



# CRYONICS INSTITUTE

## NEWSLETTER

Cryonics insights and  
information for members  
and friends of the  
Cryonics Institute



# CI BULLETIN

## *Forward Momentum, Elections and the 2016 AGM*



*Dennis Kowalski - CI President*

Hello everyone. I'm pleased to report that CI continues with steady growth and improvements. We are currently finishing up the remodeling of the front offices and Patient File room and both will be ready for viewing at our 40th AGM on Sunday, September 11th at 3:00pm EDT - Remember to mark your calendars! This year we will be conducting a Silent Auction hosted by Director Stephan Beauregard, with all proceeds donated to CI. Please note, Stephan is still looking for additional auction items as well as volunteers to help run the auction at the meeting. If you can help, please contact him at [stephan@cryonics.org](mailto:stephan@cryonics.org) or via our Facebook page. Our featured guest speaker this year is Dr. Robin Hanson, an expert on prediction markets, the social implications of future technologies, nano-technology and how these technologies influence the economy and society.

It's election time again, so please don't forget to vote. More information about the Board of Director elections and our candidate's bios are included in this issue of the CI Newsletter. We

have six candidates running for four very important positions this year. Good luck to all of our candidates and thanks for stepping up!

I am impressed with some of the exciting new developments happening in cryonics. CI Membership continues to grow as well as increased public interest in cryonics. There has also been a lot of positive feedback about the many ways to keep informed, such as our new improved CI members only Yahoo group. Membership has increased on this forum since it began and continues as the content has become more focused and relevant. If you are a CI member and are interested in joining the CI Yahoo group please email [CIHQ@aol.com](mailto:CIHQ@aol.com) to request an invitation. The CI group is private, so we do need to take this little extra step to add new members.

Interest in cryonics operations locally is catching on and members seem to be becoming more aware of and concerned with standby and what they can actually do right now. There are additional cryonics standby groups and facilities sprouting up within the United States and abroad. My hope is that all cryonicists will improve and help one another. I think the standby message is taking hold. We have sold many basic kits and people are asking good questions about our standby manuals and what to do. We also continue to run our "Standby Workbook" feature in every issue of the CI Newsletter to help members focus on their personal standby preparations with simple task-oriented instructions. There will be more to follow.

We continue to work on training efforts for local standby to help members, family, friends and professionals to help honor our wishes when we cannot speak for ourselves. Remember to check the "Member Readiness Checklist-What are your next steps?" page of this magazine and visit the resources section of CI's website to work on improving your own standby should you ever need it.

Stay healthy and I hope to see you at the next AGM.

Sincerely

*Dennis Kowalski - CI President*

### **CRYONICS INSTITUTE MAGAZINE**

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### **ARTICLE SUBMISSIONS**

Cryonics Institute or cryonics-related articles are welcome. Submissions: [cryonicsnews@gmail.com](mailto:cryonicsnews@gmail.com)

### **E-SUBSCRIPTIONS**

As a CI member, you are automatically added to our email reminder list. To unsubscribe, please use the "unsubscribe" link at the bottom of your email.

# CI NEWS

*What's happening at the Cryonics Institute*

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## Standby Manual Update

We've made some revisions to the CI Standby Manual. The most current edition (Revise Date JULY 2016) is available for download at [http://www.cryonics.org/images/uploads/misc/Cryonics\\_Institute\\_Standby\\_Manual.pdf](http://www.cryonics.org/images/uploads/misc/Cryonics_Institute_Standby_Manual.pdf).

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## CI Board of Directors Elections

Candidates for the 2016 CI Board of Directors elections have been announced. Once again, we are pleased to present a great roster of talented and dedicated individuals for your consideration. This year's candidates are Kevin Doyle, Debbie Fleming (incumbent), Alan Mole (incumbent), Marta Sandberg (incumbent), John Strickland (incumbent), and Phillipe Vitu. Please be sure to review the candidate bios in this issue of the CI Newsletter and return your ballots in time to be counted at the September 11 AGM.

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## Call for Model-Makers

Are you good with your hands? Do you have artistic talent and attention to detail? Do you think you have what it takes to build a realistic scale model of a CI Cryostat? CI is looking for members or even non-members with artistic talent and modelling skills who are willing to volunteer their time building a scale replica of the famous CI cryostat for various display and promotional purposes. The models ideally would be made of plastic, fiberglass or another rigid lightweight material (durable enough to withstand handling and transport) and stand 1 1/2 to 2 feet tall. A cutaway showing a humanoid figure inside would give the viewer an informative visual of how the cryostats are used. If you are interested in this project feel free to contact CI for more details or submit your work if you're up for this type of challenge.

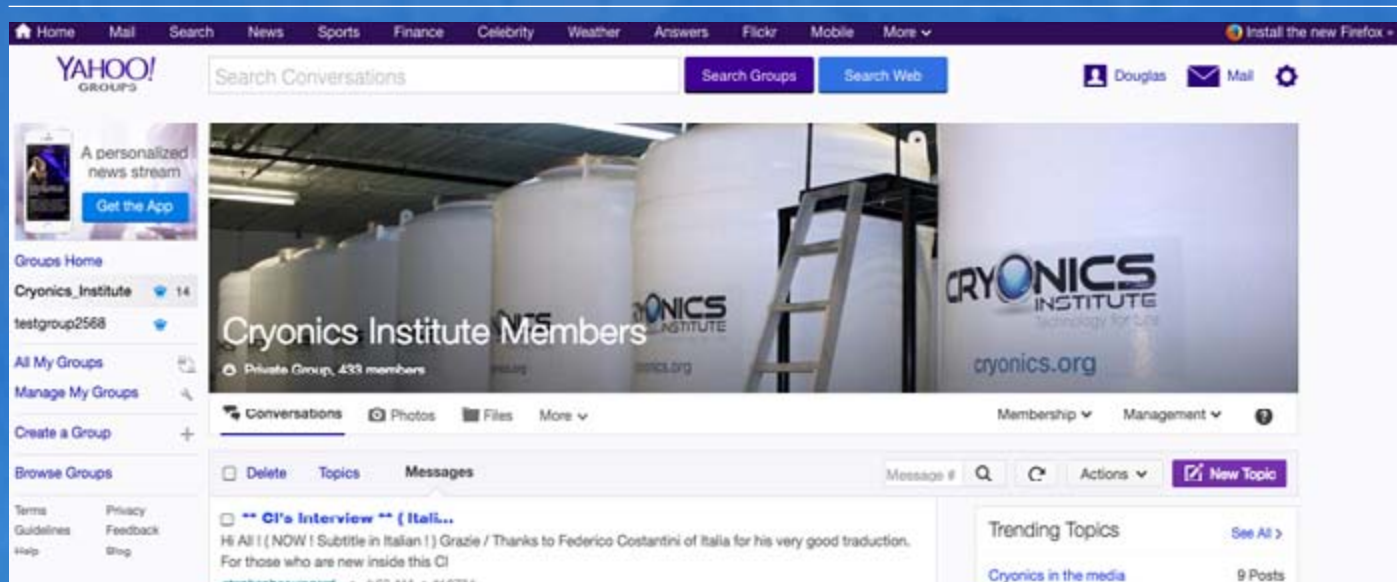
Select cryostat reference photos for this project are available [HERE](#).





# CI NEWS

*What's happening at the Cryonics Institute*



## Welcome to the New & Improved CI Members-Only Discussion Board

There has been a lot of positive feedback recently regarding the new and improved official CI Members-Only Board on Yahoo. In the past the group was unmoderated and as a result there were complaints and negative feedback about the group straying off topic and some less than civil flame wars. We got the message and we responded by bringing the group back to where it belongs so we can enjoy it for what it was meant to be.

The message board's purpose is intended as an informal yet focused forum where members can discuss cryonics, CI and related topics in a friendly and courteous environment. We manage this group for our members to encourage conversations and idea sharing among each other. The group was started as a way to help improve cryonics operations and procedures. Topics range from Standby planning to vitrification formulas and other technical aspects of what we do. Members are encouraged to volunteer for projects and to donate money for research projects or to just brainstorm about how to make CI better. Many people have used the forum to join up and form local cryonics support groups. These groups serve to educate the public, help in emergencies, and provide camaraderie for optimistic enthusiasts.

The group is being officially hosted, moderated and endorsed by CI and is reserved for and maintained exclusively for CI members. While it is our official group, we must add that not everything that ends up on the board is official CI policy or even factual. If you want official news check our website, this newsletter or contact CI directly. Any official CI messages or policies that do wind up on the Yahoo forum will be expressly marked as such and come from a CI Officer.

In order to join the group a member must submit a request to join which must be approved by one of our moderators. They will then send you an invitation to join. The reason for this is twofold. First, CI's official group is a private group and as such does not appear in Yahoo's Groups Directory. Second, we need to confirm your CI Membership before we can allow you into the group. If you are a CI Member who would like to join, please send an email to [CIHQ@aol.com](mailto:CIHQ@aol.com) and we will be happy to invite you to join the conversation!

# 2016 Cryonics Institute Board of Directors

## CANDIDATES

All CI members should have received their 2016 Board of Directors elections ballots in the mail. If you have not received your ballot, please contact CI Headquarters to resolve any issues. This year's candidates for election follow in alphabetical order.



### Kevin Doyle

My name is Kevin Doyle and I am running for the position of CI Director. I'm hopeful that I can help with the challenging work CI has ahead regarding growth, stability and changing public perceptions. I'm fully supportive of the current efforts of many groups like the CSC to put local standby teams/procedures in place.

Being from Canada, I could possibly present a bit of an international perspective. I have run a large scale beef farm operation all my life and so have some understanding of ground level work and organization. I am presently assisting the board as an advisor due to an election tie a couple of years ago.

I have a BSc in Mechanical Engineering from Queen's University and a M.E.Sc from the University of Western Ontario and have worked in Nuclear Power Generation for many years. I have a Ph.D. in Operations Research from the University of Toronto and have experience with optimization projects in the health care field, the equipment maintenance field, the area of organizational behavior, and etc. I presently operate my own consulting organization.

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### Debbie Fleming

**Incumbent: CI Organizational Consultant and Director T2016**

Debbie Fleming is 46 and currently lives in Palm Bay Florida with her two hairy children; Morgan (dog) and Peaches (cat). She started working at a local semiconductor company 20 years ago in an entry level position and has worked her way to her current position as an Engineering Tech. Her most recent accomplishment was obtaining her bachelor's degree in Organizational Management. Her father, John Bull, was involved in Cryonics since the very first days back in the 60s and was formerly the editor of Long Life magazine.

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## Alan Mole

**Incumbent: CI Vice President T2016**

(Robert) Alan Mole was born in Baltimore in 1943. He earned a BS in Civil Engineering at the University of Denver and an MS (Structural Stress Analysis) at the University of Colorado in 1971. After a career as an aerospace stress analyst, an engineer who determines whether rockets and satellites will break, he is now semi-retired. His background in biology consists of a high school class, plus reading Stryer's Biochemistry and books on molecular cellular biology to learn of later advances. Currently Vice President of CI, he has written articles for Long Life and also CI Magazine (to be published shortly), and sponsored research.

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## Marta Sandberg

**Incumbent: CI Overseas Director T2016**

Marta Sandberg was born in Sweden in 1955, in a town that straddled the Polar Circle. She immigrated to Australia as a teenager and went from the freezing north to a hot desert mining town. It was there she met her husband Helmer. They shared twenty-three years together until he died of a pituitary brain tumour. Although Marta had been interested in cryonics since she read an article about the Dora Kent case, it was Helmer's illness that rekindled her interest. After spending several years investigating cryonics — and then more years trying to convince her husband — they both signed their contract with CI. Marta also has a B.S. in Mathematics and a B.S. Business Accounting

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## John K. Strickland

**Incumbent: CI Risk Management Director T2016**

John K. Strickland, Jr. was born in New York City during the Second World War. He lived for 30 years in western New York State where he received a B.A. in Anthropology with a minor in Biology from S.U.N.Y. at Buffalo in 1967. He moved to a spot just outside Austin, Texas in 1976, and earned a second B.A. in Computer Science from St. Edwards University in Austin in 1986. He also earned graduate credits in both Anthropology and Biology. He was a professional programmer/analyst from 1980 to 2009, and was employed by the State of Texas in Austin from 1989 to 2009. He is now an independent writer and analyst in the space and energy fields.



## Phillippe Vitu

The revival of the deceased through cryonics would be a momentous achievement in the history of mankind only to be matched by the discovery of agriculture in the Neolithic age or by the invention of the printing press in the fifteenth century.

If elected to the Board of CI, I would advocate cost-effective translations of CI material into at least Spanish and French to better bring cryonics to the world. I would give cryonics added exposure with primary health care professionals by helping organize a CI presence at medical conventions in North America.

The cause is worth it.

Proud member of CI since 2012 I grew up in France, Austria, Japan and the US, I am married, currently living in Toronto (Canada) and have two children who are also CI members. I have a Law Degree, an MBA and Masters in Political Science. I am 58 years old.

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## About CI's Board of Directors

The twelve Directors of the Cryonics Institute Board are elected from our membership for three year terms in groups of four every September via mail-in ballots sent to the membership earlier in the year. Any fully-funded member in good standing may run for the board by submitting their nomination and bio to Cryonics Institute headquarters by the established deadline for that election cycle.

Election ballots are tallied and the results announced at the Annual General Meeting held at the Cryonics Institute facility every September.

All elected members of the Cryonics Institute Board are Directors. The Officers (President, Vice-President, Finance, etc.) are elected by the Board from among the sitting Directors.





## 2016 AGM

# 40th Anniversary Celebration

### 3 P.M. Sunday, September 11th, 2016

Over 50 years ago, Robert CW Ettinger introduced the world to his groundbreaking vision of cryonics with the publication of *The Prospect of Immortality*. Shortly thereafter, in 1976, his dream of affordable cryonics services for everyone became a reality with the founding of the Cryonics Institute. The Cryonics Institute was incorporated 40 years ago in Michigan, on April 4, 1976 by four local residents: Richard C. Davis, Robert Ettinger, Mae A. Junod & Walter E. Runkel.

CI celebrates its 40th anniversary this year. This is an opportunity for us to express our thanks for the confidence that you have placed in us all these years and to say "thank you" for making CI the largest worldwide cryonics organization in terms of membership and impact. Not only are we currently the largest in the world, we can also take pride in the fact that we are the only Cryonics Organization with members on all 5 continents!

In celebration, you're cordially invited to attend our Annual General Meeting (AGM) that will be held at 3PM on Sunday, September 11th, 2016 at our Michigan facility (see the following page for complete details.)

Central to CI's mission is a deep value of life and family and, because of this, we work hard and sacrifice to make ourselves the most affordable cryonics organiza-

tion for everyone.

Today, the Cryonics Institute is a proven leader in Cryonics. Our forty years have been marked by continued development, recruitment of passionate clientele and a dedication to positive change, innovation and attention to responsible budgets. CI's success reflects the assiduous work of a team who care about your well-being and your future.

We trust the coming years will provide continuing opportunities to grow at home and around the world by developing new concepts and putting into place new and more efficient services for all our members.

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*Cryonics is much more than just the science of "freezing," because our objective is life after revival, with renewed youth and extended lifespans. We want to make this a reality. —*

*Dennis Kowalski - Cryonics Institute President*

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Thank you all very much for your enthusiasm and support over the years. Your Board of Directors is looking forward to another successful 40 years and beyond!

Respectfully

*Stephan Beauregard - CI Director / Communications*





## 2016 AGM

### 40th Anniversary Celebration

3 P.M. Sunday, September 11th, 2016

The 2016 Annual General Meetings of the Cryonics Institute and Immortalist Society are right around the corner! The meetings will be held at 3PM on Sunday, September 11th, 2016 at the CI facility, 24355 Sorrentino Court, Clinton Township, Michigan 48035 (USA).

The CI facility will be open to guests and visitors one hour before the meeting begins. Meetings offer an excellent opportunity to see the facility, meet other members, get a sense of the status of the organizations and to meet with Officers, Directors and Staff. For those who come a day early, an informal dinner will be held on Saturday evening at a local restaurant.

Agenda items for the CI AGM will include the President's Report, Treasurer's Report and Investment report as well as business issues that arise. The winners of the 2016 CI Board of Director election will also be announced. Tours of the CI Facility will be available for interested guests as well as standby demonstrations using CI's Standby Kit.



This year's meeting will also feature a presentation by Dr. Robert Hanson. Dr. Hanson is a Professor of Economics at the George Mason University in the United States and a researcher with the Future of Humanity Institute at Oxford University. He is an expert on prediction markets, the social implications of

future technologies, nano-technology and how these technologies influence the economy and society.

This year we will also be hosting our first-ever Silent Auction, allowing attendees to bid on a number of items. All monies raised will be donated to CI, so we are hoping this will be a fun and rewarding addition to our Annual Meeting as well as a great way to raise donations. For full rules, please see [the previous issue of the CI Newsletter](#).

