

TRANSHUMANISME, AUGMENTATION DE L'HUMAIN, IA

JEAN-NOËL MISSA

TRANSHUMANISME

« LIVING LONGER,
HEALTHIER, SMARTER AND
HAPPIER »



Foreword by Peter D. Kramer, author of *Listening to Prozac*

BETTER Just WELL

AMERICAN MEDICINE MEETS
THE AMERICAN DREAM



CARL ELLIOTT



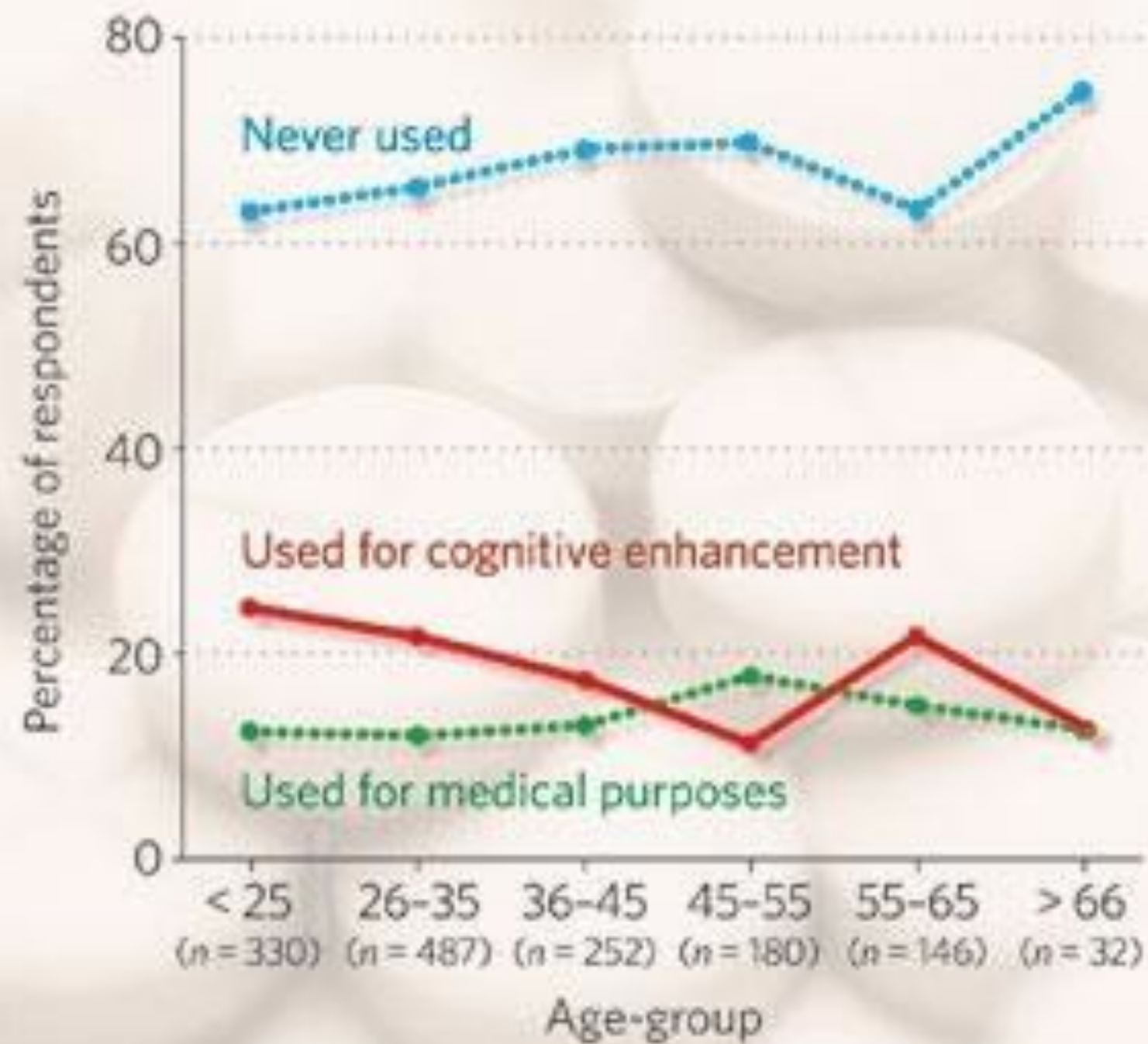
P.S. 101

SCHOOL

**DRUG
FREE
ZONE**

RITALIN
CIBA
INC.

