. What kind of people were these? But then he had another thought. "You said it was primitive," he asked. "What do people do now?" Some people were directly altering their brains, it answered. That was sometimes dangerous. (So was alcohol, Platosmith thought, but maybe I'm getting somewhere at last).

But then the telcom had given him a blow. "There are no restrictions whatever on this activity," it had said. Now that's grand, Platosmith thought. I've spent months secretly trying to find out about something which wasn't even illegal! "Would you like to be put in contact with some societies and agencies doing such experiments?" the telcom went on. Platosmith was silent. "Not right now," he had answered.

Well. He went outside and sat under an oak tree not far from his room. Pool came by not long after and saw him sitting despondently there. "Can I join?" he asked. Platosmith was impassive, but Pool had sat down. But Platosmith had then started talking. He accused Pool of holding information back, of wasting his time, of playing with him. "I'm just your black toy," he said. He began to scream. "Aren't you proud of yourself for leading me on?" Pool had looked surprised and said nothing. "I'm going to teach you not to mess with the Black Plato," Platosmith had screamed. He was brandishing the knife wildly. It was very clear now, he thought. He looked at Pool slowly, and then pressed the knife up against Pool's ribcage. "You're scum, you honky bastard. You think you're so special ..." Then he stabbed Pool to the heart, and afterwards slit his throat.

Where was he to go then? No doubt they could come for him anywhere. So he went back to his room. He didn't even bother to throw away the knife. So that's what it's come to, he thought to himself. Is there a job of assassin with these people?

(continued on page 58)

TechNews

by R. Michael Perry, Ph.D.

(Note: with this issue we resume the "Technews" column that was authored by Steven van Sickle in 1997 and 1998, with one recurrence as "Tech-notes" by Anders Sandberg in 1999.)

Exciting Progress on Many Fronts

The pace of progress now has such momentum that it's quite out of the question to keep up with it, especially in a short article like this one that we can only put out 4 times a year. But one must try. So here are a few recent highlights, with some emphasis on what seems especially relevant for cryonics and other possible means of life extension. For much of this I'm indebted to Joe Hovey who often brings these things to the attention of others at Alcor Central. (I also thank Hugh Hixon for technical consultation.)

Cloned pigs raise prospects for nonhuman sources of transplantable organs and tissues.

Important human organs such as the heart, liver, lung, and kidney are now fairly routinely transplanted and often extend the lives of the terminally ill. One problem is that such organs must now be harvested from other humans. Donor humans must be "dead"brain dead at any rate, though the tissue to be transplanted must still be viable. This considerably restricts the available sources—a young person with a fatal head injury might be an acceptable donor, but not an elderly patient whose organs have been ravaged by decades of aging and/or diseases. And most people today die old and sick rather than young and traumatized but otherwise healthy. There are ethical issues that throw up further roadblocks, such as whether a "certified brain dead" donor is really irreversibly comatose or might someday awaken. (As an aside, in the small field of cryonics, organ donations are basically taboo, even though they would sometimes be feasible in principle, especially for "neuros" who are only having their head frozen. In practice the delay and other difficulties this would cause in the suspension procedure effectively rule it out, at least for now.) Another problem is that organs, once harvested, must be used quickly or they will deteriorate. (Efforts are underway to extend organ shelf life through cryopreservation, but techniques have not been perfected for clinical use.)

