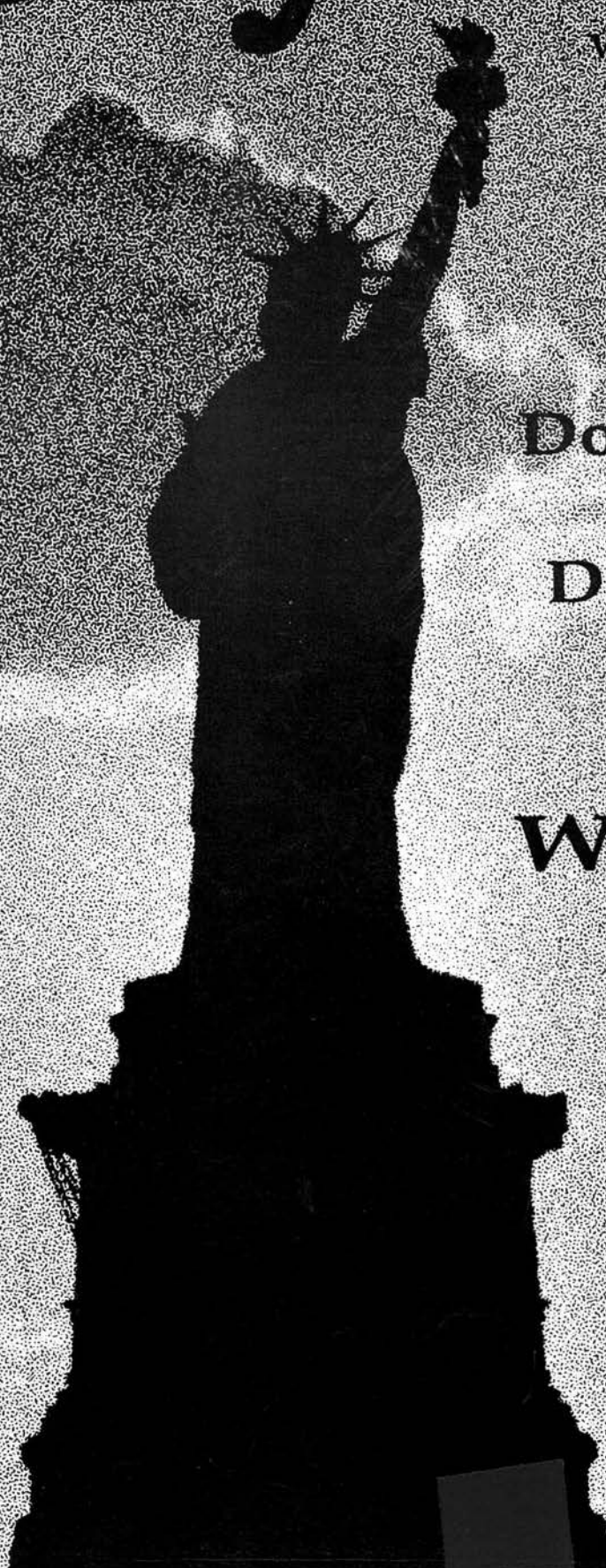


# Cryonics

Volume 12(12) • December, 1991

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**Donaldson, et al.  
Vs.  
De Kamp, et al.**

**Will Justice  
Prevail?**

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Issue to press: November 6, 1991.

### Cover:

*Carlos Mondragón reports on the current status of Thomas Donaldson's case in this month's cover story.*



## If You're In the Sign-Up Process...

As mentioned in the previous issue, our sign-up fee has been lowered to \$100. This fee covers any Applicant for a four (4) month in-processing period, after which billings of \$25/month will begin. We have adopted this method to encourage aspiring members to move through the sign-up process *quickly*, as "stringing along" applicants for upwards of one or two years presents an ongoing labor and administrative expense with no accompanying revenue.

The new fee and fee period will apply to those who began the sign-up process *before* November 1, 1991 as follows: your \$300 fee will cover you for *one year* of in-processing (\$25 x 12 months). After one year, the same billing of \$25/month will apply. So, if you began the sign-up process over a year ago — or almost a year ago — you should expect to see monthly billing shortly. If this is a hardship for you, please feel free to contact me (Ralph Whelan) here any time. I'm sure that we can have you signed up in less than a month.

This new system will be a boon for those small on money but big on enthusiasm. And Suspension Membership can easily be achieved inside of two months, so I can't see this exerting undue pressure on anyone.

## Let's Talk Turkey

This is your final reminder. The annual pot-luck holiday Turkey Murder is about to take place without you. How could you even *think* about missing it? Suspension Members, Associate Members, friends of people who once saw Alcor on the news... *everyone is welcome!* There's no charge, no secret password, and no excuse for not being there.

Please call Marce Johnson (714-962-7898) or Maureen Genteman (213-398-3464) and tell them what you'd like to bring. (We're talking food here.) For directions to Saul Kent's home in Riverside, where the event will take place, see **Meeting Schedules** on the back page of this issue.

The Turkey Roast festivities start at 1:00 PM. Attendance will be taken.

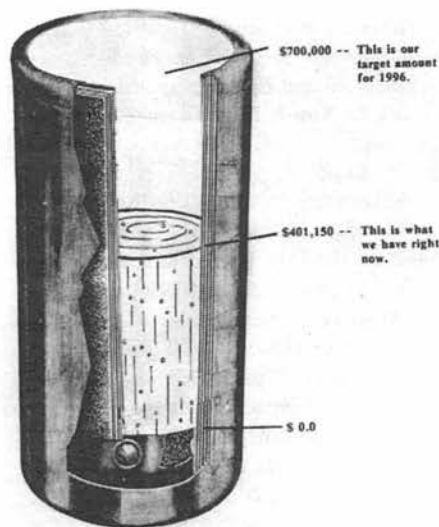
## The Jones Endowment Fund — UPDATE

Six months ago, the *Jones Endowment Fund* was created as a mechanism that would eventually be sufficient to subsidize the portion of our day-to-day operations that dues do not cover. The "eventually" in this equation is the target date of July 1st, 1996, and the "sufficient" is \$700,000. Unfortunately, the *reality* is still \$401,150, exactly what it was two months ago. In fact, if you subtract out the "set-up" amount of \$400,000, which was income from the Dick Jones Estate, you get the ugly reality that only \$1150 has come into this fund in the past six months.

Assuming we can maintain this break-neck pace, we'll have the target amount of \$700,000 by spring of the year 2165, just 169 years after the target date. That's if we neglect interest, inflation, and World Wars Three through Seven.

Yes, the math is alarming. But this is not a prediction, it's a warning. There's still time to shape the future in a more favorable way. Remember Obi-Wan Kenobi's last words to Luke: "Use The Force, Luke. And if that doesn't work, use your check-book."

Don't let his death be in vain.



## Sun Kissed — Or Bitten?

The incidence of malignant melanoma, a deadly skin cancer with a propensity to metastasize to the brain, has risen 6% per year over the past decade. Melanoma, once considered a rare cancer, has now become almost commonplace. In fact, it has become so commonplace that the risk of your (if you're an American) contracting melanoma is now 1 in 105. If the rate of incidence of melanoma continues to increase at the current rate, the risk will be 1 in 75 by the year 2000!

The reasons for the increase: abandonment of the Victorian sensibilities of our grandparents, who were smart enough to cover up from head to toe when going out into the sun. Other factors may be erosion of the protective ozone layer and the use of sunscreens which only filter out

UV-A and not UV-B, which may be even more carcinogenic and damaging to the skin over the long term.

The take-home messages in all of this are: 1) either *STAY OUT OF THE SUN* or *COVER UP*, 2) *Don't* rely on sunscreens to provide primary protection (i.e., use hats, long-sleeve shirts, or stay indoors), 3) Have frequent skin exams to catch pre-melanoma "dysplastic nevi" before they become full-blown killers, and 4) When you do use a sunscreen, use one that provides both UV-A and UV-B protection.

The numbers we've quoted above are truly alarming. We're passing this information along not only because we want you to live long and happy lives (we do!), but also because melanoma is a particularly bad way to die; among other things it has a propensity for early metastases to the brain.

## Membership Status

Alcor has 272 Suspension Members, 479 Associate Members (includes 183 people in the process of becoming Suspension Members), and 19 members in suspension.

## News Flash

As this issue goes to press, Saul Kent reports that he and Bill Faloon have been indicted on as-yet undetermined charges by a Federal Grand Jury. The FDA did not make good on its threat to yank them off the streets in handcuffs — which is fortunate both for them and for the FDA, we suspect. Saul and Bill will appear at a bail hearing in South Florida on Thursday, November 7. They do not expect to spend any time in jail.

According to Saul, this begins the Final Chapter in the FDA's long-running assault on the Life Extension Foundation (LEF). Saul and Bill, both Alcor Suspension Members, have been vigorously defending themselves — and the rest of us — from unconstitutional, immoral, and life-threatening intrusions by the FDA into health-care and nutrition decisions of all Americans. The Life Extension Foundation vs. FDA battle began in February of 1987, when FDA agents unlawfully raided the LEF facility in Hollywood, Florida. (For background information and for suggestions on what you can do to help, see the September and November 1991 issues of *Cryonics*.)

More to follow next month.

## Appellate Court Hears Donaldson Case

by Carlos Mondragón

On Wednesday, October 23rd, a California Court of Appeal heard oral arguments and debate over Thomas Donaldson's petition for the right to pre-mortem cryonic suspension.

Because a tumor threatens to destroy his brain before his heart stops and legal death would ordinarily be declared, Donaldson has asked the court to allow him to enter cryonic suspension at a time of his own choosing, with the help of others (Alcor), and without interference from the State. Under current law, a pre-mortem cryonic suspension would minimally be viewed as an assisted suicide, or could even be regarded as a homicide.

The lower court had (predictably) dismissed Donaldson's case. The panel of justices on the appellate court, however, seem somewhat more disposed to break new ground in law.

The justices began the hearing by expressing sympathy for Donaldson's situation and admiration for the scholarship of

the written briefs (See October issue of *Cryonics*).

The legal concept of the right of *privacy*, as inferred from our federal constitution and as explicitly provided for in the California state constitution, is the foundation upon which Donaldson's case rests. Privacy has been used in California and other states in various "right to die" cases. Notwithstanding that the ultimate goal in this case is the preservation of *life*, a pre-mortem cryonic suspension would result in the patient moving from a legal state of "alive" to a legal state of "dead." Hence, Donaldson's case is an extrapolation of "right to die" precedents.

California has no law prohibiting suicide. It does, however, have a law prohibiting the assistance of a suicide. And this law goes so far as to prohibit the "advice and encouragement" of a suicide.

Most of the right-to-die cases have involved the withholding of medical treatment or of nutrition and hydration. Judges have been drawing a line between these acts — calling them "passive," and any form of "active" euthanasia — such as the administration of a drug that would induce respiratory arrest. Chris Ashworth's appellate brief demonstrated that there is no logical difference between the "passive" and "active" actions, both of which lead to legal death. *The justices hearing Donaldson's appeal set the parameters of the discussion by telling the lawyers to argue under the assumption that they had accepted Ashworth's conclusion in this regard.*

For the sake of argument, the justices

The major right-to-die organizations have again registered with the Secretary of State to collect signatures on a California Humane and Dignified Death Initiative. This one is almost identical to the one circulated in 1988. The Alcor Board of Directors has officially endorsed this initiative, and would like to encourage individual members and subscribers to support this effort by gathering signatures (in order for this initiative to appear on the November 3, 1992 ballot in California, supporters must collect 600,000 signatures by February), making donations, or doing volunteer campaign work. Please contact:

**Californians Against Human Suffering**  
5750 Wilshire Blvd., Suite 561  
Los Angeles, CA 90036  
Voice: (213) 937-6295  
FAX: (213) 937-9613

wanted to know from the State's Deputy Attorney General Jorstad why a citizen should be prohibited from getting the assistance of others to carry out a lawful act — suicide. Mr. Jorstad was at a loss for words. It seems that the State's strongest argument is still the "slippery slope," i.e. we can't have people killing each other with impunity.

The justices did seem most concerned about the problem of potential abuse if assisted suicide were legal. They spent a good deal of time looking for a way to avoid this problem, all the while bemoan-

## Alcor's 20th Anniversary and the 25th Anniversary of the Freezing of the First Man

A banquet will be held on Saturday evening, April 4th, 1992 at the Marriott Hotel, 2200 E. Holt, Ontario, California to celebrate the 20th anniversary of the Alcor Life Extension Foundation and the 25th anniversary of the freezing of the first man, Dr. James Bedford.

The evening will include good food, conversation with fellow cryonicists, and excellent speakers talking about cryonics then and now.

**COST:** \$40 before February 15, 1992, \$50 thereafter. Payment and reservation must be received no later than March 26, 1992. Please make checks payable to Alcor Foundation, 12327 Doherty St., Riverside, CA 92503, or call 1-800-367-2228 to use your MasterCard or Visa.

**NOTE:** A group rate on hotel accommodations will be offered to Alcor guests by the Marriott Hotel.

On Sunday, April 5th, 1992, those who wish to can attend the monthly Alcor Business Meeting, to be held at the home of Saul Kent. Alcor will also be conducting tours of the Alcor facility.



ing the fact that such regulation is properly up to the legislature. Ashworth argued forcefully that a) Inaction on the part of the legislature did not relieve the court of its obligation to secure the rights of citizens, b) A favorable ruling from the court would scramble the legislature into action, and c) There was a precedent in *Brown v. Board of Education* (the landmark school integra-

tion case) where the Supreme Court issued a broad ruling with instructions to the lower courts to devise a system of implementation.

The hearing lasted one hour. Chris Ashworth used about 45 minutes of that, the justices and the State's lawyer used the balance. Overall, I came away with good feelings about the men on the bench. I

hope that their courage matches their intellectual honesty.

A decision will be issued in the near future, hopefully in time for us to give it full coverage in the next issue of *Cryonics*. If it is a favorable one, then you can expect hear about it first in the news media.

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## Letters to the Editor

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*The following is our reproduction of an exchange between two Humanists of Canada and one Victor D. Morse, MD. We thought you'd find it interesting. — Ed.*

Dear Humanists,

A few days ago we were surprised and dismayed to receive literature from the Alcor Foundation addressed to "Humanists of Winnipeg" (see enclosed remnants of the envelope).

We find the values and activities of this foundation *totally* repugnant. The notion that diseased bodies or parts of bodies be frozen until such time as medical technology can effect a "cure" is hardly the approach needed in our world. Instead we suggest that people, particularly North Americans, focus on curbing rampant consumption of the earth's resources, enhancing quality of life for all the inhabitants of our planet, preventing disease through healthy lifestyle choices, and accepting death as part of the cycle of life.

Kindly assure us that these misguided consumers do not in any way masquerade as humanists. Surely they know that the resources needed to preserve one dead body could be used instead to save thousands of malnourished children. A more inhumane use of the world's technology is hard to find outside of war materials.

Sincerely,  
Barry Hammond  
Mary Mathias

Dear Mr. Hammond and Ms. Mathias:

Recently, after receiving information from cryonicists at the Alcor Life Extension Foundation, you wrote a letter to the Humanist Association of Canada decrying the idea of cryonics. You also sent a copy of your letter to Alcor, who in turn forwarded it to a number of people, including

me. I have chosen to write a personal reply both to you and the Humanist Association of Canada because, as someone who considers himself both a secular humanist and cryonicist, many of the attitudes you express in your letter seem incredible to me.

First, it goes without saying that all discussions of cryonics must begin with the fundamental question of whether cryonics is going to work — one I wish I knew the answer to myself. Revival of a frozen person does not seem to me to violate any natural law, and therefore seems merely a matter of (very complicated) engineering. But whether mankind will one day reach the level of technology which will make revival possible, remains a matter of speculation; I think there is no way of saying one way or the other without a crystal ball.

If revival of a cryonically preserved person *is* destined to work one day, however, then cryonics is simply a kind of medical therapy. Or, perhaps more precisely, a way of obtaining otherwise unavailable medical therapy — a sort of ambulance ride to the emergency room of an advanced hospital that hasn't been built yet. In that case, not using cryonics techniques for (say) a 12-year-old who can't be resuscitated because of leukemia or a 25-year-old who can't be resuscitated after an auto accident, would be morally equivalent to refusing a 12-year-old or 25-year-old any other complicated lifesaving medical or emergency treatment on grounds that the Earth's resources are overtaxed. I hope humanists have not gotten philosophically to this point of view. No one, after all, is asking that the overburdened medical systems in either the U.S. or Canada pay for cryonics. If sick people want to pay for an expensive therapy themselves, on what grounds would a humanist wish to stop them? If humanism has a moral position on the subject of which medical therapies are too expensive or too chancy to try, I am not

aware of it.

Perhaps you weren't thinking of 12-year-olds when you wrote your letter, though, but rather older people. Yet even the belief that cryonics is inappropriate for an elderly humanist is equivalent to taking the stand that nobody should have more than a certain number of years on the planet before being obligated to die and make room for somebody else. Do you believe perhaps, then, that *this* should be a fundamental tenet of humanism? If so, my comment is that you should propose that this be enshrined in the Humanist Manifesto now, before treatments for aging become available. After all, if humanists of the future are going to be required to refuse anti-aging treatments as a matter of principle (much in the way that Jehovah's Witnesses refuse transfusions) they should have some warning first, in order to gird up their loins. It's painful to get old, you see — healthy lifestyle choices or not — and I imagine that it will be even more painful for those who have a living alternative. Based on experience I foresee a general exodus from the ranks of humanists if they indeed formally adopt this position and the day comes when people are actually faced with the choice of how fast to age. Sick people who have a chance at health and well being, in my experience, do not talk much about the "cycle of life" — instead they talk about how to get better.