A buffet dinner and social follow both meetings. There is no charge for the buffet dinner, but we need to know how much food to order, so please be sure to RSVP.

The Annual Meeting is open to the general public. We request that we be informed if you wish to attend. For driving directions, more meeting information and to confirm attendance, send e-mail to CIHQ@aol.com, phone (586) 791-5961 or visit Wherevent.com (<http://www.wherevent.com/detail/Cryonics-Institute-The-Annual-General-Meeting-AGM-2016-of-the-Cryonics-Institute>.)

### Night-Before Dinner

CI members and the public are welcome to join us the night before the official CI AGM at Ike's Restaurant for a casual dinner and drinks (all foods include Vegan options.) We will meet Saturday, September 10, 2016 at 6pm at Ike's Restaurant, 38550 Van Dyke Avenue, Sterling Heights (MI) 48312, near the Cryonics Institute. For a complete menu and directions, please visit [Ike's Restaurant](http://www.ikesrestaurant.com/location.php). (<http://www.ikesrestaurant.com/location.php>)



*We'll be holding a Silent Auction with all proceeds donated entirely to CI. I would like to remind all of you that we will have great items (Signed) by a few famous artists, actors, singers & more! For those who would like to be a volunteer or who would like to offer items for this Silent Auction, please contact me directly by [Email](#) or on [Facebook](#).*

*Thanks for your support! — Stephan Beauregard / CI Director / Communications and Social Media.*

# Remembering Robert Ettinger

*by Stephan Beauregard - CI Director Communications / Social Media*



It's hard to believe it's been 5 years since we said goodbye to our founder Robert Ettinger. We couldn't let this day pass without remembering his impact on us all. He remains in the thoughts of many cryonicists & friends of cryonics.

The Father of Cryonics died on July 23, 2011 in Detroit (Michigan) of natural causes, and was cryopreserved. He was 92. The cause was respiratory failure. After several days of preparation, Robert Ettinger's body was frozen, placed in a cryonic capsule, and cooled to  $-196^{\circ}\text{C}$  ( $-320.8^{\circ}\text{F}$ ). Mr Ettinger was the institute's 106th patient.

The people who knew him personally will always remember the passion that drove this remarkable man. For those who aren't familiar with Bob's life and work, here is a summary biography, courtesy of The Immortalist Society web site.

## Robert Ettinger - A Life in Cryonics

Robert Chester Wilson Ettinger (December 4, 1918 / July 23,

2011) was an American academic, known as "the Father of Cryonics" because of the impact of his 1962 book *The Prospect of Immortality*. He's considered by some a pioneer transhumanist on the basis of his 1972 book, *Man into Superman*.

Robert Ettinger founded the Cryonics Institute and the related Immortalist Society and until 2003 served as the groups' President. His body has been cryopreserved, like the bodies of his first and second wives, and his mother.

Mr Ettinger was born in Atlantic City (New Jersey), the son of Russian Jewish immigrants. Despite being raised in a Jewish family, he later on became an atheist. He served as a second lieutenant infantryman in the United States Army during World War II. Severely wounded in battle in Germany, he received the Purple Heart and recovered after several years spent in a Michigan hospital. He earned two Master's degrees from Wayne State University (one in physics, one in mathematics) and spent his working career teaching physics and mathematics at both Wayne State University and Highland Park Community college in Michigan.

Robert Ettinger had two children with his first wife, Elaine, David (1951) & Shelley (1954). David gave his first cryonics interview to journalists at the age of 12 and was an attorney in Michigan State. He served as legal counsel to the Cryonics Institute & the Immortalist Society. Robert Ettinger's daughter, who has had no interest in cryonics, is a writer and revolutionary socialist.

Mr Ettinger met his second wife, Mae Junod, in 1962 when she attended one of his adult education courses in basic physics. Junod typed and assisted with editing the manuscripts for both *The Prospect of Immortality* and *Man into Superman*. She became active in the Cryonics Society of Michigan (CSM) and edited and was production manager for the CSM monthly newsletter, *The Outlook*. In the 1970s *The Outlook* was renamed *The Immortalist* & Junod continued editorship until the mid-1990s. *The Outlook* is the longest continuously published cryonics magazine. Junod was an author, feminist, and marriage counselor.

Robert Ettinger married Junod in 1988 after the death of his first wife. Ettinger described his time with Junod as one of the most satisfying and tranquil times in his life. The couple moved to Scottsdale (Arizona) in 1995 and enjoyed a period of domestic life during which time the couple began to ease

into retirement from over 30 years of cryonics activism and the attendant burdens of work and controversy. Mae Ettinger suffered a debilitating stroke in 1998 from which she never fully recovered followed by a lethal stroke in 2000, which resulted in her cryopreservation.

## Roots of cryonics in Science Fiction

Robert Ettinger grew up reading Hugo Gernsback's *Amazing Stories*. He was particularly affected when he was 12 years old by a Neil R. Jones story, "The Jameson Satellite," which appeared in the July 1931 issue of *Amazing Stories*, in which one Professor Jameson had his corpse sent into earth orbit where (as the author mistakenly thought) it would remain preserved indefinitely at near absolute zero. And so it did, in the story, until millions of years later, when, with humanity extinct, a race of mechanical men with organic brains chanced upon it. They revived and repaired Jameson's brain, installed it in a mechanical body, and he became one of their company.

Mr Ettinger assumed that one day — long before he grew old — biologists would learn the secret of eternal youth. As he grew out of boyhood in the 1930s, he began to suspect it might take a little longer since no scientists were yet working on this particular endeavor. If immortality is achievable through the ministrations of technologically advanced aliens repairing a frozen human corpse, then Ettinger thought everyone could be cryopreserved to await later rescue by our own medically more sophisticated descendants.

In 1947 while in the hospital for his battle wounds, Robert Ettinger discovered that research in the area of cryogenics was being done by French biologist Jean Rostand; Robert Ettinger wrote a short story elucidating the concept of human cryopreservation as a pathway to more sophisticated future medical technology: in effect, a form of one-way medical time travel. The story, "The Penultimate Trump," was published in the March 1948 issue of *Startling Stories* and definitively establishes Ettinger's priority as the first person to have promulgated the cryonics paradigm, principally that contemporary medical/legal definitions of death are relative, not absolute, and are critically dependent upon the sophistication of available medical technology. Thus, a person apparently dead of a heart attack in a tribal village in the Amazon will soon become unequivocally so, whereas the same person with the same condition in the emergency department of large, industrialized city's hospital, might well be resuscitated and continue a long and healthy life. Ettinger observed that criteria for death will vary not just from place to place, but from time to time, and so today's corpse could be tomorrow's patient.

## Launching the Cryonics Movement

Robert Ettinger waited expectantly for prominent scientists or physicians to come to the same conclusion he had, and to take a position of public advocacy. By 1960, Mr Ettinger finally made the scientific case for the idea, which had always been in the back of his mind. He was 42 years old and said he was increasingly aware of his own mortality. In what has been characterized as an historically important mid-life crisis, Mr Ettinger summarized the idea of cryonics in a few pages, with the emphasis on life insurance, and sent this to approximately 200 people whom he selected from *Who's Who* in America. The response was very small, and it was clear that a much longer exposition was needed — mostly to counter cultural bias. Robert Ettinger correctly saw that people, even the intellectually, financially and socially distinguished, would have to be educated into understanding his belief that dying is usually gradual and could be a reversible process, and that freezing damage is so limited (even though fatal by present criteria) that its reversibility demands relatively little in future progress. Ettinger soon made an even more troubling discovery, principally that "a great many people have to be coaxed into admitting that life is better than death, healthy is better than sick, smart is better than stupid, and immortality might be worth the trouble!"

In 1962, Robert Ettinger privately published a preliminary version of *The Prospect of Immortality*, in which he said that future technological advances could be used to bring people back to life. This finally attracted attention of a major publisher, which sent a copy to Isaac Asimov; Asimov said that the science behind cryonics was sound, and the manuscript was approved for a 1964 Doubleday hardcover and various subsequent editions which launched cryonics. The book became a selection of the Book of the Month Club and was published in nine languages.

He became an "overnight" media celebrity, discussed in *The New York Times*, *Time*, *Newsweek*, *Paris Match*, *Der Spiegel*, *Christian Century*, and dozens of other periodicals. He appeared on television with David Frost, Johnny Carson, Steve Allen, and others. Ettinger also spoke on radio programs coast-to-coast to promote the idea of human cryopreservation.

Since the commercial publication of *The Prospect of Immortality*, all those active in cryonics today can trace their involvement, directly or indirectly, to the publication of one or both of Ettinger's books. While Ettinger was the first, most articulate, and most scientifically credible person to argue the idea of cryonics, he wasn't the only one. In 1962, Evan Cooper had authored a manuscript entitled *Immortality: Scientifically, Physically,*



Now under the pseudonym Nathan Duhring. Cooper's book contained the same argument as did Ettinger's, but it lacked both scientific and technical rigor and was not of publication quality.

## Organizational activities

Following publication of *The Prospect of Immortality*, Ettinger again waited for prominent scientists, industrialists, or others in authority to see the wisdom of his idea and begin implementing it. By contrast, Cooper was an activist and must be credited with forming the first cryonics organization (although the word "cryonics" wasn't to be coined until 1965) the Life Extension Society (LES). LES advocated immediate action to implement human cryopreservation and established a nationwide network of chapters and coordinators to develop a grassroots capability for delivering cryopreservation on an emergent basis. Cooper left cryonics activism in 1969, and was lost at sea in 1983. But his activities with LES provided the basis for the formation of the first Cryonics Societies.

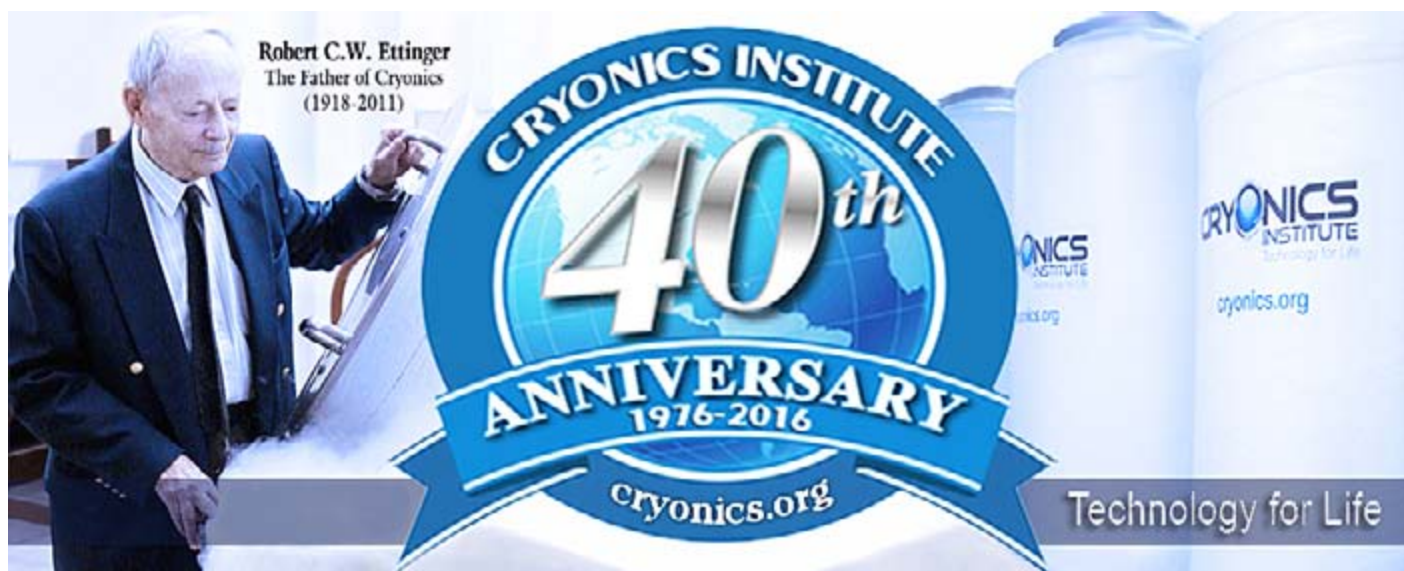
In 1966 the Cryonics Societies of California & Michigan were formed. Ettinger was elected President of the Cryonics Society of Michigan (CSM). In the 1970s CSM was transformed under the direction of Ettinger into the Cryonics Institute (CI) and the Immortalist Society (IS). In 1977, Ettinger's mother, Rhea Ettinger, became CI's first patient. Robert Ettinger was President of both CI and IS until 2003.

From 1964 until circa 1990 the growth of the cryonics movement was slow. During this period cryonicists suffered from lack of consistent or quality professional medical, legal, philosophical, business or financial support. Admission of interest in, or

advocacy of cryopreservation, uniformly resulted in reactions of revulsion, ridicule, or both. Media and public perception were consistently negative. This external pressure was exacerbated by the anxiety and fear felt as cryonicists experienced the death of cohorts and loved ones and were, of necessity, forced to provide whatever level of care they could manage on a more or less mutual aid basis. Cryonics, contrary to public perception at this time, was (and still is) a middle class undertaking, and the resources available were those of mortuary personnel and equipment and procedures which cryonicists were able to construct and devise themselves. An additional worry was the uncertain legal status of cryonics and the ever present possibility of governmental interdiction.

The growth of the internet has made a crucial difference to the spread of cryonics as an idea, which, despite much media coverage, seems to be mainly dependent upon personal contact and personal investigation.

The work of his life continues and will continue. All those who have known him and who shared his life and vision are able to see the extension of his work in 2016 and also his way of seeing what is so important in life – helping people from all social class and enjoying life to the fullest. On behalf of all Cryonicists, thank you very much for this beautiful heritage Mr Ettinger and thanks for continuing to guide us through your writing and quotes, which are of great inspiration to all of us now and far into the future.





# Where do we stand?

*by Alan Mole - CI Vice-President*

How close are we to reversible cryonics, in which we can demonstrate that a brain can be cryopreserved and restored?

We know that brains subject to ischemia deteriorate quickly, and we wish to avoid slow cooling and a two day trip to CI. We would far rather travel to Clinton Township when we are near death, take lodgings near CI, get an RN who can pronounce death to sit beside us and, hopefully, die promptly in a way that leaves our brain in good shape. Then be transferred quickly to CI, cooled and perfused promptly, and cryopreserved. Much later we want to be thawed, cured and rejuvenated, and enjoy some accumulated riches.

How close are we to all this? Perhaps very close, if we follow good advice. Research published in Long Life by our researchers Aschwin de Wolf and Chana Phaendra show it is a challenge to perfuse rat brains after even an hour of warm ischemia or 24 hours of cold ischemia without getting a lot of edema and suboptimal distribution of the vitrification agent. (1) But it's easy if we cool rapidly after death and start

the procedure within hours. There is a strong moral here: dying near CI is far better than dying across the country and being shipped to CI in a day or two. True, longer ischemia may leave our brains in good enough shape that future nanotechnology can restore them, but being perfused and cryopreserved more promptly may let our brains be restored by simple means we have today.

Most of us die slowly so we can certainly travel to Michigan. A CI member owns a house near CI that we can rent. Registered nurses can pronounce death in Michigan (provided they have written permission from a doctor), and a nursing service will provide a nurse to sit with you for just \$10 an hour. Methods of dying are harder. I have written that ideally one would die by hypothermia – slipping into a comfortable tub of warm water, turning on the cold tap so it gradually grows cold (Michigan water in winter is very cold, like the North Atlantic where torpedoed sailors died of cold in 45 minutes in World War II. Warm water could be cooled with ice.) It would be miserable to experience this,

but after turning on the cold tap you'd swallow barbiturates and go into a deep sleep in a minute. Then the water would grow cold and you would die in 45 minutes, with tissues pre-cooled.

This still sounds ideal and self-induced suicide is legal in all 50 states – but it might arouse the press and upset the populace and thus endanger cryonics. For now then, it is out – but attitudes are changing and assisted suicide is legal in five states with more considering it, so in time this may become acceptable. Or some other method may be allowed. For now we should just die naturally.

Once “dead” and pronounced, an ice bath will cool you in an hour. Some people have fallen into icy rivers and been drowned, and then revived – with all mental faculties – an hour later, so the ice bath should be good for that long, while transfer to CI takes less than that. So far so good.

But can you be perfused with an ice-inhibiting vitrification solution that will keep brain cells viable? Dr. Yuri Pichugin and Gregory Fahy cryopreserved brain slices with a new generation vitrification solution and found 91-108 percent viability (compared to the control) with a potassium/sodium assay. Their research was published in a peer-reviewed journal.(2) Advanced Neural Biosciences are extending this method to doing viability studies on brain slices after whole brain perfusion. Later they will try to pump blood-like solution through the brain arteries and check for EEG activity. The biggest challenge in whole brain cryopreservation is to identify a vitrification solution with low toxicity, low viscosity, and good blood brain barrier penetration.

