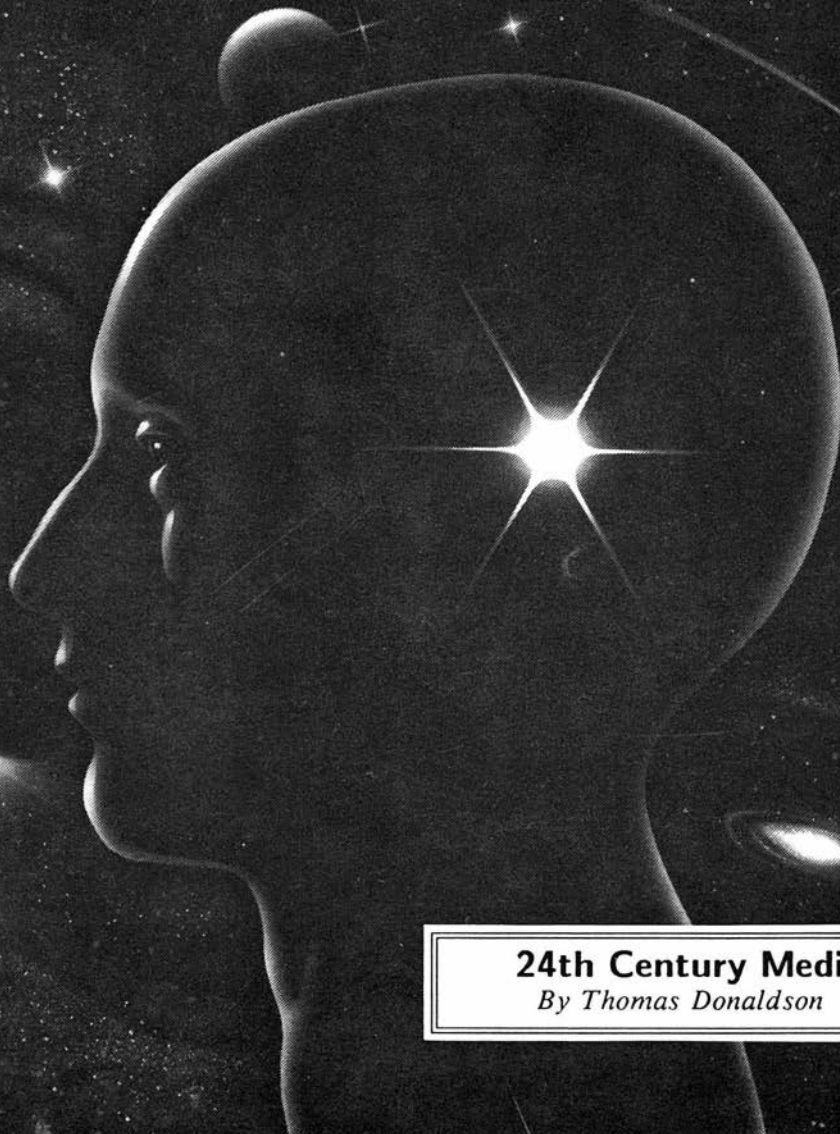


# Cryonics

Volume 9(12) December, 1988

- Legal Action Updates
- Remote Standby & Predicting Mortality Risk
- Harris on "The Mythic Hero"
- ... and more!



**24th Century Medicine**

*By Thomas Donaldson*

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## EDITORIAL MATTERS

### Errata

The mystery woman whose picture appeared on the cover of last month's *Cryonics* is "Alice Black": First Life Cycle, September 9, 1910 to October 7, 1988, and whose suspension is reported beginning on page 15 of that issue.

The separate line at the bottom of page 15 that says "At the request of the participants, 'Alice Black', 'Jim Black', and 'Carol Black' are pseudonyms." and looks like a footnote *is* a footnote.

We regret any confusion.

## DONALDSON ON FUTURE MEDICINE

In the February and March issues of *Cryonics* we brought you an in-depth, speculative look at the future of medicine over the next 20 years. This month, Thomas Donaldson takes a look at the long view in "24th Century Medicine." This article originally appeared in the September issue of *Analog* science fiction magazine and is reprinted here with the permission of Thomas Donaldson and Davis publications.

## THE GIFT OF A LIFETIME

We are offering introductory gift subscriptions again, at \$10 each, or 1/2 the regular subscription price. The recipient cannot previously have been on our mailing list as either a subscriber to *Cryonics* or as a member of Alcor. This offer applies only in the U.S., due to the much higher price of non-domestic mailings. We are actually taking a loss on the gift subscriptions at this rate, but we consider that finding new cryonicists is well worth it. If you have a friend or acquaintance who has expressed any interest in cryonics, a gift subscription to *Cryonics* may well be the gift of a lifetime.



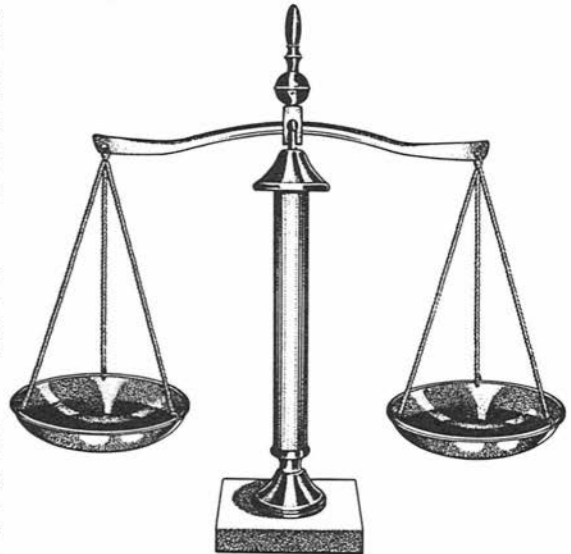
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## DORA KENT CASE UPDATE

By the time you read this, three Alcor Suspension Team members who were present during the cryonic suspension of Dora Kent will probably have been questioned before the Riverside County Grand Jury. The District Attorney's office recently subpoenaed most of the Suspension Team members who were present during Mrs. Kent's suspension to appear before the Grand Jury. Under advice of counsel, all invoked their 5th Amendment rights and declined to answer questions. As was expected, the D.A. granted immunity to three of the twelve people and can thus compel them to testify (or risk indefinite incarceration for contempt of court charges). Giving of immunity in this situation is designed to strip away the 5th Amendment protection normally accorded people in the hopes that those compelled to testify will incriminate others on the Suspension Team. What was unexpected was that the immunity was not complete immunity (so-called "transactional immunity"), but rather, "use immunity" which still leave open the possibility of prosecution for team members testifying.

The use of use immunity in such a case is highly controversial and it remains to be seen whether: a) the court will grant it, and; b) it stands up to judiciary review if it is granted.

We have been told that the Grand Jury will *not* be making a decision to proceed with criminal charges. Instead, the District Attorney will make that determination. The Grand Jury is being used only as a discovery tool to question Team memb-



ers about the suspension of Dora Kent.

What the outcome of all this will be is impossible to say. As our attorney has pointed out, a major objective of Deputy D.A. Curtis Hinman (who is in charge of the Kent case) is to "redefine" what constitutes homicide. Hinman has repeatedly commented to the media that "resuscitating" a no-code patient and then freezing him or her is, in his opinion, murder. Whether Mr. Hinman will be able to persuade others in the D.A.'s office of this novel interpretation of the law is an open question. We can only wait and see.

The bottom line is that three additional attorneys have had to be retained (to represent each team member granted "immunity") at a considerable additional expense.

On another front, the Riverside County Coroner has settled with Saul Kent in Saul's suit against the Coroner's office. In exchange for Saul dropping his demand for reimbursement of legal expenses amounting to \$25,600, the Coroner agreed to halt the search for Dora Kent's head and agreed not to disturb the other Alcor patients in suspension. In essence, the settlement makes *permanent* the Preliminary Restraining Order granted on February 1, 1988. We reproduce the article which appeared in the December 1, 1988 Riverside *Press Enterprise* below.

\* \* \*

## Coroner drops demand for Dora Kent's head

By RONNIE D. SMITH  
The Press-Enterprise

The Riverside County coroner's office has dropped its demand for the head of Dora Kent.

The death of the 83-year-old Riverside woman a year ago prompted a criminal investigation after the woman's son had her head frozen in hopes of someday bringing her to life.

The son, Saul Kent of Riverside, later sued Coroner Raymond L. Carrillo in Riverside Superior Court to bar him from seizing, thawing and performing an autopsy on the head. Thawing the head, he said, would kill hopes of reviving the head and putting it on a new body.

Kent, 49, a longtime advocate of the fledgling science of cryonic suspension of dead people, said his mother wanted to be frozen after her death. Cryonicists say people who are put in subzero storage shortly after death might be revived someday when science finds a way to do it. Most scientists call cryonics fantasy.

In a settlement of Kent's suit against the coroner Nov. 10, the coroner agreed to abandon his demand that the head be produced for an autopsy. In exchange, Saul Kent gave up his fight to get the county to pay his \$25,600 in attorneys fees and dropped the suit.

Now that the suit has been settled,

one of many mysteries in the case remains:

Where is Dora Kent's head?

The head, frozen at 320 degrees below zero and placed in a casing, was removed from Alcor Life Extension Foundation's lab before coroner investigators searched the Riverside lab looking for the head in January.

If he knows, Saul Kent's not saying. "I don't want to comment on that," he said yesterday from his home in the Woodcrest area. Kent declined to discuss other aspects of the case, saying police and district attorney investigators are still looking at the death for possible criminal charges.

Alcor officials say the woman's head was severed after her death from pneumonia on Dec. 11. Coroner officials concluded the woman died from a lethal dose of barbiturates, drugs pumped into her body to prepare her to be frozen. Alcor officials have insisted that she was dead when the drugs were pumped in.

Los Angeles attorney Christopher Ashworth, who represented Saul Kent in the suit against the coroner, said Kent won the case because he got exactly what he wanted — an order barring the coroner from removing the head.

In addition, the coroner is barred from removing the frozen remains of

eight other people at the Alcor facility, Ashworth said.

Pamela J. Anderson, a Riverside deputy county counsel, said the coroner officials agreed to settle because they no longer sought the head for autopsy.

In court papers, Carrillo said his office's involvement in the probe has ended and "I have no intention at this time nor at any time in the future of thawing out . . . the remains of Dora Kent."

Meanwhile, the criminal investigation continues into the death and the role of Alcor personnel in freezing the head. Investigators are trying to find out whether the death was murder. Alcor, founded in 1972, has 100 members worldwide and, for a fee of \$35,000 to \$100,000, will freeze and store heads and bodies at its facility.

Assistant District Attorney Randall K. Tagami on Tuesday declined to comment on the investigation. He said the agreement barring the coroner from seizing the head would have no effect on the investigation. "A civil order could not prevent the acquisition of evidence in a criminal

(See HEAD, Page B-2)

## Head . . .

(From Page B-1)

proceeding," said Tagami. Whether police even need the head any longer is unclear, he said.

The investigation focuses on a dozen people present when Kent's head was removed and frozen by Alcor. Among them are: Saul Kent, Michael Federowicz, former president of Alcor; Jerry D. Leaf, a research associate in the division of thoracic surgery of UCLA School of Medicine, who surgically removed the head; Carlos Mondragon, Alcor president; and Hugh Hixon.

Gerald D. Polls, a Riverside attorney who represents the Alcor members, declined to comment on the investigation yesterday, except to say, "Nobody has been charged and nobody has been arrested."