Perhaps your objection, though, is really that cryonics has no chance of working, and is a *complete* waste of money? In this case your reasoning still mystifies me, for even if cryonics is not destined to work, it still seems much like any other private use of private disposable income. I estimate, for instance, that for a young and healthy adult, all arrangements for cryonics (including necessary life insurance) can be put in place for the price of smoking two packs of cigarettes a day, or giving up a night of entertainment once

a week, or the savings in switching to brown bag lunches. I suppose it could be argued that smoking or movie-going or dining out are all equally morally indefensible because they use money that could be going to malnourished children somewhere — but the same can be said about buying cosmetics or mouthwash or any non-survival related amusement. How far do you push this argument? Have today's Canadian humanists arrived at the point where they watch each other to see that they don't spend any money on frivolous pursuits that could instead be going to some approved cause? (I'm surprised the Humanist Manifesto doesn't say anything about vacations.) And what to say about cryonics, whose object is not amusement?

We are left back where we started. To recap: If cryonics *isn't* going to work, it's a matter of private money spent on what amounts to a personal quest, and although "body preservation" may be more unusual than "Ingersol Home preservation" or simple stamp or car collecting, it isn't intrinsically any more damaging to society (I found your comment that this was a more inhumane use of technology than anything outside of "war materials," to be a little hyperbolic). On the other hand, however, if cryonics *is* going to work, it's not just a fancy scrapbook, but rather something much more powerful — a way of making tomorrow's standard of medical care available to people of today. If you oppose that on humanistic grounds (!) it seems to me that it behooves you to do a more thorough job of explaining your position. How far does this advocacy of withholding medical treatment from us "misguided North American Consumers" go, for instance? Perhaps any medical treatment we have in the U.S. is "misguided" if it isn't available in Canada? I presume that Canadian treatments are necessarily misguided if they are not available in Ethiopia?

As I noted at the beginning of the letter, I myself, as a humanist, have decided to be cryonically preserved when I reach the point that current medicine gives up on me. I reject the idea that I am guilty of "rampant consumption" of the world's resources by doing so. It seems to me that such arguments are simply the old "eat your vegetables; think of the starving children in China" homilies in a new guise. Sorry. Spreading guilt is a major occupation of religionists and others who tell people that they have some "sin" to answer for, just by existing. That outlook does not interest me.

I am a humanist. I am not a cryonicist "masquerading" as a humanist. Humanism is not some orthodoxy that is appropriate for others (this means you) to define for me, and my own reading of humanism certainly does not include the idea that people who live in the First World are obligated to cut their lives short for the sake of people in the Third. I believe, rather, that a philosophy that affirms the worth of the individual need not require him or her to be a sacrificial animal any more than worship one. If I choose therefore to save myself and my family over people I do not know in Africa, that does not make me less humanistic. It merely reaffirms that I am human, and happy to be so. People who are not happy to be human become Roman Catholic, or whatever. I want no part of that.

Again please rest assured, however, that when all is said and done, no one is going to try to force *you* or anyone else to practice cryonics. This does not mean, however, that the values of cryonics are not in keeping with all that is best in humanism (or, for that matter, all that is best in religion). If you've personally seen many people die in our society, for instance, you know the sad truth that all too often the dying person (humanist or not) at the end is well-nigh abandoned by friends, associates, and even family — none of whom can bear to be seeing and thinking about "diseased bodies" and the impending destruction of a human personality. (If there is one thing humanism *per se* doesn't handle very well, it's dealing with the terminally ill). In contrast, I know from experience that the nearer a *cryonicist* comes to clinical death, the more care and support he or she receives from a very close-knit community of people who are there precisely to see that his/her identity is not lost forever. This care extends through the "dying" process and beyond. My personal advice: don't knock it until you've seen it done both ways.

Sincerely,  
Victor D. Morse

Dear Editor,

Thomas Donaldson's current struggle, which is played out in a courtroom, is in every way an issue of individual rights. Throughout time, multitudes of philosophers have defined and argued the fundamental rights of the individual. It seems now that our rights are being taken for naught in a very fundamental way since

Donaldson must *plead* for his right to cryonic suspension before his legal death. [This action is due to his inoperable brain tumor.]

I believe that "*this is an assault on Donaldson's well being*" since his **Right to Life** is questioned by the State which has no justifiable interest in the outcome of his life. In his appellate brief, there are a few arguments which Chris Ashworth didn't use:

In *Beach vs. Hancock*, 27 N.H. 223, it was said: "One of the most important objects to be attained by the enactment of laws and the institutions of civilized society is, each of us shall feel secure against unlawful assaults. Without such security society loses most of its value. Peace and order and domestic happiness, inexpressibly more precious than mere forms of government, cannot be enjoyed without the sense of perfect security. We have a right to live in society without being put in fear of personal harm. But it must be a reasonable fear of which we complain. And it surely is not unreasonable for a person to entertain a fear of personal injury, when a pistol is pointed at him in a threatening manner, when, for aught he knows, it may be loaded, and may occasion his immediate death. The business of the world could not be carried on with comfort, if such things could be done with impunity."

In support of Donaldson's legal plea, I'd like to offer this classic, and historical statement by Justice Brandeis in *Olmstead vs. United States*, 277 U.S. 438 (1928), a case involving wiretapping. Said Brandeis in his dissent:

"...The makers of our Constitution undertook to secure conditions favorable to the pursuit of happiness. They recognized the significance of man's spiritual nature, of his feelings and of his intellect. They knew that only one part of the pain, pleasure and satisfactions of life are to be found in material things. They sought to protect Americans in their beliefs, their thoughts, their emotions and their sensations. They conferred, as against the Government, the right to be let alone — the most comprehensive of rights and the right most valued by civilized men."

Professor Shils offered this definition of privacy — which is taken from *Cases And Materials On Torts* (2nd ed.), published by Little, Brown and Company. It was written by Charles O. Gregory who is a Professor of Law Emeritus, at the University of Virginia and his colleague, Harry Kalven, Jr., who is a Professor of



Law at the University of Chicago:

"Privacy is a 'zero-relationship' between two persons or between a group and a person. It is a 'zero-relationship' in the sense that it is constituted by the absence of interaction or communication or perception within contexts in which such interaction, communication, or perception is practicable — i.e., within a common ecological situation, such as that arising from special contiguity or membership in a single embracing collective such as a family, a working group, and ultimately a whole society. Privacy may be the privacy of a single individual, it may be the privacy of two individuals, or it may be

the privacy of three or numerous individuals. But it is always the privacy of those persons, single or plural, *vis-a-vis* other persons."

Although not directly relevant to Donaldson's case, the citation above goes to the root of the issues decided in those cases which Mr. Ashworth most heavily relied on in his brief. Moreover, he has used the legal concept of privacy in every pleading he has made for cryonics from his first appearance in the Dora Kent case to now.

Privacy is one of man's fundamental rights which grants him the right to exist without becoming known to those outside

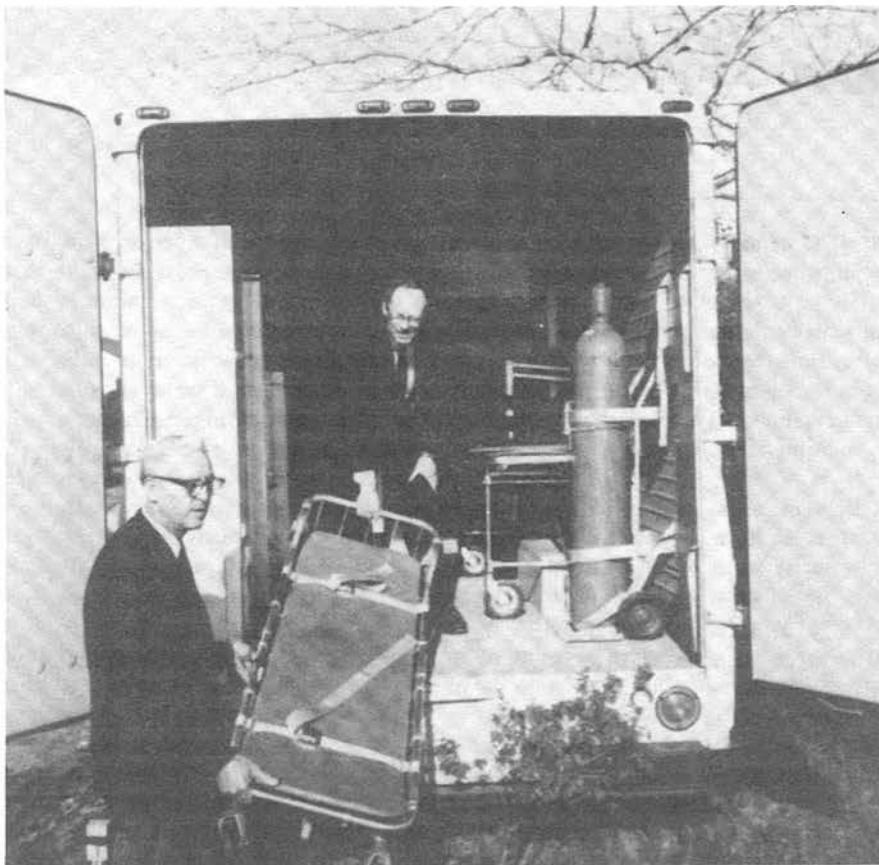
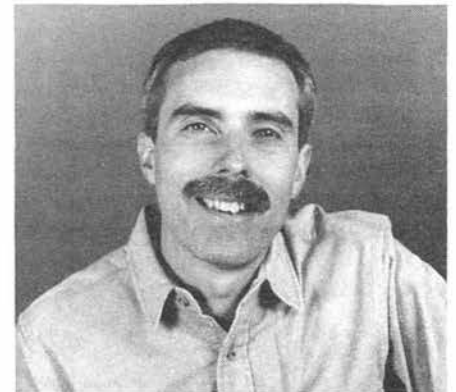
his circle. This includes the right not to agree, not to listen, and not to finance one's rival enemy. Of course, we must understand *man* before we can understand his rights.

The greatest understanding of man's true self, his potential and his rights, I submit, is in this quote from William Shakespeare's *Hamlet*: "What a piece of work is man, how noble in reason, how infinite in faculty, in form, in moving, how express and admirable, in action, how like an angel, in apprehension, how like a God!"

David Brian Christiansen

## Walter Runkel Suspended

Mike Darwin



Walter Runkel, one of the founding members of the Cryonics Institute (CI) and the Immortalist Society (IS) (both located in Detroit, MI) entered cryonic suspension on Tuesday, October 8th at the age of 75. According to news reports Mr. Runkel deanimated of a lung ailment and cryonic suspension was started immediately with the application of ice packs, administration of anticoagulant heparin, and application of a cardiopulmonary resuscitator.

Mr. Runkel was a charming, pleasant, soft-spoken man with a wide range of interests and a long-standing commitment to cryonics. In addition to being a founding member of IS and CI, his involvement with cryonics dates back to the earliest days when the Cryonics Society of Michigan was founded in the 1960s. During the period of 1968-70 Mr. Runkel helped to create the first mobile cryonics unit in that he was largely responsible for engineering the suspension van of the Cryonics Society of Michigan — a complete suspension facility on wheels — the forerunner of all mobile suspension facilities that have come since.

Mr. Runkel's creative and pioneering activities were not by any means confined to cryonics. He became involved as an electronics engineer in television in 1937

when TV was little more than a curiosity and was even labeled by many "in the know" as nothing more than a "science fiction dream." Mr. Runkel had a long and productive career with Detroit's Channel 4 TV and was responsible for building the first wave-form analyzer in use by a television station in the United States (and probably in the world).

Mr. Runkel was a well known horticulturist and actually developed a new type of apple; the Runkel Apple, which he patented many years ago.

No doubt his many years of efforts for CI and his deep value as a colleague and as a man will be sorely missed. Beyond that, there is also no doubt that Mr. Runkel's suspension will be a tremendous loss to his family, the entire cryonics community, and the world at large. Gentle, creative, and decent men like Mr. Runkel are a rare

commodity indeed. Having recently suffered the loss of a valued colleague ourselves,



we well know the pain and problems that accompany the suspension of someone you care about, and we wish to extend our

heartfelt sympathy to Mr. Runkel's family, and in particular to his wife, Luise. We hope his suspension provides solace in the midst of their loss.

Mr. Runkel, has embarked on yet another pioneering adventure. We wish him safe journeying and as much success as he had with his first pioneering "gamble" on a crazy idea called TV over 40 years ago.

(Special thanks to Brett Bellmore and Mike Perry who helped with information for this article.)

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## For the Record

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# Cryobiologists vs. Cryonicists: Roots of the Cold War

Michael Perry

A history of the well-known and unfortunate hostility of most cryobiologists toward cryonics has recently been recounted by Mike Darwin (1). In what follows we take a look at some antecedents of this hostility, which in fact began to develop shortly after the publication of Ettinger's landmark book, *The Prospect of Immortality*, in 1964.

At first the freezing idea seems to have been treated as some sort of joke by cryobiologists. Ev Cooper, reporting on the 1964 meeting of the Society for Cryobiology, comments:

"It is the custom at these meetings for one of the more articulate core of the society to introduce each contributor before he presents his paper. This year by way of introduction, the very funny thing that happened on the way to the convention was to hear about an author from

Detroit (Ettinger) who was suggesting freezing for humans. The introducer said jovially he hoped that none of the microbiologists would present papers on this. At another time the listeners heard of a letter sent in by a mortician asking for instructions in freezing. This was thought to be very amusing..." (2)

In general the cryobiologists kept their distance from the new "cult," though a few were persuaded, for a time, to become scientific advisors. But the freezing movement largely went its separate way, attracting a circle of devotees who, despite many differences, mainly agreed on the basic premise. In 1966 Cooper, apparently seeking to stir up interest among a too-complacent readership of his now renamed newsletter, *Freeze-Wait-Reanimate (FWR)*, invited opponents of cryonics to air their views. What resulted was a "great debate"



over the question, "If a person were frozen now is reanimation possible in the more distant future?" Skeptics Robert Prehoda and Armand Karow opposed Cooper, Robert Ettinger, and anyone else who cared to respond. Karow was (and is) a respected cryobiologist; Prehoda, with PhDs in chemistry and biochemistry (3), would go on to write books on suspended animation (*not* cryonic suspension) and technological forecasting.

Prehoda's critique recounted an earlier article of his in *Pageant*:

"I will repeat my published opinion (4), that 'Almost all reduced metabolism experts regard the proposal to freeze the dying or dead at the present time as totally unfeasible because they do not believe that cellular damage caused by current freezing techniques can ever be corrected.' The reasons for this dogmatic statement are

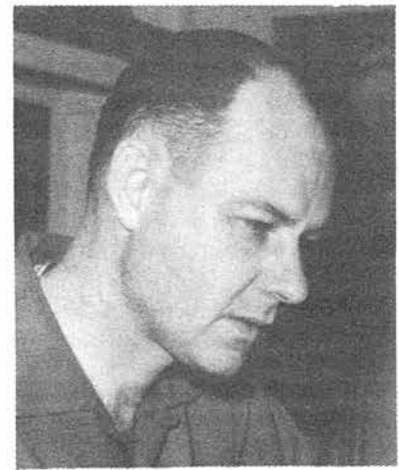




Bob Ettinger



Ev Cooper



Bob Prehoda

quite simple. When an organ as large as a human brain is perfused with DMSO and frozen to cryogenic temperatures, most of the cells are damaged beyond any conceptual means of future repair and restoration to original function. The very process of attempting to repair billions of separate brain cells would necessitate separating them, and this would sever intercellular connections that would be almost impossible to rejoin. I would estimate that the chances of rejoining ten billion brain cells would be less than one chance in ten trillion (not very good odds for a proposed multi-billion dollar 'freezer program')..." (5)

In rebuttal Cooper points out how "the history of science repeatedly reminds us that much more has been discovered and solved than men generally expected." He then makes an observation that anticipates nanotechnology: "In centuries to come and provided enough is known about life I see no reason why brain cells could not be repaired at the molecular level and reconnected." (6) Ettinger in turn was sharply critical of Prehoda's statement that "almost all" the experts regard the reanimation problem as hopeless (instead they were willing to grant some chance of success), and had other objections:

"The statement that, in freezing large organs, '... most of the cells are damaged beyond any conceptual means of future repair...' was unsupported, and almost certainly untrue, even if we put a period after the word 'damaged' and disregard possible new techniques. Actually, there has been little work with large organs, but apparently most of the cells are damaged little or not at all, even if the organ as a whole does not fully recover..."

"The statement that there would be

'...less than one chance in ten trillion...' of repairing a certain kind of brain damage is unscientific in the extreme. I will not believe this 'estimate' represents an actual calculation — let alone a correct calculation — until I see the mathematical details, and the explicit assumptions on which they are based.