Thus it appears we are moving closer to reversible brain cryopreservation. But what of providing a healthy youthful body? In 100 years, can medicine grow an entire new young body and transplant your brain into it? Conventional medical research is now experimenting with growing organs. Simple ones like tracheas and bladders have been grown already and used successfully to replace diseased organs in human bodies. Simple rat hearts grown in the lab pump blood and researchers are working on human hearts, kidneys and livers. Recently a full size human heart was created from the inter-cellular matrix from a donated organ

plus skin cells returned to stem cell condition. (3) The heart beats, though it will probably be five years or more before the technique can be considered for transplants. My guess is that in 20 years most organs can be grown and within a century full bodies will be possible.

What of head transplants? In 1960 Russian doctors transplanted the head of a small dog onto the back of the neck of a large one so the resulting creature had two heads. The thing lived several days. I recall being in high school and hearing of this. We all wondered why anyone, even crazy Commies, would do such a bizarre and cruel thing. The smaller head tried to bite the larger one though it seemed it should better have bit the demented scientists... Perhaps we were too hard on those Russian doctors. They did show that head transplants were possible.

Today an Italian doctor proposes to remove the head from the body of a brain-dead man and replace it with the head of a paralyzed man. The doctor believes the nerves will connect and give the paralytic mobility again. The operation is to be conducted in a permissive country (possibly China), within a year or so. (4) It is very, very controversial and most experts do not believe the nerves will reconnect. Still it is a beginning. Heart transplants and artificial hearts began about fifty years ago with little success and are now standard. Perhaps half a century from now head transplants will be too. (Possibly this should be called a whole body transplant because the goal of this procedure is to allow the head of a person to survive with a new or different body.)

None of this is certain but it gives us reason to hope. If we can travel so we are near CI, if we can die in some reasonable way and be moved to CI promptly, then it seems we have a fair chance at our brain being cryopreserved and later revived. Medical progress is moving on apace and in a hundred years should be able to grow us a new body and plug in our brain. Tissue at liquid nitrogen temperature is estimated to last basically indefinitely (5,000 years is often mentioned), so there is plenty of leeway.

Next, how can we assure that we'll have money when revived? Money may not even be used then and a welfare recipient today lives well compared to a millionaire of a



century ago. So having no money in the future may not be so bad. Yet things in limited supply like beach-front property must be allocated in some way, so money may be useful. Trusts are possible if you have a lot of money, but there are forms to file annually and the expense of these limits trusts to people with hundreds of thousands of dollars to invest.

For those with less assets a trust will not work, because fees will devour it all. If we assume \$1000/year for lawyers to file forms, then if you have only a thousand dollars it is obvious you cannot afford a trust. Yet a thousand may be enough, using another method. Art and rare coins have appreciated at 7% for decades. For example, the 1836 Gobrecht silver dollar, condition PR64, cost \$1900 in 1974 and \$75,000 in 2011, which works out to 9.6% interest per year, though inflation was 3%, so say 6.6% after inflation. At 7%, value doubles in ten years; in a century ten doublings increase value a thousand times. So a thousand dollars becomes a million. And the best part? Tax is due when you sell the object but no annual forms are required, so the value can increase.

I've bought a rare coin from Liberty Coins (owned by Pat Heller, CI's treasurer and very diligent in finding a good one). I'll put the coin in a sturdy plastic pipe, seal it with solvent and end caps, and bury it somewhere. A State or National park, well off the beaten trail, would be good, though I should check whether this is against any rule or I'll risk a small chance of a small fine. I should check, I really should.

I may buy a little piece of art and put it somewhere else. There are no guarantees but these things might work.

Finally, what of life in 100 years? Will it be awful, like 1984 or Soylent Green? Probably not. Someone from 1916 would be amazed at life today. Everyone owns luxurious cars with high speeds, near-perfect safety features and air condition-

ing. The Internet means everyone, no matter how isolated, has access to a virtual infinity of books, music and movies, as well as communities of common interest including people worldwide. We have reached the Poles, the depths of the ocean, and the moon (with Mars to follow.) Doubtless life is faster paced and social changes might horrify an average person from that time (acceptance of homosexuality, the sexual revolution generally, the income tax...) There is no reason to expect our own mores to prevail a century in the future; we too will roll our eyes and gasp at changes that make us uncomfortable. But overall I expect we will enjoy life, with the excitement of Mars colonies and interstellar probes, virtual reality dramas, perfect health and beauty for all, abundant leisure and prosperity... And if we don't like life then? Then we'll have them freeze us for another century and try that society. Sooner or later we will find a good one.

So, where do we stand? In a pretty good place, with all systems ready (the house near CI etc.), promising research done and promising conventional medical research happening. We just might make it.

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# The Age Of Anti-Aging Research Breakthroughs Has Begun



*by John K Strickland*

There is a quiet revolution going on among the research community that works on aging, diseases of aging, cell biology and gerontology. It is “quiet” since it gets few headlines in the major media. While the outcome is by no means certain, for the first time there seems to be real hope of a medical breakthrough in this decade that could significantly slow the aging process itself, not just alleviate aging symptoms. The results, if positive, will have a near-term effect on Cryonics organizations and an even greater long-term effect on society. This work is going on around the world, following more than a dozen major lines of research. Many of the research lines are not directly related to each other except for their potential effect on the aging process, which in itself is very intriguing. As one

who had multiple biology courses in college, and with an obvious interest in life extension, I had not seen any significant and verifiable research progress in this field by major medical institutions in the last 25 years or longer.

For the last half-century at least, there was no support among the medical community for research that addressed the aging process directly, while lots of money was being funneled into the major diseases of aging. It could endanger your professional standing or career to promote such studies. However, in late 2014 and early 2015, a significant number of papers suddenly began to be published that covered research aimed directly at aging itself. This is a major change from almost all past research; the appearance and public

discussion of so many aging studies in such a short time was unprecedented. It is not yet clear how much of this research published to date has been funded by groups that normally fund medical research or whether some of the research for the papers was self-funded. It does seem that outside funding is starting to become available as the field suddenly becomes respectable. This change in the professional climate has emboldened the community of researchers, and we now witness a “tipping point” in opinions within a significant segment of the medical community toward anti-aging research and agents. It is also significant that some major drug companies such as Novartis have suddenly (since 2014) gotten interested in funding anti-aging research.

As related by an episode of last fall's National Geographic series "Breakthrough" [1], a body of researchers went to the FDA in a body during 2015 and made an eminently reasonable suggestion. They pointed out that as a result of the recent research, more progress was seemingly being made against aging itself than against the aging diseases which have proved to be very stubborn to yield to medical science. They suggested that the FDA drop its ban on funding anti-aging research, which if successful in slowing aging in anyone, would also slow the rate of the aging diseases, keeping more people alive until those diseases can be dealt with effectively. The Bio-Gerontology Institute also has called for a task force to classify aging as a disease.

In addition, some of the researchers are actively looking for more funding from the FDA and other groups to speed up the most promising lines of research. All of these research and treatment concepts seem to have some level of credibility from reputable medical publications and/or laboratories. Everyone should be cautioned that until larger double-blind studies lasting several years are done by more than one institution on each method and have a positive result, they cannot be considered proven. The more that people want to believe in the treatment methods, the more careful medical research has to be in verifying their effectiveness. At the same time, for very elderly persons who have a medically verified limited lifespan, it may be ethical to treat them with one of these methods if trials show there are no significant side effects. Some of the treatments, if they do affect the aging process, could also slow down some aging-related diseases. Any treatment that might affect the aging process is bound to have opposition and critics, since it is still taken for granted by most people that this is impossible.

What are these research areas and who are the researchers? The research can be roughly divided into 3 groups. (A) Those that directly address the aging rate of cells and its mechanism. (B) Those that address the aging of tissues. (C) Those that address aging diseases whose progression is more directly tied to aging. Research on aging related diseases often leads to new information about aging itself. The research also tends to cluster around certain topics such as telomeres, mitochondria, and removal or turning off cells or

genes, as well as the effect of specific drugs on aging cell systems. Note that there are also some products, marketed as dietary supplements, which may have anti-aging effects, such as Resveratrol and alpha lipoic acid. This list does not include work on any such products, except one on Nicotinamide (NMN) since a professional clinical study has probably begun on that one. Also notice how the titles of the media reports are almost always much more flamboyant and optimistic than those of university press releases or scientific reports. Articles which only cover general issues of aging are not included in this listing.

The research areas (in no strict order) are:

- (1) **Senolytics or Senescent Cell removal** (2015-16)
- (2) **Rapamycin** - affects the Immune System (2015)
- (3) **Telomere Extension** via messenger RNA (2015)
- (4) **Parabiosis** or anti-aging proteins in the blood) (2015)
- (5) **Repair of heterochromatin structure** in the cell nucleus (2015)
- (6) **Metformin** -anti-aging diabetes drug (2015)
- (7) **Control of Telomerase** on-off switch (2016)
- (8) **Anti-Sarcopenia treatments** with bimagrumab (2013-14)
- (9) **"Oct 4" pluripotency gene** (5-2015)
- (10) **Mitochondria** related to cellular aging (2-2016)
- (11) **Anti-Sarcopenia drug Oxytocin** (2014)
- (12) **Switching off aging-related genes** (2015)
- (13) **Switching on youth related genes** in the mitochondria (2015)
- (14) **Nicotinamide mono-nucleotide (NMN) trial** (2016)
- (15) **New enzyme** critical to maintaining Telomere length (2015)
- (16) **FGF21 Hormone** protects the aging immune system (2016)
- (17) **Treatment and/or removal of senescent cells** (2016)
- (18) **Key protein** in human skin mitochondria decreases with age (2015)

## The Lines of Research:

(1) **Senolytics (2015-16)** is a set of methods to remove senescent cells from the body without damaging other cells. Initially existing drugs were used, but in 2016 a genetic method was found to generate a protein called caspase, which



tells senescent cells to self-destruct via apoptosis. The result in mice is a 25 % increase in life span. If this were done in humans with the same effect, the average person might live another 25 years. The primary researchers, led by Darren baker and Jan van Deursen, are at the Mayo Clinic, and are using mice as the model organisms. A directly related study led by Dr. Jordan Miller at the same clinic, has shown that the use of the senolytic drugs dasatinib and quercetin have a very beneficial effect on the mouse's cardio-vascular system.

**(2) Rapamycin** extends mouse lifespans in 2009 study (2009) The trials of

Rapamycin is a good example of the controversy that has dogged valid aging research, since there are so many invalid drugs being pushed. Discovered in a bacteria on Easter Island, it was found to be a potent anti-fungal agent. It languished untested in the labs of a large drug company for almost 20 years before being applied to transplant patients. Since it suppressed the immune system, it did not seem like

a good bet for an anti-aging drug. However in 2009 it was tested on mice and it increased their life spans by about 11 %. A variant of the drug called everolimus has been recently shown to improve the immune response of elderly patients in Australia and New Zealand. A trial was scheduled to begin in 2015 using pet dogs as the subjects to look for anti-aging effects. Many researchers have been involved in studies of Rapamycin and opposing studies of it.

**(3) Telomere extension** method via messenger RNA (2015) Researchers at the Stanford University School of Medicine led by Dr. Helen Blau have found an efficient method to lengthen telomeres in human cell lines without leaving telomerase permanently turned on. This puts the information into temporary messenger RNA instead of the permanent

nuclear DNA in the cell. This means that the cells have an increased "life span" during which they are not senescent and can continue to divide, but like all other somatic cells, will eventually stop dividing again. This reduces the chance that a patient would develop cancer if this method was used on their cells. A procedure like this one, repeated at intervals, would keep somatic cells able to divide but the cell division limit switch that protects against runaway cell division would still be there. The method allows telomere lengthening by about 10% and is also a very good research tool.



#### **(4) Parabiosis: 2015**

Parabiosis is a very old experimental technique where two mice, one young and one old, have their circulatory systems linked together to form what is in effect an artificial Siamese twin. Currently the mice are genetically very identical so there are no tissue rejection problems. When this technique was tried again recently in a number of aging research labs, including one at Harvard, it was confirmed that the old mice

got younger and the young mice got older. This effect was traced to one or more proteins, including GDF11, circulating in the blood. It was startling that a mere protein could have such a strong effect. More recently, David Glass at Novartis came up with results that conflict with the Harvard results. Conflicting results occur all of the time in science, especially in medicine, since the field is so fiendishly complex. Eventually what is really going on will be revealed. The detailed Novartis study did not disprove the reality of parabiosis, but some other protein or factor may be responsible for the anti-aging effect other than GDF11.

**(5) Nuclear Gene Repair** Heterochromatin is a form of DNA packed in tight bundles inside the cell's nucleus. This DNA is normally not being expressed. In the Progeria-like

disease Werner syndrome, a single gene: WRN causes the bundles of DNA to deteriorate causing accelerated aging, possibly by allowing the genes to be expressed. It has now been discovered that this also occurs during normal aging. The race is on to discover what causes the “normal” deterioration and a possible way to stop or reverse it. The leaders in this field are the Salk Institute and the Chinese Academy of Science. The work is being accomplished with human stem cells. A current spokesman is Dr. Juan Carlos Belmonte.

**(6) Metformin** (2014-15) Metformin is an FDA approved drug used to treat type 2 diabetes patients. It also seems to have other health benefits and may help those with type 1 Diabetes. It has been tested on a standard research nematode species (*Caenorhabditis elegans*) and on rodents for effects on aging. It has also been “tested” on a huge number of human diabetes patients with no significant ill effects. A statistical study by Cardiff University in England with over 180,000 people shows that the drug seems to increase the lifespan of people who do not have diabetes. Dr. Nir Barzilai of the Einstein College of Medicine is the head of a proposed study called TAME in the US which will test the ability of metformin to increase human life span and for other beneficial medical effects. The drug seems to work in the presence of reactive oxygen compounds created by mitochondria as a result of oxygen based metabolism. Paradoxically it does not work if those deleterious compounds are not present.

**(7) Control of Telomerase on-off switch** (2014) Researchers at the Salk Institute, led by Dr. Victoria Lundblad and graduate student Timothy Tucey, were working with yeast cells (the same yeast used to make bread) in their studies of the complicated Telomerase – Telomere interaction and control system. They found that as soon as the telomerase complex is completed, it disassembles itself. It then waits in the dis-assembled mode until cell division is complete, and then it re-assembles and replenishes the ends of the telomeres. This very unusual complex includes both an enzyme and a very short template section of DNA which is used to replace the telomere section, and which consists of the same repeating segments of DNA which simply say to the other cell components: “this is a telomere” over and over. Loss of these segments does not damage the cell until all

of them have been lost due to many cell divisions. This may indicate that the complex exists in the dis-assembled mode in most somatic (body) cells. The study has also allowed a much better understanding of the steps that occur with telomerase during and after cell division.

**(8) Anti-Sarcopenia treatment** with bimagrumab Employees doing research at Novartis in 2013 were working on metabolic pathways that control and growth of skeletal muscles in order to find a way to control muscle tissue loss. Loss of muscle tissues can be caused by inactivity, cancer and the muscle wasting disease Sarcopenia, which is age-related. They tested an antibody developed by a German company called bimagrumab or BYM338 to see its effects on muscle tissue loss. They used a mouse version of the antibody and it caused muscle hypertrophy (extra-large muscles) in the mice. It has been known that myostatin can induce muscle loss and mutations which block its effects can slow down or stop this loss. The new drug could be used to reduce muscle loss in humans. It was tested on cultures of human muscle cells as well as in mice. Developing treatments for muscle loss are critical since it makes so many elderly patients unable to care for themselves. The lead author in this study was Estelle Lach Trifilieff.

**(9) “Oct4” gene** - stem cell Pluripotency (2015) The gene Oct4 seems to be active in protecting the heart from plaque. It was previously thought to be inactive. UVA’s research has focused on how Oct4 offers cardiovascular protection. The gene could also prove critical for regenerative medicine, which investigates the growth and replacement of tissues and organs. Oct4 and its family of target genes may be activated in other somatic cells and play a key role in the cells’ ability to repair damage and heal wounds.

**(10) Removal of aged Mitochondria** (2-2016) The reason for this research was to prove that mitochondria are essential to cellular aging. This work is somewhat similar to Senolytics but it removes only senescent mitochondria from cells by triggering a large scale “mitophagy” process, instead of removing the entire cell. The cell is then rejuvenated significantly. Mitochondria are the energy centers for cells, allowing oxygen respiration. The work is being done with cultured human cells, so the next step would be to conduct a trial with

a whole organism. The international team is led by Dr. Joao Passos at Newcastle University in England.