A possible remedy to all this is xenotransplantation—using organs or tissue harvested from animals such as pigs, which are mammals of roughly human size and comparable physiology. (Jokesters and others never tire of noting other similarities between pigs and people, especially for certain cases.) Here the main difficulty is the body's immune system, which normally puts up a fierce struggle that soon destroys any foreign tissue implant, especially if from another species, notwithstanding any beneficial effects that might otherwise follow. (Unfortunately, nature didn't select for the possibility that such living implants might actually do us good!) To minimize the tissue rejection problem, drugs that weaken or disable the immune system can be used, but they have obvious life-threatening drawbacks. Another approach would be to design an animal host that is immunocompatible to begin with, so there would never be any tissue rejection problem to worry about. "Yeah, sure," responds the cynical skeptic, and until recently we've had little to offer in rebuttal. But with the cloning of mammals new prospects are opened. Recently an important step was completed with the announcement, by Britain's PPL Therapeutics, that it had cloned five piglets from adult cells. This company, the same one that brought us Dolly the sheep three years ago, aims to genetically modify its pigs to eliminate any tissue incompatibility with humans. A "knock-out" pig, with a specific gene inactivated, might turn the trick, and from there a breeding pair could be created whose descendants would also carry the desired trait. The creatures could then serve as a source of parts and material for human use. "An end to the chronic organ shortage is now in sight," was the happy conclusion of Ron James, managing director of PPL.

Plastination as a preservation alternative.

This advance is a little more pedestrian, but is of special interest to us as a possible cryonics alternative—at least until proven otherwise. Plastination is a process of impregnating a biological specimen—an organ, piece of tissue, or whole organism—with a liquid that is then hardened into a solid piece of plastic by polymerization. The specimen-in-plastic becomes very firm and durable and can be kept at room temperature indefinitely. It is nontoxic, dry to the touch, and has no smell, unlike specimens preserved in formaldehyde, a poisonous and volatile liquid. Plastination was invented in 1981 by a German chemist, Dr. Gunter von Hagens. More recently the process has been improved by Dow Corning, so it can now be carried out entirely at room temperature (von Hagens' original method required subfreezing temperature). The specimen first is soaked in acetone to dehydrate it. It is then placed in a chamber with a silicone monomer liquid, and the chamber is evacuated to induce evaporation of the acetone. The silicone takes the place of the acetone as it dries out of the specimen, then a catalyst is applied to harden it. Unfortunately, acetone is not good for delicate microstructure, such as that found in the brain, which of course is what we would be most interested in preserving. But no law of nature says that acetone would be the only possible substance to use for the first step. More research is needed (as is so often the case).

Further information on plastination may be obtained from Corcoran Laboratories in Bay City, MI, <<http://www.cor-labs.com/> phone: 517-892-6580.

Preserving fertility through egg freezing.

Sperm cells have long been frozen for future thawing and use, but egg cells present a much greater challenge because of their larger size. Until fairly recently, the successful fertilization of a frozen-thawed egg was a rarity, but a new technique has pushed the success rate up to nearly 65% and made it practical for clinical use. The new approach involves not an improved cryogenic protocol but a different way of uniting sperm and egg after thawing. Normally, to achieve fertilization the sperm must bond with the zona pellucida, the egg's outer covering, then penetrate the egg proper. The freezing process currently damages this covering enough to greatly reduce the chance of successful bonding and thus fertilization, though the egg cell body remains largely intact. In the new approach, which is known as intracytoplasmic sperm injection (ICSI), a sperm is injected or implanted directly in the egg, bypassing the zona pellucida. Although this has dramatically improved the success rate, the process still is difficult and expensive, and work is underway to render it unnecessary through improved freezing protocols based on vitrification—something that is also of considerable interest in cryonics. A success in achieving a pregnancy through a technique using vitrification was reported last December.

A researcher currently working in this area is Barry Behr, Ph.D., director of the In Vitro Fertilization (IVF) and Assisted Reproductive Technologies laboratories at Stanford Medical Center <http://www.med.stanford.edu/>

CNS augmentation through chip implants.