Dora Kent

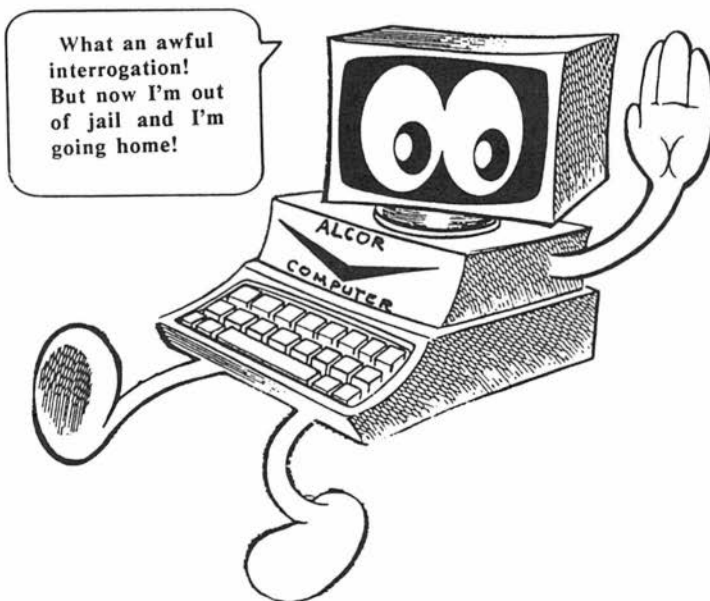


Saul Kent

\* \* \* \* \*

## MORE PROPERTY COMES BACK

Almost all of the so-called "stolen" property confiscated by the UCLA Police Department during their joint raid with the Coroner of the Alcor facility on 12-13 January, 1988 has been returned. On December 2nd, Hugh Hixon and Jerry Leaf made the 130-mile round trip to UCLA and picked up all but a few remaining items of Alcor property which were alleged to have been stolen. One item which was particularly gratifying to get back was the large four-shelf stainless steel utility cart (valued at over \$1500) which UCLA officials had repeatedly stated to the media was "definitely stolen, since we never sell such items..." This cart



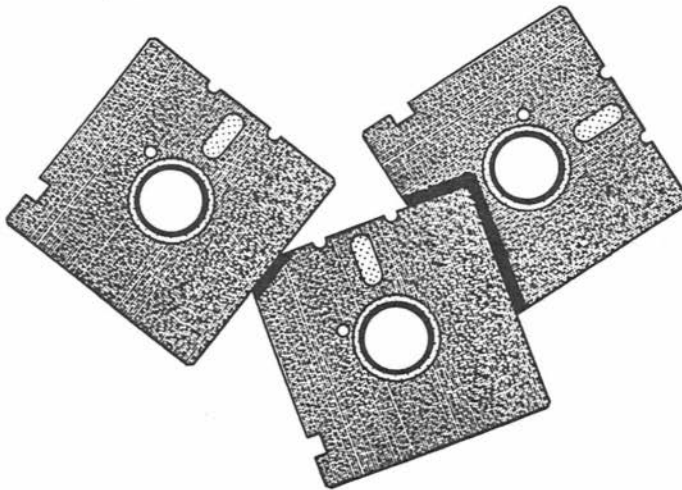
was also the only remaining item of sufficient value to allow for charges of grand theft.

We want to thank Steve Harris for his diligent and relentless investigations of how and why the cart end up being sold to Alcor. Steve's three hours of investigations resulted in Alcor being cleared and the cart being returned. The UCLA PD was unable to accomplish as much in seven months of investigation.

The UCLA PD still has a few small items which they have not yet determined the origin of, as well as a box of disposable gowns and three Shiley S-100A oxygenators which were purchased by Alcor staff at UCLA Surplus and Excess Property. It was the Surplus and Excess Property Department's policy to label disposables as "miscellaneous" on receipts -- and as a consequence, Alcor does not have clear receipts on these items. On the other hand, there is no evidence that they were stolen, either, and we expect to have them returned to us -- eventually!

On Wednesday, December 14th, Alcor got a "Christmas present" from the Riverside Police Department in the form of our computers, printers, diskettes and other office equipment taken during the raid of 12-13 January. So, eleven months later, all but a few items of our property have been returned.

Unfortunately, the presents had their lump of coal included. The MacIntosh computer had its primary disk drive rendered nonfunctional by someone having tried to remove a diskette from the unit with a pair of pliers! It cost us \$60 to get it repaired. Also not returned were virtually every core Alcor administrative diskette including diskettes with masters of the SUMS manual, transport manual, and other internal paperwork badly in need of updating. We are currently trying to find out when we can either get return of these diskettes or secure copies.



\* \* \* \* \*

## MEMBERSHIP STATUS

Alcor now has 111 Suspension Members, 228 Associate Members, and 11 members in cryonic suspension.

## DHS LAWSUIT UPDATE

Progress on the litigation against the California Department of Health Service has been slowed by litigation initiated by Mr. Roe's sister and his business partner. Since we are in active litigation, we cannot provide additional details at this time.

NOTE: Just prior to going to press "John Roe" was placed into cryonic suspension. The suspension proceeded smoothly and Mr. Roe is now cooling to liquid nitrogen temperature. We will be providing additional details on this suspension and on the storm of litigation which surrounds it in the next issue of *Cryonics*.

\* \* \* \* \*

## IS CRYONICS NOW CONSIDERED MEDICINE?

No. But at least we've made it into a medical textbook; *Practical Geriatric Medicine*, edited by A. Norman Exton-Smith and Mark Weksler. No, we aren't listed in a chapter on the frontiers of medicine, but rather predictably, in a chapter entitled "Death and Terminal Care", by P.H. Millard. It isn't much of a mention, but it's a start. Under the heading "Acceptance of Death", readers are rightly enjoined: "Doctors have been trained to preserve life and reluctance to give it up is understandable because: a) Misdiagnosis does occur and autopsy sometimes shows that a first class terminal care program was given to a misdiagnosed treatable condition; b) The forecasting of expected lifespan is notoriously difficult and remissions have been reported in seemingly terminal malignant diseases; c) There is always hope that a medical breakthrough will occur (people who pay to have their bodies frozen after death even take such hope with them into the grave); d) The fear of litigation might affect judgment.

It's not much of a mention but it's a start. Anyone care to guess how long it will be before cryonics merits a *chapter* in a medical textbook? Thanks to Steve Harris for pointing this out.

\* \* \* \* \*

## REMOTE STANDBY AND APACHE II

by Mike Darwin

When a suspension member is in severe distress but not yet legally dead, everyone involved is faced with a serious dilemma. This dilemma is compounded if the member is at a location remote from Alcor's facilities or Coordinators. Life insurance won't pay until legal death has been certified, and local medical personnel are usually both unwilling and unable to provide adequate stabilization and transport if the member becomes ischemic. On the other hand, if an Alcor remote standby team is deployed and the member recovers, there may well be no money to cover the \$2,000, \$3,000, or larger bill incurred in going to the member's aid.

What would be ideal in such a situation would be *remote standby insurance*, and for some time Thomas Donaldson had such insurance with Lloyds of London.

### Comparison of Clinical Assessment With APACHE II for Predicting Mortality Risk in Patients Admitted to a Medical Intensive Care Unit

James A. Moss, MD, Mary S. Todd-Davison, RN, Robert Y. Conroy, MD, PhD

The APACHE II (Acute Physiology and Chronic Health Evaluation) system has been widely used as an objective means of predicting outcome in critically ill patients. The prospectively collected patients prospectively assigned to the medical intensive care unit to compare the predictive accuracy of APACHE II with clinical assessment for patient care provided. At the time of admission to the intensive care unit, the APACHE II score was calculated and clinical assessment was performed. The APACHE II score was calculated at the time of admission to the intensive care unit and at the time of discharge from the intensive care unit. The APACHE II score was calculated at the time of admission to the intensive care unit and at the time of discharge from the intensive care unit.

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Unfortunately, Lloyds no longer offers such insurance and Alcor is currently using an informal, poorly structured cash or credit card deposit system to structure remote standby service.

At this time, Alcor does not even have a model remote standby contract so that people can make decisions about exactly what kind of remote standby they want and how long they want it to last. One of the major stumbling blocks to writing such a contract has been the problem of objectively quantifying the risk of ischemic coma for a given patient. If a decision to go to a member's bedside is to be made, it has to have some outside, objective criteria to base it on. Often a member's physician will be unwilling to make a prediction about when a patient is going to go ischemic, even if he is fairly confident that it is going to happen *soon*, simply because he does not want to be sued if he is wrong. What is needed is a simple, straightforward algorithm for predicting mortality which can be used by the Alcor staff to determine whether to go or not to go.

In the last few years there has been increasing interest in the medical community in developing an objective system for sorting out "GOMER" (as in Get Out of My Emergency Room!!) patients from those who have an appreciable chance of recovering. With ICU bed space being as precious as it is in many institutions and the enormous pressure for cost containment continuing to increase, there is growing pressure to triage "hopeless" patients. One such "triage" tool is the APACHE II (Acute Physiology and Chronic Health Evaluation) disease severity scoring system. The APACHE II system uses a number of basic and relatively simply physiologic parameters to predict the likelihood of a given patient surviving his stay in the ICU. The parameters APACHE II looks at are: blood pressure, heart rate, respiratory rate, body temperature, serum sodium, potassium, and creatinine concentrations, arterial pH, alveolar-arterial oxygen gradient, hematocrit and white blood cell count, the patient's level of consciousness as evaluated by the Glasgow Coma Scale, presence or absence of acute renal failure, the patient's age and chronic health status, and the diagnostic category weight. These numbers are then run through a regression formula and a mortality risk predicted.

In an article in the *Journal of the American Medical Association* (JAMA, 260(12), 1739-1742 (Sept. 23/30, 1988)), results of an large study comparing the APACHE II to predictions of mortality made by the nurses and physicians caring for the patients are reported. The results confirmed previous studies indicating that the APACHE II is highly predictive of ultimate outcome. The differences between physicians, nurses, and the APACHE II were not statistically significant. Of particular interest to cryonicists is that the APACHE II was nearly 100% accurate in predicting mortality in the 90% to 100% groups.

Curiously, the authors ran their experiment using only a single evaluation, at admission of the patient to the ICU. Presumably, if a patient is in the ICU over any period of time, the APACHE II index could be re-evaluated to see which way it, and the patient's status, was moving.

Alcor programmer Mike Perry is in the process of encoding the APACHE II algorithm into a computer program, so that Alcor can objectively evaluate a patient's chance of surviving a stay in the ICU even though we may be hundreds or thousands of miles away.

The APACHE II system is a very simple one. And while its overall degree of effectiveness is the same as for skilled physicians, it lacks one very important feature: it cannot predict with any real precision *when* a patient is going to become ischemic. Undoubtedly there are other physiologic changes which occur in most critically ill, dying patients which could be used to more precisely target when cardiac and respiratory arrest are going to occur. It would behoove us to carefully watch the literature and begin

building a database of such parameters for various disease states.

The important thing about the APACHE II is that it is a start. As a minimum it should allow Alcor staff remote from the patient to have a pretty good idea of whether or not the patient is going to make it through the current hospitalization. That is potentially very useful information to have.

\* \* \* \* \*

## THEM AND US

by Mike Darwin

It was one of those usual, awful, last-minute calls. These days I'm pretty much protected from them. Now it's Carlos Mondragon's job to handle such calls unless I happen to be the unlucky one to pick up the phone. In the midst of all the other troubles we are having here, this was just one *more* unneeded worry.

Carlos had asked to me follow up on this case because it appeared that there was a reasonable possibility that the person could be signed up while still competent and *before* legal death. As is the norm in such cases, the situation went from bad to worse in a hurry and the whole affair ended up inflicting the usual quota of grief on everyone involved.

Such calls always leave me feeling terrible. I just try to get off the phone as quickly as possible after giving the caller(s) the maximum amount of information that I can. I always treat them well. But just below the surface I experience intense frustration, resentment, and even, occasionally, anger. In the last two months, Alcor has had no fewer than six such last-minute calls. In several cases the people involved have been knowledgeable, articulate, and very personable. Under other circumstances they would be a joy deal with.

What makes these last-minute situations so intractable and what provokes such feelings of anger in me is that invariably these people will not take "No." for an answer. It is understandable why they won't give up. They are pleading for a life, often the life of someone they love deeply and they simply *cannot* take "no" for an answer. Sometimes, as one recent caller did, they can be moved to invective; shouting at you and becoming angry, hysterical, and accusing. In the last six months I have been accused of everything from sadistic, heartless indifference to homicide by willful inaction or bureaucratic inflexibility. I always try to listen to such people and remain reasonable -- it's my job to do so. When I can't, I simply tell them that I feel there is nothing more productive we can say to each other, and then I hang up. Fortunately, calls of the hostile variety



are few and far between. Most callers are simply desperate.