**(11) Anti-Sarcopenia drug Oxytocin** The hormone Oxytocin has been discovered to combat the age-related syndrome called Sarcopenia. Levels of the hormone drop dramatically with age. This work was done with mice by researchers at UC Berkeley led by Dr. Irina Conboy. Mice with higher Oxytocin levels quickly repaired injured muscle tissue, apparently by stimulating stem cell proliferation. Mice with a disabled Oxytocin gene showed strong signs of premature aging.

**(12) Switching off aging-related genes** For all eukaryotic cells, the genes are represented in the DNA segments which are part of the chromosomes in the nucleus. A team at the University of Washington and the Buck Institute for Research on Aging, led by Dr. Brian Kennedy and Dr. Mark McCormick, has identified 238 genes that promote aging. What if those genes could be turned off? Working with yeast cells, they found that many of the same genes are present in humans. By removing genes from the yeast cells, in effect turning them off, they found one gene (LOS1) that when removed, increased the yeast cells life span by 60%. This gene is linked to the difficult anti-aging method of caloric



restriction. A way of turning this gene off in humans might provide the same result as being on a lifelong starvation diet.

**(13) Switching on youth related genes** in the mitochondria Instead of removing the aged mitochondria, this research is aimed at rejuvenating them. Researchers at the University of Tsukuba in Japan have found that the mitochondria become senescent because their genes are

switched off. There is a tiny amount of DNA in the mitochondria that is not duplicated in the cell nucleus, and is crucial to the mitochondria's proper functioning. A Team led by Dr. Jun-Ichi Hayashi was able to switch some of them back on. The researchers are working on ways of reliably switching the genes back on and restoring most of a cell's mitochondria to full function. The researchers are using human cell lines as models.

**(14) Nicotinamide mono-nucleotide** (2015-16) A trial to test the anti-aging effects of this drug may already have begun as of July 2016. Researchers at Washington University and Keio University in Japan plan to test it on 10 healthy people to verify that it has no harmful side effects. Its effect may be related to boosting the effects of sirtuin, an enzyme which generally declines with age, and converts a chemical called NAD into nicotinamide. There seems to be a complex interaction between the levels of nicotinamide, NAD and sirtuin in cells. Nicotinamide has been tested extensively on mice, with proof of increased lifespans. The material seems to enhance metabolism and organ self-regeneration, which ability is gradually lost due to aging. Mice studies do not always reflect what happens in human studies, and the mechanism of how nicotinamide affects organs and stem cells is not yet known.

**(15) New enzyme** critical to maintaining Telomere length (2015) Biological systems are almost always more complex than first thought. When Telomerase was first discovered, it was thought that it was the main or only enzyme needed to maintain telomere length in eukaryotic cells. A group at Johns Hopkins, working under Carol Greider has discovered another crucial enzyme. Telomeres in free-living cells and some specialized ones in animals need telomeres to be maintained, as otherwise, they would get shorter every time they divide, and when they get too short, the cell becomes senescent. A very persistent graduate student Stella Lee was working on a way to test how long the telomeres were. Working with yeast cells, then moving to mouse cells, the project took her 5 years to complete, but also resulted in a discovery that the enzyme ATM kinase is required to make telomeres longer. This also led to a possible way to make telomeres longer to deal with certain aging-related diseases.



**(16) FGF21 Hormone** protects the aging immune system. (2016) This newly discovered hormone increases the lifespan of mice by 40%. Its production probably drops with age in normal animals. Without it the thymus gland produces few or no T-cells, which are a type of white blood cell. By raising its levels, the thymus produced T-cells again, and by blocking its action, the thymus aged more rapidly. The hormone FGF21 at the right level thus protects much of the immune system from aging. This research is being done at the Yale School of Medicine by a team led by Vishwa Deep Dixit. The hormone could also be used to raise the immune function in many kinds of compromised patients.

**(17) Treatment of and/or removal of senescent cells.** (2016) Genetically engineered mice were used to test a method that uses Janus kinase inhibitor drugs to remove senescent cells, partly reverse fat tissue insulin resistance in aged mice, thus reducing diabetes effects. It also seems to stimulate stem cells. The work is being done at the Mayo Clinic by researchers led by Dr. James Kirkland.

**(18) Key Protein** In Human Skin Mitochondria Decreases With Age (2015) Researchers at Newcastle University's Institute of Cellular Medicine, led by Dr. Mark Birch-Machin, have discovered that levels of a protein that is key to the functioning of mitochondria in cells actually decreases with aging in human skin cells. This protein, Mitochondrial Complex II, is key to the production of energy by the mitochondria. This discovery could undercut the mitochondrial theory of aging. Mitochondria have a very limited set of genes. The next step is to verify where the protein is synthesized, as if it is produced outside the mitochondria, that could invalidate the theory. In this study, the cells used for the testing were taken from live human subjects.

## Possible results of the research:

This shows the amazing variety of aging-related research now going on. Most of this information was unknown just 3 years ago. Since many of these lines of research may not be directly related to each other, it makes aging sound like an incredibly complex, insoluble problem. There may in fact be more than one major cause of ageing, or all of the trails of evidence may eventually lead to a single major cause. If several

of these methods were combined in a treatment, the results might be a larger degree of life extension, or they might work against each other. Since the tools the researcher are using are improving rapidly and since communication between them is speeding up, the rate of productive research is speeding up. This speedup is likely to continue, producing a flood of information. Sharing of information will reveal new facts about aging. Eventually, drugs and treatments to retard aging may be approved.

## Effects on Society

If one or more of these lines of research lead to an inexpensive means of significantly extending the human lifespan, there will of course be more hope for indefinite life extension, since as you live longer, there is a greater chance for more breakthroughs, but controversy will erupt immediately. Society will have to adapt to the growing numbers of healthy retired people. The retirement age will have to be raised, based on a mathematical proof of a sufficient level of financial support for those who are retired, and also based on a person's actual health and ability to work as determined by a jury of at least 3 doctors, including the patient's own doctor.

There will probably be both a positive and negative effect directly on Cryonics. Real life extension and slowing of the aging process will give more people hope that if aging can be reversed, there is a more rational reason to choose cryonics. On the other hand, some people may assume that life extension will mean they will not need a contract with any cryonics organization. They may forget that people can still die suddenly of diseases and accidents, and until medical resurrection via extreme hypothermia and other methods is a standard and accepted procedure, you will still be permanently dead if you do not have a contract.

## Research References:

A comprehensive list of references, research notes and associated hyperlinks for this article can be found in the original document [here](#).

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# CI MEMBERSHIP

 New Members

 New Country

Members ..... 1,308  
SA ..... 197  
Patients ..... 138

Pets ..... 125  
DNA/Tissue ..... 236

TOTAL  
**1,446**





# STANDBY WORKBOOK

## *Preparations for an Optimal Suspension*



### **STANDBY TASK: Professional Services**

**Difficulty Level: Moderate**

*Teamwork is a critical component of any good standby plan. In our case, we have to take extra care in selecting and vetting our teams since when the time comes we won't be in a position to guide or correct them. In addition to friends and family members who will make up our "first-response" team, we will also need to have the cooperation of professional service providers like a funeral director. This article (reprinted from the CI Standby Manual) provides some insights and advice on how to approach and recruit members for your Standby Team..*

## **The Approach**

*Dennis Kowalski - CI President*

When it comes to talking about cryonics and communicating our ideas, we have to understand that there are many approaches and that not all approaches are appropriate for all situations. What we are proposing is, by all definitions, outside of conventional wisdom and sometimes we have to accept the fact that we are not going to change people's minds about cryonics overnight. What seems obvious to us is absurd to many people who are approached with the concept of cryonics. Many cryonicists feel it is their duty to convince the public, and those around us, that cryonics is a rational and logical enterprise. After all, we don't want to be alone when we revive and would also like to rescue our loved ones from permanent death with us. The problem is that no matter how persuasive and logical our arguments, we are inevitably going to cause a disconnect from some people, and may even create tension and hostility by trying to sell them on the idea of cryonics.

However, what's important to recognize is that we do not always need to sell people on the validity

or soundness of cryonics when seeking help. It may surprise you to know there are many people who have helped and worked with the cryonics movement who have no belief in the concept whatsoever! However, those people did exactly what was asked of them to assist in the process, in spite of their own personal beliefs about cryonics as a viable concept or not. Therefore, when it comes to standby preparations, it might be better to have fully committed cryonics advocates at your side, but it is not always practical or even necessary for people to be "true believers" in order to receive their full cooperation to help you with your standby and preservation.

We simply need people who are willing to honor what they understand to be "your last wishes," whether they personally agree with them or not. It is much easier to get a doctor or funeral director to wrap his or her head around the simple concept of honoring someone's final wishes rather than trying to successfully debate them on the great philosophical argument of whether cryonics is the right thing to do. The simple concept of "honoring someone's last wishes" is a powerful

# STANDBY WORKBOOK

## *Preparations for an Optimal Suspension*

argument with a long history and a strong moral precedent. It is rooted as a universal tradition among most cultures and is seen as the right thing to do by most people.

The professionals that are helping you may still see your ideas as kooky or fringe, but as long as they understand and believe that what they are being asked to do is ethical and legal, they are very likely to be willing to help. It is extremely important for the person asking for help to use the right approach by giving people compelling, logical, ethical and legal reasons to help you. Honoring someone's last wishes or their family's wishes in the time of great sorrow and pain associated with the loss of a loved one is seen as a noble duty and an act of benevolence — and that is good enough reason for most people to help. This ethical argument is a strong one and should be employed to obtain the help we need.

Once the question of ethics has been settled, it is important to back up our requests with the necessary legal paperwork to establish that what we are doing is approved by law, and especially that those helping will not get into trouble. It is important to offer any documentation not as a threat to force cooperation, but as further reason to convince that those who might help you that they won't suffer any legal or other consequences by doing so. It's easier to catch flies with honey than with vinegar, so use your legal leverage as positive reinforcement to support your case.

Documents that clearly state who has control over your body and how the remains will be handled are very useful, as is a Uniform Anatomical Gift Act, which also benefits your case as a long-standing precedent that hospitals and funeral homes are familiar and comfortable with. It is better to present these documents to relevant parties well before cardiac arrest if at all possible. No one likes getting handed a stack of legal papers last minute, especially in an emergency situation. If the professional on site receiving these documents feels that they are getting the bum's rush or being blindsided by complications they are unfamiliar with, they could easily put the brakes on everything. They are very likely to choose to slow down and take a minute, or worse, a few days to review the documents and mull over the ramifications. They may even stop completely in order to get a review from their legal department, causing critical delays that will jeopardize your chances for a successful suspension.

Finally, there is the simple fact that money talks. For some professionals, the bottom line of whether they will help you or not depends on what is in it for them. There have been several clever ideas about providing bonuses to doctors who pronounce promptly and for funeral directors who expedite your wishes quickly. In fact, all planning should be set up to reward those who act fast on your behalf.

Some have even gone so far as to place penalties in their wills for those who stand in the

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way of ones suspension. i.e, a family member gets an extra \$1,000 if he/she notifies the Cryonics Institute within the first 10 minutes of pronouncement. Alternately, provisions can be added that a family member's \$100,000+ inheritance shrinks to \$1.00 if they stand in the way of my cryonics suspension or contest my will. There are many clever ways to structure your estate to remove any profit motive that could get in the way of your suspension.

In any event, one of the most important factors of standby is having the people around you on board and helping. They may think your ideas are nutty, but as long as they know they are acting ethically, legally and within the bounds of your last wishes, then they are likely to help. It certainly doesn't hurt for them to understand that they may profit from helping as well - or lose out if they don't.

If you don't have the people around you on board and willing to at least notify CI as soon as

arrest starts or even before then, unfortunately, all the equipment and preparations associated with standby are worthless. You need an advocate to help and speak up for you when you can't. It doesn't matter if you have a large standby team made up of close friends who agree with your ideas or a spouse who deplores the idea of cryonics. You need to have them on your side and willing to act according to your wishes when it counts. You need to discover the correct approach, and for some people this means trial and error. It might mean finding a new doctor or a new funeral home. In some cases, it might even mean finding someone outside of your own next of kin to sign over the rights to your remains. If you do not have those around you on board, then you need to find an advocate who will be on board before moving forward with your other arrangements and plans. Equipment, contracts, and so forth mean nothing if there is no one locally to notify the right people and to exercise these plans on your behalf.

The right time to get people on board with your cryonics plan is obviously before you need standby. Contacting these persons in advance can make a huge difference in the timeliness and quality of your standby and preservation. Professionals to consider include:

- Funeral Director
- Your doctor or local hospital
- Emergency Services - Fire, Police, Coroner

### **Communication Tips and Documents**

- Clearly communicate that cryonic preservation is your choice for "Honoring your last wishes."
- Documents stating who has control of your body and how the remains are to be handled.
- Copies of CI Contracts to show you have a legal, paid arrangement for cryopreservation
- Uniform Anatomical Gift Act
- Consider providing a financial incentive or bonus



# Who will be there for YOU?



## Don't wait to make your plans. Your life may depend on it.



Suspended Animation fields teams of specially trained cardio-thoracic surgeons, cardiac perfusionists and other medical professionals with state-of-the-art equipment to provide stabilization care for Cryonics Institute members in the continental U.S.

Cryonics Institute members can contract with Suspended Animation for comprehensive standby, stabilization and transport services using life insurance or other payment options.



Speak to a nurse today about how to sign up.

..... **Call 1-949-482-2150** .....

or email [tabitha@suspendedanimationinc.com](mailto:tabitha@suspendedanimationinc.com)



# Worldwide Cryonics Groups

**AUSTRALIA:** The Cryonics Association of Australasia offers support and information for Australia & nearby countries. [caalist@prix.pricom.com.au](mailto:caalist@prix.pricom.com.au). Their Public Relations Officer is Philip Rhoades. [phil@pricom.com.au](mailto:phil@pricom.com.au) GPO Box 3411, Sydney, NSW 2001 Australia. Phone: +6128001 6204 (office) or +61 2 99226979 (home.)

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**BELGIUM:** Cryonics Belgium is an organisation that exists to inform interested parties and, if desired, can assist with handling the paperwork for a cryonic suspension. The website can be found at [www.cryonicsbelgium.com](http://www.cryonicsbelgium.com). To get in touch, please send an email to [info@cryonicsbelgium.com](mailto:info@cryonicsbelgium.com).

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**BHUTAN:** Can help Cryonics Institute Members who need help for the transport & hospital explanation about the cryonics procedure to the Dr and authorities in Thimphu & Paro. Contacts : Jamyang Palden & Tenzin Rabgay / Emails : [palde002@umn.edu](mailto:palde002@umn.edu) or [jamgarnett@hotmail.co](mailto:jamgarnett@hotmail.co) Phones : Jamyang / 975-2-32-66-50 & Tenzin / 975-2-77-21-01-87

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**CANADA:** This is a very active group that participated in Toronto's first cryopreservation. President, Christine Gaspar; Vice President, Gary Tripp. Visit them at: <http://www.cryocdn.org/>. There is a subgroup called the Toronto Local Group. Meeting dates and other conversations are held via the Yahoo group. This is a closed group. To join write: [csc4@cryocdn.org](mailto:csc4@cryocdn.org)

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**QUEBEC:** Contact: Stephan Beauregard, C.I. Director & Official Administrator of the Cryonics Institute Facebook Page.

Information about Cryonics & perfusion services in Montreal for all cryonicists. Services available in French & English: [stephan@cryonics.org](mailto:stephan@cryonics.org)

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**FINLAND:** The Finnish Cryonics Society, (KRYOFIN) is a new organization that will be working closely with KrioRus. They would like to hear from fellow cryonicists. Contact them at: [kryoniikka.fi](mailto:kryoniikka.fi) Their President is Antti Peltonen.

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**FRANCE:** SOCIETE CRYONICS de FRANCE SOCIETE CRYONICS DE FRANCE is a non profit French organization working closely with European cryonics groups.

For more information: J.Roland Missionnier: phone: 33 (0) 6 64 90 98 41 or email: [cryonicsnews.inpi@yahoo.fr](mailto:cryonicsnews.inpi@yahoo.fr)

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**GERMANY:** There are a number of Cryonicists in Germany. Their Organization is called "Deutsche Gesellschaft für Angewandte Biostase e.V.", or short "DGAB". More information on their homepage at [www.biostase.de](http://www.biostase.de). If there are further questions, contact their Board at [vorstand@biostase.de](mailto:vorstand@biostase.de).