An implanted chip with a system of electrodes permits a paraplegiac to walk with the aid of computer-transmitted instructions. Mark Merger, a 39-year-old French financial consultant, was paralyzed from the waist down in a car accident ten years ago. In a procedure that attempts to alleviate the problem, 15 electrodes were implanted in Merger's legs and connected to a chip embedded in his abdomen. The operation had to be repeated because of complications, but in March Merger was able to stand and walk using his own muscles, if not his own volition. A further, relatively simple refinement will be a walking cane with a keypad so the chip can be signaled by the patient to produce desired muscular movements, allowing him to walk unassisted. Currently there are electronic systems that use electrodes taped to the skin and that have had some success in permitting paralysis victims to walk, but the new approach promises a finer control over muscular motions. True, it will still be crude and cumbersome compared to the intact central nervous system, in which walking commands issue directly from the brain and don't require an external, intermediary device to produce movements. But it can be seen as a step toward this possibility, and something that offers hope to many thousands of disabled people today. More generally it is a step toward a brain-machine interface, which may be of great importance in the future for life extension and enhancement of our cognitive abilities. The project is being coordinated by Professor Pierre Rabischong of Montpellier University, France.

Quantum computing: progress and caveats.

The quantum computer is a device, mostly still on the drawing boards but now implemented in simple versions, that could revolutionize the computing field and with it our whole civilization or, indeed, our very existence. A quantum computer gains its powers from the strange properties of matter at small (atomic and subatomic) scales. Where a classical computer has components that can be in one of two states ("0" or "1" or "on" or "off"), in a quantum computer a superposition of states is allowed. Both possibilities (both "on" and "off") are, in a sense, simultaneously present. Computation becomes a far more complex operation, with many avenues explored in parallel. Certain presently intractable operations could thus be greatly speeded up, so that the devices doing them would be far "smarter." The consequences of such improvements are difficult to predict because they could have widespread application affecting many facets of life. (As one suggestion of how deep such influence could be, consider a relatively simple advance, the invention of printing from movable type, and how much it has affected our civilization over the historically brief period of a few centuries.) But it's still not clear how general and pervasive this improvement would be. Would quantum computing apply mainly in certain specialized areas only, including versions of cryptographic code breaking, where it has already shown theoretical promise? Or would it handle a much broader spectrum of tasks involving learning, reasoning and intelligence, leading to a kind of "god in the machine?" Or is any sort of practical quantum computer even possible at all?

Thus far there has been impressive progress, all in the space of a half-decade or so. Small working models of quantum computers have been made, using up to four quantum bits or "qubits." Algorithms have been devised such as Peter Shor's fast technique for factoring a number into primes. This, if it could be implemented on a sizable scale, would threaten many present-day cryptographic schemes. Some limits to quantum computing have been established too. As one example, an algorithm for searching a specialized type of database by Lov Grover works in the square root of the time taken by a classical computer. This has been shown to be a best possible speedup—no other program, even if implemented on a quantum computer, could do better. In another line of research, error-correcting and state-restoring schemes for quantum computers have been devised and promise to make computations more robust. (Quantum computers have the problem that their delicate superpositions of states are very fragile and prone to disruption or "collapse" by small amounts of outside interference, including observations of the state of the system at the wrong time.) It is clear, nevertheless, that much must still be done before a practical quantum computer can be realized. But the subject has attracted some highly talented researchers, who are making progress and are optimistic about the prospects. l

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(continued from page 54)

Oddly, everything was calm. But thinking the incident over as he walked away, it wasn't like any other time he had wasted people. Pool had not looked frightened! Curious, puzzled, even introspective, but he hadn't seen even a smidgen of fear in Pool's eyes.

The next day, Pool was not under the tree, but Platosmith's meals kept coming, he was just as free to come and go as he pleased. Neither the telcom nor the heli spoke the least bit differently to him. Had it all been a dream? Was he crazy? No, he had the knife, still with blood on it. He walked about the grounds in a daze, with the people he saw looking at him indifferently. Slowly he began to puzzle out what he could do NOW. He should certainly get in touch with one of these brain change societies, certainly...

It was about a week after the incident under the tree that he had met Pool walking calmly from one building to another. He had looked at Pool in shock, but then thought to himself: Well, yes, if they could bring me back they could bring back Pool. Pool had smiled at him, come up to him, put his arm around Platosmith's shoulders. "Come now, come now," he had said. "The battles you are fighting were lost or won five hundred years ago. It is a different time, we are different people from what we were before. Let us tell you about ourselves and this place and this world."

l

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