TRENDS IN USE OF NEUROENHANCERS





“COULD THIS SORT OF GENE TRANSFER INTO SKELETAL MUSCLE ACTUALLY BE USED FOR A GENETIC ENHANCEMENT OF ATHLETIC PERFORMANCE OR EVEN JUST COSMETIC PURPOSES? JUST SAY YOU'D LIKE YOUR PECTORALIS MUSCLES TO BE A LITTLE LARGER BECAUSE YOU WANT TO LOOK A LITTLE BETTER AT THE BEACH. JUST TAKE A FEW INJECTIONS OF THE VIRUS, AND A MONTH LATER WHILE YOU'RE WATCHING TELEVISION, YOUR MUSCLES HAVE GOTTEN BIGGER.”

**H. LEE SWEENEY, GENETIC ENHANCEMENT OF MUSCLE,
FRIDAY, SEPTEMBER 13, 2002**



Back Mouse: Wild Type
Front Mouse: PEPCCK-C^{mus}



Speed: 20 m/min



"In terms of their importance to the future of our society, these issues rank up there with war and peace. . . . Required reading for anyone aspiring to lead the nation."

—Wall Street Journal

BEYOND THERAPY

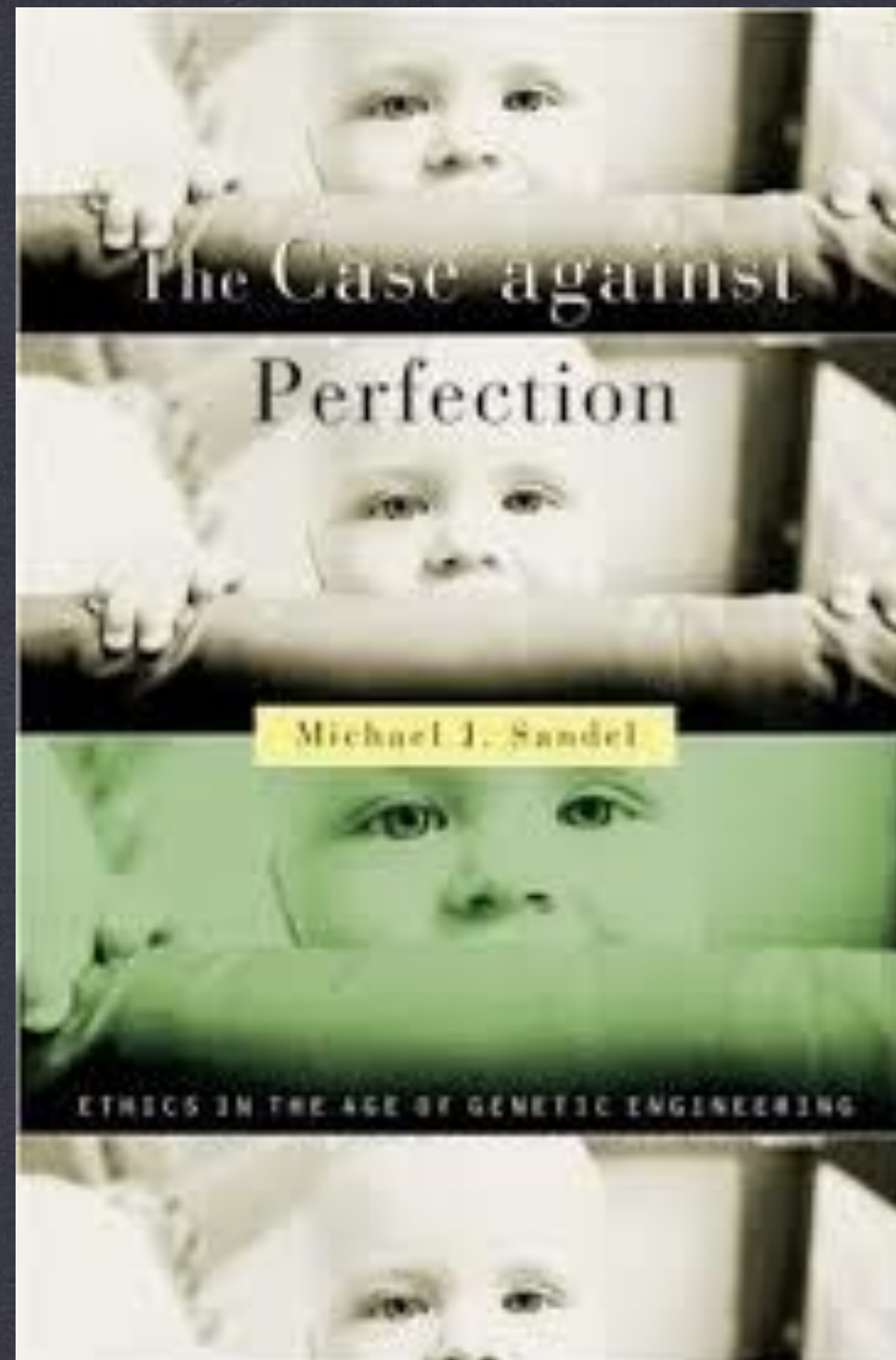
BIOTECHNOLOGY
and the Pursuit of Happiness