"The worth of a gamble depends not only on the chance of success, but on the value of success. The 'expected gain' is the product of the probability of success times the payoff if success is achieved. The payoff here is so huge that even a small chance of success might be considered acceptable. Furthermore, even failure would pay off to some extent, since the dying will have additional hope, the bereaved additional comfort, and the stimulus to research will improve the chances of those dying later." (7)

Armand Karow, the other opponent, was more careful, both in admitting that cryonics had *some* chance of success (albeit a very minuscule one, in his view), and in denying that other cryobiologists had flatly ruled this out:

"I, too, must agree that there is some chance, but this chance is so remote as to be non-existent. Literally the chance of reanimation of large masses of frozen living tissues such as a whole rabbit, dog, or monkey is about as great as the chance for a rusting model T Ford suddenly becoming like new by undergoing a spontaneous reversal of the rusting process." (8)

In addition Karow attempts to pull rank on the reader by suggesting that only a scientist such as himself can make an informed judgment on the subject. There are other arguments against cryonics based on probability (again dismissed by Ettinger as

being without mathematical foundation) and cost (not relevant to the technical issue of feasibility, though not trivial either). Finally Karow suggests that pickling might have about the same likelihood of success as freezing. To the latter Cooper replies,

"If you will pardon me saying so, I'm pickled to death that my question has received the attention of such a fine cryobiologist as Armand Karow, Jr. But, Armand,... you really must be pulling our collective leg..."

"Surely you wouldn't say that if Suda pickled one brain and perfused and froze a second [one,] he would get a better brain wave from the pickled brain after six months?..." (9)

Both Cooper and Ettinger take Karow to task for pulling rank, Cooper replying, "If the layman always took what the expert said as gospel truth through the ages, I fear we might have neither our present civilization nor perhaps science herself..." (10) Ettinger's answer too is interesting:

"Karow says the layman must take the scientist's word on what can be done, just as he must take the physician's word. But physicians disagree, and so do scientists. During [World War II], several consulting surgeons thought my leg had to be amputated; only one thought he could save it. Not being an idiot, I put myself in the hands of the lone optimist, who did in fact save my leg. The parallel is obvious, and the stakes in our program incomparably greater." (11)

Joseph Zeletsky, another reader, had further thoughts:

"That allusion to a rusting model-T Ford was excellent but not as Mr. Karow

would expect. If the original blueprints are available and the rust isn't scattered but preserved, the car could be reproduced identically. Of course each atom of iron wouldn't be in the same place as it was originally but what difference does that make?... The human body is continually changing while life is going on anyway.(11)

"But freezing is different. It is like having taken that old model-T years ago before it rusted out but when it threw a rod and then preserving it so it can't rust or deteriorate and now de-preserving it and putting in a new rod, cylinder head or whatever is necessary. Fifty years later it could be as good as new!..." (12)

It is significant that the above exchanges took place before the freezing of Bed-

ford. Already, battle lines were being drawn, and as might be expected, along emotional rather than scientific lines. Tragically, the scientific establishment put the weight of its authority and influence against those who would seek to defeat death scientifically. Twenty-five years later, only a tiny handful are frozen of the many millions who died during the interim. The proponents of cryonics are acting too along emotional lines, but their emotions are more in keeping with the scientific spirit of rational inquiry, and more humanitarian as well. The 20th century has witnessed many outrages, but the greatest of these, in terms of the sheer number of lives needlessly lost, may well prove to be the rejection, by those who should have known better, of the attempt to preserve the deceased for later reanimation.

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[LESN=Life Extension Society Newsletter; FWR=Freeze-Wait-Reanimate]

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2. *LESN* 4 Sep. 1964, p.1.
3. Prehoda, Robert, private communication, 24 Oct. 1991.
4. *ageant* Apr. 1966.
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8. *Ibid.* p.3.
9. *Ibid.* p.5.
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## Future Tech

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### The Extropian Mail List

H. Keith Henson

Max More's *Extropy Magazine* recently spun off an electronic mail list. Before I describe some of the messages that went to this list I am going to discuss the Net a little. The Net is one of the up and coming "institutions" of the future. I expect the Net to subsume much of the functions of newspapers, magazines and the post office.

The Net consists of some large number (in the range of 3,000, but the number is quite uncertain) of educational, commercial, government and private computer networks. (The HP Internet consists of some 45,000 computers alone.) The computers are connected together via a network of communication links.

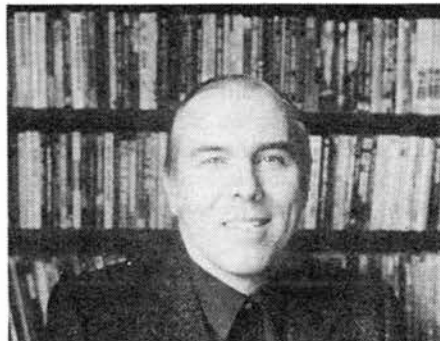
Perhaps as many as 5 million people have accounts on these computers. An account almost always includes an electronic mail (email) address. For a lot of people on the Net an account is as essential as a desk for their job. Others are students using a university computer. Some sub-

scribe to a commercial service like CompuServe or Portal (where Alcor and I have accounts).

Most of the commercial services, and a lot of the others, give an account holder access to some fraction of "Net news." Net news is simply astounding. There are over 600 news groups, most with numerous "threads" or topics within that group going on all the time.

The moderated news groups are like magazines. You send messages by electronic mail to the moderator, and your comments or questions might get into the next edition. All I know of are moderated by one person, and some come out several times a week. (I don't know how the moderators do it.) An example is the sci.nano-tech group. People send email to John Stores Hall (JoSH) and within a few days your message and possibly some comment by John may appear in thousands of computers.

Messages to unmoderated groups are



just "posted" and within a day or two will have spread from one machine to another half way around the world. (I often see postings from Finland.) For example, one such group, misc.legal, recently had over a hundred messages on the Clarence Thomas debate. A lot of sites do not carry the entire topic list. Some part of the list is almost a necessity for a place with serious computers. Bug fixes for a large number of computer operating systems are posted to a news group appropriate for that machine. People who have problems with computers or software post questions and often get answers in a few hours.

Reading Net news is a major time sink. I try to keep my list of groups and topic threads short enough to get through the new postings in an hour a day or less. The amount of material in all groups is simply staggering. Last I heard it was roughly 16 megabytes a day. Considering that a long novel might run 800 kilobytes, you can see that dipping into this stream is



much like trying to get a drink from a fire hose. A lot of places either don't get news, or subscribe to a rather limited list.

Electronic mail is the lowest common denominator across the network and most people can send mail to most others (Prodigy, GENie and Bix are outside of the mail exchange). Computers can be used as "list servers" to distribute electronic mail to a list of people. I am on several email groups, for example, the one on artificial life. The mail groups can be moderated, as Kevin Brown's cryonics list is normally, or unmoderated, which is the situation when Kevin goes on vacation and leaves the list server running on automatic.

The Extropian mail list is a new unmoderated one. It resides in a machine named *gnu* which is reached through another machine called *ai* at MIT. Thus the Extropians e-mail address is "extropians@gnu.ai.mit.edu". Mail sent to extropians at this machine is re-sent to a list of a few hundred people.

It is hard to get a handle on the people on this list, but a majority would seem to be libertarians or objectivists of one stripe or another. A good number are either signed up or planning to do so; otherwise, there is a lot of variation. The stuff which comes over an email list conforms to Sturgeon's Revelation (i.e., 90% of everything is crap), but in the first 4 weeks or so that this list was operating, over a megabyte was posted, including some real gems. It seems that a dozen or so active people sitting at their computer terminals can easily

churn out a few pages a day if they care about the subject. These folks care.

To get the debate off to a fast start, I posted a few of my columns from *Cryonics*, a long article on memes, and one called *MegaScale Engineering* (or *Party Animals Loose in Space*.) One of the longest running threads this sparked was a discussion on how one should relate to duplicates of one's self. There was a lengthy side discourse on the morality of making duplicates, or for that matter having children in a world where no one died. I have long thought that duplicates would be "forbidden" unless you are willing for the duplicate and yourself to leave the solar system. I am no longer very confident that this would be the situation. It was pointed out in one thread that a society which permitted its most productive people to make all the duplicates of themselves the market could efficiently absorb one which did not. Interesting asides: Is there any limit to the size of a galactic economy? Would the speed of light keep governments from "catching up" with you? And a related matter, if a local star system decided to halt reproduction and succeeded, would they be overwhelmed by one which did not? Or, in a nanotech era, would economic power go to societies which stayed small and (per capita) wealthy?

Avoiding a solar-system-wide "Calcutta" situation seems much harder than I had hoped. The Calcutta syndrome is

where a nanotech supported population increases (fast or slow, it comes to the same thing) until it runs out of materials (or energy or both) and reaches a state where reproduction is held down by grinding poverty. (This is actually just a modern version of Thomas Malthus' 1798 observation about population growth and available resources.) A species-wide ban or even a limit on reproduction is going to be very hard to obtain if we still have a lot of variation in human culture. Some people were certain that (given strong property laws) the market would eventually call a limit, though perhaps at a depressing "standard of living" for a lot of people. Others were confident that the Four Horsemen would get back in the act. For all I appreciate market forces, they are not the only influence on humans. A future of wars and plagues enhanced by nanotechnology is not nice to contemplate either! There was no general consensus.

Uploading into hardware did not seem to be much of a cure for the kind of problems people thought up. Is there any difference between being "dead" and being eternally swapped out? And what happens when you can no longer afford the minimum storage charges for "yourself." Well, one point in our favor is that the people on this list are at least thinking and writing about some of the long term consequences of living a very, very long time.

And, boy, the fur does fly!

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## Immortalist Philosophy

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### Uploading, Cryonics, and the "Rapture"

Max More

"Many people would sooner die than think. In fact they do." Bertrand Russell's barbed observation applies forcefully to issues of cryonics and physical immortalism both in its opponents and, unfortunately, in some of its proponents. Most humans exhibit a deep need for certainty. Certainty

of belief, even if it reduces the chances of achieving important goals, is more comfortable than uncertainty. Certainty is soothing since it requires no action. If you are certain an event will occur you need not contribute to bringing it about; if you hold a belief with certainty you need not

look for contrary evidence and can ignore evidence presented to you.

All current human cultures exhibit this desire for certainty. It infests all religions with ideas of heaven, merging with "the Godhead" or dispossession of the ego. A dogmatic belief in an effortless,



blissful afterlife allows the believer to avoid confronting death. All a person need do, they feel, is believe. Few or no actions are necessary to secure the certain continuation of life, and any actions (such as worship) that may be necessary guarantee indefinite and effortless life. This entropic temptation spreads even into science, with many scientists adopting a dogmatic Establishment stance rather than a critical yet receptive inquiry. "Hamburger-into-cow" anti-cryonicists are salient examples of this harmful psychological trait at work.

To avoid misinterpretation I wish to say that I am not claiming that all non-immortalists have succumbed to the temptation of dogmatic certainty. The comparative youth of transhumanist philosophies such as Extropianism and Venturism and of practices like cryonics means that most of the world is unfamiliar with non-religious alternatives to certain death. A fraction of those who believe death to be certain and human limitations to be inevitable would be willing to reconsider should they discover our ideas. It is only those who refuse to reconsider who lack courage and rationality.

So tempting is certainty and so unappealing is uncertainty over survival that even cryonicists and other transhumanists may fall prey to it. I have noticed tendencies towards dogmatic certainty among some cryonics and uploading enthusiasts. Having found a possible present or future means of avoiding death and having made deep changes in their view of life, these persons are tempted to stop searching for ways of improving their chances.

There are those uploaders who agree that cryonics is workable, but who choose not to make suspension arrangements, believing that before they would need suspending they will be uploaded into more durable hardware. Some of these people are not young, and have — in my

view — unrealistic beliefs regarding when uploading will be possible. Given that no one has yet been able to clearly demonstrate what kind of device will be necessary to preserve our selves fully, and given the significant chance of accident or disease, their extreme confidence that they won't need suspending is, in my judgment, foolish.

There is a related tendency in these cryonicists and uploaders to talk about uploading or revival from suspension as if it will suddenly and totally eliminate any difficulties with life. We are given the impression that transhuman or posthuman existence will be one of constant bliss, without need for effort or struggle as a result of dramatically enhanced intelligence and superior bodies. A Pollyanna view like this turns the idea of uploading or revival from suspension into a variation on the Christian Rapture in which the faithful ascend to heaven and enjoy everlasting blissful passivity.

But realistically we can expect life to continue to be full of challenges requiring thoughtful attention and action, though the challenges will be grander and the possible rewards much greater. Dynamic Optimism does not sanction these tendencies toward dogmatic passivity and faith. D.O. requires us to treat no practice or solution as final or certain to succeed. Faith that uploading or cryonics will certainly work and work in time for us is deadly. It will discourage both the search for ways to improve the chances that cryonics and uploading will work and work as soon as possible, and the search for alternatives. The tendency toward certainty may partly explain why too many cryonicists and uploaders fail to take significant responsibility for their health. It's much easier to believe that you have a sure escape route from death than to control your diet and to exercise.

Some ideas are more prone to intel-

lectual passivity and dogmatization than others. While not necessarily rejecting them as false we are responsible for subjecting them to particular critical examination. Uploading seems to be one such idea. This is due to the radical and discontinuous nature of the transformation, giving it the tone of a Rapture. This is one reason why I concur with Thomas Donaldson in preferring an expectation of gradual metamorphosis to that of discontinuous uploading. The process of metamorphosing will require us to carefully and continuously select and integrate the optimal somatic and cognitive upgrades, whereas uploading promises a radical change that requires no effort on our part.

Although I cannot pursue the issue here, I am also concerned about the doctrine of Universal Immortalism. The goal of UI is to resurrect everyone who ever died, including those of whom no trace is left. This goal, if theoretically and practically feasible at all, is so extremely remote from current possibility that it may tend to induce either indifference or certainty. Furthermore, in the hands of persons other than its current proponents, Universal Immortalism might tempt some to reduce their efforts to secure indefinite life because of the belief that other Universal Immortalists will recreate them.

If we are to continue to advance toward better ways of achieving indefinite life we must remain on guard against creeping certainty and dogmatism. This involves constant critical examination of our own and other cryonicists' thinking and practice for signs of dogmatism and intellectual passivity. We will each have our favored means of pursuing unlimited life, but we are responsible for remaining open to alternatives and to new information. We will either remain flexible and live with uncertainty, or we will stagnate and perish.

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## Alcor Abroad

Carlos Mondragón

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For the past few years, media interest in cryonics outside of the United States (mostly in Europe) has been booming. Lately, we've been getting a lot of atten-

tion in Spain.

In the summer of 1990, two Spanish popular science magazines, *Conocer* and *Muy Interesante* printed serious (and by

our standards, favorable) articles on cryonics. These magazines could both be described as a cross between *Omni* and *Scientific American*.

Soon after the articles appeared, we were visited by a crew from the Spanish national television network, TVE. They produced a segment for a weekly news magazine show called *Informe Semanal*. Being the only Spanish speaker here, I gave the interview and tour of the facility.

One week after *Informe Semanal* aired their cryonics segment, I got a call from another TVE program, *La Tabla Redonda*

(the Round Table). They asked me to come to Spain for their show, which airs live at midnight. They told me they would fly me there first class (not that I needed a whole lot of persuasion) the first week in November.

As it turns out, the ticket they sent wasn't first class, it was *Grand Class*: meaning I made the journey on the upper deck of an Iberia Airlines 747 where there are only 12 fully reclining seats and 2 stewards to wait on you hand and foot. I arrived in Madrid on November 5th, 1990, the day before the show, feeling very well rested.

American TV talk shows could learn a thing or two from the Spanish (and not only about travel arrangements). In this country, it's customary to isolate a program's guests until air time. The reasoning behind this is that it keeps the conversation "fresh and spontaneous." Not so in Spain. In spite of 10 years of "progressive" socialist rule, there is still a great deal of old world civility. The evening before the broadcast, I and all the other guests were treated to a four-course dinner, cocktails and fine wines included, where we were able to converse freely for about three hours!

It was during this socializing that I first became aware of what the show would be about. The other guests were scholarly representatives of major religions: a Roman Catholic priest and professor of theology at the University of Burgos, an Orthodox Rabbi from Tel Aviv, a Muslim theologian, a Buddhist (!) and a Cabbalist (!!). It looked like maybe I was expected to be the fifth course, to be eaten on the air. At least that was the producer's intent. Of course it would have worked out that way if I hadn't had the chance to talk to the "opposition" beforehand.

Luckily three hours was plenty of time for me to successfully communicate the cryonicist concept of death and the consequent lack of conflict with the Judeo-Christian tradition. (Cryonically suspended people aren't necessarily dead, worldly technology used for the prolongation of human life is good, etc.) There aren't many Buddhists in Spain, so my strategy worked.

By the time we went on the air, the Catholic priest and the Rabbi had absolutely no objection to cryonics! The show's moderator was quite visibly crestfallen.

Though this show didn't have the expected fireworks, it did start out with the best five-minute news department presentation of cryonics I've ever seen.

I could write pages about the two full days I got to spend in Madrid, but other than to say that almost everyone I met seemed to be intrigued by the idea of cryonics, it would be irrelevant to this magazine. Suffice it to say I had a great time.