In the midst of such emotionally wrenching calls it is easy to lose perspective on why Alcor cannot help them. The mental and emotional state of the callers is bad enough to deal with. The details of such situations are even worse to have to think about: It is usually the small hours of the morning. Somewhere, in a hospital morgue or a mortuary, a person is slowly slipping away. Often the caller has had the presence of mind to have had them packed in ice in a desperate holding action. Always there is the awareness that the caller is suffering through every second of the call; experiencing each refusal as another precious moment lost, a little bit more of their loved one's identity slipping away, beyond recall.

In the midst of such emotional turmoil I often find I'm asking the same question the caller is asking Alcor: "Why can't I help this person?" Why indeed? I always give the reasons calmly, articulately, and I suppose, despite my best efforts, somewhat mechanically. It is almost a reflex by now:

1) You cannot give informed consent under such circumstances. You are under tremendous emotional pressure at this time and it is not possible for you to become adequately educated about cryonics and Alcor or to be objective about cryonics given the pressures of time and circumstances. If, when you later do become informed you change your mind, Alcor is exposed to the potential for serious and *successful* litigation.

2) The financial logistics are almost always impossible. Who has that kind of money in liquid form available at a moment's notice?

3) Questions of legal authority to make these arrangements for your next of kin cannot be rapidly resolved. We need to *know* that you have the authority to make such a decision and that the patient left no prior direction to the contrary.

4) Treating patients we have no prior responsibility for means that we may be unable to respond to those members who *have* responsibly made arrangements in advance of need.

There are other reasons as well, but these are plenty good enough. They never work. Always there is the belief and the hope that they can be negotiated around. Surely, the caller says, "it is always a matter of money. Surely we could not be that cold-hearted..."

But it isn't a matter of money and we can be that cold-hearted. We have to be if we are to survive.

Coming out of a grocery store in Riverside or walking down the street in L.A., you can count on it happening at least once a week: Some disheveled or not so disheveled-looking person comes up asking for money: a dollar, two dollars, any change you have in your pocket... Television is peppered with the faces of starving children and pleas for help. Everywhere people are hungry and dying. I am not left unmoved by their pleas, either. But neither am I moved to answer these cries for help.

If I answered even a fraction of them, I'd be destitute and begging for help myself. I cannot save all the people in the world. I cannot even save a tiny fraction of them. In fact, viewed objectively, my own situation is a pretty desperate one under the circumstances. Here I am, trapped in the dying days of the 20th Century. I am well aware that medicine tomorrow will likely be able to halt and reverse the slow but daily more

palpable disintegration of my body and mind. But I will likely not live long enough to reach that medicine. My only alternative is a desperate journey against incredible odds into a strange and scary future. I will need every penny I can muster to have any hope of getting there. I must work ceaselessly to improve the odds just so that *I* can survive.

That's the real picture. Fortunately, there are others who share my desire to survive and they have entered into a contract with me. We have agreed, in essence, to be each other's *family*, to work within certain confines to save each other's lives. The first obligation of any family is the well-being of that family. The family does not give away all its resources to strangers or even to neighbors who may be in need. True, they may set aside a

portion of their resources for charity to those whom they deem deserving. But they are parsimonious and ever mindful of the primary obligation: the survival and well-being of members of the family. A distinction is always clearly made between *us* and *them*. It is this distinction that makes the family and its survival possible.

I have come to see Alcor as the same kind of institution. It is, of course, not something automatic like being born into a family, a religion, or a country. It is in fact a carefully engineered "synthetic family". But it is just as real (maybe even more so) and it is governed by the same principles. Alcor has powerful obligations to its members. It must act prudently and husband its resources in a manner consistent with being able to further its members' survival. It cannot risk or expend those resources on others who are not a part of the family unit and who have not pledged their share of resources and commitment to survival for other members.

Even though the difference between members and nonmembers may seem very arbitrary, it is not. The fact is, a person who has chosen to sign up for suspension has distinguished him- or her-self as being quite different from those who have not. As a minimum they have shown the mettle and responsibility required to wade through paperwork, purchase insurance, and pay bills. They have established for themselves a certain level of credit and responsibility. They cannot have denial, procrastination, or irresponsibility as primary elements in their personalities. Suspension membership serves as a powerful *filter*, removing many people who would be both undesirable and risky to deal with --



particularly in a life-or-death situation.

The eleven Alcor patients now in suspension counted on Alcor to be there for them not just on the day they entered suspension, but over the long haul as well. The other 111 Suspension Members are counting on Alcor to be there when the need arises for them too.

The last-minute callers often have a true and heart-rending story to tell. Given the undeveloped state of cryonics and the almost total lack of public knowledge about it (let alone public pressure for responsible planning and behavior) it is not surprising that so many people call up to make arrangements only when confronted with the brutal fact of death.

The streets are full of the same kind of stories from people seeking shelter or a meal. Of all the cryonics organizations now in existence or that have existed in the past, Alcor has spent more on "charitable" actions such as educating the public about cryonics and taking over the care of patients who have no funding than any other. We have a long history of charitable activities. I try to keep that in mind when last-minute callers accuse Alcor of being composed of heartless monsters who simply refuse to help in situations of desperate need.

But try as I might, it still makes me angry. It is *not* my fault that the caller didn't find out about cryonics until it was too late, or that they didn't realize that arrangements had to be made in advance. I resent being told I am responsible for their problems.

The most extreme example of this happened recently when a woman called to inquire about cryonics wanting to know if it was "for real". When I explained it to her in-depth and told her that it was indeed a reality and that we had patients in suspension *now*, she became furious, exclaiming that it could have saved her father, who had died a few months before. "Why", she wanted to know "didn't we tell her about it then!" Didn't we know that it was our responsibility to make sure that people *knew* about cryonics so that they wouldn't mistakenly bury or burn their loved ones?!!

I don't know that I'll ever be able to handle the last-minute calls without letting them get under my skin. Particularly when they come from long time subscribers to *Cryonics* or long-time Associate Members of Alcor who never got around to signing up. I don't think I'll ever be able to adjust to that kind of pain and grief.



All I can do is to send a message to all of you out there who aren't signed up but think cryonics is a dandy idea: When your mother or your brother or someone else you love is dying in a hospital or lying in a morgue or a mortuary, just keep one thing in mind: the situation will reduce to *us vs. them*. The only advice I can give you is to make very sure that you are included in the *us* side of that equation. And lest you judge us too harshly when that time comes, keep in mind that just as you would not invite a dozen hungry street people into *your* home to share the night, let alone the rest of your life, neither will Alcor.

We simply can't. And we won't.

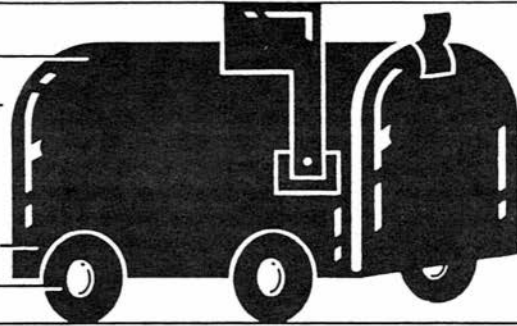
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*Letters to The  
Editors*

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Dear Mike:

Although we have had our differences in the past, I am writing this letter to express my all-out support for Alcor in the suit against the Department of Public Health Services, et al. It is a *necessity* for all cryonicists and lovers of human rights that this suit be won.

Advise us as to what we can do. I assume money would be helpful. Where do we send it? I assume additional declarations from scientists and health care professionals would be helpful. Do you have a contact person to coordinate and advise re: such declarations? Is there anything else we can do to help?

When we win this suit, I hope this victory will serve as a catalyst for further mutually beneficial endeavors.

Sincerely,  
H. Jackson Zinn, President  
American Cryonics Society

Dear Mr. Zinn,

If ACS is sincere in wishing to provide support to Alcor in the DHS litigation there are a number of things which can be done:

By far the most important would be to share substantively with Alcor the burden of expense associated with the DHS lawsuit. Alcor has raised the over \$36,000 expended so far by directly contacting its members and *asking them* for support. We have not even come to court yet, and the total cost of this action is likely to be far higher. Additional technical and other declarations are also needed and you may contact Saul Kent for information on how to provide this kind of support.

An added and extremely important step would be to thoroughly inform and update your membership on the situation with regard to the DHS and Alcor's role in countering this threat. Members of all cryonics groups need to be told not only the skeletal details of the case, but also its implications. Everyone needs to be apprised of just how unjust and capricious the DHS actions have been, and of the consequences if Alcor loses this struggle

The Alcor staff has spent *hundreds* of volunteer hours responding to the DHS challenge. The large administrative and staff expenses we have experienced so far are not even reflected in the \$36,000 outlay for legal expenses.

You end your letter with the statement: "When *we* win this suit..." I appreciate the offer implied by the use of "we" to provide a level of commitment from ACS similar to that of Alcor's. No doubt ACS will benefit equally from a successful outcome of the DHS lawsuit. -- Mike Darwin.

P.S. Checks should be made payable to Alcor with a notation on the check that use is for the DHS litigation. Of course, all such contributions are tax deductible.

\* \* \* \* \*

## THE MYTHIC HERO (Cont'd)

by Steve Harris

I appreciate Thomas Donaldson's comments [Nov.] on my treatise [Sept.] on cryonics and the myth of the resurrected hero. Thomas is a rationalist *par excellence*, and his views of the human rational potential are always uplifting to me. But the obvious fact is that we cryonicists have an enormous cultural inertia to overcome, and (much as I hate to remind everyone) our present "rational" approach to doing this is not working very well. Why not? Perhaps, before I comment on Thomas's objections to my thesis, it would be useful to consider the problem of the public perception of cryonics from yet another mythic or "archetypal" angle.

In mythologic terms, it is well to remember that the defeat of Death requires great power -- power of the sort which can only be drawn from "Great Good" or "Great Evil." Thus, mythic characters who attempt to actually defeat Death (as opposed to merely prolonging life), must be either "heros" or "devils." I have discussed the role of the mythic hero in my previous essay, but the role of the mythic devil is at least as important to the cryonics movement. The reason is painful: the mythic devil represents the dark side of the ancient mythology of death, and it is that dark side which seems often to become associated with cryonics in the public eye.

It takes little thought to realize how resoundingly the evil un-dead troop through our collective unconscious. In American literature, non-religious resurrection of the dead has been associated with evil and horror at least as far back as W. W. Jacobs' classic short story "The Monkey's Paw," (1902), in which an elderly couple use a magic talisman to wish their dead son out of the grave, forgetting that he has been horribly mutilated in the industrial accident that killed him. In recent times the "mal-resurrection" tradition has been continued by Stephen King (*Pet Semetary*, 1983) and many others.

When the popular scene turns to science fiction movies, monsters returning from apparent "death" to wreak havoc are almost the norm. Examples here range from the huge Venusian beast in *20 Million Miles to Earth*, to a giant carnivorous plant in *Day of the Triffids*, and even down to the small crab-like parasite in *Alien*. In several films (*The Deadly Mantis*, *The Thing*), "dead" monsters slated for resurrection even come cryogenically preserved.

Evil *humans*, as well, have had their day in horror and Sci-fi movies as *technological* escapees from the Grim Reaper. In many of these movies, it is interesting to note that the preserved human brain plays a special, gruesome role. Preserved abnormal brains figure in a number of Frankenstein films, in which resurrection is by electricity. For decades, starting with *The Creature With the Atom Brain* in the 1940s, we have been plagued with a spate of *Living Dead* movies in which corpses resurrected by radiation or chemicals can only be stopped by destroying their somehow still-functioning brains. And in the classic Sci-Fi movie *Donovan's Brain*, the disembodied, artificially-maintained brain of a

ruthless financier possesses an evil personality so strong that it telepathically begins to take over the world.

There is even a 1960's camp treatment of this theme, in a movie imaginatively titled *They Saved Hitler's Brain*. It is painful to even describe this movie, let alone to watch it, but suffice it to say that the action involves a container holding the disembodied head of the Nazi leader being transported hither and thither, one jump ahead of the authorities, in a way that cryonicists of today will find vaguely unsettling and familiar. Here again, the object is world domination.