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**INDIA:** Can help Cryonics Institute Members who need help for the transport & hospital explication about the cryonics procedure to the Dr and authority in Bangalore & Vellore Area. Contacts : Br Sankeerth & Bioster Vignesh / Email : [vicky23101994@gmail.com](mailto:vicky23101994@gmail.com) Phones : Bioster / 918148049058 & Br Sankeerth / 917795115939

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**ITALY:** The Italian Cryonics Group (inside the Life Extension Research Group (LIFEXT Research Group)) [www.lifext.org](http://www.lifext.org) and relative forum: [forum.lifext.org](http://forum.lifext.org). The founder is Bruno Lenzi, contact him at [brunolenzi88@gmail.com](mailto:brunolenzi88@gmail.com) or Giovanni Ranzo at: [giovanni1410@gmail.com](mailto:giovanni1410@gmail.com)

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**JAPAN:** Hikaru Midorikawa is President Japan Cryonics Association. Formed in 1998, our goals are to disseminate cryonics information in Japan, to provide cryonics services in Japan, and eventually, to allow cryonics to take root in the Japanese society. Contact [mid\\_hikaru@yahoo.co.jp](mailto:mid_hikaru@yahoo.co.jp) or <http://www.cryonics.jp/>

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**NEPAL:** Can help Cryonics Institute Members who need help for the transport & hospital explanation about the cryonics procedure to the Dr and authorities in Kathmandu. Contact : Suresh K. Shrestha / Email : [toursuresh@gmail.com](mailto:toursuresh@gmail.com) Phone : 977-985-1071364 / PO Box 14480 Kathmandu.

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**NETHERLANDS:** The Dutch Cryonics Organization (<http://www.cryonisme.nl>) is the local standby group and welcomes new enthusiasts. Contact Secretary Japie Hoekstra at +31(0)653213893 or email: [jb@hoekstramedia.nl](mailto:jb@hoekstramedia.nl)

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\* Can help Cryonics Institute Members who need help, funeral home, transport & hospital explication about the cryonics procedure to the Dr and authority at Amsterdam with branches in other cities. Contact : Koos Van Daalen / Phone (24 Hours) +31-20-646-0606 or +31-70-345-4810

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**NORWAY :** Can help Cryonics Institute Members who need help for the transport & hospital explication about the cryonics procedure to the Dr, funeral home and authority at Sandvika. Contacts : Gunnar Hammersmark Sandvika Begegravelsesbyraa / Phones : 011-47-2279-7736

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**RUSSIA:** KrioRus is a Russian cryonics organization operating in Russia, CIS and Eastern Europe that exists to help arrange cryo-preservation and longterm suspension locally, or with CI or Alcor. Please contact [kriorus@mail.ru](mailto:kriorus@mail.ru) or [daoila.medvedev@mail.ru](mailto:daoila.medvedev@mail.ru) for additional information or visit <http://www.kriorus.ru>. Phone: 79057680457

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**SPAIN:** Giulio Prisco is Secretary of the Spanish Cryonics Society. Website is <http://www.cronica.org.sec>. He lives in Madrid and he's a life member of CI and is willing to serve as a contact point for Europeans. He can be contacted at: cell phone (34)610 536144 or [giulio@gmail.com](mailto:giulio@gmail.com)

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**SWITZERLAND:**  
[www.CryonicsSwitzerland.com](http://www.CryonicsSwitzerland.com) or [www.ria.edu/cs](http://www.ria.edu/cs)

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**CRYOSUISSE** The Swiss Society for Cryonics.  
[cryosuisse.ch](http://cryosuisse.ch) To join, email [info@cryosuisse.ch](mailto:info@cryosuisse.ch)

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**UNITED KINGDOM:** Cryonics UK is a nonprofit UK based standby group. [www.cryonics-uk.org](http://www.cryonics-uk.org) Cryonics UK can be contacted via the following people: Tim Gibson: phone: 07905 371495, email: [tim.gibson@cryonics-uk.org](mailto:tim.gibson@cryonics-uk.org). Victoria Stevens: phone: 01287 669201, email: [vicstevens@hotmail.co.uk](mailto:vicstevens@hotmail.co.uk). Graham Hipkiss: phone: 0115 8492179 / 07752 251 564, email: [ghipkiss@hotmail.com](mailto:ghipkiss@hotmail.com). Alan Sinclair: phone: 01273 587 660 / 07719 820715, email: [cryoservices@yahoo.co.uk](mailto:cryoservices@yahoo.co.uk)

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Can help Cryonics Institute Members who need help, funeral home, transport at London. Contact : F.A. Albin & Sons / Arthur Stanley House Phone : 020-7237-3637

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**INTERNATIONAL:** The Cryonics Society is a global cryonics advocacy organization. [www.CryonicsSociety.org](http://www.CryonicsSociety.org). They publish an e-newsletter *FutureNews*. Phone: 1-585-643-1167.

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## HELP US STAY UP-TO-DATE!

*If you live in one of the countries listed, we'd appreciate if you would please take a moment to contact the groups listed in your country to confirm their details. Also, if you know of, or are considering starting a support, standby or other cryonics-related group in your area, please send details to [cryonicsnews@gmail.com](mailto:cryonicsnews@gmail.com).*



## JOIN A CRYONICS GROUP!

*The Cryonics Institute encourages members to join, or form, local cryonics standby, support and social groups. If you're interested in joining or forming a group of your own, please check upcoming issues of the CI Newsletter to learn more about CI's new Cryonics Groups program..*





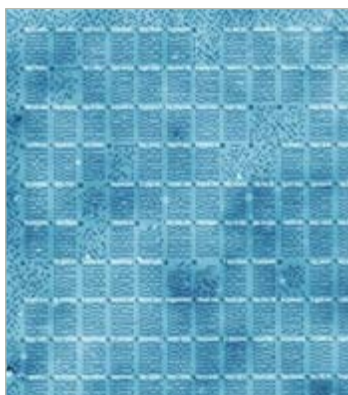
### *Cinnamon may be the latest nootropic*

Kalipada Pahan, PhD, a researcher at Rush University and the Jesse Brown VA Medical Center in Chicago, has found that cinnamon improved performance of mice in a maze test.

His group published their latest findings online June 24, 2016, in the Journal of Neuroimmune Pharmacology.

"The increase in learning in poor-learning mice after cinnamon treatment was significant," says Pahan. "For example, poor-learning mice took about 150 seconds to find the right hole in the Barnes maze test. On the other hand, after one month of cinnamon treatment, poor-learning mice were finding the right hole within 60 seconds."

[READ THE FULL STORY AT KURZWEILAI.NET](#)



### *World's smallest storage device writes information atom by atom*

*Storage density of 500 terabits per square inch --- 500 times better than the best commercial hard disk drive*

Scientists at Kavli Institute of Nanoscience at Delft University have built a nanoscale data storage device containing 1 kilobyte (8,000 bits) with a storage density of 500 terabits per square inch (Tbpsi) — 500 times denser than the best commercial hard disk drive currently available. Each bit is represented by the position of one single chlorine atom.

"In theory, this storage density would allow all books ever created by humans to be written on a single post stamp," says lead scientist Sander Otte. The research is reported today (Monday July 18) in Nature Nanotechnology.

[READ THE FULL STORY AT KURZWEILAI.NET](#)

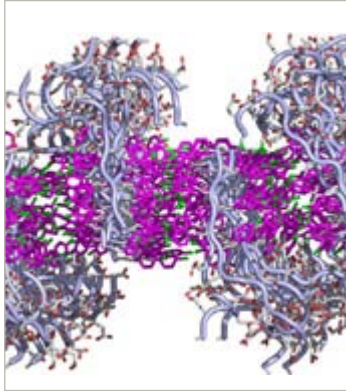


### *Mental, physical exercises found to produce different brain benefits*

Cognitive brain training improves executive function while aerobic activity improves memory, according to a new study by the Center for BrainHealth at The University of Texas at Dallas.

The study, published in an open-access paper in Frontiers in Human Neuroscience, compared cerebral blood flow and cerebrovascular reactivity data, obtained via MRI, for two groups of healthy sedentary adults ages 56–75 years. The members of both groups participated in training three hours per week over 12 weeks.

[READ THE FULL STORY AT KURZWEILAI.NET](#)



## *New nanomaterial mimics cell membranes*

*Applications include water purification, fuel cells, and selective drug delivery*

Materials scientists at the Department of Energy's Pacific Northwest National Laboratory have created a new material that performs like a biological cell membrane — a material that has long been sought for applications like water purification and drug delivery.

The "peptoid" material can assemble itself into a sheet that's thinner, but more stable, than a soap bubble, the researchers report this week in *Nature Communications*. The assembled sheet can withstand being submerged in a variety of liquids and can even repair itself after damage.

[READ THE FULL STORY AT KURZWEILAI.NET](#)

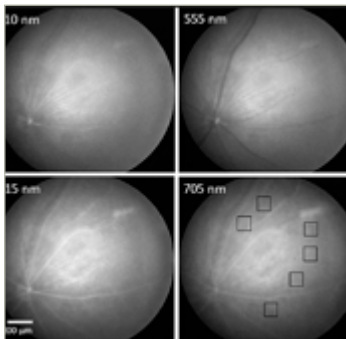


## *Americans worried about gene editing, brain chip implants, and synthetic blood*

Many in the general U.S. public are concerned about technologies to make people's minds sharper and their bodies stronger and healthier than ever before, according to a new Pew Research Center survey of more than 4,700 U.S. adults.

The survey covers broad public reaction to scientific advances and examines public attitudes about the potential use of three specific emerging technologies for human enhancement.

[READ THE FULL STORY AT KURZWEILAI.NET](#)



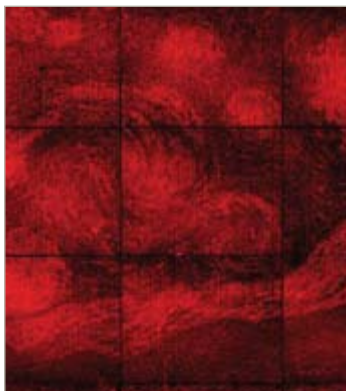
## *How to detect early signs of Alzheimer's with a simple eye exam before symptoms appear*

*Human clinical trials are set to start in July in Minnesota*

University of Minnesota (UMN) scientists and associates have developed new technology that can detect signs of Alzheimer's before the onset of symptoms — early enough to give drugs a chance to work — in mice and humans by simply examining the back of their eyes.

Looking at Alzheimer's effects through the eye is a key advantage of the new technology. "The retina of the eye is not just 'connected' to the brain — it is part of the central nervous system," said Swati More, PhD, of the Center for Drug Design at UMN, co-author of a paper recently published in *Investigative Ophthalmology & Visual Science (IOVS)*.

[READ THE FULL STORY AT KURZWEILAI.NET](#)



## *DNA origami creates a microscopic glowing Van Gogh*

*Proof-of-concept of nanoscale precision placement of DNA origami for building hybrid nanophotonic devices*

Using folded DNA to precisely place glowing molecules within microscopic light resonators, researchers at Caltech have created one of the world's smallest reproductions of Vincent van Gogh's *The Starry Night*. The feat is a proof-of-concept of how precision placement of DNA origami can be used to build hybrid nanophotonic devices at smaller scales than ever before.

DNA origami, developed 10 years ago by Caltech's research professor Paul Rothemund, is a technique that allows researchers to fold (in a test tube) a long strand of self-assembling DNA into any desired shape. The folded DNA then acts as a scaffold (support) onto which researchers can attach nanometer-scale components. KurzweilAI has reported extensively on DNA origami — most recently, an automated design method for creating nanoparticles for drug delivery and cell targeting, nanoscale robots, custom-tailored optical devices, and DNA as a data storage medium, for example..

[READ THE FULL STORY AT KURZWEILAI.NET](#)

# MEMBERSHIP BENEFITS

## Why join the Cryonics Institute?

### 1) **Cryonic Preservation**

Membership qualifies you to arrange and fund a vitrification (anti-crystallization) perfusion and cooling upon legal death, followed by long-term storage in liquid nitrogen. Instead of certain death, you and your loved ones could have a chance at rejuvenated, healthy physical revival.

### 2) **Affordable Cryopreservation**

The Cryonics Institute (CI) offers full-body cryopreservation for as little as \$28,000.

### 3) **Affordable Membership**

Become a Lifetime Member for a one-time payment of only \$1,250, with no dues to pay. Or join as a Yearly Member with a \$75 initiation fee and dues of just \$120 per year, payable by check, credit card or PayPal.

### 4) **Lower Prices for Spouses and Children**

The cost of a Lifetime Membership for a spouse of a Lifetime Member is half-price and minor children of a Lifetime Member receive membership free of charge.

### 5) **Quality of Treatment**

CI employed a Ph.D level cryobiologist to develop CI-VM-1, CI's vitrification mixture which can help prevent crystalline formation at cryogenic temperatures.

### 6) **Locally-Trained Funeral Directors**

CI's use of Locally-Trained Funeral Directors means that our members can get knowledgeable, licensed care. Or members can arrange for professional cryonics standby and transport by subcontracting with Suspended Animation, Inc.

### 7) **Funding Programs**

Cryopreservation with CI can be funded through life insurance policies issued in the USA or other countries. Prepayment and other options for funding are also available to CI members.

### 8) **Cutting-Edge Cryonics Information**

Members have access to both the Cryonics Institute Newsletter and Long Life Magazine online, as well as our Facebook page, an official members-only forum (coming soon) and more.

### 9) **Additional Preservation Services**

CI offers a sampling kit, shipping and long-term liquid nitrogen storage of tissues and DNA from members, their families or pets for just \$98.

### 10) **Support Education and Research**

Membership fees help CI to fund important cryonics research and public outreach, education and information programs to advance the science of cryonics.

### 11) **Member Ownership and Control**

CI Members are the ultimate authority in the organization and own all CI assets. They elect the Board of Directors, from whom are chosen our officers. CI members also can change the Bylaws of the organization (except for corporate purposes).

The choice is clear: Irreversible physical death, dissolution and decay, or the possibility of a vibrant and joyful renewed life. Don't you want that chance for yourself, your spouse, parents and children?

*CI is the world's leading non-profit cryonics organization, bringing state-of-the-art cryonic suspensions to the public at the most affordable price. CI was founded in 1976 by the "father of cryonics," Robert C.W. Ettinger as a means to preserve life at liquid nitrogen temperatures. As the future unveils newer and more sophisticated medical nanotechnology, it is our hope that the people preserved by CI may be restored to youth and health.*



To get started, contact us at:

**(586) 791-5961 • email: [cihq@aol.com](mailto:cihq@aol.com)**

Visit us online at [www.cryonics.org](http://www.cryonics.org)



# Member Readiness Checklist

## *You've signed up for cryonics - what are the next steps?*

Welcome Aboard! You have taken the first critical step in preparing for the future and possibly ensuring your own survival. Now what should you do? People often ask "What can I do to make sure I have an optimal suspension?" Here's a checklist of important steps to consider.

- ☐ Become a fully funded member through life insurance or easy pre-payments

Some members use term life and invest or pay off the difference at regular intervals. Some use whole life or just prepay the costs outright. You have to decide what is best for you, but it is best to act sooner rather than later as insurance prices tend to rise as you get older and some people become uninsurable because of unforeseen health issues. You may even consider making CI the owner of your life insurance policy.

- ☐ Keep CI informed on a regular basis about your health status or address changes. Make sure your CI paperwork and funding are always up to date. CI cannot help you if we do not know you need help.
- ☐ Keep your family and friends up to date on your wishes to be cryopreserved. Being reclusive about cryonics can be costly and cause catastrophic results.
- ☐ Keep your doctor, lawyer, and funeral director up to date on your wishes to be cryopreserved. The right approach to the right professionals can be an asset.
- ☐ Prepare and execute a Living Will and Power of Attorney for Health Care that reflects your cryonics-related wishes. Make sure that CI is updated at regular intervals as well.
- ☐ Consider joining or forming a local standby group to support your cryonics wishes. This may be one of the most important decisions you can make after you are fully funded. As they say-"Failing to plan is planning to fail".
- ☐ Always wear your cryonics bracelet or necklace identifying your wishes should you become incapacitated. Keep a wallet card as well. If you aren't around people who support your wishes and you can't speak for yourself a medical bracelet can help save you.
- ☐ Get involved! If you can, donate time and money. Cryonics is not a turnkey operation. Pay attention and look for further tips and advice to make both your personal arrangements and cryonics as a whole a success.
- ☐ Keep up to date! Read CI Magazine and follow the simple "STANDBY WORKBOOK" exercise in each issue.

## Bulletin Board

### 2016 CI ELECTIONS Your Vote Matters!

Don't forget to cast your ballot for the 2016 Board of Directors election. The Board, made up of members just like you, is responsible for overseeing and managing the affairs of the Cryonics Institute, so your vote matters!

Four directors seats out of twelve are up for election annually to serve a term of three years.