A REPORT BY THE PRESIDENT'S COUNCIL ON BIOETHICS
FOREWORD BY Leon R. Kass, M.D., Chairman

- * **Better children** sélection et modification des embryons
- * **Superior performance** amélioration des performances athlétiques
- * **Ageless bodies** prolongation de la vie
- * **Happy souls** modification de l'humeur et des fonctions cognitives

**MICHAEL
SANDEL**

**THE CASE AGAINST
PERFECTION**



« The main problem with enhancement and genetic engineering is that they represent a kind of hyperagency—a Promethean aspiration to remake nature, including human nature, to serve our purposes and satisfy our desires. What the drive to mastery misses and may even destroy is an appreciation of the gifted character of human powers and achievements. **The real problem with genetically altered athletes is that they corrupt athletic competition as a human activity that honors the cultivation and display of natural talents** »

-Michael Sandel

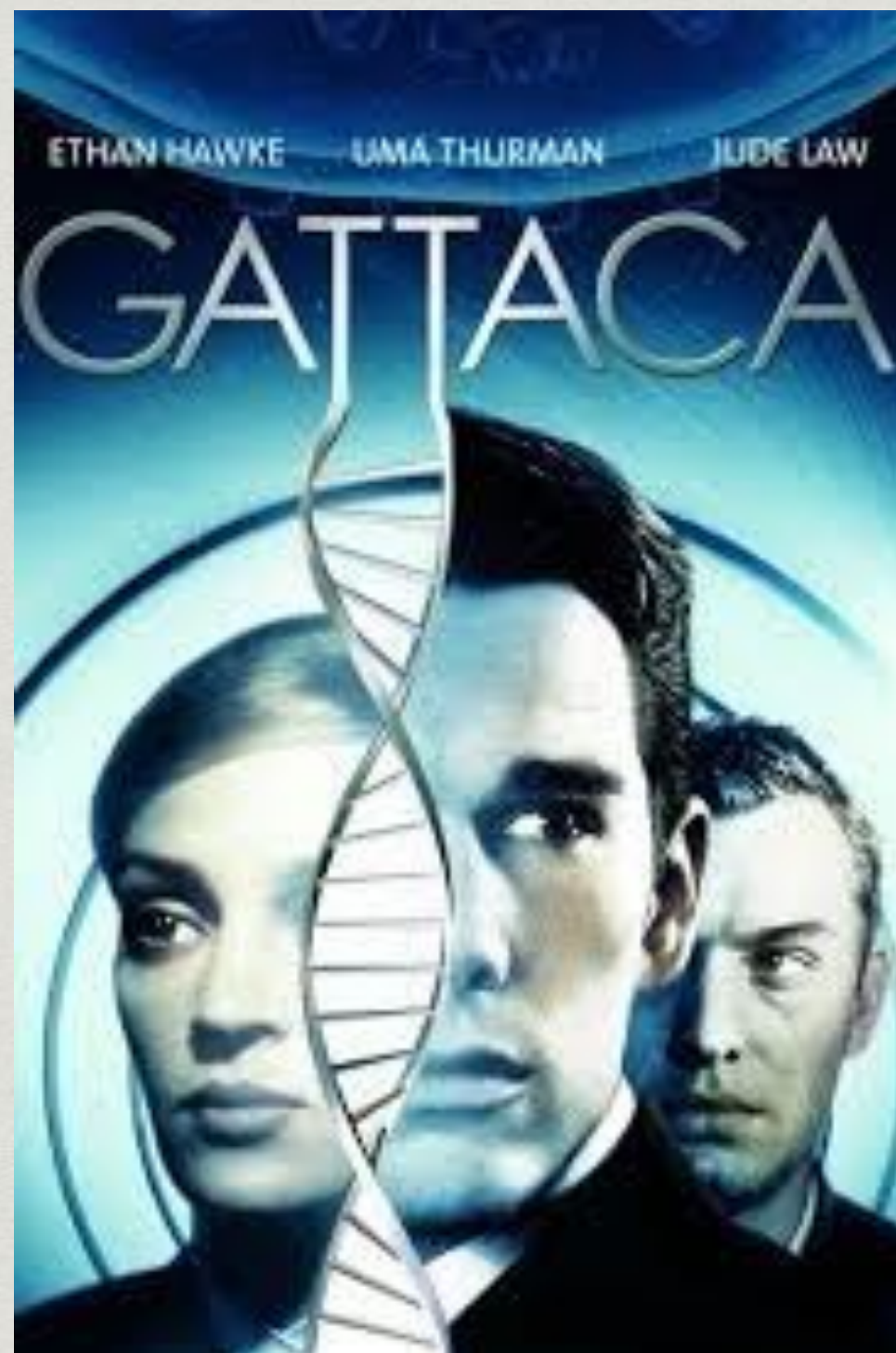
MICHAEL SANDEL

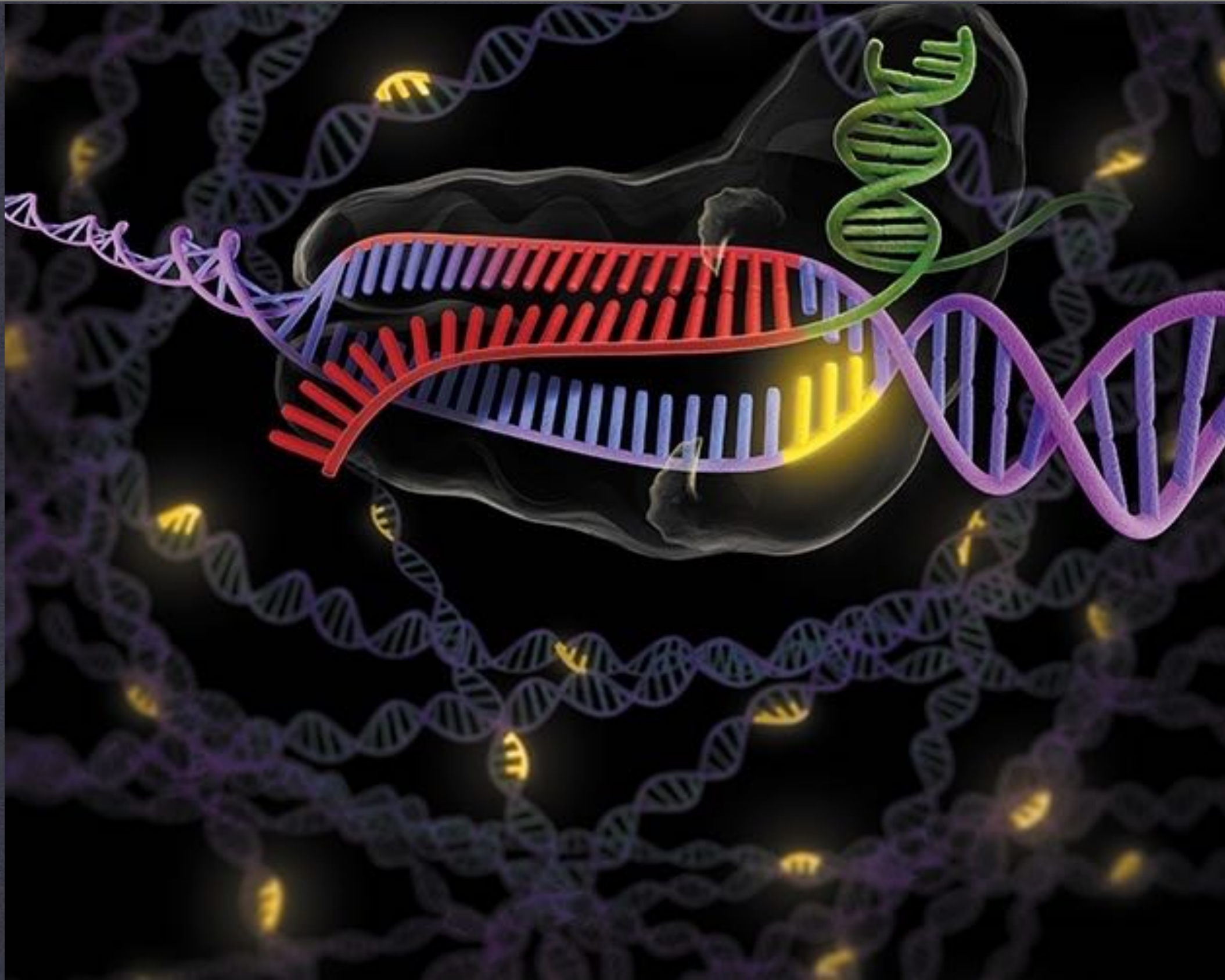
« SOME POINT TO THE DANGER OF
CREATING TWO CLASSES OF
HUMAN BEINGS: THE ENHANCED
AND THE MERELY NATURAL »



BETTER CHILDREN

**SÉLECTION ET
MODIFICATION DES
EMBRYONS**





CRISPR-CAS9 TECHNOLOGY

JENNIFER DOUDNA (USA) & EMMANUELLE CHARPENTIER (FRANCE)

We may be nearing
the beginning of the
end of genetic
diseases.

Jennifer Doudna
Professor of Chemistry and
Molecular and Cell Biology
University of California



CRISPR-CAS9 TECHNOLOGY

JENNIFER DOUDNA (USA)



Shutterstock

CRISPR-CAS9 TECHNOLOGY

JENNIFER DOUDNA (USA)



INTERNATIONAL SUMMIT ON HUMAN GENE EDITING

DECEMBER 1-3, 2015

Genetic enhancement (Robin Lovell-Badge — INTERNATIONAL SUMMIT ON HUMAN GENE EDITING, December 5 2015)

- * (I) **Disease resistance: infectious disease, cancer**
- * (II) **Diet:** Tolerance to lactose, gluten, etc. Ability to obtain nutritional benefit from plants or parts of plants that we can't currently digest.
- * (III) **"Human traits":**
 - * Physical: muscle mass or type, height, appearance/cosmetic
 - * Specific characteristics, such as perfect pitch
 - * Longevity
 - * Intelligence
- * (iv) **"Non-human traits":**
 - * Trivial (e.g. GFP)
 - * Sensory systems (ultraviolet, infrared, electromagnetic fields) ?
 - * Tolerance to drought, heat, or cold ?
 - * Synthetic genes ?