Silly? Of course -- though perhaps not as silly as the farce which is playing itself out in Riverside, California. But even so, cryonicists cannot afford to miss the lesson. "Camp" or not, the fictional choice of *Hitler* as the figure whose brain is preserved, is probably a response to deep and serious cultural misgivings which arise whenever the question of brain-preservation-for-future-revival is considered. In the past few months, for instance, Alcor members presenting cryonics to the public in places as diverse as California and Oklahoma have been asked about the moral consequences of inadvertently saving a "Hitler."

Now surely, the entire country has not seen *They Saved Hitler's Brain*. If the frequency of this kind of question from the general public over the years seems at first shocking, in mythic terms it is much more understandable. What is happening is simply that "Hitler" is being invoked as a psychological symbol. What the specter of *Der Fuhrer* really represents is an automatic rejection (as being evil) of any resurrection scenario which does not in some way (directly or indirectly) involve a hero. We are, after all, a culture whose classic movie horror figures are not only Frankenstein's Monster and the Living Dead, but also the Mummy and Dracula -- "failed" resurrection figures all.

As we look around the world, every culture seems to have its tales of the evil returned-dead; its ghouls, ghosts, vampires and zombies. Undoubtedly, it would be good for cryonics if humans could simply banish such ancient and horrific images out of their unconscious minds. Clearly, such things interfere with any vision of the far future in which ordinary people come back (with a little help from their friends) as their own sweet former selves.

But can such a change in visions of the future be accomplished? Thomas Donaldson's example of male chauvinism as a formerly entrenched prejudice which is now on the decline is a powerful one. Surely, Donaldson argues, if we have begun to conquer *that* species of bigotry on the basis of pure reason and will, we may yet do the same with the prejudices facing cryonics....

Unfortunately, let me point out that the rise of feminism may not be so comforting a metaphor for cryonics. First, there is the obvious fact that there are many more women in the world than there are cryonicists, yet cryonics as a small and vulnerable movement cannot afford to wait as long as women have for full status. Furthermore, feminism and the increased status of women have historically been driven in lock-step with advancing technology (as Thomas notes), from improved pediatric medicine, to the industrial revolution, to The Pill. But again, unfortunately, in cryonics, impressive resurrection technology is exactly what we don't have, and aren't likely to get soon.

This last is an important point, worthy of repeated emphasis. Leaving aside the sort of power that a very large number of oppressed people can generate, there seem to be only two other great human forces for philosophical and cultural change in the world. One is myth, and the other is technology. (A gizmo or a story). Thus, in the absence of good mythological appeal, it is very difficult to change the philosophical outlook of a society



in the absence of a change in technology.

Cryonicists have discovered this the hard way. Arguing that we may have "access" to tomorrow's medicine today is difficult enough. But suggesting that we rely for the success of our message on public adoption of tomorrow's *psychology* today, is to invite failure. In other words, assuming that we can change public psychology *now* on the basis of *future* technology, is perhaps to put a very large cart before a very small horse. At that rate, as Thomas notes, it is going to take a very long time to get anywhere.

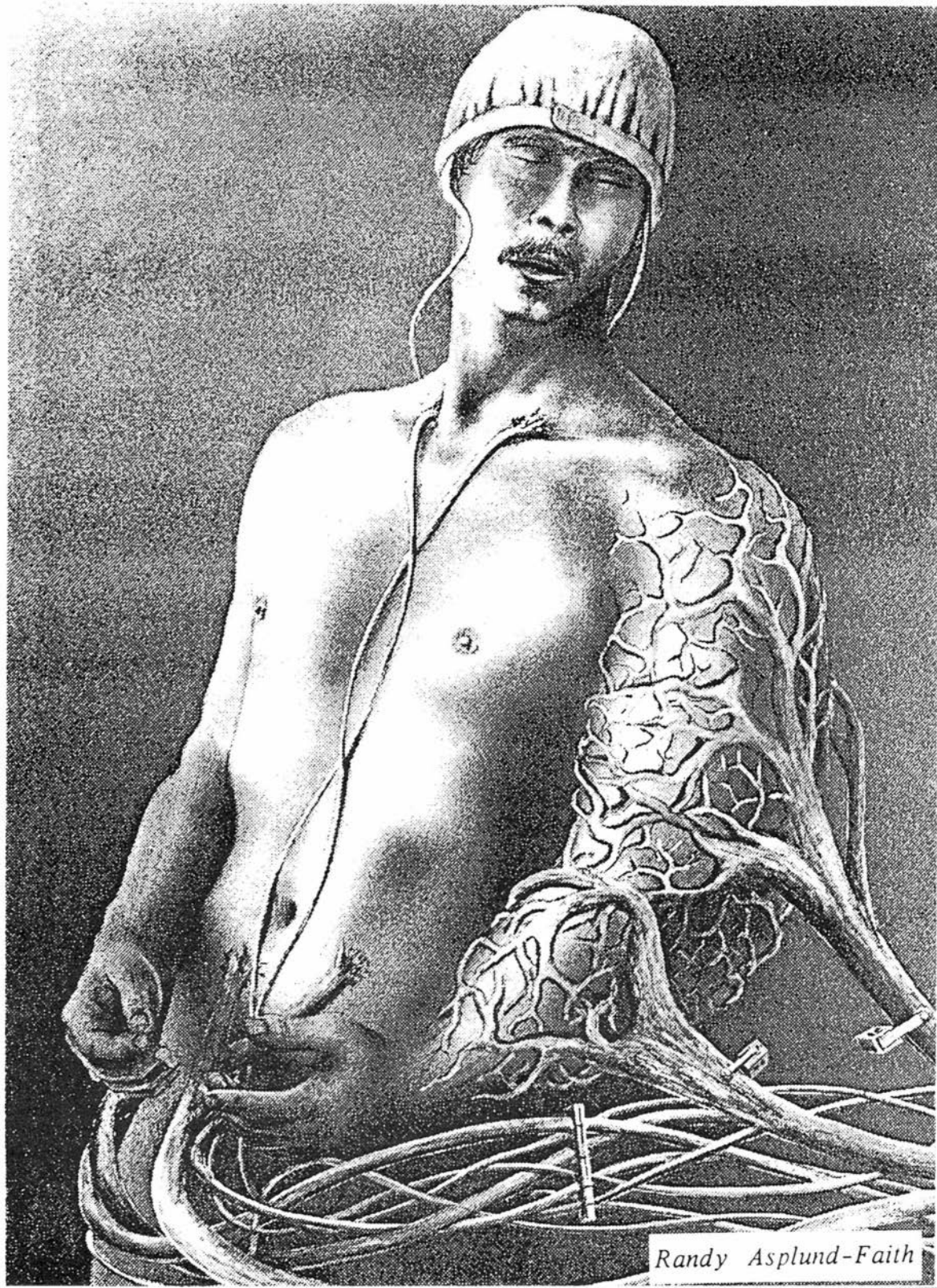
What I'm presenting is perhaps an alternative. We have seen how deeply entrenched are resurrection myths in our society. These myths are represented by both our movies and books, and the deeper themes that underlie them. As I have noted earlier, the dark side of these myths work against us in cryonics no matter what we do. For example, Frankenstein and his monster, as symbols of technological resurrection and horror, have been stubbornly associated with cryonics from the very beginning: the first Frankenstein movie to be made after Ettinger's *The Prospect of Immortality* was published (*The Evil of Frankenstein*, 1964) features a Frankenstein's monster resurrected from a block of ice! Today, more than twenty years later, the mythos is no better. We cannot even get a decent documentary made about cryonics without some ghoulish editor deciding to call it *The Living Dead*.

So be it. Since we cryonicists seem to be stuck with such myths in the short term, the question (as I said earlier), is whether or not we can make them work *for* us, as well.

Thomas Donaldson has argued that the idea of the resurrected hero is fundamentally at odds with the cryonics idea of self-earned-eternal-life-for-all, unless all are heros. He is correct. The problem is that the philosophical position Thomas advocates will not be shared by the general public until functional immortality at last begins to be a reality. In the meantime we need an appealing spell, and I believe that a hybrid mythological approach, combining elements of the traditional hero and the idea of mass salvation, may offer the best chance of presenting the cryonics idea to the world. This sort of mythic appeal is not new, and it can work: One example I previously gave was that of the ancient Egyptians, who in later dynasties mummified even common people under the sacred name of Osiris. And it should also be remembered that even Christianity has its Universalists.

In suggesting that we exploit existing myth to our advantage by working to freeze a much-loved celebrity, I am trying to offer a deeper insight into what would otherwise be simply thought of as "good showmanship" (and those who are uncomfortable with psychoanalysis can continue to see it that way, if they like). I certainly never meant to suggest that we compromise the philosophical integrity of our organization. Rather, I propose such a thing basically out of desperation, given the low likelihood that our present "Heros "R" Us" philosophy alone will soon enable the masses to acquire the same degree of free-floating self-esteem that we present cryonicists manage to generate for ourselves.

No offense is intended. The reader must realize that in short essays such as these, the author must play devil's advocate a bit for the sake of clarity. Nevertheless, through any discussion of these issues, the bottom line fact should remain before us that cryonics is still in trouble as a popular idea. As a crude index of our persuasiveness, consider that in a quarter century of effort, we cryonicists have not been able to persuade as many people to sign up for cryonic suspension as the Reverend Jim Jones was able to persuade to take cyanide. Obviously, relative to most folks, some vital psychological essential is missing from our message. For whatever the reason, this is a problem that we need to ponder a lot more.



Randy Asplund-Faith

## 24TH CENTURY MEDICINE

by Thomas Donaldson

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\* \* \*

*"You were only 10 years old, full of running and jumping, ballgames and Masters of the Universe, when they told you that you had osteogenic sarcoma. You cried and begged your mother not to let them cut off your leg. Five interns had to hold you down when you tried to run away. When you woke up, your right leg was cut away at the knee."*

We don't like to think about our own vulnerability. Every day, accidents and disease severely injure people just like us. They happen quite unexpectedly. One day everything seems to be going well and the next day, we face utter terror. And this is not a terror of an invasion of green spiders from Arcturus, but an ordinary terror, happening to our next door neighbor or to ourselves.

This article is about medicine in the 24th Century. But we need to stand back from the subject first, for perspective.

In the 17th Century, more than 50% of all children born never lived past age ten. Nineteenth Century writers like Dickens wrote death scenes -- children dying of cholera, or whooping cough, or diphtheria, or scarlet fever.... People died at all ages. Smallpox scarred others for life. Nobody liked this fact, but it was so common that everybody lived their lives without ever thinking about it, unless it suddenly became real, for themselves, their wife, or their children. And if so, nobody else paid attention. The invisible terror remained invisible to them, and so thankfully, they went about their own affairs.

These diseases were an unseen background to life. Wealthy families would leave town every year in the cholera season. City fathers would shut up houses on quarantine. People would not often talk about their vulnerability any more than they now talk about the color of the sky.

But the other side of vulnerability is heroism. If no injury were final and we could put everything back as good as new, heroes become impossible. Invulnerable people can't even fall in love. Nobody writes stories about them. They have no *problems*. Today we are invulnerable to diseases which once brought terror to whole cities.

To understand medicine of the 24th Century, we have to understand the thin line between vulnerability and invulnerability. This line dominates our lives night and day. It is so important that we learn to walk along it without even thinking about it, any more than we think about breathing. And yet, whether we experience happiness or despair depends on where that line falls for us.

The most important point about 24th Century medicine is this: that line will fall *elsewhere*.

For science fiction writers, vulnerability and invulnerability are also essential. If unshielded high-dose radiation is no longer dangerous, that's bound to affect the story. If bad guys once "killed" can come back, or people can recover from gaping ax

wounds to the head, the entire meaning of a fight is transformed. Amazingly, events in many science fiction stories depend on injuries or diseases likely to be trivial problems a few centuries from now. Who today would write a story about a little girl's death from scarlet fever? Nobody dies of scarlet fever any more.