### Call for Volunteers

*CI is always looking for volunteers to help with our many projects and initiatives. If you have skills in design, programming, writing, marketing, public relations, science or simply have enthusiasm and energy to contribute, you can make a difference at the Cryonics Institute!*

**VOLUNTEER NOW**

### Letters Welcome

One of our goals for the CI Newsletter is to provide a forum for member outreach and opinion in addition to the existing online forums. If you have comments to share, feel free to write us at [cryonicsnews@gmail.com](mailto:cryonicsnews@gmail.com). We may introduce a letters column if response is favorable, so if you do write, please indicate if your letter is approved for publication or not.

### AGM in Style

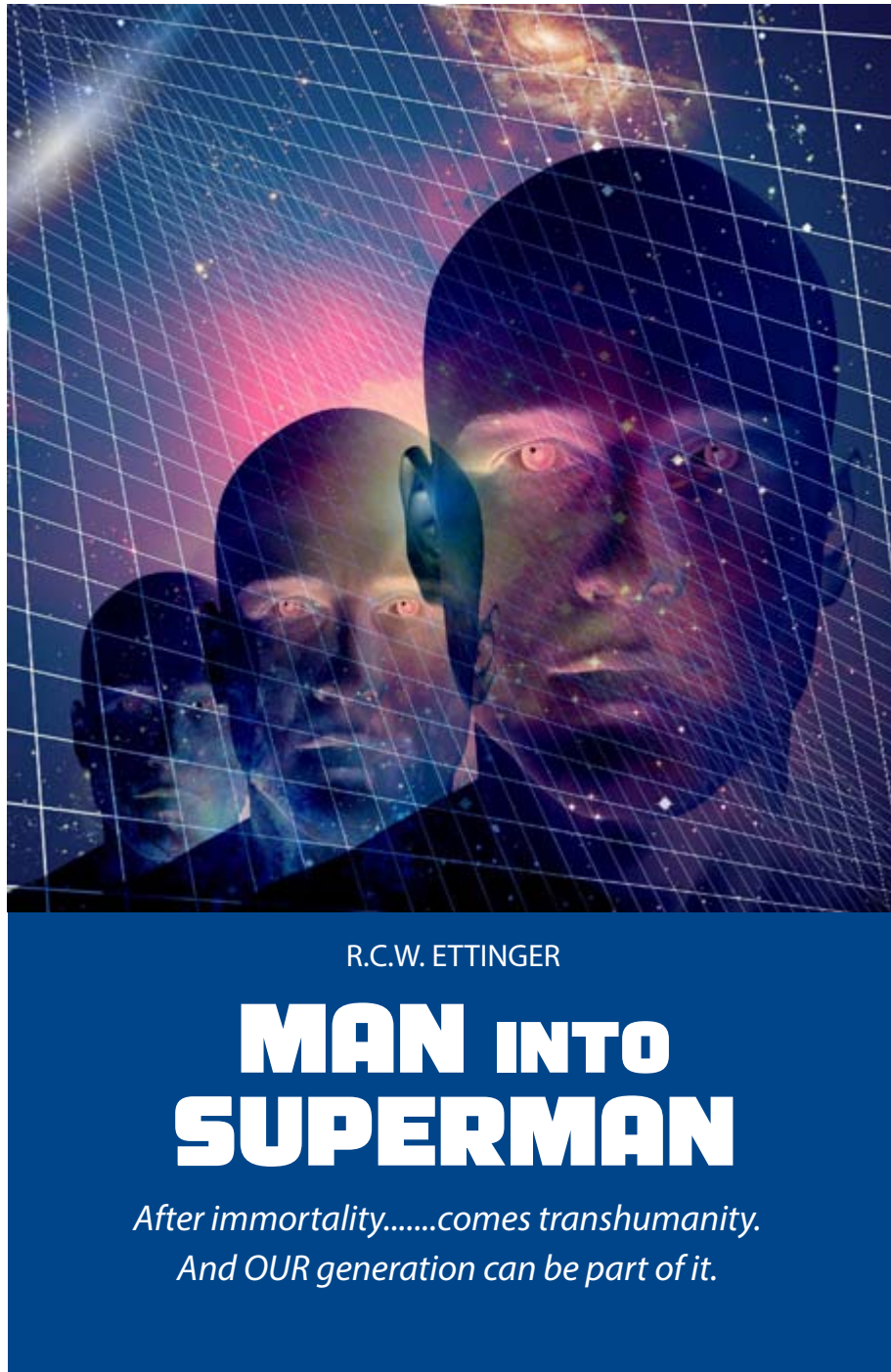
Attend the 2016 AGM in style with CI gear from our [Cafe Press store](#).

### Writers Wanted

*Got something to say?*  
The CI Newsletter is looking for submissions from our readers!  
If you've got a great idea for a story, please forward it to:  
[cryonicsnews@gmail.com](mailto:cryonicsnews@gmail.com)



CI Reading Room  
*Serializing essential works on cryonics*



*Robert C.W. Ettinger's*  
*"Man into Superman" Part 6*



## 6

# Growing Pains

It is all very well to surmise what we supermen will be like; but an equally important question, so far largely skirted, is what it will feel like.

Miserable, maybe. In one of Robert Heinlein's early stories, "By His Bootstraps," the protagonist briefly encounters superhuman creatures via a timetravel machine, and his mind nearly crumbles:

*It had not been fear of physical menace that had shaken his reason, nor the appearance of the creature-he could recall nothing of how it looked. It had been a feeling of sadness infinitely compounded ... a sense of tragedy, of grief insupportable and incapable, of infinite weariness. He had been flicked with emotions many times too strong for his spiritual fiber and which he was no more fitted to experience than an oyster is to play the violin. (75)*

There is ample precedent for this kind of conjecture. "Ignorance is bliss." "Whosoever increaseth knowledge increaseth sorrow." Perhaps our powers of perception, comprehension and sympathy will outstrip our ability to manipulate the world and ourselves, leaving us in the horrifying position of feeling and foreseeing every hurt, while helplessly watching universal tragedy unfold. It is even possible that this explains the apparent absence of superior alien visitors: cosmic truth, revealing itself at a slightly superhuman level, may be too terrible to be borne.

Optimists have not been lacking either, but their views have often been simplistic. Countless gospel-bearers have insisted that some ritual, or talisman, or slogan would make us moral and emotional-if not intellectual-supermen, with what small results we well know. And this penchant survives in the modern era: Arthur Koestler speaks of a "harmo-

nizing pill" that will somehow reconcile our warring impulses and civilize us through chemistry. (91)

Since it is very unlikely to be that easy, many pundits refuse to consider basic change at all. René Dubos has written. "... I believe that any attempt to alter the fundamental being of man is a biological absurdity as well as an ethical monstrosity." Also, "... the biological and mental nature of man ... is essentially unchangeable." (19)

But the "absurdity" remains to be seen, and the "monstrosity" is something we should be able to accept, albeit it will require some very nimble psychology. Expressed a little differently, it should be within our power to choose to grow up.

To a child, the normal adult has some monstrous qualities, including his inscrutable values and motivations. The boy is incapable, for example, of believing that one day girls will be alluring to him, or that lollipops may not be; and he cannot always understand the perspective that produces the apparent cruelties of punishment and discipline. Many children would opt for Peter Pan, and most adults to day would choose humanity. To undermine this prejudice, we must try to show that the suggested changes will indeed constitute growth, development, and improvement. The most crucial changes-the most threatening and promising ones-are those relating to intellect and personality. By investigating these, perhaps we can gain some inkling, some faint intimation, of what it will feel like to be a superman among supermen.

We can begin with something relatively simple, explicit, and palatable: the improvements in intellect associated with supertongue.

*The Language of Superman*

But what we can't say we can't say, and we can't whistle it either. F. P. Ramsey

Since man is sometimes characterized as "the animal that talks", perhaps superman is "the animal that talks more", or the animal that talks better".

Many scholars have been profoundly impressed by the idea that language does not merely express thought, but shapes it. Emerson said, "Bad rhetoric means bad men." Ludwig Wittgenstein said, "The limits of my language are the limits of my world." In Orwell's world of 1984, "Newspeak" made it nearly impossible to express or even entertain thoughts outside the party line. Korzybski, Hayakawa and other students of semantics have laid great stress on the traps and pitfalls in everyday speech and symbolism.<sup>7</sup> And the great exponent of the hypothesis of linguistic relativity, or linguistic Weltanschauung, Benjamin Lee Whorf, wrote: "The world has to be organized by our minds-and this means largely by the linguistic systems in our minds ... we cannot talk at all except by subscribing to the organization and classification of data which the agreement (of the linguistic community) decrees."<sup>8</sup>

This means, for example, that if your language is rich in special names for colors, you will have enhanced ability to recognize and identify particular hues from memory; and laboratory evidence has been compiled for this." It has also been shown that if objects or stimuli are given the same name by the experimenter, the subjects are more likely to respond to them in the same way. (23) Yet many attempts to prove more sweeping claims have failed, and most linguists seem to remain skeptical of such assertions as, "...the structure of a particular language may channel thinking and thus cause the users of that language ... to arrive at different conclusions or different solutions to problems from what speakers of the other language would do. (23)

But this skepticism seems to be based on attempts to compare natural languages, with all the attendant difficulties in trying to sort out the linguistic effects from those of culture, heredity, etc. We do have good evidence, objective and subjective, that the languages of mathematics and technology per-

mit and promote different and more effective styles of thinking. In the words of Sylvain Bromberger:

*"... some of these (scientific) questions may not be expressible in English at all, especially so if by 'English' we mean contemporary, 'ordinary' English. 'Why is the emf induced in a coiled conductor a function of the rate of change of magnetic flux through it and of the resistance of the coil could probably not have been asked in seventeenth century English, and a similar situation may hold for questions that have not yet risen.'" (16)*

An even better example occurred in one of my classes a couple of years ago. Male students would go to almost any lengths to avoid the draft. Why? So as not to be killed in Viet Nam. But what was the probability of being killed there? Oh, fifty-fifty, was the usual answer. How do you know? Shrug. Don't you know that about 40,000 have been killed, out of about 4,000,000 who have served? Shrug. The probability of an event is defined as its relative frequency of occurrence, in a suitable sequence of experiments it is the number of times it does occur, divided by the number of times it might occur. Calculate the probability of being killed in Viet Nam, if the war goes on about the same. Well, what do you know the probability of being killed is only 0.01 or 1%.

Hell no, they still won't go, but at least their eyes have been opened a little bit, and if faced with really grim alternatives-jail or exile-the choice might now be different. One little technical word, and the concept it embraces, can change a whole life.

Again, the languages of science tend to reflect the "operational definition," which separates information from mere labels. It was not so long ago, remember, that Moliere had to chide physicians for saying, in all seriousness, "Why does opium put people to sleep? Because it has dormitive virtue." ("Because it puts people to sleep.") We have much less tendency nowadays to talk about "virtues" and "essences" and "humors," and this represents real progress.

Likewise, who can deny that quantitative thinking became much easier with the transition from

Roman to Arabic numerals? (Imagine a Roman engineer trying to multiply LXIV by MCIX.) And who can doubt that the incredibly clumsy Mandarin writing exhausted the talents of generations of Chinese scholars? As Parkinson says, “. . . the process of becoming literate in China is one for which life hardly seems long enough.” (116) Although the Chinese invented movable type, the 40,000 characters of the written language prevented its use.

True, one might speculate that the very difficulties mentioned above tended to produce bright people; the Romans were, after all, effective engineers, and the Chinese did devise ways to put their language to work. But it is much more natural to recognize liabilities for what they are, and to agree, for example, with Professor Nakamura's statement:

*The (Japanese) language lacks the relative pronoun, “which”, standing for the antecedent, that helps develop clarity of thought. The absence of such a relational word makes it inconvenient to advance closely knit thinking in Japanese. It is difficult to tell what modifies what, when several adjectives or adverbs are juxtaposed. Because of these defects, Japanese presents difficulties for exact scientific expression and naturally handicaps the development of logical, scientific thinking among the Japanese people, which has actually brought about grave inconveniences in their practical lives. (121)*

Although Dr. Nakamura speaks here only of “difficulty” and “inconvenience,” much more than that is at stake. It is indeed difficult to compare the effects on culture of the natural languages (a) because it is nearly impossible to separate the non-linguistic factors; (b) because a natural language, such as Chinese, that is deficient in one area may be superior in another; and (c) because all existing natural languages, including those of “primitive” peoples, are very old and complex. But by comparing natural languages on the one hand with protolanguages of the distant past, and on the other hand with the languages of science and with imagined languages of the future, we can convince ourselves that language holds a key to qualitative improvement in thought.

For example, modern Chinese is said to be rich in words for the concrete and particular, but very poor in words for the abstract and general; it also lacks simple forms for the plural of nouns or the tense or mood of verbs. (21) Thus they have no word meaning “old” one must specify how old, e.g., “seventy or more,” “eighty or ninety,” etc. Likewise, one cannot speak of a “fast horse,” but must say something like “a horse good for a thousand li.” The same word may signify “a man ... .. the man ... .. some men,” “mankind,” etc.

Of course the Chinese have long since found ways to minimize the deficiencies of their language, while exploiting its advantages. But what about protoChinese? There must have been a time in prehistory when *Sinanthropus* (or some such) was just learning to speak, and there existed words neither for “old” nor for particular numbers, neither for “fast” nor for units of distance, neither plural forms of nouns nor substitute expressions. Surely then, speech and thought must have been dim, vague, and ambiguous enough to merit the epithet “subhuman”.

Looking to the future, some opportunities are obvious but striking, as in the reduction of ambiguity. Questions in English, beginning with “Why,” are of so many subtly different types, demanding so many different kinds of answers often not the kind anticipated—that professional philosophers and linguists must write yards of jargon to extricate and explicate the meaning. (16) Supertongue should have all of these nicely categorized, with immense saving not only, of time but of misunderstanding and frustration.

Terseness is itself a virtue insufficiently appreciated. Who has not had the experience of reading a long sentence, involving difficult concepts, or complex relations, and found that at the end of the sentence he had forgotten the beginning? If you cannot express an idea briefly, then a combination of ideas may become so awkward that its expression is not just difficult, but impossible. Yet in English, for example, we use unnecessarily long words because most of the one-syllable words have not been allocated.

Consider, say, the one-syllable words that could



be formed by combining three sounds-the first vowel, the first unvoiced consonant, and the first voiced consonant, viz., a (ah), b, f. Even if we delete the most awkward combinations (fba, bfa), there are still four words (abf, afb, baf, fab) only one of which (fab = "fob") is in use. If we consider the sounds a, b, f and r, the feasible words are arbf, arfbl barf, braf, frab, and farb, not one of which is in use, except for the colloquial use of "barf". In fact, linguists believe that with moderate ease we can speak and hear at least 100 simple sounds (40) whence it follows, with reasonable assumptions, that the entire unabridged English vocabulary could be reduced to words of one syllable-still leaving plenty of room for redundancy, synonyms, poetic variation, and the monosyllabic rendition of a large store of common phrases!

Our languages are exceedingly weak also in the description of contoured surfaces, including faces; we can easily recognize differences of physiognomy and expression that we are nearly helpless to communicate verbally. Consider how laborious it is for a witness to help a police artist reconstruct a face; or, better yet, consider the well-documented story of Clever Hans. (119)

Hans was a horse-a horse that apparently could do arithmetic, understanding the questions spoken in German (this was in Berlin in 1904), and responding with the correct number by tapping his hoof. Visitors, including eminent scholars, came from far and wide to view the marvel; and many were convinced of the genuineness of Hans' intelligence, because he succeeded with strangers as well as with his master, even in his master's absence.

Eventually, however, a shrewd observer named Pfungst noticed that Hans did poorly in failing light, and with that clue the puzzle was quickly solved. Hans had no talent whatever in arithmetic and no understanding of German; what he did possess, however, was an amazing ability to read human emotions from facial expressions and bodily attitudes. He simply (!) watched the spectators carefully, and could tell by their appearance when it was time to stop tapping. We can expect languages of the future to have thousands of new words and coded combinations, both to allow the communication of subtleties of facial expression and to

help perceive them.

Again, we need to develop the verbalization of kinaesthesia-articulate the sensations relating to balance and coordinated movements. At present, in order to teach someone how to ride a bicycle, for example, it is necessary to demonstrate and then let him practice. Conceivably, with adequately developed language, one could simply give description and directions, and the feelings and muscle responses would be so clearly conveyed that the student could ride at once, or at least with greatly reduced practice. (Fortunately, new techniques of memory training are likely to be at hand even before we have biologically improved brains.)

Oddly enough, some bright people have failed to recognize the opportunities in more sophisticated language. The philosopher Michael Polanyi, for example, actually appears to accept the present limitations of language as natural and permanent, and uses them to "prove" (!) that some kinds of knowledge cannot be made explicit, that certain things can be known only tacitly: bicycleriding is one of his examples. 141 Now, it is not selfevident that the feel of a bike can be fully conveyed in words, but at least the approximation is presumptive. If one can remember or imagine a set of feelings, then one can associate these with a spoken cue. The problem then reduces to building an adequate store of feelings or responses on the one hand, and symbols on the other.