Our next contact with Spanish media was a visit from the editor of a new popular science magazine, *Ano Cero*. His article was quite good, but of greater inter-

## Hibernación: La vida bajo mínimos

**A** diferencia de la crónica, la criobiología si es una ciencia que estudia el efecto del frío sobre los organismos vivos. Hasta el momento, los científicos han logrado grandes avances en lo relativo a la conservación de sangre, piel y otros tipos de tejidos, e incluso de órganos; algo



muy importante dado el creciente aumento de los trasplantes de todo tipo. Pero en los que se refiere a descensos de temperatura en seres humanos, lo más que se ha conseguido es provocar en los pacientes un estado de hibernación artificial similar al que espontáneamente alcanzan ciertos animales homeotermos, como el lirón, la marmota, el erizo y algunos murciélagos. Un estado de vida latente caracterizado por un sueño profundo durante el cual los animales limitan al máximo su consumo de energía cuando las con-

ditiones ambientales en el período invernal se vuelven difíciles. En esas condiciones extremas, su temperatura corporal puede descender a 5 ó 10 grados, con un acusado descenso de las funciones metabólicas.

En los seres humanos se puede inducir un estado similar administrando fármacos que inhiben los sistemas nervioso, endocrino, vascular y muscular, y otros encaminados a sedar psíquicamente al individuo. Cuando esto se ha logrado se comienza el enfriamiento corporal, mediante baños de agua fría o refrigeración directa de la sangre. La temperatura no debe descender nunca por debajo de los 28 grados para evitar la parada cardíaca. El proceso inverso, de vuelta a los 37 grados de temperatura corporal, debe hacerse muy gradualmente. Las aplicaciones de la hibernación son fundamentalmente quirúrgicas, ya que el frío suprime las reacciones orgánicas provocadas por la intervención, y también por el efecto anestésico que se produce, cuando la temperatura cerebral desciende por debajo de los 30 grados. Ello permite reducir la aplicación de otros anestésicos, economía siempre conveniente en cualquier operación.

est is the fact that this gentleman has been appearing on Spanish radio shows talking about cryonics.

It was one of these radio shows that prompted one of our Spanish suspension members to call in and correct some of his statements. The result: that member is now doing radio and TV interviews herself.

As usual, media people copy one another, and on June 1st of this year I was again invited by TVE to come to Spain and do another show. This time it was a program entitled *Tribunal Popular*, a sort of People's Court where a jury recruited from

copies of all the material I had sent in advance, and they were fully prepared to defend cryonics. Over lunch we informally discussed cryonics and its implications for the future of mankind, society, and just about everything else.

But once we got to the TV studios, it was down to business. We met in a conference room and planned courtroom strategy. All we knew of the opposition was that the "prosecutor" had recruited as his two witnesses a physician and a cryobiologist. (If only Mike Darwin spoke Spanish. Drat!)



**Una cara decisión.** Es cierto que la vida no tiene precio. Esa parece ser la convicción de las personas que un día decidieron que sus cuerpos fueran congelados. Una decisión que puede llegar a costar 10 millones de pesetas si se pasa por quirófanos y tanques de conservación, como los de las fotos.



I was the last witness. The prosecutor's cross examination was intense. Although my Spanish has improved tremendously in the last two years, arguing the biology of cryonics in a rapid fire environment is nothing I look forward to doing again anytime soon. (If only Darwin spoke Spanish. DAMN!) I haven't yet seen a tape of the show, so I'm still at that stage where I imagine it's worse than it was.

Oh yes, the jury was split six to six, but since the foreman voted against cryonics so went the verdict. On the up side, everyone including me noticed that the studio audience was absolutely riveted.

While in Barcelona, I also did two radio shows, one national and one only broadcast in Cataluña. The latter generous-

ly reverted to Castillian Spanish for my interview since I don't speak Catalán. Both radio interviews went very well.

After all this business was done with, I spent the next two days on the Mediterranean island of Mallorca with a family of Alcor members who are now avid cryonics proselytizers and wonderful friends.

On this side of the Atlantic, I've been doing plenty of interviews with the Hispanic press, including two on Univisión's *Cristina*, a blonde Cuban version of Oprah. I went to Miami to do another program called *Sabado Gigante* in mid-July. In September, I did another

talk show on the TeleMundo network called *Cara a Cara* (Carmen Brewer of ACS was also a guest on this program).

So does all this mean that cryonics is about to take off in the Spanish speaking world? I'm often told that I err too much on the side of optimism, so I won't even venture a guess.

What I have come to appreciate, though, is that in general, anything having to do with science or technology is greeted with positive enthusiasm in Spain, somewhat less so among Hispanics here, but not with the disdain or suspicion so pervasive in American culture. There is no doubt in my mind that a similar jury here would have not been evenly split, they would have sent me to the gulag.

Until two years ago, all of Alcor's foreign members were in English speaking countries. Much of the resistance has recently been a prudent reluctance to sign papers not in one's language. This tells me that if we can overcome language barriers, we will see cryonics become a truly worldwide phenomenon.

In the course of my preparations for my last European excursion, I finished translation of an abbreviated version of *Cryonics: Reaching For Tomorrow*. If you can help with further translations of our literature or suspension paperwork into Spanish (or any other language), please call me. Even if your work isn't perfect, it's much easier for me to edit something already done than it is to start from scratch.

## Philosophy and the Problem of the Death of Philosophers

Hugh Hixon

From the earliest known musings of philosophy, the question of the existence of death has been particularly intractable. Why should Man, the self-aware Lord of Creation under the gods, be subjected to eternal oblivion; and particularly, why should the individual philosopher (who would be king) suffer this fate? (Any philosopher worth his salt makes his way in the world by spitting into the wind, so the possession of an ego of some proportions is entirely understandable.)

Whatever logical contortions they may put themselves through, the honest ones have come to understand that their lot

is one with the beasts and insects; so they elevate death to the status of an axiom and make their peace. A most bitter peace, withal, but one gets that sort of thing in the quest for the truth.

So here come the immortalists, and particularly, the cryonicists. We are the technologists, the dirty-fingernailed artisans, without a thought for the thoughts of these great men. (One is invariably reminded at this point of the comment that, "A civilization that exults philosophy, because it is an intellectual profession, and denigrates plumbing, because it is a dirty, manual thing, will soon find itself in

trouble, as neither its philosophy nor its pipes will hold water.") And what do we do with this philosophically intractable problem of death?

*We create a technological solution!*, of course. So much for the musings of philosophers.

And then there's the emotional aspect; a philosopher's thoughts are more dear to him than his children; they *are* his children! And to these parents, their children, immaculately conceived and carefully nurtured in their minds, can do no wrong.

So it's entirely understandable that

philosophers should have some trouble with us. They have created a room in their house for Death, and carefully furnished it and arranged it, and closed the door and locked it. But it's always there, and they know with bitter certainty that someday they will pass through that door, and not come out. And we go clomping through the house in our muddy boots, and pop the expensive lock off the door with a crowbar, and look in this room, and we turn to the philosopher and we say, "So where's your problem?" And they get the idea that we may be snickering up our sleeves at them, and that we will never, never understand the *gravity* of their thoughts on this thing. So it's understandable that they may be a bit upset and defensive and backwards

with our cavalier solution to their personal Gordian Knot.

I suppose they're right; we *do* snicker a bit. But in the end, death is the common enemy of all of us, and though we have set ourselves on the path of Choice, that even those dearest or most valuable to us may choose death of their own free will, we know that each and every death diminishes us. And! We! Don't! Like! It!

So have *some* sympathy for the philosophers; they're trying to deal with what has classically been an intractable problem the best they or anybody else knew how before Robert Ettinger, whom they've probably never heard of.

But don't let them get in your way! The important thing about a philosopher is

to be able to say, in the year 2991, "I once met him." If he isn't available to agree with you, *he* didn't solve the problem.

Oh yeah: If you wish to get a philosopher's attention (and for that matter, a lot of other people's), you might try suggesting that a thousand years from now, the only living memory of him will be yours, having this conversation, and What Does He Think Of That?

Hugh Hixon does cryonics, and plumbing, and philosophy, and thinks Life makes a *great* axiom, and always has a wrench handy, because sooner or later, it's all gonna' leak a bit!

## A Personal View of the Alcor Research Fund-Raiser

G.M. Fahy

The existence and quality of research carried out by organizations such as Alcor has long been a topic of concern to cryobiologists. Several cryobiologists have indicated to me, directly and indirectly, that they felt cryonicists should do research on brain cryopreservation. In part for this reason, I agreed, once upon a time, to help Jerry Leaf develop a protocol for testing the retention of memory after freezing and thawing based on Smith's classical experiments on the freezing of hamsters. I felt this would be good, solid cryobiological research of considerable general interest over and beyond any concern with cryonics or even cryobiology. I also felt it would provide data that would help to elevate the level of discussion between cryonicists and cryobiologists, for the benefit of both. Naturally, then, when I learned that Alcor was sponsoring a fund-raising dinner that would feature a discussion of this proposal, I was interested in learning how this proposal would be presented. I had also been asked to discuss my own research on vitrification, which I felt might not be very relevant but perhaps would be worthwhile nevertheless. So I decided to attend this meeting.

The dinner took place on Saturday, September 28th, 1991 at the Marriott Hotel in Los Angeles near the LA International

Airport. Almost nothing about the meeting was as I expected it to be. Unfortunately, as is well known to readers of this periodical, Mr. Leaf suffered a fatal heart attack on July 10. Perhaps in part for this reason, the 20 or so attendees were rather somber and less talkative than I had anticipated, and most arrived late. There was no Master of Ceremonies, host, or moderator, so the structure of events was loose. I think the most significant of the departures from expectation, however, was my own talk.

Sometime following the news of Mr. Leaf's heart attack, I learned (by reading about it in *Cryonics*) that I was to speak both about the retention of memory project and about vitrification. Not being prepared to take over for Jerry Leaf, and hoping to bring some new information with me to the meeting, I decided to accelerate some research that had been underway for several months. As part of my continuing interest in the 2-deoxyglucose project begun at NIH several years ago, I had decided to make a first attempt to visualize the degree of structural damage done to brains frozen to low temperatures with concentrations of glycerol that satisfy the so-called "Smith criterion." The results, which became available 3 days before the meeting, gave me pause. Because of them, the first part of my talk, on memory reten-

tion, was deleted and replaced by the information that follows, and the second part of my talk, on vitrification, acquired far more relevance than I had expected.

Due to time constraints, printed versions of the slides I projected at the meeting will have to wait until next month. For now, I can only summarize the situation as follows.

For some time now, the question of how much structural preservation exists in brains frozen with present techniques has had contradictory answers. On the light microscopic level, 6 Molar glycerol has produced either superb preservation or preservation marred by massive cellular dehydration, depending on the glycerolization technique. Brains frozen with 3 M Glycerol have given mixed results. As reported in an abstract (1), it is possible to obtain excellent-looking histology after freezing with 3 M glycerol, but, unfortunately, this degree of preservation is not consistent from brain to brain or from brain region to brain region. For example, I showed that, for the case of both spinal cord and cerebral cortex from a single animal, one region showed seemingly excellent histological preservation, and a nearby region of the same tissue showed extensive gaps or tears in the tissue. The origin of these gaps or tears, however, has

not been clear. The most disturbing finding has been on the electron microscopic level. Although some degree of preservation has been observed, extensive damage, seemingly inconsistent with light microscopic results, has usually been seen (unpublished Alcor results). Biochemically, all functions measured to date have always survived freezing and thawing, even under poor circumstances (2), again in possible disagreement with the often poor electron microscopic (EM) results. Hence, the reality of the EM results and the possibility of artifacts in these results have been in question for some time.

The experiment I reported on was carried out as follows. A single rabbit brain was perfused at room temperature with 3.72 M glycerol, frozen to -130 °C, cut at this temperature or below, and the resulting slabs freeze-substituted for many months at -78 °C. This procedure permits ice to be visualized as it exists in the frozen state, thus helping to answer the question of how much damage exists while the system is frozen, rather than after thawing. It can be predicted with reasonable reliability that, if 3.72 M glycerol is used before freezing, the amount of ice formed should be about 60% of the total volume of the system when it is frozen to low temperatures. The key question, however, is not how much ice forms but where does the ice form: does it form in a destructive pattern or in a non-destructive pattern?

The answer, somewhat to my surprise, was that the pattern of ice formation seems to be potentially quite damaging. Everywhere one looks, thick sheets of ice are found stabbing their way through brain tissue with apparent abandon. By looking at serial sections through frozen tissue, it is apparent that these sheets extend for considerable distances in all directions, offering little opportunity for continuity of neural connections around the ice crystal slabs in most cases. In white matter, where glycerol permeation may be less complete, the situation is even worse, the tissue ap-

pearing as a series of more-or-less circular cavities with thin surrounding walls of neural tissue. The ice crystals formed throughout the brain are so large that they are readily apparent to the naked eye. The ice crystal distribution pattern is quite unique, and unlike that seen in any other tissue that I am aware of. Thus, brain tissue does shape ice in unique ways, as hypothesized, but contrary to hypothesis, the uniqueness of the pattern does not clearly provide unique protection to brain tissue structure in comparison to other organs.

A striking result is that, in comparing these ice crystal patterns to the patterns of tissue gaps found in similar material frozen to the same temperature and thawed, there is a coincidence between the pattern of ice crystal orientation and length in the frozen state and the pattern of tissue gaps after thawing. In other words, the tissue gaps appear to correspond directly to cavities previously created by ice during freezing. Mysteriously, these gaps are absent from many sizable regions of thawed brain, despite the fact that ice crystal patterns appeared to be essentially the same in every brain region seen by freeze substitution. It is also almost miraculous how well the tissue organization re-establishes itself in general after thawing, even in areas where gaps are present. However, the likelihood of extensive damage existing below the level of resolution of the light microscope, but all too visible in the electron microscope, appears high.

Suda, too, has seen these gaps. I showed several of his unpublished micrographs in which he demonstrated that the gaps expand when the brain is reperfused, since perfusate can leak into the gaps and build up tissue pressure there, thus dilating them. The gaps seen by Suda, like the gaps seen by me, are generally parallel to the direction of axon orientation.

The upshot of these observations is that, in fact, ice seems to be mechanically damaging to the brain. In this light, my comments on vitrification seemed particularly germane.

As most readers know, I've been working on eliminating ice crystal damage in kidneys for more than 10 years now. As I announced at the Society for Cryobiology meeting in Belgium in July, this work has now progressed to an interesting point. My research team can now consistently replace about half the water in a rabbit's kidneys with organic chemicals (a degree of dehydration which is sufficient to permit vitrification at 1,000 atmospheres of hydrostatic pressure) without killing the kidney or permanently damaging it in any way that we can detect. Unfortunately, we are unable to actually vitrify these kidneys at this time for a variety of reasons: a) they don't survive exposure to 1,000 atm, b) they are damaged by cooling without freezing (chilling injury), and c) our system for cooling and for inducing electromagnetic warming under high pressure conditions is still incomplete. Thus, we have a considerable distance to go before we can demonstrate success after organ cryopreservation, but the good news is that we can do one of the most demanding parts of the procedure with good survival afterwards, and we are continuing to make progress in the other areas.

My conclusion is that vitrification, or near-vitrification, may be a more attractive avenue of research for cryonicists than freezing. This could help cryonicists reduce damage and at the same time make their thoughts coincide more closely with those of cryobiologists.

## References:

- (1) *Cryobiology* 21:704, 1984.
- (2) "The Cryobiological Case for Cryonics," *Cryonics: Reaching for Tomorrow*, Appendix A.

*Mike Darwin will discuss further implications of this information and its impact on Alcor's research program in the January issue of Cryonics.*

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## Life Insurance Simplified

*Bob Gilmore and Mary Naples, CLU*

Life insurance seems to appear in many forms as different insurance companies attempt to cast differences and variations from competitors. Certainly some companies do offer somewhat distinct benefits, usually in the form of riders. The life insurance death benefit, however, is paid from either a term insurance policy or a whole life policy or hybrids thereof. This will be a brief attempt to clarify the similarities and differences of the basic



forms of life insurance.

Term insurance is the purest form of life insurance and the first form invented. Under this concept, a death benefit is selected and the related premium is based on the current age and health circumstances. At the younger ages, when the probability of death is low, premiums are generally lower. As age and probability of death increase, the premiums follow suit to cover the increasing death benefits paid. Some policies are renewable for one or more additional periods even if your health changes. Many policies may only be renewed for a set period of time, for instance until age 65. Some term policies allow the insured to "convert" to a whole life or similar plan without having to go through medical underwriting.

**The advantages of term insurance include:**

- A lower initial premium
- Larger amount of coverage can be purchased for a limited period
- May have conversion privileges

**The disadvantages to term insurance include:**

- Premiums dramatically increase with age
- Premiums are paid for life (if policy allows)
- Policy premiums over time can total more than policy death benefit
- No value as a cash asset
- No loan leverage ability

A second type of insurance is called whole life insurance. By virtue of its name, it can be discerned that this form of insurance was created to provide for the "unlucky" person who lived too long for the economics of term insurance to be viable. Whole life insurance was developed by mathematician James Dodson and introduced to America shortly after 1762. Dodson devised a system whereby the policyholder would pay the same premium even though his age was advancing. This was done by setting a premium higher than the initial term premium, or in other words at a level higher than the pure mortality costs for the given age. Gradually this level premium would be outdistanced by

the escalating mortality costs and premiums associated with the term policy. Whole life premium in excess of the amount needed to cover the risk for the year would be invested. The investment would grow and provide funds to offset the increasing mortality costs as the insured grew older. In order for the investment account to offset the premiums in later years, an underlying interest assumption is used. Generally this assumption is very conservative. As seen from recent examples in the news, though, this is not to say that all companies' investments are conservative.