MICHAEL SANDEL

« THE ETHICS OF GIFTEDNESS PERSISTS IN THE PRACTICE OF PARENTING. BUT HERE, TOO, BIOENGINEERING AND GENETIC ENHANCEMENT THREATEN TO DISLODGE IT.

TO APPRECIATE CHILDREN AS GIFTS IS TO ACCEPT THEM AS THEY COME, NOT AS OBJECTS OF OUR DESIGN OR PRODUCTS OF OUR WILL OR INSTRUMENTS OF OUR AMBITION.»



JÜRGEN HABERMAS

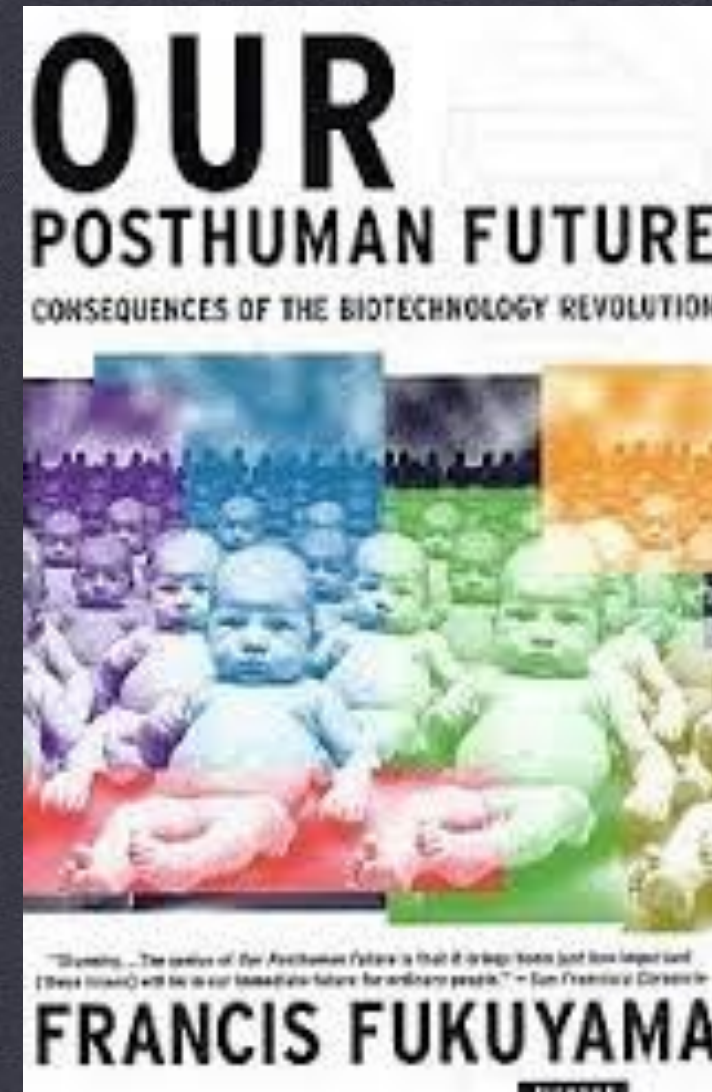
« L'INTERVENTION EUGÉNIQUE EST IMPERMÉABLE AU TRAVAIL SYMBOLIQUE CONSCIENT PARCE QUE L'INTERVENTION EST DE NATURE NON SYMBOLIQUE »

« QUAND L'ADOLESCENT APPREND QU'UNE PERSONNE EXTÉRIEURE EST INTERVENUE DANS SON GÉNOME POUR EN MODIFIER CERTAINS TRAITS, SA PERSPECTIVE D'ÊTRE UN ÊTRE AU DÉVELOPPEMENT NATUREL PEUT ÊTRE REMPLACÉE PAR CELLE D'ÊTRE UN ÊTRE FABRIQUÉ »