Thus, superman will gradually build-and be built by the richness and subtlety of supertongue, and there will develop qualitative changes in our mental world, if these suggestions prove sound. We should be able to express details, shadings, and nuances that now perforce we must either gloss over, or else honor at the cost of excessive labor and time. Our perceptions of the world, and of each other, should in turn become sharper, broader, and deeper. Thoughts which formerly could be expressed, or even entertained, only slowly and laboriously if at all, could then become for everyone the casual exercise of a moment. What godlike power, just in the enrichment of verbal language!

Eventually, the demands of "channel width" for high density communication, or the simple joy of

exploitation, may lead us to explore visual, tactile, and olfactory dimensions of language, despite the seeming handicaps. We may learn how to create appropriate signals with muscles or glands, or even directly by cerebration, as well as how to amplify these signals and beam them over space, and how to use suitable transducers for direct input to the nervous system of the listener. But such exotic techniques will not soon be needed. Sound alone provides vast room for the expansion of language.

The consequences are in some respects unnerving. It gives one pause, for example, to note-as I have elsewhere--that within a few centuries Shakespeare is likely to be a dead letter, his wonderful works of no more interest than the grunting of swine in a wallow. At best, they may retain a certain quaint charm for scholars of antiquity, somewhat as Egyptian hieroglyphics do for us; but ancient Egyptian writing is simply too stiff, narrow, cumbersome and tedious to merit much interest among moderns, even though it was created by people just as intelligent as we. It was a feat in its time and served a purpose, but now it is over and done with. If we would not remain children, then at the appropriate time we must put aside childish things.

### *The Human Condition and Beyond*

An adult differs from a child in more than size and strength, and we can expect our thoughts to develop in more ways than speed and accuracy, as well as anticipate a different balance in our feelings and an altered focus in our motivations. Our guesses will be informed by a review of certain aspects of human psychology.

First we must clear away certain fallacies widely held among "educated" laymen, (for example, many physicians), such as the notion that the most powerful of our drives are those related to survival, food, and sex. For people to risk their lives, and to abstain from food and sex in varying degree in response to social pressure, individual idiosyncrasy, or mere habit, is more the rule than the exception. (Think of soldiers, smokers, dieters, chaste teenagers, etc.). While our elementary animal needs are in a sense "basic", still the tail has come to wag the dog, and the higher drives are nearly autonomous. Gordon Allport has not much overstated the case

in saying, "The motives of a mature person are so far removed from the original physiological drives that nothing can be gained by attributing the social behavior of an adult to primary physiological drives."

Another mistake is the notion that we are governed, or ought to be, by some principle of "homeostasis" analogous to the tendency of an individual cell to maintain a constant internal environment in the face of changing external conditions. Only some aspects of our behavior, and those not the highest, are of this defensive type, aimed at redressing a balance and seeking some peaceful haven. (This is the trouble with virtually all utopias.) A somewhat similar error is the idea that one of our basic motivations is to seek "adjustment" to the world. Probably most of our highest drives are related to the nonhomeostatic, aggressive drives of curiosity, play, manipulation, and exploration. At any rate, happiness cannot be equated in any simplistic way with comfort or pleasure, else the opium eater and lobotomy patient would have to be considered among the most successful people.

Then there are several interrelated fallacies, seldom explicitly stated but prevalent, concerning "natural" man, already touched upon. One is the assumption that our most basic motivations and values are mutually consistent, so that a "correct" attitude and course of action is always possible in principle: this is far from clear, and to avoid permanent residence on the horns of a multiple dilemma it may become necessary to excise certain motivations from our psyches-a painful process. Another is the idea that man is normally well integrated, despite the many-layered accretion of disparate elements in his brain and mind gathered during the development of the species and the individual.

Still another is the assumption that the more basic drives, at least, are overwhelmingly adaptive, for example, that fear is almost entirely a useful response that prepares the organism for "flight or fight"; but M. B. Arnold has shown rather convincingly that fear is more often enervating than invigorating, and while it may be useful for caution it is maladaptive for flight.' Finally-to cut the list arbitrarily short-there is the idea among many laymen that needs and appetites are always well correlated;

but P. T. Young points out that this is not so, e.g. that when a rat's diet is deficient in magnesium, it may actually develop an aversion to the needed element. 185 In short, it seems nearly certain that man is not consonant either with himself or with even an idealized environment.

Those who speak of the "human condition"--especially novelists and philosophers--often embrace all of these fallacies and many others. In their moments of relative optimism they may rationalize pain and failure as necessary counter-points to joy and triumph; or they may see tragedy as the penalty for forsaking the "natural man" within us, the generic angel sullied and crusted over by individual and cultural mistakes. These are not very productive ideas--little more than breast-beating. In their more pessimistic musings, such writers are likely to see the failure of man as an existential necessity, hungers unsatisfied and tensions unalleviated as the way of the world--but again they only bewail man's fate or acclaim his noble martyrdom, and neglect the close analysis of the problems that might reveal paths to solutions.

As one small example, it is suggestive to imagine the plight of a young man in the Old Stone Age, seeking to "find himself." Why can he not adjust to his time and place, as might be expected of a "normal," healthy animal? Why is he restive and discontented, even though his life may be comfortable enough in a good year, with clams for the digging, fruits for the picking, a complaisant woman and a balmy breeze? Perhaps he is really a jazz musician, and he can't find a clarinet. Possibly he needs to do fine wood carving, and the flint band-axe isn't adequate. Or maybe--just like some moderns--he needs to scratch his fanaticism itch; he needs a "cause," and no satisfactory banner is in sight.... Well, there was little he could do but kick the dog, squint wistfully at the horizon, and grumble about the "human condition." But our position, at the watershed of history, is different; we have the knowledge, the tools--and the time. To plan our strategy, we need among other things the clearest possible understanding of motivation and emotion, some of which seems at hand.

### *Motivation: Hierarchies and Feedbacks*

There are several related words which differ in many ways--between themselves, from psychologist to psychologist, with respect to inheritance vs. learning, etc.; these words include motivation, drive, and instinct. We shall not trouble ourselves overmuch with the distinctions, but use them (as Humpty-Dumpty did) at our convenience.

As good reductionists, we recognize that at the basic physiological level our nervous systems (hence our personalities) are programmed, and that a motivation (drive, instinct, reflex, habit, etc.) is an element of the programming. At some stage, presumably, the programming and its principles will be fully understood and it will be within our power to modify it physically, by brute force if necessary, thus becoming whatever we choose to be within whatever limits may exist. At the very least, each of us should become equal to the best of us in all respects.

But this is rather vague and distant. For the near term, we must work at a different level and more indirectly; and of course we acknowledge that the programming of an animal is far different from that of a computer, primarily because, even in self-modifying computers, there is a clear separation between the "nervous system" (the program) and the balance of the beast. In a biological organism this distinction is not nearly so sharp and the feedbacks much more complex, including the likelihood of internal anomalies or inconsistencies, such as the simultaneous need to dominate and to submit.

In Abraham H. Maslow's frequently-cited theory of motivation, various drives or goals are roughly ranked in order of "prepotency" or urgency, and the "lower" drives must be satisfied before one can turn to the "higher," in general." For example, hunger usually takes precedence over the sex drive; and most of us require our social approval urge to be satisfied before we can turn fully toward self-actualization or fulfillment of creative potential.



(Sometimes, of course, the same activities may serve both ends.)

Maslow's theory, although crude and incomplete, is not merely descriptive but useful and fruitful. It organizes motives into hierarchies (which admittedly are not always clear-cut), and it also distinguishes between "deficiency motivation" (such as hunger) and "growth motivation," of which the highest is self-actualization: a man must do what he can do. (As Henry W. Nissen put it, "Capacity is its own motivation.") Among other things, these ideas, when judiciously interpreted, give us a new perspective on the autonomy of the higher motivations and the possible dispensability of some of the lower ones.

As a trivial example of the partial dispensability of one of the lower drives, consider hunger. Modern man-let alone superman does not need gnawing, ravenous hunger to produce needed action; if we happen to be busy, we should be able to ignore hunger for several days without severe discomfort. There is no danger of starvation; we know our bodies need food, and it will be available at our convenience. Instead of a raucous "alarm clock" clanging feed me, feed me, there should be a decorous, gentle "chime" growing more insistent only very gradually.

Ideally, of course, the "alarm" should also be adjustable by an act of will, so that when we decide to enjoy the act of satiating a vigorous appetite, the appetite will be there. To attain these improvements should be a relatively easy task of physiological engineering, if indeed not merely of conditioning.

At the second-highest level in Maslow's system is the need for esteem, that of others and of oneself. A great many people are more or less stuck at this level, their major activities organized by this need, which never seems quite satisfied. There seem to be two main reasons for this: first, the need was insufficiently satisfied early in life, and the deprivation, according to Maslow, permanently weakened the individual in that respect-made him less able to bear that kind of deprivation than a normal person; second, the deprivation instigated activities that became fixed as habit patterns, so that esteem-bringing activities (making money, earning

acclaim and admiration, etc.) became essentially autonomous, the core of the individual's personality, dominating all other needs and activities, at the expense of his further development.

It is fairly clear that, as supermen, we can largely dispense with the esteem drive also. (We bypass for the moment the question of how to reorganize personalities already stuck at that level.) By way of analogy, normal people in civilized countries and quiet times (there have been such) are very little driven by their "safety needs" (the second tier in Maslow's hierarchy) because family and society have always provided ample protection, and the adult need merely allocate an occasional cursory review to his arrangements for physical safety. Likewise, superman should have ample confidence in the esteem-worthy character of his personality and actions, and thus be able largely to ignore the question, except for occasional routine review on a conscious level.

If superman is going to eliminate or minimize all motivations except self-actualization, this seems to tell us something about the nature of "happiness"; it does not depend primarily on comfort, certainly not on safety, and not even on love or self-esteem, although all of these are needed in their time and place; it depends ultimately on a certain tension, and a certain rhythm, in the stretching and exercising of one's capacities-not homeostasis, not any static bliss, but a dynamic and intricate pulse and surge of challenge and growth. Happiness is better than comfort, joy, or even ecstasy; and its main features seem to relate to the binding of time and of the personality--it seems to tend, in a preconscious way, to depend on rhythms of satisfaction extended over time and over several facets of the self.

While these notions barely broach the subject, and while vast areas of great interest must be omitted entirely (such as the nature of the unconscious and the possibility of making it rational and accessible), still we may get a glimmer of the transhuman psyche by looking at some further aspects of motivation, usually either from a Maslowian or a Darwinian point of view, and with no special concern for redundancy. But before looking at some specific motivations, we should clarify again the possibility and desirability of a higher level of uni-

formity, and a much larger pleasure/pain ratio, in our transhuman world.

### *Designing Personality and Prescribing Happiness*

When we learn what factors of personality are most conducive to external effectiveness and to internal satisfactions, everyone should have the option of optimizing the circuits in his nervous system, whether through surgery, pharmacy, and electronics or through simple learning. Then almost everyone might be highly efficient and nearly always content, maybe even euphoric; yet contemporaries are apt to view such prospects as distasteful or worse. We must try to show that the fear and repugnance many feel are founded mostly on misunderstanding.

Part of the fear pertains to a well-meaning but clumsy and doctrinaire paternalism in the manner of *Brave New World*, which some humanists foresee, a world in which you will not only be forced to conform, but will jolly well be forced to like it. The fear of being made to like what you don't like strikes at the ego, the self; a threat of forced personality change is, in a sense, a death threat.

The possibilities of abuse and tragedy are real enough. But such errors represent aberrations and not necessary consequences of human engineering. As for the feeling that any major personality change is a mortal danger, that is just an excess of wariness and want of thought; the feelings that make our hackles rise are not always reliable guides to behavior. Major progress must involve major changes in intellect and personality, and there need be no trauma unless the change is too rapid or disorderly. If we have time to digest and integrate the new information and relationships so that all aspects of the self can be kept or brought in phase, then these personality changes will represent not mayhem but simply growth, and in many cases healing.

Even less valid is the notion that some of the spice will be taken from life if we cold-bloodedly study the psyche, learn its mechanisms, and then tailor the individual to exploit this knowledge. It takes all kinds to make a "human" world, we are told; some

even go so far as to say it is our very defects that are endearing!

Perhaps it is the contrasts in the world which provide some of its interest. But who would conclude thereby that we ought carefully preserve a quota of victims, a class of clowns? Must there be dwarfs, and blind men, and hunch-backs, just so the rest of us can savor our good fortune a little more? Must we force or entice some to remain simpletons, so the rest of us can the better relish our superiority? The absurdity of such proposals is obvious; it would be even worse than to retain a class of poor people, just to titillate the rich.

Even if it were true that the world would lose some savor thereby, it would still be morally and practically necessary to allow everyone the information and facilities to optimize himself, to enjoy the best available. But in fact it is not true, for at least two reasons. First, it would require a warped mind to enjoy the unnecessary misfortune of others. Second, superman's capacity for perception is unlikely to require the crude, physical, temporal presence of contrasts of misery; if he realizes fully that misfortune has existed, and could exist, that should suffice for any requirements of contrast.

In similar vein, some philosophers have gone so far as to assert that pain is necessary for pleasure, occasional misery is essential for the possibility of joy, good cannot exist without evil, and indeed life can have no meaning without death. This falls just short of being self-evident drivel; it has just barely enough plausibility so that it sometimes fools people.

The answer, first, is that it just isn't true; it is an assertion with a certain ring to it, but virtually no substance. There is no solid evidence behind it, and there are plenty of counter-examples. There are many people who are generally wretched, and others who are generally contented. Many people show a life-long surplus of joy, and others a deficit.

If the claim is made that at least a substantial danger of pain must be present, that at least a looming threat of tragedy must underlie the enjoyment of life, again the case is, at most, unproved. To some extent, the argument can be reversed: the near

presence of unfortunate people and the dark shadow of peril can warp the personality, producing feelings of guilt and anxiety that make happiness impossible.

In any case, as already indicated, superman should fully appreciate the dangers and tragedies in the world of space and time, and be able to utilize any desired sense of contrast. Furthermore, we do not expect this functioning to depend on the crude animal drives which governed our predecessors and ourselves until now; for superman, gradations of pleasure ought to provide motivation just as efficient as did the contrasts of pleasure and pain for man and preman. Keenly alive to the implications of small differences, he can be happy at all times and comfortable most of the time, yet far quicker and more energetic than we in responding to-and creating-demands for action. This qualitative improvement is something we can scarcely understand until we experience it.

### *Habits Good and Bad; Phasing Out Fear*

With no effort to be systematic, let alone exhaustive, we can now look at a few specific drives and ask whether to cultivate or weed them out.

While we are being very cavalier in the use of terms, there seem to be very few, if any, true “instincts” in man above the cellular level only genetic tendencies or capacities which are stronger or weaker, more or less specific. (It used to be said that infants have two universal instinctive fears, namely of falling and of loud noises, but this seems to have been disproved.) One is tempted to speak of a universal tendency to avoid the painful or unpleasant and seek pleasure, but the spectacle of a sadist and masochist interacting is enough to cure us of that; adequate definitions of pleasure” and “pain” are not yet at hand.

Having bowed to some of the many difficulties, we can now proceed to ignore most of them and make some judicious speculations. Our first and easiest include the continuation, without radical change, of the drives of self preservation, curiosity, and general aggressiveness. It is not claimed that these are “basic” in any physiological sense, and it is even possible that aggressiveness and selfpreserva-

tion may have neurotic elements from some valid point of view; but it is reasonably clear that these traits will persist simply because their lack would probably prove fatal in the end. It is true that clams have done well enough, as a species, without notable curiosity or aggressiveness, and even some varieties of man-Egypt’s fellahin, for example-have sometimes found protected niches; but on the level of technological man, and for the long term, a lack of curiosity and aggressiveness will surely be suicidal. (Their presence may also, of course, but less definitely.) To him who merely sits and waits, assuredly will come at last his nemesis; constant reconnoitering and probing is the only defense that has a chance. The only way to avoid disaster is to go looking for it.

Drives likely to be extirpated include zealotry (idealism, fanaticism, militant enthusiasm, etc.) and the “territorial imperative,” if the latter really has a specific genetic basis. These are not only unnecessary, at a superhuman intellectual level, but obviously troublesome; we shall expand on this in the next chapter. Shame will probably be weeded out, no longer being needed as a counterweight to pride; instead, there could be simple acknowledgements of factual shortcomings, and calm regret when we blunder, followed by efficient corrective actions. On the other hand, we may well retain pride and vanity, despite their elements of neurosis, because they may continue to be important constituents of our psychic fuel.

More impressive than any of these, however, will be the expected phasing out of fear.