The most common form of whole life insurance is called "straight line" or "ordinary" life, for which you pay the same premium for as long as you live. These premiums can be several times higher than an initial term premium, but they are significantly lower than you would eventually pay should you continue to renew a term insurance policy.

Since a whole life policy has an investment or cash value aspect, it is possible and in fact quite likely that a policy's internal earnings will reach a point where the policy premium can be paid for from the policy itself. These earnings generally will take the form of a stated interest rate or a policy dividend. Another important factor in the cash value increase is that it is possible for the policy death benefit to increase as well. This may be particularly important when considering a policy for cryonics and the likely ravages of future inflation to a level death benefit policy.

**Advantages of whole life insurance include:**

- Permanent coverage until death
- Level premiums
- Cash values accumulate as an asset
- Policy's internal growth can cover future premiums
- As a result of cash increase it is possible to increase death benefit

**Disadvantages of whole life insurance include:**

- Higher initial premium
- If policy is not continued in early years there is a significant loss of premium paid

- Basically locked into one company to avoid the loss of premium

Universal Life is a type of policy which has received some attention recently. It is basically a hybrid product that accomplishes the same things as term insurance and an outside investment account. In a way it can best be described as putting money into an insurance pot. Some of the money is taken off the top to cover expenses and the cost of mortality coverage. The funds that remain after expenses would earn interest at a prevailing rate. These two factors should be viewed together, since each can vary and thus diverge from anticipated results.

Will all of the variables involved, it should be made clear that the

administration necessary to achieve a desired result can be cumbersome. These variables would include the internal mortality costs, administration costs, premiums, interest rates, and death benefits.

As long as there is enough money in the pot for the company to cover the cost of the insurance, the policyholder has the flexibility of determining how much premium will be paid. If not enough premium is paid or interest rates are not as high as anticipated, the term insurance costs can begin to cannibalize the funds available. It is important to be careful to assure that premiums paid will allow the plan to survive indefinitely.

**Advantages of a universal life policy include:**

- Premiums can fluctuate
- Accumulated funds earn current interest rate
- Can have increasing death benefit

**Disadvantages of a universal life policy include:**

- Term costs inside this product can be higher than the same company's separate term product
- Administration charges can substantially affect yield
- Premiums are not guaranteed
- Current interest rates not guaranteed (subject to contractual)
- Basically locked to one company (like

whole life) due to substantial surrender charges in early years

The following graphs represent a basic comparison of values of a whole life and term policy issued by a major insurance company. While specific values are not particularly relevant, it is possible to gain an understanding of the dramatic trends within the policies. Graph A shows the relationship of premiums and death benefit of a whole life policy that is paid continuously. It also incorporates the internal cash value or surrender value. It is easy to see the impact of the increasing death benefit. Graph B illustrates the relationship between the death benefit and the total premium outlay of a term insurance policy. Again, it is apparent that at a point, usually near life expectancy, the premiums paid into a policy will exceed the death benefit. Graph C simply shows the relationship of the two death benefits.

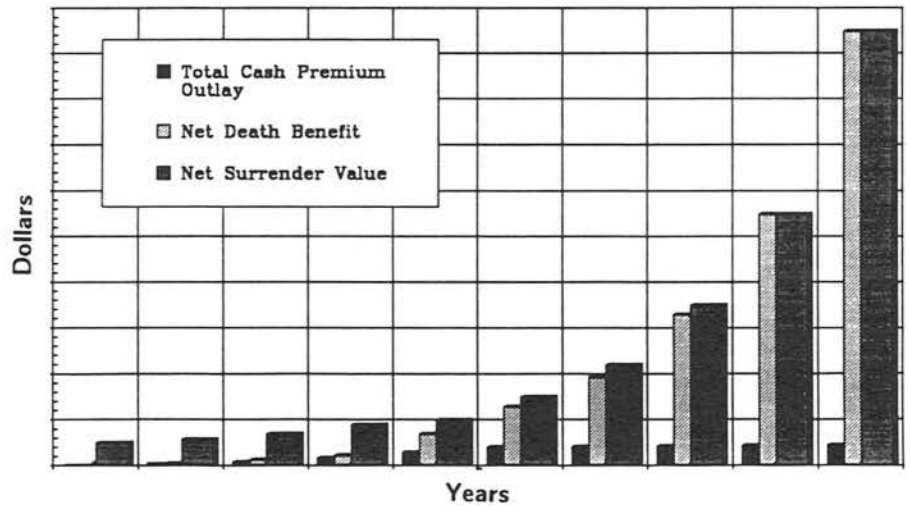
So far this discussion has focused on the basic description of life insurance products in general. Probably the most important factor in selecting life insurance is selecting a product that has the greatest likelihood of being in force when it is needed most, i.e., issuance of the death certificate. Factors that could preclude that end would include inability to afford premium payments now or in the future, outliving your insurance policy, or, as recent events have suggested, outliving your insurance company.

Certainly most purchasers of life insurance consider whether the policy is affordable. Consideration also should be given to whether or not the premium could be afforded during a period of long-term illness or disability. This can easily be provided for by a rider added to the policy which would cover the premiums during such a period. A personal or company provided disability policy could do so as well.

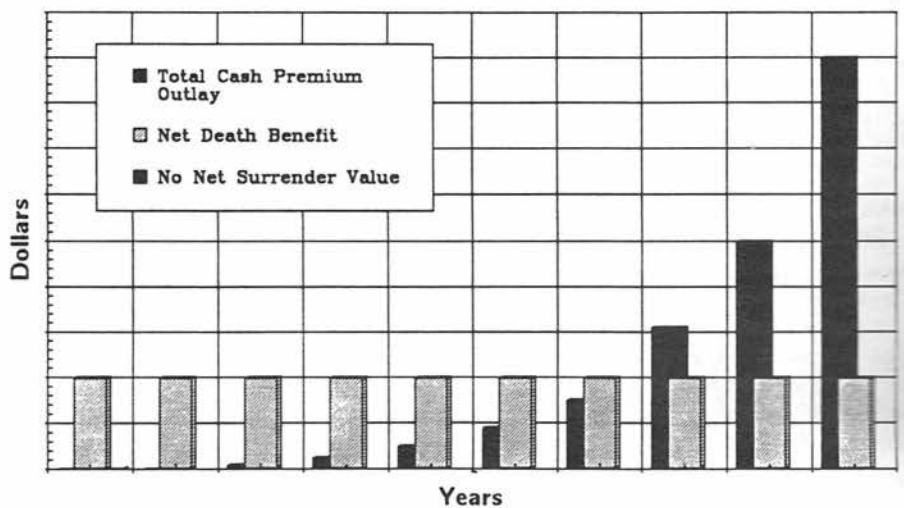
A strong case can be made for selecting a policy that does not run out at a given age. When looking long range, the insured should be the one who decides when, or if, to eliminate coverage, not the insurance company.

Careful consideration should be given to the insurance company selected on the basis of financial stability. There are many different rating services available to the public to assist in this type of evaluation. The three most common are A.M. Best & Company, Moody's, and Standard & Poors. They do use different methods of assessment, which should be considered in

**Graph A**  
Whole Life Insurance Policy Values



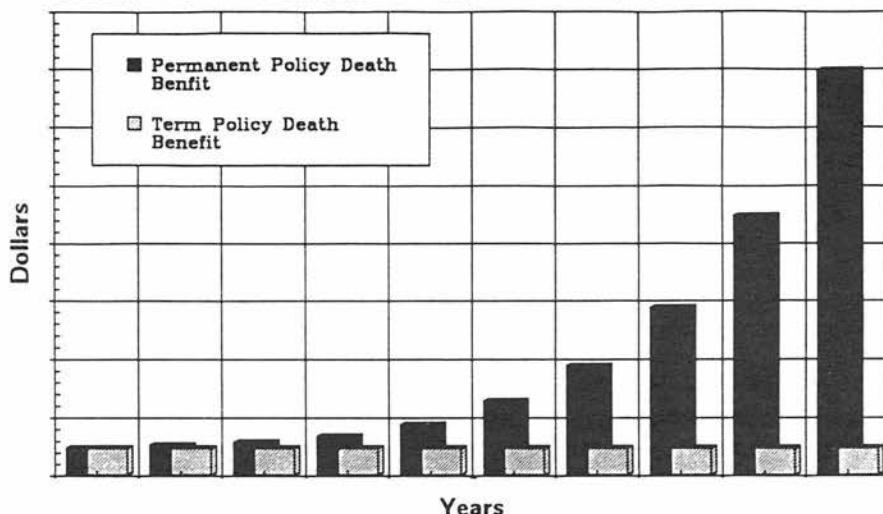
**Graph B**  
Term Life Insurance Policy Values



making an informed judgment. A solid life insurance agent should be able to assist in this pursuit.

*Bob Gilmore and Mary Naples represent New York Life Insurance Company, as well as many other companies. They have experience in dealing with the concerns of cryonicists, having written policies for dozens of Alcor members.*

**Graph C**  
Term vs. Permanent Insurance, Death Benefit



## Why Nanotechnology is Only Half the Story

### And What to Do About It

*Thomas Donaldson*

For some time the ideas of nanotechnology have dominated discussion in cryonics. Interpretations of this word have taken many forms, and while I have been vocal about my own interpretation, this article isn't really about nanotechnology at all. We all know, by now, that brain repair after cryonic suspension will require systems for making highly controlled and complex modifications on scales matching or below the size of our brain cells. To anyone who might actually be revived at some future time, details of technological methods will not matter at all.

For recruiting new Alcor members, nanotechnology has several very attractive features. First, the idea is quite easy to understand; no one needs any special study to see how an ability to operate at nanoscales will provide many possibilities for repairing the damage both of dying and of freezing. Second, it has Authorities to back it: no prospective member must undertake an independent study of obscure (to them) points of neural cell and brain physiology to see that repair lies within the scope of nanotechnology.

Yet properly so considered, all of these tools for repair answer only one side of the question. What about someone who asks whether or not we survive in the first place? Sure, our brain, as a mass of biochemicals, will certainly survive; even individual cells and structures may be found after examination. But right now, in 1991, we are not in a position to *prove* to anyone that freezing (and I mean freezing down to liquid nitrogen temperatures) will *not* destroy their memory. The reason: we still don't know how long-term memory works. If we had structures or chemicals we could point to as invariable clues to memory, then yes, that would be enough. Unfortunately we still lack this knowledge.

Whether you think your memories (in a general way) are so important that you would consider yourself lost (dead?) if stripped of them, or whether you want some kind of continuity even then, this problem must present a *big* barrier to recruitment. I personally think the circumstantial evidence of memory survival to be extremely strong; other cryonicists (but not every cryonicist) probably share

my opinion. But I came to this opinion not by any easy or quick road but by going out and reading in detail about the biochemistry and physiology of memory, not just once but many times, as my understanding (and that of scientists!) grew. To ask potential members to carry out similar studies would more likely put them off us than bring them to us.

Another road also exists, in one way even harder. Some cryonicists became Suspension Members because, they say, eventual discovery of how to revive us "just stands to reason." After all, the notion that now in the 20th Century, doctors or scientists know enough to say that such revival will be forever impossible is quite simply absurd. If they could describe in detail what happens to brain cells on (protected) freezing, or on dying, or how long-term memory itself worked, the situation might be a little different. But no one anywhere can do any of these things now.

It is as if, faced with a machine which did not work, and about which these doctors and scientists quite openly confess almost complete ignorance, they im-



mediately claim it must be scrapped. (If we treated our cars that way, we'd buy a new car every time we left the headlights on and ran down the battery... or maybe even just ran out of gas!).

Personally I think this second route is quite a good argument; but I know it's not an argument everyone can see. How could the opinion of everybody I know not merely be wrong but *absurdly* wrong, a tremendous hoot of a falsehood?

They all *look* so learned and deep...

So what is to be done? Certainly anyone who wants to *argue* for cryonics rather than simply join up needs to study both cryobiology and neural physiology, not once but in a continuing way. That will only solve part of the problem, though. The other part comes from the fact that almost certainly anyone arguing for cryonics *now* won't be an Authority. (The thing about Authorities is that many people will simply accept their account of something without question. And if you *aren't* an Authority they'll happily doubt you, even if you're claiming the world is round and the Earth orbits around the Sun.)

Certainly Alcor publications such as *The Cryobiological Case For Cryonics* should receive at least as much publicity as works on nanotechnological repair. [This publication is now an appendix in *Cryonics: Reaching For Tomorrow* — Eds.] It simply can't be assumed that our audience knows any biology at all; yet our essential thesis depends, basically, on evaluation of the effects of freezing and ischemia *on memory*. We must make sure this material presents the subject as simply as possible while at the same time keeping away from *oversimplification*. (Yes, I confess to sinning in this respect too). Can 8th-graders read and understand our scientific material?

Finally, of course, we have the Authority Problem. Without any actual Authorities willing to be quoted, we'll remain in difficulties. These difficulties will even extend to Authorities stating absolute falsehoods to support their deathism (like the problems between Mike Darwin and Alan Trounston, MD, PhD, FRS, etc.).

Eventually, of course, the Authorities who have become members will come out of the closet. I can't claim perfection for this interim solution: but I would suggest that along with our scientific material we become populists in science. That is, we openly advocate the ability of literate people to learn this stuff and reach their own *independent* judgments; we try to explain and show to people, constantly, that

these subjects are *not* difficult or beyond their understanding; and finally, we provide bibliographies, both for those who want surveys and those who want to look at the boundaries of research.

Finally, with this last in mind, here is a "first cut" (further suggestions wanted!):

As a basic description of our own physiology and anatomy, including our brains and nerve cells:

• William S. Beck, *Human Design*, HBJ Publishers, 1971

For biochemistry, including what was known at that time about cell physiology (the difference between these two gives an idea of what's happened in the last 20 years):

• Albert L. Lehninger, *Biochemistry*, Worth Publishers, 1971

• Frank B. Armstrong, *Biochemistry*, 3rd ed., Oxford U. Press, 1989

For neuron and brain physiology, at a level deeper than elementary introductions, there is no book or review which covers those issues related to cryonics and only those. Here are some books which contain such information:

• Eric R. Kandel, *Cellular Basis Of Behavior*, W.H. Freeman & Co., 1976 (This book was written *before* Kandel's discoveries about LTP).

• Dale Purves and Jeff W. Lichtman, *Principles Of Neural Development*, Sinauer Associates, 1985

• David F. Lindsley and J. Eric Holmes, *Basic Human Neurophysiology*, Elsevier, 1984

Finally, the cryobiological issues remain very important. The Alcor review *The Cryobiological Case For Cryonics* summarizes the needed material quite well; at the same time, outsiders to cryonics will probably simply refuse to read it as a reference. My suggestion here is that first, anyone wishing to argue the case for cryonics should familiarize themselves with this review, and second, they should not stop there but go on to read as many of the scientific papers cited there as they can, for themselves.

For anyone who has never tried this before, here are some suggestions. First, *never* expect a public library, no matter

how good, to contain these papers. The best procedure would be to visit the nearest public *university*. At least one of their library branches will subscribe to these periodicals and allow you to photocopy the relevant articles. If all else fails, and only then, should you go to your city's public library and request copies on InterLibrary Loan (receiving them will take some time).

As for *reading* a scientific paper in these areas, I would simply say that you should not expect it to read like a novel. Just jump in. If you find words that you don't understand, you can usually simply look them up (not in regular dictionaries, but in technical dictionaries. If, after all, no one expects a description of auto repair without special vocabularies, how could we expect discussions of neurons to be different?). Many public libraries at least have these dictionaries. You may wish to read the paper there rather than at home. If you want to read them at home, you might visit local *used* bookstores, where used dictionaries and other reference material of only a few years ago are on sale.

Not only this, but you will soon find that the number of technical words you'll have to learn to understand these papers isn't really all that large. It's not as if you have to learn Chinese in order to understand. Even more than that, ever afterwards, you will have learned how to read such papers *for yourself*. Congratulations: you're now free from the interpretations of newsmen or other reporters. You can find new discoveries and make your *own* judgments about them.

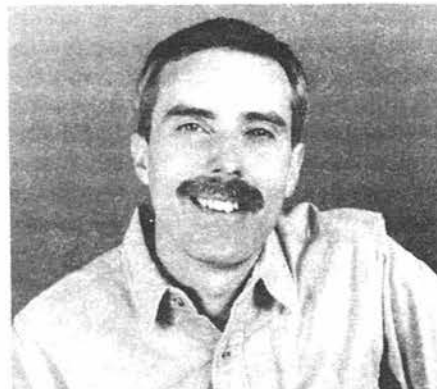
Finally, no argument for cryonics can be complete without study of this material. Nanotechnology may offer many future wonders; but anyone who tries to argue *cryonics* without a biological understanding too, hides a central problem, either from himself or from his audience. Sooner or later these falsehoods will come back to them.

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# How to Know if Sudden Cardiovascular Death Awaits You

Mike Darwin

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Last month Dr. Steve Harris examined the role of smoking as a cause of sudden death from heart disease (and, to a lesser extent, stroke) using Jerry Leaf as the emotional fulcrum. What I have to say this month and in the coming months about "how not to die like that" is really a continuation of a series of articles that Steve Harris and I co-authored in 1987 on how to reduce your risks of autopsy. Those articles were interrupted due to the Dora Kent case, and for one reason or another were never continued. Jerry's untimely deanimation demonstrates powerfully the need to continue with those articles.