### WHAT IS HUMAN?

Of course we might totally redesign ourselves. But some human traits are so fundamental to almost everyone's concept of who they are that they will actively resist any redesign, for themselves or for their children. In some fundamental ways people *will not* change. In other ways they may change profoundly; but the points on which they stay the same are just as important. In Box 1, I list some *essential human traits*, and others where redesign might happen.

We can imagine ways to turn people into docile slaves, to rework them as parts of spaceships, or turn them into six-legged creatures living on the floor of ammonia seas. But this article isn't about what can be done to one group of people by another. That is *assault* rather than medicine.

We do not want anything done to us which will make us something else entirely, or that will make us say: "that is not me". But who are you? Here is a test for biological changes to human beings: If people can be found who genuinely want such a change for themselves, then it will happen, and in some sense is a subject for medicine. All other events constitute assaults. Assaults will happen: but they are the *problems* of medicine rather than its success.

What is most important about identity is that our bodies and our senses are not external tools. We *are* our bodies. We cannot take them off or put them on like clothing.



## BOX 1: CONSTANCY AND CHANGE

*Biological control implies the ability to change human design. Here are some things about ourselves we will want to keep, and others we will change.*

### CONSTANTS:

- *External anatomy.* Our current body form and size remains important in relating to other human beings (an "attractive" man or woman). We use tools, detachable parts, to overcome defects in our anatomy.
- *Facial expressions.* We communicate with our faces.
- *Individuality.* People resist becoming hive creatures or total separation from others. Finding a balance will still give us problems.
- *Sexuality.* Sex will still give us problems. Couples will still pair and have children.

### CHANGES:

- *Biochemistry and metabolism.* We may use new enzymes and cell constituents containing metals (gold, arsenic) and other rare chemicals.
- *Internal anatomy.* New internal organs for life in space, defense against biological invasion, renewal of worn-out parts.
- *Immortality.* Redesign so that aging does not happen.
- *Sleep.* Brain and body reorganization so that sleep is unnecessary. We will become tired far less easily. We'll have more energy and not *want* to sleep.
- *Brain.* Improved sensory discriminations, and broader and longer attention span. We don't currently know how our brains work. Potential improvements are hard to see, but must certainly exist.
- *Sexuality.* Pregnancy may shorten or disappear entirely. Cloning may become important, but people will see clones as continuations, not as new people ("He lost all his memories and had to relearn everything").

Our nervous system maps our own particular body. We can't just hang new eyes on like binoculars. If we had the eyes of eagles, we'd need the brains of eagles to use them and the *feelings* of eagles to respond to what we see. These feelings, the neurology underlying our senses and our body, are far more important to our sense of self than just a piece of anatomical equipment.

Medicine is a branch of technology, but not *just* a branch of technology. We demand of our doctors that we *trust* them. They reach into parts of ourselves very important to us. Anyone who changes our body is also changing our soul. Some of the transformations I discuss in this article may not seem related to medicine at all. But all of them involve changes which are terribly important to us. We will not allow these things to happen

casually, or be done to us by a random stranger. One way medicine differs from other fields is that it invades the soul.

And so we see one kind of 24th Century terror: that you are one day kidnaped and integrated into a spaceship. And from this assault you will need healing, to return you to a human state. Tomorrow's physicians may have to force you not to be a spaceship. In such a situation not just your body is injured, but also your soul. We will have to discuss how healing of our souls, of the very essence of what we are, could come about.

## CAPABILITIES

We can best judge the capabilities of 24th Century medicine by looking at what living things can do now. If today's animals or plants can do something, then some way exists to do it under complete human control. We will make quasiling creatures, not just of the size and complexity of viruses, but up to and including the size and complexity of redwood trees or whales.

Learning to manipulate living creatures is exactly like learning to use alien machines whose vanished owners built them for unknown purposes and with locks to prevent unauthorized use. Living creatures are independent of our wishes. Their entire design aims toward their own perpetuation and defense. We can't transplant organs from animals because of their (and our) immune systems. We can't mold them like clay because they try to retain their own forms. The creatures we will build will have no such independence. They needn't even have drives to find their own food.

To some unknown degree, we will also make creatures with biochemistries quite unlike any which have yet developed in nature, or that ever could develop in nature. For all current Earth life, water is the major solvent and transport chemical. But ammonia supports biochemical reactions. Silicone fluids which freeze at  $-100^{\circ}\text{C}$ , forms of oil with higher boiling points than that of water: all these might support enzyme chemistries broadly similar to our own. Oceans of silicone fluid just won't happen naturally, but they need not happen naturally for us to make biochemistries based on them.

The simplest forms of such machines would be single cells, like macrophages. Macrophages are part of our normal defense mechanism. These cells move about inside our tissues, destroying old and foreign cells and other debris. They slip between existing cells, accessing every part of our body. Cell membranes aren't solid walls. Artificial macrophages could pass *through* and between cells, reaching any body tissues. They could deliver genes or chemicals, take control of their target cells' metabolism, or even replace target cells entirely by budding off a new copy. Normal macrophages use the bloodstream for transport. Artificial macrophages could use the bloodstream too.



## BOX 2: WHERE ARE WE NOW: MACROPHAGES.

By now (1989) virologists routinely create modified viruses to place specified genes into DNA of target cells.

Attempts to cure one disease, Lesch-Nyhan disease, are imminent. Lesch-Nyhan disease, which causes mental deficiency and uncontrollable self-mutilation, results from a single missing gene. Because Lesch-Nyhan disease is so simple, primitive genetic surgery will work. Full genetic surgery needs much more capability. Sometimes host cells turn off inserted genes. Again, transfer viruses can put genes into the wrong cells, where they cause new kinds of pathology.

The problem is that most genes require regulation by others. A.D. Miller and others at the Salk Institute have created a virus carrying not just a gene, but its regulator genes, into host cells (A.D. Miller et al, *Science*, 225, 933-938 (1984)).

To keep transfer viruses from reproducing, we create modified viruses lacking genes for chemicals essential to reproduction. We grow up many transfer viruses with a second virus (called the *helper virus*). The helper makes the essential chemicals. After separation from helpers, these viruses can insert their cargo of genes into cells, but not grow in them.

The macrophages I discuss are much more elaborate. They can carry much more control machinery to recognize target cells, responding only to them, or responding differently depending on cell type or cell conditions. They can still work even if the target cell isn't functioning (viruses can't do this). They can rebuild target cell machinery other than the genes. They can also transfer many more genes, up to an entire copy of the patient's genome.

### References

R.D. Cone and R.C. Mulligan, *High efficiency gene transfer into mammalian cells: generation of helper-free recombinant retrovirus with broad mammalian host range*, *Proc Natl Acad Sci*, 81(20), 6349-53 (1984).

M.A. Eglitis, P. Kantoff, E. Gilboa, and W.F. Anderson, *Gene expression in mice after high efficiency retroviral mediated gene transfer*, *Science*, 230, 1395-8 (1985).

A.D. Miller, M.G. Rosenfeld, et al, *Infectious and selectable retrovirus containing an inducible rat growth hormone minigene*, *Science*, 225 933-8 (1984).

Artificial macrophages will be able to communicate with one another. They could release diffusible chemicals to guide one another's behavior. Based on what one set found in the retina, for instance, others could carry out special modifications in the visual cortex. These devices could form an integrated repair system much larger than a single macrophage.

Some repairs will need delivery of materials to a repair site much faster than the circulatory system provides. We'll need devices to grow their own support tissues into a patient. For instance, severe crushing or mangling injuries will require us to provide a new vascular system. The repair device might resemble a fungus, growing mycelia into the injured tissue. The mycelia would grow between existing cells rather than destroying any. We can call such devices *repair nets*. A repair net will work together with a whole family

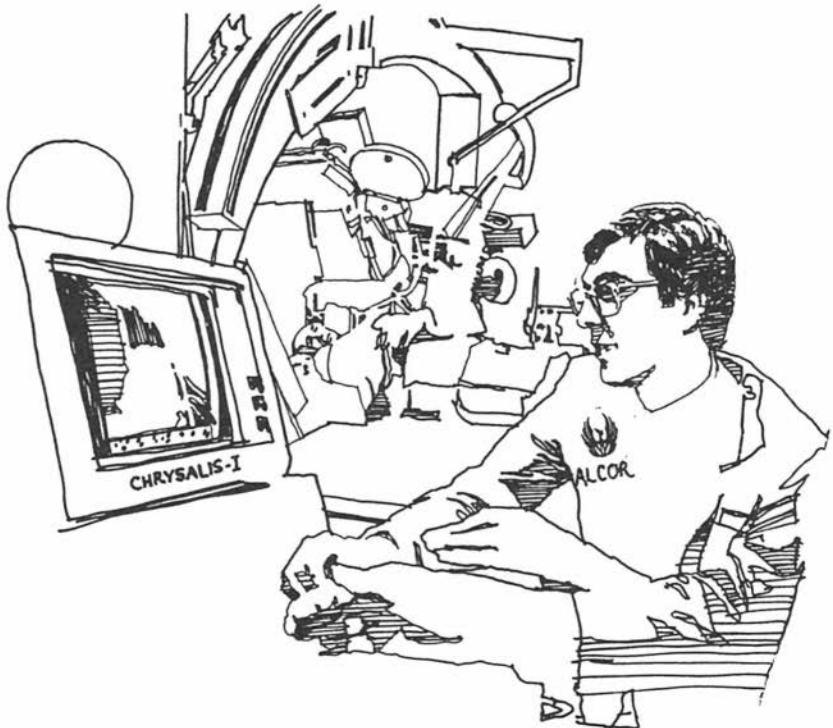
of macrophages. For instance, the macrophages could reach their target through the mycelia of the net.

Many of our organs have few provisions for self-repair. That means that repairs must be done externally. If our heart is injured, we lack a backup heart. Furthermore, some modifications and transformations require external support simply because our bodies have no way to bring enough materials and energy to the repair site. The final level of repair machine would actually take over metabolism of a patient from outside.

We can therefore expect devices which would enfold a patient completely and carry out repair. We have a model for such devices already; the womb. It supports the infant by externally supplying blood and oxygen and removing wastes. But such a device would have even greater power to control growth and development of the patient inside it. It would take over from the patient's own genes, controlling growth according to the patient's own genetic program. Such a repair device would have a *brain*, to manage its control and maintain homeostasis. It could take apart a patient's entire body cell by cell, rework it into something new, and return the cells to their original location. I will call such a device a *chrysalis*.

Chrysalises, repair nets, and macrophages are *types* of machines. They would have many specialized forms for different jobs. They would have programmability. Some would be adapted to replacing only particular organs. Some repair nets could force rapid wound repair. A broken bone, for instance, would be set inside a repair net bandage. This would grow into the tissue, controlling and promoting repair. Others would be adapted to reworking and repairing nervous tissue. Some chrysalises would specialize in reviving "dead" tissue, such as severed limbs. These would be reattached after revival by another chrysalis.

The ability to design whole animals and plants to specification also means complete control over existing creatures, their metabolism, growth, and development. Since cancer is a disease of growth and development, we can expect that cancer would be a long-vanished problem. But control over growth and development mean not just an end to cancer, but also the ability to facilitate rapid and complete wound healing, regeneration of lost limbs and organs, and the reversal of aging.





### BOX 3: WHERE ARE WE NOW: DEVELOPMENT

As far back as the 1930s, scientists developed indirect evidence for *morphogens*. These diffused through the body of a growing animal, and their concentration at particular locations told cells there what to do. One known morphogen is a derivative of Vitamin A, *all-trans-retinoic acid*. It controls the growth of chicken limbs. Morphogens for slime molds and hydra are known (C. Thaller and G. Eichele, *Nature*, 327, 625-628 (1987)).

One class of DNA control sequences, the *homeo box*, characterizes genes controlling development in fruit flies, flour beetles, mice, and man. Specific homeo box genes are active only in specific segments of mice and fruit flies. Mark Krasnow and others at Stanford have traced interactions between homeo box genes (one gene turns on or off another) in fruit flies (M. Robertson, *Nature*, 327 556-557 (1987)).