Fear has both emotional and motivational aspects. It seizes the viscera and alters the metabolism, often squeezing the heart and blanching the face; and it provides powerful motivation in a wide variety of useful avoidance habits. It is usually assumed to be a biological basic, and of all Franklin Roosevelt’s Four Freedoms, freedom from fear might seem the least likely of attainment. Short of utopias, short of total control of the environment and a stable society-must there not always be dangers? And is not fear a necessary response to danger? Would not a fearless being tend to die rather quickly? Is not fear tightly bound up with the survival instinct? So it might seem: nevertheless I think that, as super-



men, we shall be nearly fearless.

For this discussion we must disregard most of the complexities and subtleties, such as the relation of fear to the feelings of anger and awe. Then the evolutionary bases of fear and courage seem fairly clear, and these form a dynamic tension somewhat analogous to that of self preservation vs. self sacrifice, discussed in Chapter 7. This tension, also, could become radically displaced.

The utility of fear is obvious in avoiding physical peril (a predator, an enemy, a storm). Fear leads to flight or avoidance, and flight or avoidance may lead to safety; hence the timid tend to survive. But the meek have not inherited the earth, because flight or avoidance does not solve all problems: if predators lurk around the only water hole, then those who cannot overcome their fear will die of thirst. Warriors in a warlike tribe may lead risky lives, but they tend to acquire women, land, and slaves, thus consolidating their ferocious traits. (It is said that, a few centuries back, the life expectancy of the sons of English earls was about twenty three, most of them dying violent deaths.) There is probably no single gene for fear, no simple hereditary basis for courage or aggressiveness, but we all have both tendencies in varying degree.

Some of the disadvantages of a fearful disposition are manifest. To begin with, it is unpleasant. If excessive, it can be drastically counterproductive: useful caution may

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deteriorate into harmful terror or panic. On a more subtle level, in modern circumstances, fear may be diluted or "referred", expressing itself as guilt, anxiety, and indecision. Do these represent the inescapable price we must pay for a biologically essential response? I think not.

At the very least, the average level of fear can be sharply reduced. A child needs fear, because he is too immature to be governed by reason based on experience and understanding; only a healthy respect for parental anger will keep him out of the street. The adult, on the other hand, does not have to be terrified of automobiles to avoid them: he

dodges the taxicabs efficiently but calmly, using his brains and rarely calling on his adrenal glands for assistance.

When we are sufficiently alert and aware, we should not need the spur of fear, nor tolerate the confusion it tends to bring. Our glandular responses can probably be brought almost entirely under conscious control, by techniques we are already beginning to learn. (81) Again, this may convey images of aloof, imperturbable automatons, cold and hard, but this is not the right picture. After all, when we grow up today and leave behind our temper tantrums, this does not make us less human, only less childish.

It is commonplace--especially in war--to say that everyone has fear, that courage is not the absence of fear but the ability to overcome it. The first part of this saying is an egalitarian myth, as I am convinced by observations of different people and of myself at different times. There are wide variations in habitual fear levels and fearful response habits, and there is indeed a type of bravery based on lack of fear; there really is a temperament which is cool and steady in the face of danger. Two fighter pilots, for example, may be perfectly equal in willingness to accept and seek risks, but the one with less fear to subdue is likely to be more clearheaded and efficient.

This cool temperament is partly inherited, but it can also be acquired. In my middle age, I am much less fearful than I was as a child or youth. Some of this fear reduction may result, to be sure, from diminished sensitivity--our antennae become stiffer with age--but introspection convinces me that some of it represents genuine learning and growth, the ability to size up dangers, put them in perspective, and handle them in a relatively calm way.

Phasing out fear is only one small aspect of the improvement expected in our personalities as supermen, but it is one most of us can understand and appreciate readily. Not to shiver, not to quake, not to feel the knot in one's stomach, not to be gripped by the shrinking confusion of mind or paralysis of will not to be afraid any more, how marvelous!

*The Action Approach*

If wishes were horses, beggars would ride. It is all very well, some may say, to speak glibly of extirpating this instinct or phasing out that emotion or drive, but exactly how can this be done?

In part, the question is unfair; if we knew exactly how to do it, it would already be done, and we would be superhuman now. In part, we rely on our sense of history and on the validity of our world-view: presumptively, there is some specific anatomical and physiological basis for every constellation of traits, and the day must come when we can remake ourselves at least to the level of the best that now exists, using either grossly physical (surgical/ chemical/ electronic) or psychological methods. Beginnings and hints of all these capabilities exist in the current technical literature. In this section we want to review briefly some of the simpler techniques, characterized by Dr. George Weinberg, a New York psychotherapist, as "the action approach." (116)

The basic idea is simple and has been around a long time, viz., that many aspects of personality can be regarded as habits, which can be inculcated or eradicated by patterns of behavior that are under conscious control. For a long time attempts to apply this idea had very limited success, but its modern champions are undaunted and apparently making considerable progress.

They are bucking a majority which still takes a gloomy view about the possibility of teaching old dogs new tricks. For example, P. M. Symonds has written, "The evidence ... points not only to the persistence of traits of personality throughout life but also to the great resistance of personality traits to change ... after months and even years of concentrated efforts (by clinical workers) to change personality in clients, basic personality patterns remain unchanged." (161) Gardner Lindzey et al have found compelling evidence for the importance of genetic factors underlying certain personality traits." And the psychoanalytic school, beginning with Freud, holds that events in early life exert influences exceedingly hard to counteract, a view which is certainly consistent with the indifferent success of analytic methods.

What Weinberg calls "the action approach" is related to what others call "behavior therapy," an early proponent of which was William James, who said, "Action seems to follow feeling, but really action and feeling go together, and by regulating the action, which is under the more direct control of the will, we can indirectly regulate the feeling, which is not." (Remember "Whistle a Happy Tune" in *The King and I*) If we act like the people we want to become, according to James, we shall turn ourselves into those people. But this cannot be done instantly, hence it is crucially important to choose the right strategy in modifying first one, then another of the behavior patterns in question. Weinberg's contribution—which we cannot detail here—lies in the explication of this strategy, and he claims substantial clinical success.

Maslow's views are at least partly consonant with these ideas. He speaks of an "inner core" of the personality, formed in the first few years of life, which must be discovered if one is to find his "identity"; but he also says of the self, "Partly it is also a creation of the person himself ... Every person is, in part, 'his own project,' and makes himself." "Again, the tail wags the dog, and at least an important part of the person is simply a bundle of autonomous habits, subject to change.

The better known behavioral therapists, e.g. H. J. Eysenck, have a somewhat different focus in applying learning theory to the elimination of neurotic symptoms, often using a simple "conditioning" approach reminiscent of Watson's work with animals; for example, a child may be cured of bedwetting simply by wiring the bed so that a bell rings whenever he begins to urinate. (48)

Needless to say, the analysts vigorously attack the behaviorists, claiming among other criticisms that a symptom eliminated by conditioning is likely to be replaced by another symptom, perhaps worse, if the "underlying unconscious" cause is not removed; but the behaviorists insist the facts support them, and that in many cases, at least, there is no "unconscious cause," but only the syndrome itself.

Weinberg's position is in some important respects different from that of the classical behaviorists, particularly in his attention to the total patient and

his motivations, rather than to isolated syndromes. But he is also attacked by the analysts, and has some wry comments about those who insist that a “seeming” personality change leaves one “really” the same underneath, however great the objective and subjective improvement may be.

We have not proven that “normal” people can be much improved by the same techniques that are used with neurotics,” but no one is fully normal anyhow, and nearly all of us could probably be substantially improved by the systematic use of existing techniques. If we include “operant conditioning,” by means of which one can apparently attain conscious control even of his heart beat and brain waves, then this partial and current armamentarium alone gives promise of a giant step forward.

### *Emotional Stability*

Despite the foregoing notes of optimism, superman will need all the help he can get in stabilizing his emotions. We think we have troubles now! What must we expect when our expanded intellects interact with a vastly more complex environment?

One possibility is Heinlein’s conjecture at the beginning of this chapter—everything scaled larger, including gulfs of grief that humans would dare not plumb, as well as (presumably) peaks of ecstasy that unmodified man could not endure. But we can do without the gulfs, thank you, and there are many ways in which we might cheat the piper, such as simply to tune out or wall off the undesired emotions, possibly for protracted periods, until we can deal with them, perhaps piecemeal, from a more advantageous position. Of course this strategy usually fails for the neurotic and psychotic humans who try it, but that is because (a) their unconscious minds are not under control, and (b) they never achieve the more advantageous positions that continual growth should bring.

Another critical problem is that of monitoring one’s own conditioning. According to Eysenck dysthymic (despondent) patients and normal introverts are characterized by the quick and strong formation of conditioned responses, while psychopaths and normal extraverts are characterized by

the weak and slow formation of conditioned responses. Thus the deviation in either direction may prove disastrous. (49) And this is oversimplified; our problem will be to screen endless categories of conditioning reactions and optimize the rate and degree of each. There are some things that we want to learn thoroughly, in a single lesson mathematical theorems and tables of basic information, how to walk without stumbling in the reduced gravity of the moon, how to recognize poison mushrooms, etc. Then there are other things that we want to learn only through thick (but not impassable) barriers of suspicion—that our value systems are wrong, that a friend is stabbing us in the back, or that it is necessary to betray a commitment, for example.

A related problem is that of adjustment versus responsibility. In contemporary life we all know easy-going people who have apparently made a marvelous adjustment—by blinding themselves to dangers and responsibilities (for example, letting children run wild, untrained and unprotected); and on the other hand, there are those who assume more responsibility than they can handle, and succumb to neurotic anxiety. The latter will be the greater danger for superman, whose longer attention span and heightened awareness of implications may tend to overwhelm him with demands.

Finally, large elements of uncertainty will always be present when we have no fixed ultimate goal, when the horizon continually recedes as we advance, when being is subordinate to becoming for the indefinite future. As Maslow put it, “Growth has not only rewards and pleasures but also many intrinsic pains.... Each step forward is a step into the unfamiliar and is possibly dangerous. It also means giving up something familiar and good and satisfying. It frequently means a parting and a separation, with consequent nostalgia, loneliness and mourning. . . . Growth forward is in spite of these losses and therefore requires courage and strength in the individual....”

There is no guarantee that the requisite courage and strength will always be found in time, but I am reasonably confident we can gain sufficient control of our nervous systems, so that the major threats will not be from within.



## *Empathy Without Altruism*

We often assume that superior beings will be characterized by the “civilized” satisfactions and the gentler virtues. Superman must be nice—a kind of Boy Scout idealized and realized. But this notion is probably as unrealistic as its opposite, that of the bloodless logic machine.

Today we love to be loved, and we need to be needed; the most valued feeling is the feeling of being valued. (That is, most of us are stuck on Maslow’s third or fourth level.) But advanced individuals may see maudlin sentiment on the part of their fellows as worse than useless, as a pitfall for the object of affection and a sign of weakness and immaturity by the giver of affection. They may learn to enjoy each other’s company and shared activities no less, while still refraining from a generalized and uncritical attachment. Today it is regarded as a virtue to give oneself and to want to give oneself, but this may come to be seen only as a neurotic weakness.

As for the particular trait of generosity, we may be able to throw light on some of its aspects by considering the word itself. “Generosity” is usually construed as giving more than is needful, or more than is expected, or more than is customary. But to understand the anatomy of this generosity, we must ask what is needful, and why; what underlies the expectations and the customs.

What is our purpose in giving more than is needful, or expected, or customary? If it is to inspire gratitude, because we enjoy the gratitude or want to benefit from it, then giving that much was needful after all, and in a private sense the generosity did not exist. If our motives were more neurotic, if we needed to bolster our self-esteem or assuage guilt feelings, then again, in a subjective sense, no generosity was involved. In the last analysis, we do everything to please ourselves, or to please some aspect of ourselves, or to avoid a worse eventuality (even though our actions do not always lead to the desired results); thus we can say, with great generality, that in a proper subjective sense there is no such thing as generosity.

This is not to deny that the word has a useful

meaning, or that some people are nicer than others. If someone you know has what is commonly called a generous nature, then he doubtless does give beyond the average, by objective criteria, and he doubtless is a more pleasant person to deal with (although sometimes his generosity may have bad results for his family, as well as for himself). But superman may regard the satisfactions of the generous as the delusions of fools, more or less in a class with those who packed off their little ones on the Children’s Crusade, feeling full of pious virtue; or with the Stakhanovites who work themselves into early graves for Mother Russia and the Party.

Perhaps, then, superman will regard generosity and niggardliness alike merely as miscalculations, carrying emotional freight only for the immature. (One gives what suits one’s purposes, neither more nor less.) Despite this, he may feel the same warm glow a human does when helping and benefiting others; among his other accomplishments, superman will surely not lack the capacity for double-think, and for falling into childlike attitudes when he chooses.

So in some respects we may indeed come near the cold, aloof, machinelike creature so often depicted in fiction. Surely it will be an advantage to be able to “turn off” or “tune out” one’s emotions at will, choosing fully to savor only those that are enjoyable—provided this can be done without impairing judgement and without traumatizing the unconscious mind. Perhaps we may carry to extreme our present habit of “hypocritical” courtesy, showing our acquaintances faces of concern and interest that we may not fully feel, or allow ourselves to feel—not because we are deceitful, but because we recognize both their need for sympathy and our need to limit involvement.

But along with his coolness, his ability to make the grimmest decisions without the quiver of a muscle, the transhuman may also be warm and understanding in a way that we see only few hints of today. A “generation gap,” for instance, should be a thing unthinkable. Every parent should understand the most delicate nuance of his child’s feelings and the wellsprings of his motivation. In part, we think of the development and training of accentuated perceptions, à la Clever Hans, mentioned

earlier. "Every little movement has a meaning all its own," and an adult should be able to "read" every twitch and grimace of a child. He should also sense the child's feelings more intensely, for two reasons: the higher "voltage" of his nervous system, in contrast to ours; and his superior ability to extrapolate consequences and perceive the relatedness of situations and developments. All this means he can convey to the child the breadth and depth of his understanding and sympathy, yet with enormous tact--the total result being a sense of love that we would find inexpressible. Supermother--whether she "carries" her child or watches him gestate in an artificial uterus--will doubtless look back on human mothers, insensitive and erratic as they are, as little better than the sow that requires only a small disturbance to cannibalize her young.

### *Man and Superman*

Although the foregoing discussion of superman's personality was only a tentative beginning, limitations of space and competence force me to leave it at that. With luck, these speculations may help make transhumanity just a little more meaningful, a trifle less vague and abstract. Possibly more psychologists will be motivated to think in terms of therapy for "normal" people as well as for neurotics; surely this is a major untapped national and personal resource, right now. Perhaps some poets and novelists will be moved to make these ideas more particular and dramatic in the next few years, helping to pave the way for superman and create a more active demand. But might there not be a dangerous interregnum as man is phased out and superman takes over?

The question of race and culture in politics is already volatile, and may become more so. Unless government controls are imposed--which hopefully will not happen--life styles and initiatives will continue multifarious, and for a while many varieties of superman will have to get along with each other, and with man.

One of the more obvious dangers is probably exaggerated: that of nations or societies cloning "superior" types, using newly developed biological techniques to produce thousandfold "twins" of

Einstein, Patton, Eddie Rickenbacker, and others who supposedly might beef up a country's strength. For one thing, these procedures are not likely to be available until the present generation of doctrinaire leaders in the totalitarian countries has been replaced. For another, it should become obvious in time that (1) a hundred Pattons are not a hundred times as valuable as one, and (2) it is nearly impossible to surmise, even a few years ahead, which traits are the most valuable ones for specific strategic objectives; one cannot even be sure whether big men or little men will be better soldiers in the context of the next decade's technology. But most of all, we rest our hopes on the emergence of individual, selfish motives and the millennial outlook, which will view with cold disfavor any holy wars or ideological crusades.

There will still be problems, but to some extent they may create their own solutions. If a new variety is really a superman in all respects, he will realize, far better than we, the error in mistreating inferiors and the folly of boastfulness or arrogance. But there may be many limited supermen, especially in the near future, and they will not necessarily have balanced judgement; some of them may be only strong, and not very sympathetic or wise. Still, at least two factors should tend to save the situation: heterogeneity and upward mobility.

If a subpopulation is segregated geographically and culturally, as well as genetically, so that it is highly visible and enviable, then it has an explosive potential; but that is not likely to be the case. It will be more similar to the present situation of the wealthy: They are widely scattered, widely variable, and not, to any important degree, leagued together against the rest of us. At the same time, we all have some chance to become wealthy, not being excluded by any caste system; hence any envy or resentment tends to remain under control. Just so with supermen: they will probably be well mixed through the population, will not necessarily have any prominent stigmata, and will have little incentive to band together. At the same time, the techniques of improving people should be available to all--at a price, no doubt--and there need be no climate of envy, or hate.

## Next Issue: Chapter 7 - Morality for Immortals