Keep in mind that for about one third of those who have heart attacks, the only "warning" they get is sudden death. And that's not much of a warning. To cryonics it is thus of paramount importance that, if we have atherosclerotic disease in our hearts and/or brains, we learn about it as soon as possible so that we can start making lifestyle changes to reverse the disease, or at the very least have a medical record available to hand to the coroner documenting a prior history of atherosclerotic heart disease and thus decrease the risk that the coroner or medical examiner will conduct an autopsy.

I want to point out, as Steve has, that Jerry's choices were his own. Jerry made several unsuccessful efforts to stop smoking and change his high saturated fat diet, and he had begun a nutrient supplementation program several months before his heart attack. These were unprecedented steps for Jerry (who formerly pooh-poohed taking vitamins), and I believe that had his heart-disease been diagnosed he would have increased his efforts to reverse his disease and go on living. In any event, I know he had some level of concern about these issues, and I believe he would in no way object to being the case in point, if it will help others to avoid an unfavorable suspension.

Also, I think that this particular article is needed because following Jerry's suspension I received several calls from Alcor members asking what they could do to learn their risks of dying the same way — and just as important (or even more so!) how they could *decrease* those risks. This article will be the first of my efforts to address those concerns. Steve Harris has led off with an excellent start.

What happened to Jerry is almost always avoidable. Study after study has demonstrated that for the overwhelming majority of people, atherosclerotic cardiovascular disease (so-called "hardening of the arteries") is both a preventable and a reversible condition *right now*. Further, it has never been easier to do; the proliferation of tasty, fat free foods has made it a nearly painless process. In the coming months I hope to share both the evidence and the brass-tacks means for greatly reducing your risk of sudden death and for

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*Keep in mind that for about one third of those who have heart attacks, the only "warning" they get is sudden death.*

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greatly reducing your risk of ever developing any atherosclerotic disease, including both heart attack and stroke.

Indeed, if there is sufficient interest, Steve and I may even put on a one-day seminar which will include simple, easy to follow guidelines using off-the-shelf products that will greatly cut your risks of sudden death from atherosclerosis. And yes, it is possible to eat enjoyably without really "cooking." So even if you live on Fritos, hamburgers, french fries and cokes, we can show you how to buy the same general kinds of quick foods at the store, including things like ice cream, cupcakes,

chocolate cake, and even *cheese cake* and not die of heart disease. We don't claim that such a diet will be the healthiest possible, but we do claim that it probably won't kill you suddenly and we can even show you how to judiciously use supplements to help make up for the nutritional gaps you may now be experiencing.

But all of this is not the subject of this article. The subject for today is assessing your risks and undergoing diagnostic studies to determine if you need to change your diet and/or take medication. This is important, because as everyone knows, some people eat like pigs, smoke like chimneys, and don't develop atherosclerotic disease. The question is, are you one of them? What's more, a few people who have comparatively low cholesterol levels and who eat well and exercise are still doomed to get atherosclerotic disease through as yet little understood mechanisms relating to insulin metabolism or other still unknown factors.

It is my intention to keep it simple here, and I advise you to do the same. I have seen people with very high total cholesterol try to tell me that this is just fine because they have high levels of high density lipoprotein (HDL), the so-called "good cholesterol" which will protect them from heart disease.

Statistically speaking this is correct, but the correlation isn't as good as you might think. It's not nearly as good as it is with reducing total cholesterol to 150 to 160 mg/dl. A healthy normal total cholesterol is now considered to be 180 – 200 mg/dl. Contrast this with the healthy normal given in my 1984 edition of *Diagnostics* from the *Nurse's Reference Library*, which gives a total cholesterol of 120 to 330 mg/dl as in the normal range! The "real" healthy normal if you want to drop your risk of dying of heart disease down to about 3 per 1000 is in the range of 150 mg/dl to 160 mg/dl. Cholesterol levels of near

200 are only acceptable if a risk of sudden death of 8 to 9 per 1000 is acceptable (these figures are for the males of 35 to 57 year of age).

To understand the impact of total cholesterol on cardiovascular disease, it is only necessary to look to Japan which (along with Iceland) ties for the world record for longest mean lifespan. One reason for this is that Japan has the lowest incidence of heart disease of any country in the world. The Japanese have total cholesterol in the range of 150 to 160 mg/dl.

This is not to say that the issue of HDL cholesterol can be neglected completely. Far from it. HDL levels correlate to cardiovascular disease risk almost as well as total cholesterol levels. However, this a more controversial area and beyond the scope of this article. Steve Harris has agreed to deal with the issue of HDL/LDL and triglyceride levels in more detail later. For now, it is probably worth noting that HDL levels below 30 mg/dl carry with them a very serious risk for heart disease even with a "good" total level of cholesterol of 150 to 160. Thus, anyone with HDL levels lower than 35 should get skilled medical management to reduce his/her risks of atherosclerosis.

Beyond the absolute levels of HDL and LDL cholesterol there is the issue of the ratio between the two. The most desirable ratio is a 1 to 3 ratio: 1 mg of HDL for every 3 mg of total cholesterol. Clearly the more HDL you have relative to total cholesterol the lower your risk. Medicine today considers a ratio of 1 to 5 (HDL to total cholesterol) to be "normal" — and that is because it's *normal* to have a significant risk of dying of heart disease — the leading cause of death in the U.S. today!

So, to recap quickly: you always want your total cholesterol to be below 180 mg/dl, and ideally it should be in the 150 to 160 range. You can find out how good or bad your numbers are by having your doctor run a cholesterol screening panel on you, or save money by going to a low-cost (or sometimes even free) screening clinic offered by a local hospital. (NOTE: don't rely on shopping mall finger prick tests as they are notoriously inaccurate.) If you don't have cholesterol numbers like those listed as desirable above, you need to consider making some changes in diet and lifestyle and, if the problem is serious enough, going on medication under the supervision of a physician to bring your numbers into line. But more on all of that

in subsequent articles.

The point of discussing cholesterol at all is to discuss it as a *risk* and to give you some guidelines on how to use cholesterol readings in conjunction with other risk factors to determine if you need diagnostic procedures to look for heart disease. In Jerry's case, one or more of the relatively inexpensive diagnostic procedures I'm about to describe would have very likely detected his coronary artery disease and possibly saved his life.

Right now the gold standard test for diagnosing coronary artery disease is coronary angiography, wherein an X-ray opaque dye (iodine based) is injected through a catheter threaded into the heart via a major artery in the arm or leg while the heart is examined under X-ray (and X-ray motion pictures are made). The drawback to this technique is that it is too dangerous to use on healthy people (i.e., those in whom no coronary artery disease is suspected). An unfortunate side effect is sometimes sudden death from the dye, and serious complications such as bleeding or injury to a limb can and do occur. Coronary angiography is also complex and costly.

The current standard for non-invasive tests which carry minimal risk is the treadmill EKG exam. The treadmill exam consists of an EKG (cardiogram) taken while the heart is put under the stress of exercise. Diseased coronary arteries don't carry as much blood as they should and that means that the heart tissue being supplied by them becomes ischemic (gets inadequate blood flow). The ischemia results in changes in the electrical signal emitted by the affected area of the heart. *Sometimes*. And that's the problem with stress testing: it only works sometimes. Best case numbers are that stress testing is diagnostic of coronary heart disease about 75% of the time. Some studies report success rates as low as 60%.

What's more, stress testing is known to give false positives telling healthy people they have heart disease when in fact they don't. Another factor to consider is that a stress test will not detect coronary artery disease until the vessel is narrowed to a 70% blockage of flow. In other words, it discloses only relatively advanced atherosclerotic disease where the risks of sudden death are already elevated. Consider that about one third of all sudden cardiovascular deaths result from a comparatively small atherosclerotic plaque rupturing and causing a clot which blocks the vessel.

Since the treadmill EKG test isn't very accurate alone, it is usually done along with another test such as the treadmill EKG/thallium scan or the treadmill EKG/echocardiogram. The thallium EKG stress test is performed by giving a very small amount of radioactive thallium while the heart is made to work (i.e., stressed) by running the patient on a treadmill. Areas of the heart supplied by atherosclerotic vessels will not take up thallium at first and scarred areas as a result of prior "silent" heart attacks won't take up thallium at all.

The stress EKG/echocardiogram is a relative newcomer (thallium scans have been around for over a decade) and is performed by examining the heart under exercise load using ultrasound to check for anatomical abnormalities associated with heart disease such as thickening of the left pumping chamber's wall, calcification of large vessels, valve disease, and motionless areas of the heart wall that indicate scar tissue from prior heart attacks. The problem with an echo is that it generally can only detect advanced heart disease wherein the person has already suffered a lot of damage and has long been at risk for sudden death. Thus it isn't a very good tool for evaluating people who haven't had their *first* (and maybe their last) heart attack yet.

Is there a reliable and practical means of detecting heart disease early on? Yes. Now we get to crux of this article: the Ultrafast CT scanner. Ultrafast CT is a brand new development. It allows for very rapid CT pictures of the beating heart to be made and for the resolution to be good enough to detect tiny calcium deposits in the coronary arteries. These calcium deposits are almost always present, even in very early coronary artery disease.

The reliability of ultrafast CT (UFCT) in diagnosing early coronary artery disease would appear to be in the 80% to 90% range with few or no false positives: if calcium is present in the coronary arteries you can pretty well be certain that you have coronary artery disease.

Currently there are three UFCT machines in Southern California. Two are at the Harbor UCLA medical Center in Torrance and the other is at the Brea Cardiovascular Institute in Brea, California (just a few miles from where Alcor used to be located). The Brea Cardiovascular Institute offers the test to the public (with an MD's prescription) for about \$375.

The next question is, should you have a stress test or UFCT exam? The answer depends on your risks. Age is the biggest



risk. Other criteria are as follows: men 40 or over, women over 50, obese persons over the age of 30, diabetics, hypertensives, male smokers over age 35, and female smokers over age 45. If your cholesterol is 250 mg/dl or above and you are over 30 the answer is also probably yes.

If you fall into one of the categories above, it is definitely worthwhile to have an exam to rule out heart disease. If UFCT isn't available at a facility near you, then you will have to use stress testing and echocardiography.

Regardless of what testing modality is used, you should get tested if you fall into

one of the categories listed above and you are serious about not dying suddenly. If your test results are positive (i.e., indicative of heart disease) you need to get good treatment. Start by notifying us that you have been diagnosed with coronary artery disease and we can refer you to physicians who will give you competent advice to assist in selecting a good *local* doctor to follow your care.

If you are interested in having a UFCT done you may contact the Brea Cardiovascular Institute:

Dr. Harvey Eisenberg  
Brea Cardiovascular Institute

603 South Valencia Avenue  
Brea, California  
Phone: (714) 996-4029

Whatever you do, don't put off testing for too long. More avoidable deaths with long ischemic times are the last thing in the world we need right now. Not only do such patients suffer devastating injury which may not be easy (or even possible) to fully repair, they present truly awful technical challenges to the surgeon/perfusionist. And that's the last thing we need right now. Especially with Jerry gone.

## A Reply for Ralph

Thomas Donaldson

Regarding Ralph Merkle's reply to me in the October 1991 issue of *Cryonics*, I have two points to make:

1) In my mind there is a clear distinction between simulation and (at least the intended goal of) uploading. I presume that those who wish to upload into a computer do not wish to end with a simulated version of themselves, complete with all their old problems. If Ralph or others interested in uploading prefer the simulations because they get some mysterious thrill from becoming silicon, even if it's complete with zits and farts, then I have little to say to them. I believed that the goal was self-improvement. If they want self-improvement, making a silicon simulation means very little.

2) Ralph's second point claims that a simple adjustment in speed will solve the problem of running a program (*You or I*) on a different network. It's important to remember that in our brains not *all* message times are equal to start with; the problem comes because message times won't match, not because they are not equal.

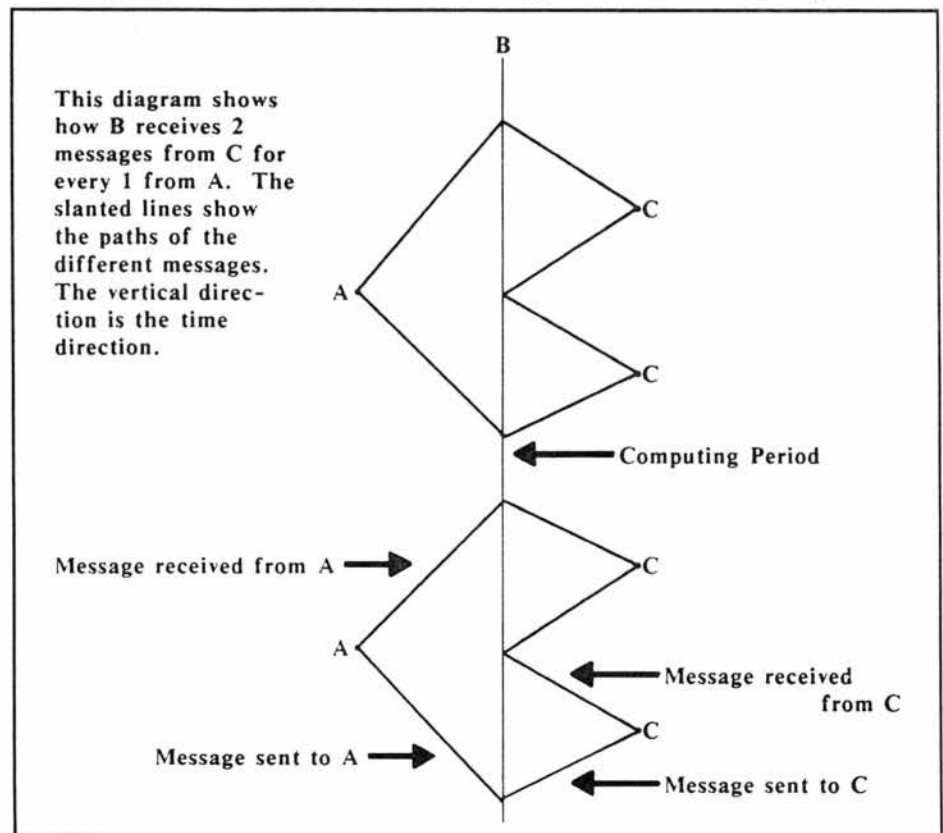
Since he's making a suggestion about how to fix a computing problem, I shall discuss that problem here. If we want to equalize message times *without changing the program*, slowing the processors down to equalize apparent message-passing times *won't work*. The first reason is that

computation and message passing happen concurrently (at least in any well designed parallel program). If the processors are slowed down and the program remains the same, they may not finish required calcula-

tions before the message arrives. (Or putting it differently, the *ratio* of messaging-time/computing-time must be preserved). The second is that the order in which messages arrive at any fixed processor can make a big difference to the combined program running on all three; changing apparent messaging times will change this order.

Here is an example: Suppose we have three processors, A, B, C, with message links as shown in the figure.

(These 3 processors, of course, may be part of a much larger system.) Now suppose that B is set up to gather in 2



replies from C, send a combined result to A, which then replies back to B, and then they all repeat. With messages passing at the rates above, all processors go through their send-reply cycles in synch. Each cycle ends with B receiving the reply from its previous message to A, just exactly when it also gets its *second* reply back from C. If, however, all message times are equal, then B won't be ready to reply to A when A requests its reply. Figure 1 should help explain how this system works.

(Note for *real* computer addicts: an easy way for a change in message timings to cause a big problem in this setup would

be to reuse the very same variable X (i.e., the same memory space) in B for all the messages involved. Suppose B takes A's former result, sends it to C, gets back the first reply from C, computes with it, gets the second reply from C, sends the result to A, then receives A's next reply *using the same variable X*.

If all message times become equal, then A's reply overwrites X too early and the program will not produce a correct sequence. Such use of a single variable for messaging may be forced either by small available memory or large message sizes.)

Of course without detailed knowledge

of brain circuits (currently absent!) I can't say as *fact* whether examples of this sort occur in our brains. The computational point is that the biology of our neurons makes them act very differently from *any* fixed structure, including a switching network. But that's not even my main point. I hope that by now my *main* point, about metamorphosis, has been heard by most readers with an interest in the matter. Perhaps I've also interested a few cryonicists in parallel programming, which has close ties to understanding how our brains may work.

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## Reviews

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### Late for Dinner

Reviewed by Mike Darwin

I went to this movie with very low expectations. Admission was free since I and the others from Alcor who attended with me were the guests of the Cinemapolis (they had invited Carlos to speak briefly on cryonics to the audience before the film, and provided free passes to Alcor personnel and our guests). Perhaps one reason I liked this movie as much as I did was because my starting expectations were so low *and* I didn't have to pay to see it. And of course, Alcor did the technical consultation on this film and even rented (along with Cryovita) to the production company much of the equipment used in the brief cryonics sequences. Yet another reason my expectations were low was that someone whose film criticisms I particularly value who had seen the film described it as a "small movie that was disappointing."

But I don't think these are the reasons I liked it so much. I liked this movie because while it is true that it is *not* a "big" film which deals with big issues in terms of how cryonics is likely to affect the world as a whole, it dealt with issues that are especially important to me. There are no great heroes and nothing of epic proportions happens; cryonics doesn't change the world or save millions of

lives.... And yet this film is, in my opinion, far and away the best movie ever made about cryonics/suspended animation.