Morphogens allow very fine guidance of repair and removal of misplaced tissues by artificial macrophages or nets. These devices could also recognize cell types and even to which segment a cell belonged. They could turn on growth and division genes in cells where these are normally off, and guide the resulting growth.

#### References

Sheard, P., and M. Johnson, *Science*, 236, 851 (1987).

Utset, M.F., Awgulewitch, et al, *Science*, 235 1379-1382 (1987).

Growth and development are now almost completely beyond our control. Today, whenever we want to alter the shape of bone or tissue we use surgery. But all of today's surgery is only a crude makeshift. A medicine based on control of growth and development would treat problems very differently. It would allow us to alter the shape of bone or tissue by a kind of directed growth. Millions of macrophages would enter the patient, controlling growth or breakdown of our tissues. Similar methods could modify individual cells. A genetic modifier would be a macrophage-like cell. Millions of these would enter a patient, search out target cells and individually change, remove, or modify their genes.

#### FIRST AID

What medical problems do we have now that we'll still have in the 24th Century? The major problem will have to be physical injury: broken bones, damage to internal organs or the brain, people sliced open by machinery, knifings, gunshot wounds. Machinery will still malfunction. People will be hurt, often far from places where full-scale medical help is available.

Ideally a First Aid kit is something everyone can carry with them in their wallet. What problems could a First Aid kit deal with? How would it work?

The First Aid kit might consist of machines bound together into a package the size of an aspirin tablet. These machines would get some or all of their materials and energy from the patient's own tissues. People going into dangerous situations might build up their resistance by vaccines of the kind I'll describe in the next section.

- *The intelligent glue.* This is a tablet of small, single-celled machines. To use it, you would stick it to the skin near the injury. The device comes apart into many small machines that soak through the skin, seeking out areas of broken bone and skin. Once there, they transform themselves into the required cells for repair. If they settled around the region of a broken bone, for instance, they would form a glue to hold together the broken bone together and then discharge chondrocytes to create new bone making the union permanent.

- *The intelligent bandage.* Repairing more extensive wounds or injuries needs a *net*. The intelligent bandage would send mycelia into the patient and grow a support network on which repair can commence. You would attach it to the patient, just like the intelligent glue.

- *Diagnosis and control* A lot of contemporary medicine involves recognizing what is wrong with a patient. The doctor then takes over the normal functions of monitoring (using medical devices like the EKG machine, and blood chemistry machines) and control normally performed by our own body (by the administration of nutrients, drugs, and so on).

First Aid devices will have brains and sensors. Just like our own bodies, they will respond to high or low levels of critical materials in the bloodstream by releasing more when needed or removing them when there is too much. A small package that could quickly be attached to the patient would be able take over from our normal glands. It would be able to prevent patients from going into shock, for instance.

- *The intelligent IV.* Often doctors must deliver drugs or blood plasma to their patient's bloodstream. This requires placing a needle into the patient's vein, a task requiring considerable skill. The intelligent IV will have teeth and a hollow tongue somewhat like an animal's. It will seek out and connect itself to veins or arteries. It will become a part of the patient's body. No operator skill will be needed.

These devices can carry their own intravenous fluids, drugs, and microscopic repair machines with them. Attach them to a patient, and they will determine what is needed and deliver it to the bloodstream.

- *The stasis machine.* Sometimes injuries are too serious to leave a patient awake. This device will put the patient in hibernation. It will send out macrophages to modify and protect critical tissues like the brain. The macrophages will redesign these tissues so that they can withstand prolonged periods without nutrients or oxygen (more or less turning the patient's cells into spores). It will then shut the patient down until more sophisticated repair capabilities become available or can be brought to bear.

## THE HOSPITAL

Medicine based on control over growth and development will make almost no use of surgery. Many problems requiring surgery now, like cancer or heart disease, simply will not occur. Yet surgery is the most important function of hospitals today. Even without surgery, though, less portable or less common equipment will belong in hospitals. Patients will have devices growing into them or enveloping them, sometimes much bigger than they are. Here is some equipment which will probably be available.

- *Diagnostic machines.* This consists simply of a fine dust of macrophage spores.

Patients inhale it. The machines would enter the body, explore it completely, and return through the exhaled air. Another device catches exhaled air and reads the problem from the diagnosis machines.

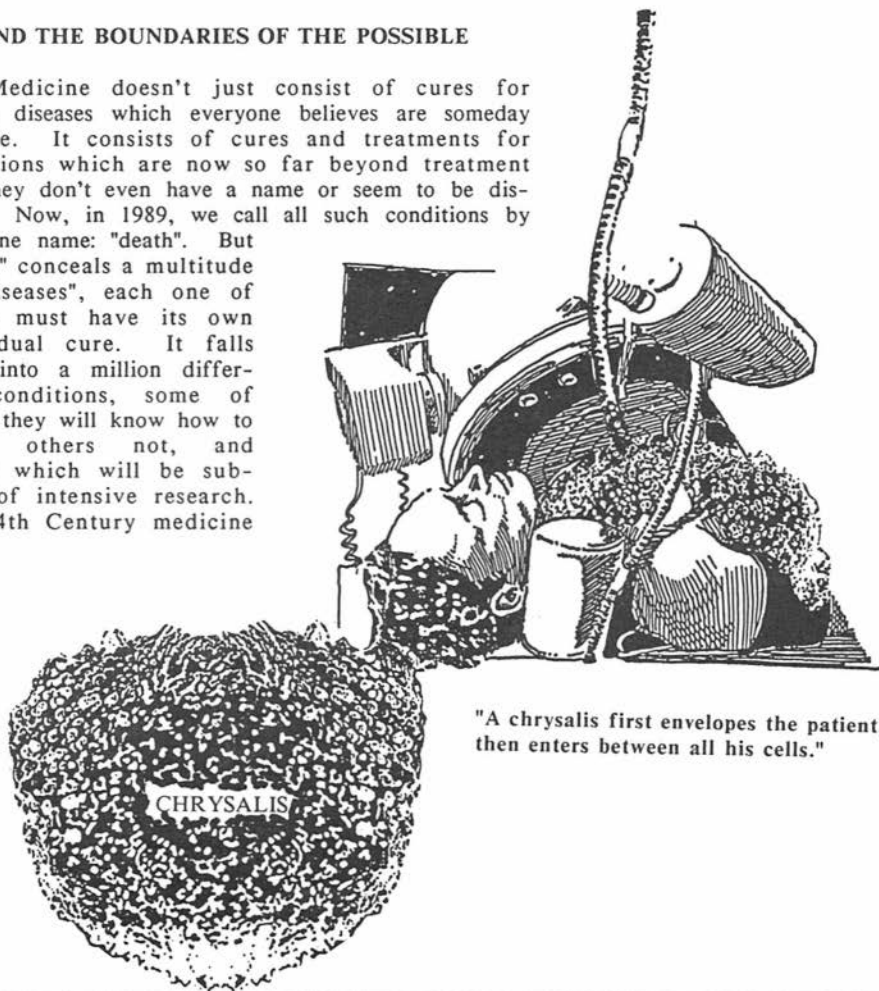
\* *The net as a substitute for the cast.* Accidents causing major internal injuries need more than First Aid. For instance, heart and lungs might become crushed and nonfunctional. We put the patient into stasis. Repair nets for such injuries would grow into a patient, reverse the stasis in their cells, and start regrowth. They provide their own substitute heart, lungs, and blood vessels, and their own autonomic nervous system to keep track of the patient.

We could treat crushed limbs the same way. The same kind of chemical signals (morphogens) causing our limbs to grow properly in the first place can shape them for repair. A repair net would grow into the limb, guided by recognition of the injured cells and a plan for how the limb should look after repair.

Hospitals involve much more than this. Right now, we take someone to the hospital for serious conditions. Someday our serious medical problems will be trivial. Serious problems for 24th Century medicine would be utterly impossible for us today:

#### BEYOND THE BOUNDARIES OF THE POSSIBLE

Medicine doesn't just consist of cures for known diseases which everyone believes are someday curable. It consists of cures and treatments for conditions which are now so far beyond treatment that they don't even have a name or seem to be diseases. Now, in 1989, we call all such conditions by only one name: "death". But "death" conceals a multitude of "diseases", each one of which must have its own individual cure. It falls apart into a million different conditions, some of which they will know how to treat, others not, and others which will be subjects of intensive research. For 24th Century medicine



"A chrysalis first envelops the patient, then enters between all his cells."

## BOX 4: WHERE ARE WE NOW: DEATH REVERSAL

Since each form of "death" is a different pathology, I can't begin to discuss all the forms even briefly. I will discuss two questions:

### • Survival of personality.

During an initial period after formation, chemical and other treatments can erase memories. Afterwards, however, no known treatment disrupts memories without total destruction of neurons. Permanent memories persist for years. These facts suggest (but don't prove) great durability.

Currently, the leading theory proposes that chemical changes in neurons from learning resemble those of cell differentiation. Specific genes are turned on or off when a neuron acquires a memory (cf. P. Goelet, E.R. Kandel et al, *Nature*, 322, 419-422 (1986)). This theory would predict that memories, like differentiation, are very durable.

Two alternatives for memory are now disproven:

Our brains don't need continued electrical activity to remember. Audrey Smith cooled hamsters down to near 0°C, stopping all electrical activity. Afterwards, they remembered mazes they had learned.

The wiring diagram of neurons to one another also doesn't code memories. Since salamanders can repair massive brain injury, Paul Pietsch cut salamander brains into pieces, scrambled the pieces, and reimplanted them. These animals recovered, and also remembered. Furthermore, mollusks such as *Aplysia* can achieve very rudimentary learning. Their nervous systems are small enough that we have mapped them completely. Their connections don't change with learning.

### References

Allport, S., *Explorers Of The Black Box*, W.W. Norton, New York, 1986.

Goelet, P, E.R. Kandel, et al, *Nature*, 322, 419-422 (1986).

Pietsch, P, *Shufflebrain*, Houghton-Mifflin, Boston, 1981.

Martinez, J.L. and R.P. Kesner, *Learning And Memory*, Academic Press, 1986.

Smith, A.U., *Biological Effects Of Freezing And Supercooling*, Williams and Wilkins, Baltimore, 1961.

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### • Reviving brains after oxygen and blood flow have ceased.

Commonly, if you aren't drugged or cooled down, after 5 to 8 minutes without blood flow, current medicine can't revive you. But this isn't the whole story. Over

the last 20 years, a quiet revolution has taken place. Reviving brains injured by prolonged lack of blood flow has become a major research problem.

In 1969, K.A. Hossmann and S. Sato revived electrical activity in cats' brains left without blood for an hour. Several drugs improve recovery, including naloxone, verapamil, nicardipine, gangliosides, taurine, and others.

Unfortunately, since Hossmann and Sato, clinical treatments for brain damage haven't yet materialized. The problem turns out more complex than neurologists hoped. Even partial success, however, means a great advance in treating strokes and brain injury.

Neurons don't disappear instantly when deprived of blood flow. They gradually decline over four days. Protein synthesis fails in these injured neurons, and they become hyperexcitable. These two events eventually kill them.

Since brain damage matures over days rather than instantly, macrophages can take control of injured neurons, provide any protein synthesis ability they lack, and guide them back to health. Treated brains would look inflamed. Other macrophages may weaken skull bones to allow swelling.

**Most citations here are for recent work on the subject:**

Baskin, D., et al *Nature*, 312, 551 (1984).

Drejer, J., et al, *J Neurochem*, 45, 145-151 (1985).

Karpiak, S., et al, *Stroke*, 18, 184-187 (1987).

Hossmann, K.A. and S. Sato, *Science*, 168, 375 (1987).

Suzuki, R., et al, *Acta Neuropath*, 60, 217 (1985).

Thilmann, R., and M. Kiessling, *Acta Neuropathologica*, 71 88-93 (1986).

will not be the same as 26th Century medicine....

- *The chrysalis for cellular repair.* Poisoning, asphyxiation, drowning, all will require cell-by-cell repair, perhaps too extensive for macrophages. In such a situation a chrysalis would first envelop the patient, then send tendrils of itself in between all of his cells. It disassembles the patient, surrounding each cell with its own repair machinery and vascular system. The disassembly process carefully preserves information about locations of the patient's cells and their relationships to each other. If necessary, though, morphogen chemical gradients could also retain this information. A patient would swell up to ten times his original volume. After repair, the chrysalis slowly withdraws the same way it entered re-establishing normal cell-to-cell relationships.

Since our brains contain our selves, chrysalises might work only on the brain, simply regrowing the rest of the body.

However, chrysalises won't be able to restore lost information. But information which would allow reconstruction of the patient's identity very likely survives for much longer periods of time than are now compatible with restoration of life. Intensive research goes on now on how to revive brains deprived of blood flow for up to an hour at normal body temperature, with tantalizing preliminary successes. Beyond about an hour without oxygen and nutrients, the status of brain cells becomes a great mystery. We know that extensive structure remains on a light-microscopic scale. On electron-microscope scales, some cell structures are somewhat damaged. We don't know how much structure is critical or how memories are stored and how durable they will be. Our permanent memories may be coded by changes in activation/deactivation of genes in each neuron. This would mean that personality would survive many hours after cessation of circulation. Anthropologists have recovered fragments of brain DNA from Indians buried 3000 years ago in the mud of a pond. So long as fragments of nervous tissue exist, chrysalises could reconstruct a brain from those fragments and a body around the brain.

Many current conditions of injury, including cryonic suspension, are very simple compared to problems for which chrysalises are needed. They probably won't need more than macrophages and nets for repair.

"Death" isn't the only "impossible" problem that will be treatable by 24th century medicine. Brain and spinal cord injuries currently devastate their victims. Active research goes on to repair these problems too. For both rats and monkeys, normal *adult* neurons in their brains will divide. Control of growth and development specifically includes restarting growth in cells which have normally ceased to grow. Macrophages can enter these cells and rework the genetic controls on growth.

Ability to recover people after such serious injuries necessarily means the creation of whole classes of identity-damaged people. These will be people who have lost whole sections out of their previous lives because of some brain injury, now totally repaired. You may have been married to a woman for 40 years, but after injury and repair remember nothing of her. The way we act toward stroke patients tells us that we're certain to treat these people not as new people but as the same people they were before injury. But it will be a new kind of brain injury, one we don't have today because all such patients now die. And it will be a kind of brain injury no amount of biological control or repair can cure.

## METAMORPHOSIS

The most important biological changes we make to ourselves will be invisible, such as changes in metabolism and repair, and changes in mental processing. We would use our ability to control life to allow us to metamorphose into new creatures able to live in new environments. Macrophages could remodel our cells to have these traits, a kind of vaccination for new environments.

- *Radiation resistance.* High resistance to radiation needs active repair mechanisms for genetic and biochemical damage, much higher levels of antioxidants, and duplication of genes.

In space we will also need resistance to ultra-



"We would use our biological control, metamorphosing into new creatures able to live in new environments."

violet radiation. Ultraviolet radiation causes much the same kind of cell damage as gamma radiation, but to skin surfaces alone. High ultraviolet resistance may involve very high melanin production: a capacity to change skin color to deep black.

• *Weightlessness.* Our balance perception adapts spontaneously. After prolonged periods in space, Skylab astronauts could easily sit in chairs rotating at high speed without becoming dizzy. The major problems associated with prolonged weightlessness are losses of bone, muscle, and red blood cell production. We don't yet know how *adaptive* these changes are. Perhaps such changes are positive and we could last indefinitely in weightlessness after an initial period of adjustment.

In the future we will be able to change ourselves to adjust quickly between gravity and weightlessness. We might have richer nets of blood vessels to bring supplies for rapid growth into muscles, bone, and marrow. Moving from weightlessness to gravity should increase production of bone, blood cells, and muscle. Reverse movement should cause equally marked loss of tissue, and its degradation and storage as fat.

• *Decompression.* Ability to live unprotected in space, even for a short time, may become extremely useful. Whales can store enough oxygen for an hour without breathing in the myoglobin in their muscles. Short periods in vacuum shouldn't pose any insurmountable oxygen storage problem. We would need skin better able to withstand loss of external pressure, nictating membranes to protect our eyes, and muscles able to close off our lungs and gut from vacuum. Since whales adapt to decompressions of similar or greater magnitude, there's no serious design problem.

• *Cold.* Our skin darkens in sunlight. Some people will find it just as useful to grow a thick fat layer in the cold.

Not everyone would metamorphose. Protective clothing is often the best adaptation of all. But even simple adaptations to cold or vacuum become important for workers in prolonged contact with hazardous environments.

Metamorphosis may require such a thorough rebuilding that our metabolism cannot run normally while it goes on. With a chrysalis providing external support, quite profound rearrangements of metabolism become possible. Here's how to redesign someone to live in a cryogenic ecology on Titan (the ecology itself may be man-created. We may create animals and plants able to live on many planets where life could not evolve naturally).

*We must rearrange someone's entire biochemistry in every single cell. First, freeze them down to the low temperature to which they are to be adapted. Second, the chrysalis grows in between their cells, much as in cellular repair. Of course it has the proper metabolism to operate at -200°C. The chrysalis then individually rebuilds every cell into cells with cryogenic metabolism. It sequesters the patient's memories and maps them cell by cell onto similar structures in the target organism. The chrysalis then withdraws in reverse order. The metamorphosis is done. The man may awaken as a cryogenic creature.*

Of course, metamorphosis needn't rebuild someone's whole body in all cases. For instance, our liver performs critical functions in storing energy (in glycogen) and detoxifying foreign chemicals. We may wish to rework our liver so that it will also store oxygen, as part of adapting someone to live unprotected in space. A net could substitute while rebuilding the liver from outside.

## IMMORTALITY

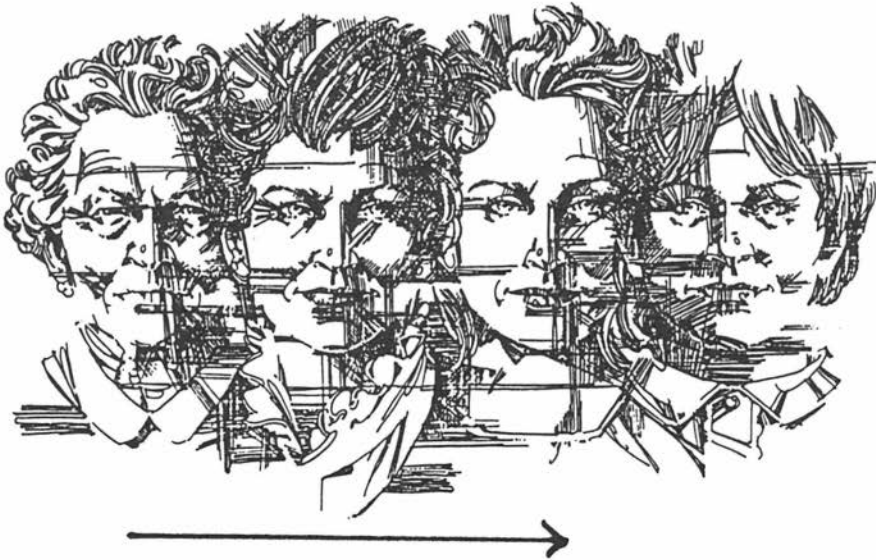
Of all the suggested modifications to human beings, only one has extremely vocal, serious, and organized proponents right now. That is biological immortality. Its most organized proponents are the cryonics societies.

Clearly *means* can exist to prevent and reverse aging. And they do raise an issue about identity. Most people think of themselves with finite lifespans. They say: "That will happen after my time", or "I'm glad I won't be alive to see that". They have planned out their whole lives on the basis of their mortality. They go to school at a certain age, marry, have children, plan on leaving an estate on their death. Faced with the possibility of indefinitely long lifespans, they ask if they would continue to be themselves if they were immortal. There is no easy answer to that question.

We can deal with the deterioration of aging, including brain and heart malfunctions, by permanent alterations in our ability for self-repair. Modified people could survive indefinitely in good health without growing old. Body structures like teeth, which slowly wear away, could renew themselves by slow growth of new tooth material (as rats and rabbits do). If you live long enough, however, you are certain to suffer a severe accident. That accident will need external repair.

Old age has no positive evolutionary effects. Fundamentally it happens because our "natural" life styles rarely allowed people to live to age 70. Now, with so many people surviving to 70 and beyond, we literally run out of biological programming. The symptoms of this loss of programming are what we call old age.

Preventing and reversing old age will happen because people who did not age would have an evolutionary superiority to those who did. They would not spend so much energy supporting infants and young children. Nor would they burden their own children with their care in old age. Right now, about 50% of the population is dependent on others as a



"Preventing and reversing old age will happen because people who did not age would have an evolutionary superiority to those who did."



## BOX 5: WHERE ARE WE NOW: IMMORTALITY

• *Intervention.* Immortality (absence of aging) is a subproblem of development. Gerontologists have known that low calorie diets with all essential nutrients double lifespans since work by Clive McCay in 1934. These diets cause unknown changes in hypothalamic hormones. Serotonin is somehow involved.

The major reason why aging research has not advanced further with this problem is the emotional turmoil felt by funding agencies and scientists themselves at the concept of interfering with aging.

### References

McCay, C.M., et al, *J Nutrition*, 18, 1 (1939).

Timiras, P.S. and P. Segall, *Federation Proceedings*, 34, 83 (1975).

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• *Evolutionary explanation.* Different animals and plants live for different lengths of time. These lifespans need explanation. Why don't people live as long as redwood trees?

Most evolutionary biologists would explain aging as a secondary effect. Animals in nature die of starvation, disease, or predation before they grow old enough to show old age. Their lifespan corresponds to just past the point at which, in nature, almost all are dead anyway. Their bodies have self-repair programs telling what to do up to that age. Our own life conditions are much better than formerly. We almost all live long enough to run out of programming. Old age is the symptom of this running out of programming.

### References and Notes

G.C. Williams, *Pleiotropy, natural selection, and the evolution of senescence*, *Evolution*, 11, 398-411 (1957)

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The first suggestion of a repair machine was Jerome B. White's (1969), a modified virus. The idea of macrophages and repair nets existed at least since 1977, when Thomas Donaldson wrote a discursive bibliography (*Cryonics: A brief scientific bibliography*) describing means of repair, and Michael Darwin independently proposed a modified white blood cell for repair (*The Anabolocyte: a biological approach to repairing cryoinjury*, *Life Extension Magazine*, 80-83 (July/Aug., 1977)). In 1977 Thomas Donaldson also circulated a description of the chrysalis, though not by that name. This was published in *The Immortalist* (12, 5-10 (1981)) as *How will they bring us back, 200 years from now.*

About 1984 or earlier, K. Eric Drexler circulated ideas for cell repair machines, based on a mechanical tradition. These contain important new ideas, particularly calculations on sizes and implementation. Unfortunately his book, *Engines Of Creation* (Anchor/Doubleday, New York, 1986), lacks a technical appendix describing these.

result of age (too much or too little). Everyone takes this biological burden for granted, just as they once took it for granted that most children would die before age ten.

### DISEASES WE DON'T KNOW WE HAVE

Conditions of life can change so much that traits once useful become actively harmful. It's not easy to predict future conditions of life and their problems. To 17th Century doctors extra weight was a cushion against disease and a reserve for hard times. The concept that obesity could cause problems would seem absurd. Problems associated with obesity only appear at ages few 17th Century people would have survived to. More to the point, obesity was then a *positive* trait, a sign of health, wealth and *beauty*. A 17th Century doctor, having seen the long term disadvantages of obesity, would then have to decide to do away with this form of beauty.

We may be seeing one "disease" like this now. Getting good jobs in 1989 requires some level of technical skill. This learning takes personal traits (emotional ability to study and listen) and brain processing. Someone without these traits finds academic learning hard: this is now classified as a disease and called a *learning disorder*.

Mental and emotional skills someone would need to do well in 24th Century society won't just be enhancements of current abilities. To do well, we'll have to *lose* some abilities we now have. Someone from the 24th Century may well appear *less* intelligent on all our current tests. For instance, current tests require subjects to follow orders. With much or all of production and distribution automated and the disappearance of "workers", following orders could become a far less valuable and even contrasurvival trait.