Why? Because at its core, this movie is about the same things that cryonics is all

about. It's about the positive power of technology to change people's lives for the better and it's about the power of love and human values to overcome the problems that even good technology invariably



  
CASTLE ROCK  
ENTERTAINMENT  
A Time Warner Company

Late for Dinner

Director W.D. Richter (c) is flanked by his stars, Peter Berg (l) and Bran Wimmer (r), on the Santa Fe set of Castle Rock Entertainment's LATE FOR DINNER.

Photo credit: Lorey Sebastian  
LFD-8

brings with it. What is perhaps most amazing about this movie is that nowhere in it is technology portrayed as evil, bad, or valueless. Yes, technology is shown as potentially troubling and capable of being disorienting and alienating, but it is *ultimately* shown as being capable of drawing people together and of allowing them to live longer, happier lives.

The story is fairly straightforward: a young man (Frank) and his mentally handicapped brother-in-law (Willie) flee the law in Santa Fe, New Mexico to escape a crime they didn't commit. One of them is wounded, the other dying from kidney disease when they happen onto one Dr. Chilblains of the Chilblains Cryonics Society in Pomona, California. Chilblains places them into cryonic suspension without even telling them what he is about to do. Frank and Willie awake in Pomona, California in 1990 and then make their way back to their loved ones who have long given them up for dead. Children have grown up, a wife has grown middle-aged. Time has passed these men by. They are truly strangers in a strange land and everything has changed — so much of the change being things those of us alive today will take for granted: there were no cellular phones in 1962, no personal computers, or black physicians, or ready-tellers, let alone career and working women as the norm! The whole social landscape has changed.

For those of you too young to remember the sixties, I can tell you as one who lived through them that the makers of this film evoked many bittersweet memories for me. More than that, they have touched on a central problem of cryonics which is of deep concern to many in the world at large: the problem of loneliness and alienation, the problem of fear of the unknown and of being time-shifted into an "alien" culture. *Late For Dinner* tackles those issues head-on and deals with them



CASTLE ROCK  
ENTERTAINMENT

## Late for Dinner

Jessica Joy (Marcia Gay Harden), Frank (Peter Berg) and Willie (Brian Wimmer) in an early portrait of the Husband family from director W.D. Richter's touching tale of timeless love, *LATE FOR DINNER*, a Castle Rock Entertainment production. Photo credit: Lorey Sebastian

in a positive, upbeat way.

Some have said that "cryonics is just used as a tool in this film to move people from point A to point B." I agree. There is little focus on heart-lung machines or emergency room drama, or confrontations with hospital staff. Cryonics is used just as a tool to explore the durability of love and the power of advancing technology to save lives that would formerly have been lost. But then, after all, cryonics is just a tool to achieve those things and properly shouldn't be the focus of the lives of most of those who use it, anymore than antiseptics is. So, in that sense this is a small film.

And in just that sense it is also a gigantic one. For even I, a professional cryonicist, swept away by the technology and in love with it, even I know that in reality what cryonics is *really* all about is love and life. Perhaps there is little big

"drama" in the kiss of a married couple or the smile on a young man's face when he realizes he isn't going to die after all because of kidney transplants. But that is *exactly* what cryonics is all about and it is *exactly* what I want out of it.

For this reason I am very thankful for this film. Yes, it is sweet, and "small," and sentimental. But then, so is the *best* of life. As one who's lived through plenty of "drama" in his day, if I was forced to choose between the two, the choice would be an easy one.

If *Late For Dinner* plants the seed in just a few of those who saw it that cryonics need not be big, and bold, and scary, but rather small and intimate and loving, then it will have done everyone, cryonicists and noncryonicists alike, a very big favor.

## The Neurobiology of Memory

by Y. Dudai, Oxford U. Press 1989

Book Review by Thomas Donaldson

Up until now the recent tremendous burst of experiment and theory about the neural and biochemical events involved in

memory has lacked any fair and full account in book form. Certainly we could get ideas of what was going on from in-

dividual review articles or symposia, but these have always dealt with only a fragment of the field. Yadin Dudai has now



produced the full account we have wanted.

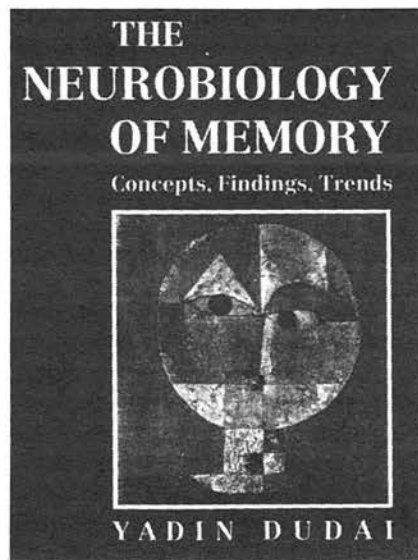
Since the story of memory remains incomplete, Dudai's book (unless he constantly revises it, not at all out of the question!) will eventually become outmoded. Its value lies in the fact that it provides a very full account of essentially *all* the work done up to this time on memory, its generation, its persistence, and its nature. Any cryonicist involved in actively thinking about recovery of memory after cryonic suspension must now take account of Dudai's book. It is literally crammed with information about every stage of the memory process, with a 54-page bibliography and a shorter 3-page list of suggested reading, all of it entirely devoted to the problems and issues involved in memory.

Since the book contains so much information I find it hard to summarize simply in a short book review. It contains full accounts of the work of Kandel and others on the sea snail *Aplysia*. It has full accounts of David Alkon's work on *Hermissenda* (although Alkon's work is very important, he hasn't cut out for himself such a public figure as Kandel). It discusses LTP in brain slices, again in detail, all with references. Nor does it neglect earlier work on protein synthesis during learning, of which it gives equally full accounts. The amount of information he provides for these three fields alone answers many questions someone might have about what possibilities have and haven't been checked out thoroughly by experiments.

But of course that's only a beginning. Dudai also discusses imprinting and what's now known about its mechanisms, visual memory (which has been studied closely as a subset of the study of visual processing), the brain processes involved with song in canaries, finches, and other animals, including of course the discovery by Nottebohm and others of the fact that these birds actually grow new neurons each season, and references to all the related work showing that adult rats, too, will grow new neurons (awfully close to human beings!). And what about neural nets? Yes, they are also covered, though from a biological perspective rather than a computational one (Dudai points out how very suggestive computational neural nets are, but also that real nerve cells respond with far more complexity than any standard net element, and their connections to one another are far more complex, too). Toward the end, we have a long chapter devoted to the studies of various kinds of amnesia and what they may tell us about

memory.

Along the way Dudai points out several changes to our thinking about memory, all of which I think any student of memory would have suspected by this time. First, the distinction between "short-term" memory and "long-term" memory has gradually faded away: what we have instead is a cascade of processes going on for days. Each has its own biochemical changes, and interrupting each



one will cause a loss of memory (all of this isn't just stated, but described in detail, with references). There is also a quite precise discussion of just how and where memory is distributed and how and where it is localized, including what we know about the cascade of memory stages described above.

Here is another issue looming into view (not really settled as yet) — that is, just what processes are globally involved in producing a memory? Some neuroscientists (cf. G. Edelman) think that memory arises by a kind of Darwinian selection between different possible connectivities of many relevant neurons. Abstractly, this means that we already have "pre-representations" for what we learn, one of which is modified and strengthened when we actually learn something.

One major and simple reason why such a theory of memory might be attractive is that our brain (and so our nerve cells) never responds passively to information. It simply is not a blank slate on which our learning writes. However, the other possibility is that learning actually creates the representation itself in our nerve cells; taking its side, Dudai points out that other than in songbirds (perhaps a special case), we lack real experimental

evidence for such learning. And when it happens in songbirds, old neurons are actually destroyed and new ones provided.

As a cryonicist, I was particularly interested in Dudai's account of what we know about the persistence of memory. For cryonicists this issue is very central: we simply are *not* fixed computers, with our memory parts (whatever they may be) remaining passively in the latest state they have been put. Nerve cells are dynamic just like other cells, with some of their chemistry lasting only a very short time. Although this issue really isn't settled, it still goes much further than LTP and synaptic changes (why, then, should those changes *persist* rather than disappear over time?). This issue is overwhelmingly important for us. Sure, we'd happily lose a day of memories. But what can be done, and how can we be sure of recovering all or most of our memories? To do this we must understand not the transient changes of memory, but the persistent ones and how and why they are persistent.

Dudai devotes an entire chapter to this issue (Chapter 8: "On the lifespan of molecules and memories"). He describes the two broad theories for this persistence which have been suggested.

First, neuron memory may persist by a regenerative molecular cascade. How does that work? Crick has given one model, a system of 2 bound copies of one molecule combined with a special enzyme. The first molecule can exist in two states, + or -. When first made, the molecule comes out in state -. Formation of a memory turns all the bound pairs into ++. Each member of the pair is destroyed and regenerated independently; but the special enzyme will not act on a — pair at all. What it does is to turn every +- or -+ pair into a ++ pair. This means that if a memory has formed, it will persist even if the molecules forming it are constantly replaced. (It must be said that such a mechanism hasn't yet been discovered in memory.)

The second possibility is that new genes are activated as the end point of memory formation (that is, after all the cascading reactions are done). This would tie in memory and learning with the very same processes involved in growth and development. Fragmentary evidence for such a theory already exists. It consists of observations that special genes already known to be involved in growth and development are also activated at the end of memory processes; the discussion in Chapter 8 goes into detail about these, again

with references. Dudai feels that this theory has a problem, which is that changes to the genes will cause changes throughout the cell. (I don't think this need be a problem: we need not have only *one* gene controlling connectivity to *all* other neurons!).

But there are other possibilities in this theory too: perhaps the genes are in mitochondria lying close to the synapse. Or perhaps they cause the generation of another chemical, which *is* persistent, to be laid down *outside* the cell in the neighborhood of the synapse. Brain development actually involves such a system, with special chemicals laid down in some locations (the NCAMs, ependymins, etc.); their effect is first to attract, and then to bind,

dendrites or axons to them. Dudai discusses all this work very carefully; it's clear that as of now (1991) this theory has a lot of support but no really definitive proof.

These chemicals would not alone constitute memory. What they would do is cause the persistence of newly grown connections, or changes to existing connections; these connections, when looked at globally, would form the memories we know. Their relevance to cryonic repair is immediate: it would be of very great interest indeed if we found a system which told us, *independently* of the existence of a connection between two neurons, that such a connection ought to be there. Their relevance would become even greater if they acted to attract the dendrites: this

could easily mean that a properly prepared neuron (we might have to tweak some of the developmental switches as part of repair) could recover its *own* connectivity.

However, I do want to emphasize that this is currently only a possibility, not at all something on which we should base any plans. But regardless, in order to repair broken connections, any independent signs of their existence would help immensely. That is exactly the kind of information such a mechanism of memory persistence would imply. Any study of repair needs close attention to cryobiology, too. But the other hand we need is an understanding of memory itself; that is what Dudai provides here, as far as current knowledge allows it.

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## Recent Abstracts of Interest

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Fahn S

### **An open trial of high-dosage antioxidants in early Parkinson's disease.**

*Am J Clin Nutr* 1991 Jan;53(1 Suppl):380S-382S

High dosages of tocopherol and ascorbate were administered to patients with early Parkinson's disease as a preliminary open-labeled trial for the eventual controlled double-blind study evaluating antioxidants as a test of the endogenous toxin hypothesis of the etiology of Parkinson's disease. The primary endpoint of the trial was the need to treat patients with levodopa. The time when levodopa became necessary in the treated patients was compared with another group of patients followed elsewhere and not taking antioxidants. The time when levodopa became necessary was extended by 2.5 y in the group taking antioxidants. The results of this pilot study suggest that the progression of Parkinson's disease may be slowed by the administration of these antioxidants. A large multicenter, controlled clinical trial currently underway in North America evaluating tocopherol and deprenyl has the potential to confirm these results.

Robertson JM Donner AP Trevithick JR

### **A possible role for vitamins C and E in cataract prevention.**

*Am J Clin Nutr* 1991 Jan;53(1 Suppl):346S-351S

Biochemical evidence suggests that oxidative stress caused by accumulation of free radicals is involved in the pathogenesis of senile cataracts. If so, appropriate amounts of the antioxidant vitamins C and E might be expected to prevent or retard the process. Such activity has been observed in several *in vitro* and *in vivo* studies of experimentally-induced cataracts. A recent epidemiologic study found that cataract patients tended to have lower serum levels of vitamins C, E, or carotenoids than did control subjects.

The present investigation, which compared the self-reported consumption of supplementary vitamins by 175 cataract patients with that of 175 individually matched, cataract-free subjects, revealed that the latter group used significantly more supplementary vitamins C and E ( $P = 0.01$  and  $0.004$ , respectively). Because the results suggested a reduction in the risk of cataracts of at least 50%, a randomized, controlled trial of vitamin supplementation in cataract prevention may be warranted.

Block G

### **Vitamin C and cancer prevention: the epidemiologic evidence.**

*Am J Clin Nutr* 1991 Jan;53(1 Suppl):270S-282S

Epidemiologic evidence of a protective effect of vitamin C for non-hormone-dependent cancers is strong. Of the 46 such studies in which a dietary vitamin C index was calculated, 33 found statistically significant protection, with high intake conferring approximately a twofold protective effect compared with low intake. Of 29 additional studies that assessed fruit intake, 21 found significant protection. For cancers of the esophagus, larynx, oral cavity, and pancreas, evidence for a protective effect of vitamin C or some component in fruit is strong and consistent. For cancers of the stomach, rectum, breast, and cervix there is also strong evidence. Several recent lung cancer studies found significant protective effects of vitamin C or of foods that are better sources of vitamin C than of beta-carotene. It is likely that ascorbic acid, carotenoids, and other factors in fruits and vegetables act jointly. Increased consumption of fruits and vegetables in general should be encouraged.

Stahelin HB Gey KF Eichholzer M Ludin E

### **Beta-carotene and cancer prevention: the Basel Study.**

*Am J Clin Nutr* 1991 Jan;53(1 Suppl):265S-269S

In 1971-1973 at the third examination of the Basel Study started in 1959, the major antioxidant vitamins and carotene were measured in the plasma of 2974 men. A subsample and their families were reinvestigated in 1977-79. During the 12-y observation period (1973-85) 553 men died, 204 of cancer (lung cancer 68, stomach cancer 20; colon cancer 17, all other malignancies 99). We found significantly lower mean carotene levels for all cancer, bronchus cancer, and stomach cancer (all  $P$  less than 0.01) compared with the 2421 survivors. The relative risk of subjects with low carotene (less than 0.23  $\mu\text{mol/L}$ ) was significantly elevated ( $P$  less than 0.05) for lung cancer (Cox's model). Higher risks were noted for all cancer ( $P$  less than 0.01) if both carotene and retinol were low. Low plasma carotene which is known to reflect carotene intake is in our study associated with increased cancer risk.

Cross RJ Campbell JL Markesbery WR Roszman TL

### **Transplantation of pituitary grafts fail to restore immune function and to reconstitute the thymus glands of aged mice.**

*Mech Ageing Dev* 1990 Oct;56(1):11-22

There is evidence to indicate that the neuroendocrine and immune systems can interact. Thus, neuroendocrine hormones can modulate a variety of immune functions and there have been attempts to manipulate the neuroendocrine system of aged animals to enhance immune function. We have previously shown that the transplantation of a syngeneic pituitary gland under the kidney capsule of young adult mice elevates serum prolactin and enhances immune responsiveness. In the present study pituitary glands were transplanted under the kidney capsule of 22-month-old mice to determine if this maneuver can enhance a number of immuno-



logic parameters. The results demonstrate that aged animals bearing transplanted pituitary grafts for 10 days did not exhibit any enhancement in their primary antibody response to sheep red blood cells, splenic T or B-cell mitogen responsiveness or restoration of thymic architecture. When these immunologic assessments are performed on animals bearing pituitary grafts for 28 days, the IgM and IgG primary antibody responses and splenic T-cell responsiveness are enhanced but repopulation of the thymus still does not occur. Importantly, this enhancement does not restore immunocompetence to levels observed in young mice.

Hazzard WR Applebaum-Bowden D  
**Why women live longer than men: the biologic mechanism of the sex differential in longevity.**

*Trans Am Clin Climatol Assoc* 1989;101:168-88; discussion 188-9

1. Exogenous sex steroids appear to influence lipoproteins in a manner that is a caricature of the effects of endogenous sex steroids: Estrogens raise HDL (selectively HDL2) and lower LDL; Androgens lower HDL (selectively HDL2), while raising LDL. 2. Exogenous sex steroids are likely to affect LDL metabolism via effects on the LDL receptor; Estrogens increase LDL receptor activity (in non-human species at

both the hepatic cellular and mRNA levels, though this is yet to be confirmed in humans); ??Androgens decrease LDL receptor activity (yet to be tested in either human or non-human species). 3. Exogenous sex steroids appear to alter HDL levels predominantly via modulation of HDL catabolism; Estrogens retard HDL catabolism (33) (and may also increase apo A-I synthesis and HDL production); Androgens accelerate HDL catabolism (30). 4. Modulation of HDL (and possibly LDL) metabolism by sex steroids may be mediated by alterations in hepatic triglyceride lipase (HTGL) activity.

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## Alcor News

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### False Arrest Lawsuit Settled

by Carlos Mondragón

Plaintiffs in the litigation known as Pizer et al v. County of Riverside et al agreed with the county on a final settlement of the suit. The terms of the settlement included a \$90,000 cash payment and the return of some personal property which had still been in the possession of the county.

This lawsuit was filed in the early days of Alcor's fight with former Riverside County Coroner Ray Carrillo. On January 7th, 1988 Carrillo's deputies executed a search warrant at Alcor's Riverside facility looking to confiscate and then autopsy neuropatient Dora Kent. When it became clear to them that they had been foiled, they arrested every Alcor person in sight. Michael Federowicz, Hugh Hixon, Arthur McCombs, Carlos Mondragon, Michael Perry, and David Pizer were handcuffed and "taken downtown for booking."

We were all released within a few hours. Michael Federowicz was the only one to have suffered physical injury: he got a nitrogen burn on his foot when coroner's deputies forced him to open a dewar and move neurocans so that they could be photographed.

Christopher Ashworth represented the plaintiffs in this case on a contingency basis.

### New Director

At the October 6, 1991 meeting of the Alcor Board of Directors, Alcor Membership Administrator and Magazine Editor Ralph Whelan was voted onto the Board of Directors.

### New Patient Alarm System

Recently we purchased the first half of what is to be a greatly overhauled new alarm system for the patient dewars. Advances in computer and thermocouple technology now make it possible for us to economically directly monitor the temperature inside the patient storage dewars. In the past, we have relied on indirect methods such as gas-filled copper capillary tubes coupled to microswitches (when the tube is out of liquid nitrogen the gas inside the tube boils and flips a switch). The new system uses a scanning thermocouple meter which "looks" at each dewar's temperature at two points inside the vessel every 2.5 seconds. This temperature data can be printed out at intervals or dumped to computer for storage on diskette or hard-drive. The system also features alarm capability; it can trigger both a deafening local alarm and a dialer which calls outside.

Next we hope to update our dialer; there have been amazing technological advances on this front since we purchased our first one nearly a decade ago. Now there are smart dialers that won't take "no" for an answer and which require a unique identification code to be entered before they will temporarily abort trying to reach someone. If no one comes in and corrects the alarm situation within a short, fixed period of time, the dialer goes into action again. Isn't technology wonderful?

### Foreign Aid from Canada

We at Alcor regularly get calls or messages from members or other interested parties asking if they can "help"

and/or hang around the facility awhile to get the feel of what is going on. For the most part nothing comes of this once they realize just how tedious, time consuming, and downright boring most of the day-to-day work is (no matter how necessary it may be). Occasionally, however, someone shows up who is not only energetic and imaginative (Alcor members tend to be like that), but is prepared to take the time to really understand what we are all about and then jump in and get his hands dirty. Such a person is Paul Wakfer, one of our Canadian members, who spent almost the entire month of October with us.

Paul is one of those people who likes to learn everything he can about a subject before committing himself to a course of action, but once he does commit himself there is no turning back. His background is in mathematics and systems analysis, at which he has been highly successful. His time here was largely spent in helping to upgrade our computer system, both hardware and software in all areas, administrative, patient care, and research. In addition, he spent a lot of time doing training, helping in strategic planning, assisting in research, making financial contributions, taking out the trash, and generally making himself useful.

For relaxation (after a twelve hour day), he would hit one of the local college hangouts and rock and roll with the best of them. Not bad for a 50+ man! Not content after this whirlwind of activity, he has taken back with him a series of special projects for Alcor just to keep himself busy on those long cold Canadian winter nights. Volunteers like this are always welcome. The more the better!

Many thanks Paul. We all hope to see you again soon.

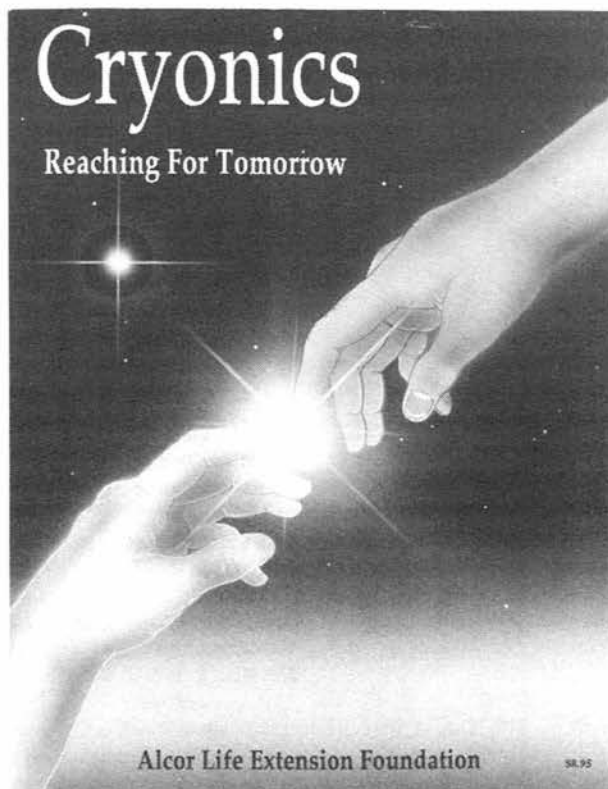


## Cryonics Is. . .

Low-temperature preservation of terminal patients when medicine is unable to heal them. This treatment is called *cryonic suspension*. The goal of cryonic suspension is the transport of today's terminal patients to a time in the future when cell/tissue repair technology is available, and restoration to youth and health is possible — a time when freezing damage is a fully reversible injury and cures exist for virtually all of today's diseases, including aging.

It is our belief that if human knowledge and medical technology continues to expand in capability, people with conditions that would cause them to (incorrectly) be considered dead by today's medicine will be routinely restored to life and health. This coming control over living systems should allow us to fabricate new organisms and sub-cell-sized devices for repair and resuscitation of patients who will have been waiting in cryonic suspension.

There is already substantial scientific evidence available that current suspension techniques are preserving memory and personality — and that the repair and resuscitation technologies we envision will be developed within the next 50 to 150 years.



Non-members may call toll-free (800) 367-2228 or write (see reverse for address) and receive the book, *Cryonics - Reaching for Tomorrow* for free (regular retail price: \$8.95, member price: \$5.00.)

## Alcor Is. . .

The Alcor Life Extension Foundation: a non-profit tax-exempt scientific and educational organization. Alcor currently has 17 members in cryonic suspension, hundreds of Suspension Members — people who have arrangements to be suspended — and hundreds more in the process of becoming Suspension Members. Our Emergency Response capability includes equipment and trained technicians in New York, Canada, Indiana, and Northern California, with a cool-down and perfusion facility in Florida and the United Kingdom.

The Alcor facility, located in Southern California, includes a full-time staff with employees present 24 hours a day. The facility also has a fully equipped and operational research laboratory, an ambulance for local response, an operating room and the world's largest and most technically advanced cryogenic patient storage facility.

All Alcor Directors and Officers are required to be full suspension members.

Call toll-free (800) 367-2228 or write (see reverse for address) for the free book, *Cryonics: Reaching for Tomorrow*.

### Table of Charges and Dues

Sign-Up Package: \$300 first member of household, \$150 each additional member.

Whole Body Suspension Minimum: \$120,000

Neurosuspension Minimum: \$41,000

Outside U.S. Surcharge: \$10,000

Annual Adult Dues: \$252.00

Additional Adult Family Member Annual Dues: \$126.00

Additional Family Member Child's Dues (under 15 years of age): \$63.00

Adult Student Annual Dues (must be full time student): \$126.00



You can tour the Alcor facility in Riverside, California under the expert guidance of the Alcor staff. The facility is open to small groups (15 people or less) who wish to learn how terminal patients are placed into suspension and how they are cared for at -320°F.

The Alcor tour also features a discussion of the scientific evidence that patients in cryonic suspension have a realistic chance of being restored to life, health, and youthful vigor as well as a fascinating exploration of the advances likely to come in the 21st century and beyond. The tour provides an invaluable opportunity for you to have your questions about cryonics and the prospect of an extended human lifespan answered.

The Alcor tour is free of charge. If you'd like to make arrangements, call (800) 367-2228.

Yes, I want to make cryonic suspension arrangements with Alcor. Please send me \_\_\_\_\_ Sign-Up Package(s).

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone \_\_\_\_\_

I understand that an Alcor Sign-Up Coordinator will contact me at the above number.

First household member: \$300.  
Additional members: \$150 each.

Payment enclosed (check or money order).  Bill me.

# Order Form

NOTE: All prices include postage and handling and are in U.S. dollars. Minimum order \$5.00. Overseas orders must be paid for with U.S. dollars by Traveler's Cheques or International Money Order. All orders are subject to availability and all prices are subject to change.

## Cryonics Magazine

### Subscriptions:

- United States: \$35.00/year  
 Canada and Mexico: \$40.00/year  
 Outside North America: \$45.00/year

### Cryonics back issues:

U.S., Canada and Mexico: \$2.50 each. Issues: \_\_\_\_\_  
 Outside North America: \$3.50 each. Issues: \_\_\_\_\_

## Membership

- Alcor Suspension Membership Packet \$300.00

## Books

Cryonics - Reaching For Tomorrow	\$5.00	_____
Engines of Creation	\$10.95	_____
The Prospect of Immortality	\$11.00	_____
Man Into Superman	\$14.00	_____
Great Mambo Chicken & the Transhuman Condition	\$18.95	_____
The 120-Year Diet	\$5.95	_____
The Tomorrow Makers	\$18.95	_____
Immortality, Scientifically, Now	\$11.95	_____

## Brochures

Alcor Life Extension Foundation	\$0.75	_____
Why Cryonics Can Work	\$0.25	_____

## Articles and Reprints

Why We Are Cryonicists	Free	_____
Alcor: The Origin of Our Name	Free	_____
Technical Case Report: Neurosuspension of Alcor Patient	\$3.00	_____
The Journey Begins: Alcor Member Enters Biostasis	\$2.00	_____
The Scientific Validity of Cryonic Suspension: A Bibliography	\$3.00	_____
Long-Time Alcor Member Enters Biostasis	\$2.00	_____
The Cryobiological Case For Cryonics	\$2.00	_____
Mathematical Analysis of Recirculating Perfusion Systems, With Application to Cryonic Suspension	\$2.50	_____
Declarations by Scientists in Support of Kent vs. Carrillo	\$20.00	_____
Case Report: Two Consecutive Suspensions	\$3.00	_____
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The Cephalarium Vault: A New System of Protection For Alcor Neuropatients	\$1.25	_____
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Her Blue Eyes Will Sparkle	\$1.00	_____
Cryonics and Space	\$0.50	_____
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Many Are Cold But Few Are Frozen: A Humanist Looks at Cryonics	\$2.00	_____
A Stunning Legal Victory	\$2.00	_____
What You Can Do	\$9.00	_____
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Slide Presentation:		
Suspension Members	\$200.	_____
All Others	\$350.	_____

## Gift Items

Alcor T-Shirt, Size: _____	\$12.00	_____
Alcor Sweatshirt, Size: _____	\$17.00	_____
Alcor Mug	\$6.00	_____
Alcor Patch	\$5.00	_____
Alcor Bumper Sticker	\$2.00	_____
Lapel Pin	\$5.00	_____
Tie Clasp	\$5.00	_____
Hat Pin/Broach/Stick Pin	\$5.00	_____

Total \_\_\_\_\_

The literature above can be ordered by using this form, or by telephone with Mastercard or Visa by calling Alcor: 1-800-367-2228 (toll free).

Name \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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Visa/Mastercard#: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Please pay by check, money order, or credit card.

ALCOR, 12327 Doherty Street, Riverside, CA 92503

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## Advertisements And Personals

The Alcor Life Extension Foundation and Cryonics reserve the right to accept, reject, or edit ads at our own discretion and assume no responsibility for their content or the consequences of answering these advertisements. The rate is \$8.00 per line per month (lines are approximately 66 columns wide). Tip-in rates per sheet are \$90 (already printed and folded); or \$180 (printed one side) or \$270 (printed both sides), from camera-ready copy. Tip-in ads must be clearly identified as such.

MARY NAPLES, CLU and BOB GILMORE – CRYONICS INSURANCE SPECIALISTS. New York Life Insurance Company; 4600 Bohannon Drive, Suite 100; Menlo Park, CA 94025. (800) 621-6677.

**EXTROPY: The Journal of Transhumanist Thought, #7.** Memetics and cryonics, privately produced law, spontaneous orders (markets, agoristic computing, hypertext) neurocomputation, neologisms, transhumanism, reviews of *Smart Drugs*, and more. \$4 from Max More; P.O. Box 77243, Los Angeles, CA 90007-0243.

## Meeting Schedules

Alcor business meetings are usually held on the first Sunday of the month. Guests are welcome. Unless otherwise noted, meetings start at 1 PM. For meeting directions, or if you get lost, call Alcor at (714) 736-1703 and page the technician on call.

The **SUN, DECEMBER 1** meeting is the Annual Turkey Roast, at the home of:  
Saul Kent and Jo Ann Martin  
16280 Whispering Spur  
Riverside, CA

**Directions:** Take the Riverside Freeway (Hwy 91) east to Riverside and get off going south (right) on Van Buren Blvd. Whispering Spur is south of the freeway four miles, and 1.0 miles beyond Mockingbird Canyon Rd., on the left. 16280 is the second house on the right, at the end of the white fence.

The **SUN, JANUARY 5** meeting will be at the home of:  
Allen J. Lopp  
13354 Veracruz St.  
Cerritos, CA

**Directions:** Take the Artesia Freeway (State 91) to Cerritos [between the San Gabriel Freeway (I-605) and the Santa Ana Freeway (I-5)], and get off at Carmenita Road going north. Veracruz is the third street on the left after 183rd St. 13354 is on the southwest corner of Carmenita and Veracruz. You may park on Veracruz or in the lot of the Thrifty Drugstore on the opposite side of Carmenita.

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There is an Alcor chapter in the **San Francisco Bay area**. Its members are aggressively pursuing an improved rescue and suspension capability in that area. Meetings are generally held on the second Sunday of the month, at 4 PM, followed by a potluck. Meeting locations can be obtained by calling the chapter's secretary, Carol Shaw, at (408) 730-5224.

The **SUN, DECEMBER 8** meeting will be held at the home of:  
Roger Gregory and Naomi Reynolds  
2040 Columbia St.  
Palo Alto, CA  
Tel: (415) 493-7582

**Directions:** Take the 280 north to Page Mill Road, and take Page Mill east toward Stanford. Go down to the bottom of the hill to Hoover St. (5th light). Turn left on Hoover to California St. and make another left. Go two

blocks to Columbia and turn right. The house is in the second block, on the left.

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There are two Alcor discussion groups in the **Greater New York area**. Details may be obtained by calling either Gerard Arthus, at (516) 474-2949, or Curtis Henderson, at (516) 589-4256.

The **Alcor New York Group** meets on the the third **Sunday** of each month at 2:30 PM, at **72nd Street Studios**. The address is 131 West 72nd Street (New York), between Columbus and Broadway. Ask for the Alcor group. Subway stop: 72nd Street, on the 1, 2, or 3 trains.

Meeting dates: **Dec. 15, Jan. 19, Feb. 16, Mar. 15.**

The **Long Island Cryonics Discussion Group of Alcor** meets on the first Saturday of every month, at 2:30 PM, at the home of Gerry Arthus. The address is: 17 Mystic Way, Stony Brook, L.I., telephone (516) 689-6160. **Note that this is a new address.**

Meeting dates: **Dec. 1, Jan. 5, Feb. 2, Mar. 1.**

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There is a cryonics discussion group in the **Boston area** meeting every second Sunday at 3:00 PM. Information may be obtained by contacting Eric Klien at (508) 663-5480 (work) or (508) 670-5235 (home). There will be a meeting August 11 at 3 PM at the home of Eric Klien; 28 Kenmar Dr., #272; Billerica, MA 01821. Take the 3 north to the Concord exit, and go right toward Billerica. The fifth street on the right is Kenmar. Go to the driveway one short of the end of Kenmar and turn left. Go to Building 28 (last building).

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The **Houston area** has a discussion group on cryonics, life extension, and the high/low diet. Meetings are typically held the second Saturday of every month. For more information call Ravin Jain at 713-797-1076 or Rupert Hazle at 713-480-3309. Correspondence may be addressed to Rupert Hazle at 15107 McConn, Webster, TX 77598.

## Other Events of Interest

**Alcor's 20th Anniversary and the 25th Anniversary of the Freezing of the First Man**

A banquet will be held on Saturday evening, April 4th, 1992 at the Marriott Hotel, 2200 E. Holt, Ontario, California to celebrate the 20th anniversary of the Alcor Life Extension Foundation and the 25th anniversary of the freezing of the first man, Dr. James Bedford.

The evening will include good food, conversation with fellow cryonicists, and excellent speakers talking about cryonics then and now.

**COST:** \$40 before February 15, 1992, \$50 thereafter. Payment and reservation must be received no later than March 26, 1992.

Please make checks payable to Alcor Foundation, 12327 Doherty St., Riverside, CA 92503, or call 1-800-367-2228 to use your MasterCard or Visa.

**NOTE:** A group rate on hotel accommodations will be offered to Alcor guests by the Marriott Hotel.

Sunday, April 5th, 1992, those who wish to can attend the monthly Alcor Business Meeting, to be held at the home of Saul Kent. Alcor will also be conducting tours of the Alcor facility.



ALCOR LIFE EXTENSION FOUNDATION  
12327 Doherty Street  
Riverside, CA 92503

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**For information on cryonics call Alcor:  
1-800-367-2228 (toll-free, non-members only) or 1-714-736-1703 (members).**