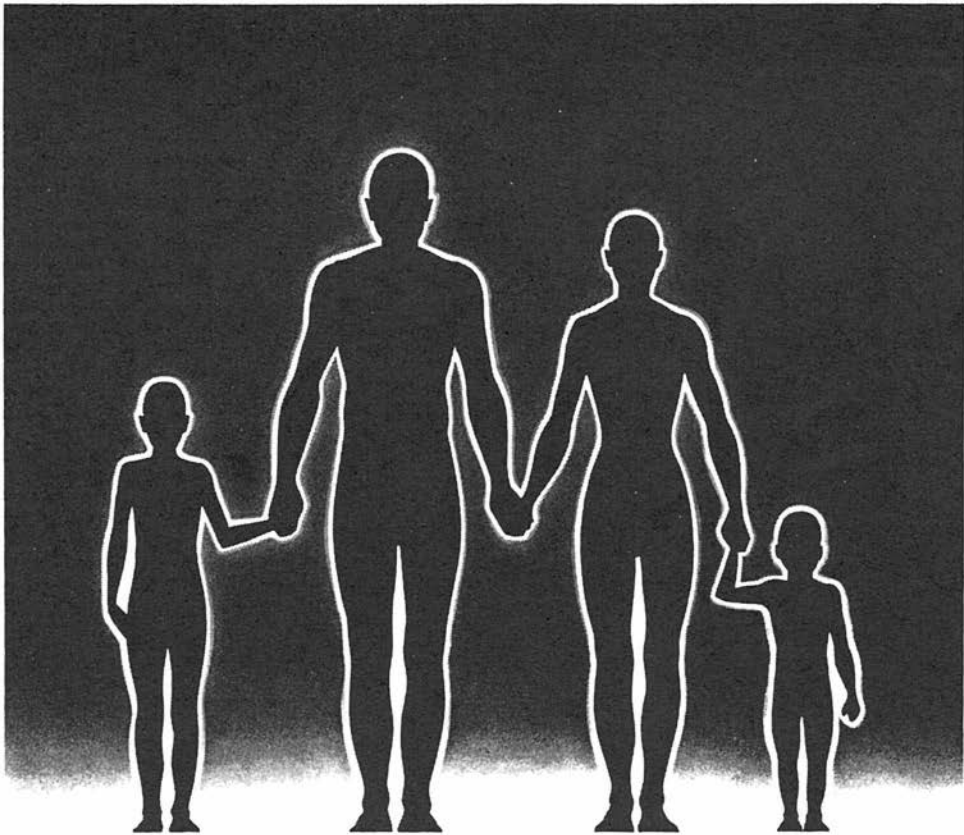
The metamorphosis needed, a slightly rearranged brain, will be simple to carry out in practice. But our whole personality is bound up in our abilities or lack thereof. To change these abilities involves many questions medical technology won't answer. A sufficiently advanced technician might appear indistinguishable from an idiot. Do you want to become an idiot?

### ILLNESSES OF THE 24TH CENTURY

All currently known medical problems will be easy exercises even for novice doctors of tomorrow. So what could go wrong? Let's look a little at history.

In the Middle Ages, wolves ranged freely over Europe. They disappeared from England first of all, but even in 1500, wolves remained abundant in France. In the wintertime, they came in packs into Paris and ate children, dogs, even adults whom they found alone on the streets. Today we no longer have problems with wolves eating our children.

Wolves are wild things. So are viruses and bacteria. In 2388, people will no more suffer from predation by wild bacteria than they now suffer from predation by wolves. A second class of current diseases are the *diseases of development*, like heart disease or cancer, in which normal growth and development become deranged. Fundamentally, they stem from aging, which is the most fundamental process of growth and development. Of course, as a result of our control over genetics, growth, and development, all such diseases will disappear, together with aging itself.



If human beings take complete control of life, human beings will be the cause all medical problems. That is, problems will consist entirely of accidents and assaults.

Crime is another form of predation. Chrysalises, nets, and macrophages could all be turned to criminal use. Specially constructed macrophages could enter our brains, change our memories and desires, and turn us into the slaves of their creator.

Accidents needn't just consist of broken bones. People can be injured by release of biological agents or toxins. Many 19th-Century doctors spent years working out causes for diseases. Even in this century, doctors had to unravel the causes of Legionnaire's disease and AIDS. Similar detective work will go on in the 24th century. It will involve not just seeking out harmful *chemicals*. We would have to search out harmful nanomachines, creatures able to multiply and grow. But unlike the 19th Century or the present, such creatures would be entirely man-created.

History suggests another change too. European populations so easily overwhelmed the peoples of the Americas because Europeans arrived carrying many deadly diseases. Centuries of plagues gave them immunity. The Indians had no such immunity. As many as 90% of them for five generations after the Europeans came died of terrible plagues such as measles and smallpox.

If the major disease problems of the 24th Century will consist of accidental or

deliberate release of organisms, then we can expect that the people of that time will carry with them appropriate enhancements of their immune systems. These enhancements, just like the diseases which made them necessary, will be man-created. Anyone of the 24th Century will be able to resist bacteria/devices which would instantly kill any unprotected person of our time. If hostile nets can invade our brains to take control, then we'll have equally clever defenses against them.

Control of living things puts responsibility for life or death on us, not on the wolves. Any analysis of human nature tells us that we could become very sick in the 24th Century.

Nevertheless, we now live at the leading edge of a very long historical trend toward longer lifespans and less sickness, and even less death from other causes such as accident and murder. This trend tells us that people of the 24th Century will live much longer lives and expect even longer ones; lifespans stretching across millennia. But that is a statement not about medical technology, but about our own use of it.



## A CRY IN THE DARK

Movie review by Mike Darwin

Every great, great once in a while everything comes together just right and a cinematic masterpiece is made. The acting, the directing, the details and nuance of the setting and camera technique all are executed so seamlessly that they beautifully facilitate the telling of a compelling and important story.

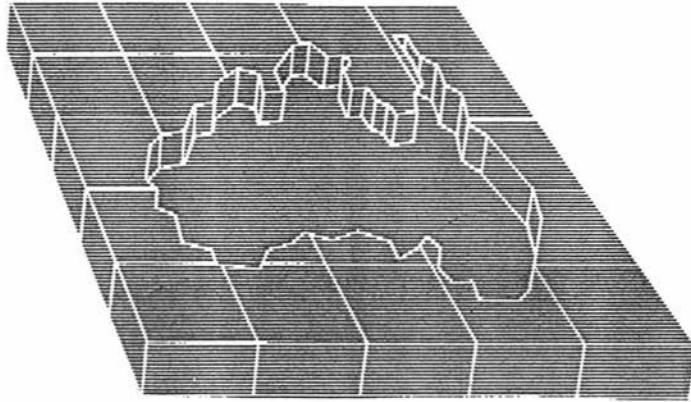
I can remember quite clearly when I first heard the story of Lindy and Michael Chamberlain (no relation to Alcor's Fred and Linda Chamberlain). Alcor member and Australian Coordinator Simon Carter was on an extended visit to the United States in 1982, and he told an outrageous story about this woman who "claimed that a dingo had eaten her baby whilst she and her family were camping near Ayers Rock." I laughed so hard that tears ran down face. I had never heard the word "dingo" before, and even after I was told that it was a wild Australian dog I thought the story absurd and very funny. Particularly the way Simon told it. He said that the whole country was up in arms over the case and that it seemed pretty clear that woman in question had killed her baby in a fit of post-partum depression and then tried to blame it on a perfectly innocent dog.

That was the last I heard of the story until a year or two ago when a close friend of mine, who happens to be a Seventh Day Adventist, mentioned the Lindy Chamberlain case and had quite another story to tell. The Chamberlains it turns out were very devout Adventists (Michael Chamberlain was an Adventist minister) and their trial in Australia had been conducted against a backdrop of religious prejudice and investigatory incompetence. The story I heard was 180° removed from the tale Simon had told.

Also, the Chamberlain's story on the surface, bore a more than passing resemblance to the Kent case. Thus, shortly after it opened I went to see the movie dramatization of the Chamberlain's ordeal. It was all I could do to sit quietly through the screening. At many points in the movie the sense of *deja vu* was overwhelming and I wanted to shout in anger or just walk out and catch my breath. There are the incompetent and politically scheming Australian Northern Territory Police. There is the initial (and correct) finding of innocence and closure of the case which is later reversed by a relentless and inaccurate stream of media hysteria and distortions. There are forensic experts who are expert in one area (like the effects of human dentition on fabrics and objects) being called to provide evidence which is out of their range of competence (such as the effects of animal dentition on fabrics). There are the political opportunists who see in the case a chance at an enhanced career. And there is a prejudiced and gossiping public who knows little or nothing of the real circumstances of the case, but who are all too willing to pass judgment and spread lies.

And yet it is not just the Chamberlains and their agony that makes this movie an extraordinary cinematic experience. It is their message of courage and persistence in the face of overwhelming odds. That and the incredible acting of Meryl Streep and Sam Neill as Lindy and Michael Chamberlain. I must confess that I am no great fan of Meryl Streep. Fortunately she is not in this movie. Streep manages to transcend her usual screen persona and give us a woman who is the quintessential plain-jane Australian woman. And I do not mean that description as an insult to Australian womanhood. It is a strong, open, sassy kind of woman that Streep captures. A kind of woman who, in her lack of pretense, self-deprecating good humor, and great strength and commitment to values I find extremely attractive. Lindy Chamberlain is the kind of woman that a man -- any man -- would do well to have at his side at a time of crisis or in the heat of a battle.

The great triumph of *A Cry In The Dark* is that it resists being just a simple cautionary tale about a single excess, such as irresponsible press coverage. It succeeds



because it shows that the kind of nightmare that the Chamberlains lived through requires that a number of ingredients be present: corrupt and/or incompetent officials, a sensationalist and irresponsible press, so-called experts whose reach far exceeds their grasp, and lastly and most importantly, a country of people who, at least in one case, allowed their hateful prejudices and lack of intellectual rigor to sidetrack justice.

This is a movie that every cryonicist should see. It is a movie that every man, woman, and child living in America or anywhere in the world should see. It is a powerful and flawlessly executed cautionary tale.

The last words that Michael Chamberlain says, the words that close the movie, sum up the feelings of all of us here at Alcor:

"We are still fighting because we want the world to know how important innocence is to innocent people."

\* \* \* \* \*

## 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.

# ALCOR

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The JANUARY meeting will be held at the home of:

(SUN, 8 JAN 1989)

Bill Seidel  
10627 Youngworth  
Culver City, CA

The FEBRUARY meeting will be held at the Alcor facility:

(SUN, 5 FEB, 1989)      Alcor Life Extension Foundation  
12327 Doherty St.  
Riverside, CA

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The Alcor Cryonics Supper Club is an informal dinner get-together in the Greater Los Angeles area. These meetings are for newcomers and old-timers alike -- just an opportunity to get together and talk over what's happening in cryonics -- and the world!

If you've wanted an opportunity to ask lots of questions about cryonics, or if you just want a chance to spend some time with some interesting and nice people, pick a date and come! All dinners are scheduled for Sundays at 6:00 PM.

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SUNDAY, 22 JANUARY

Los Arcos\*  
722 N. Pacific Ave.  
Glendale  
(818) 246-8175

\*Take the 134 to Glendale, exit at Pacific Ave., and go north about one block.

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\* \* \*

The New York Cryonics Discussion Group of Alcor has recently formed.

The group meets on the the third Saturday of each month at 7:30 PM. The November 19 meeting will be held at the El Paso restaurant, in Manhattan's Greenwich Village. The address is 134 West Houston St., between McDougal and Sullivan. Telephone (212) 673-0828. Ask for the Alcor group at the rear of the restaurant. Subway stops: Houston St. on the 1 train; Spring St. on the C, E, or K trains.

If you live in the New York, Philadelphia, New Jersey, or Boston areas and would like to participate in the rebirth of New York cryonics please contact one or more of the following people:

Gerard Arthus	(516) 273-3201
Al Roca	(201) 352-5268
Curtis Henderson	(516) 589-4256

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