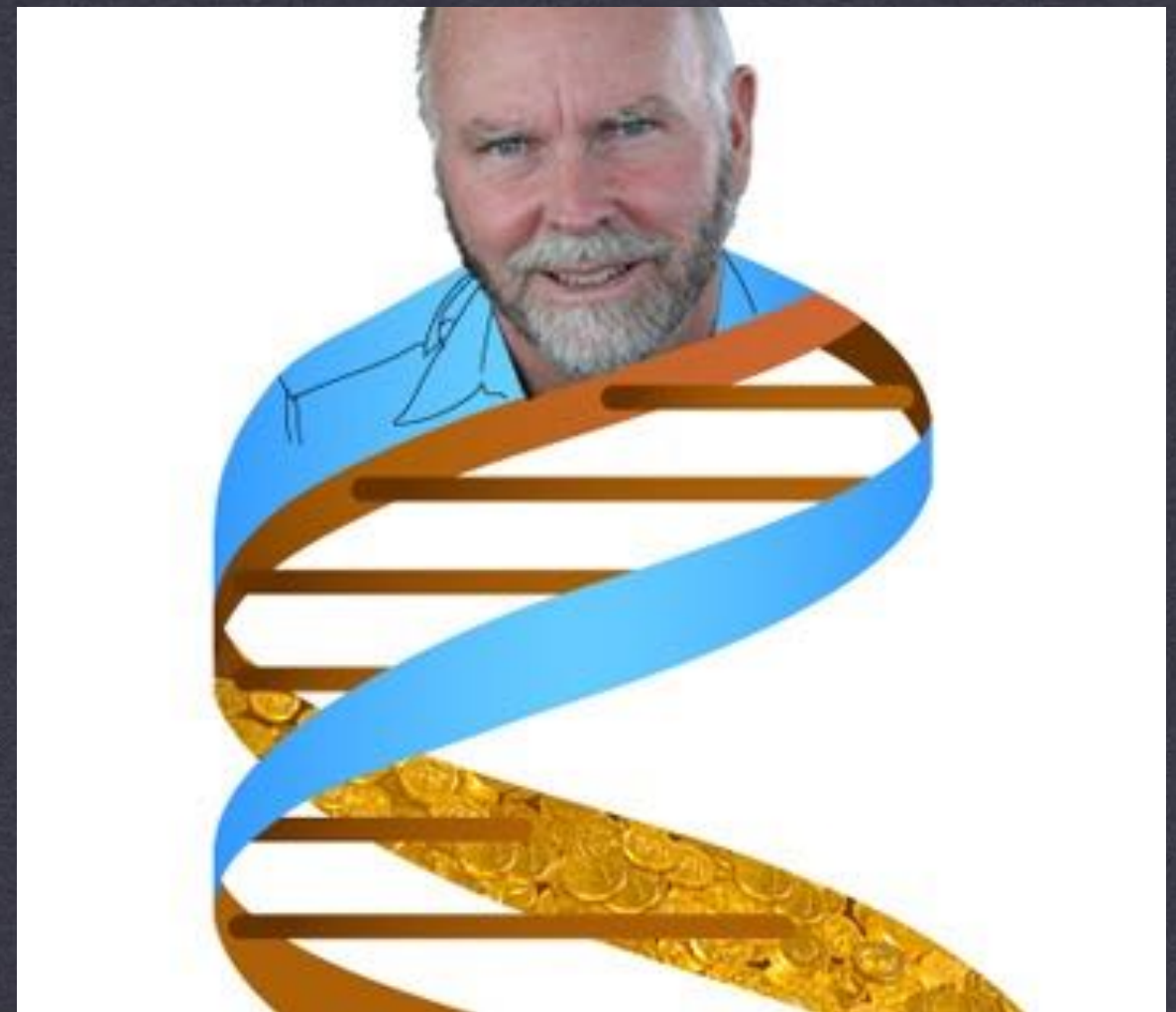
FRANCIS FUKUYAMA, REGULATE GENE-
EDITING — NOW, NEW YORK DAILY NEWS
FRIDAY, DECEMBER 4, 2015

«WE NEED AS A SOCIETY
TO ESTABLISH SOME RED
LINES REGARDING USES
OF THIS TECHNOLOGY.
ONE THAT I WOULD
PERSONALLY DRAW IS
BETWEEN THERAPEUTIC
AND ENHANCEMENT
USES OF GENE EDITING »



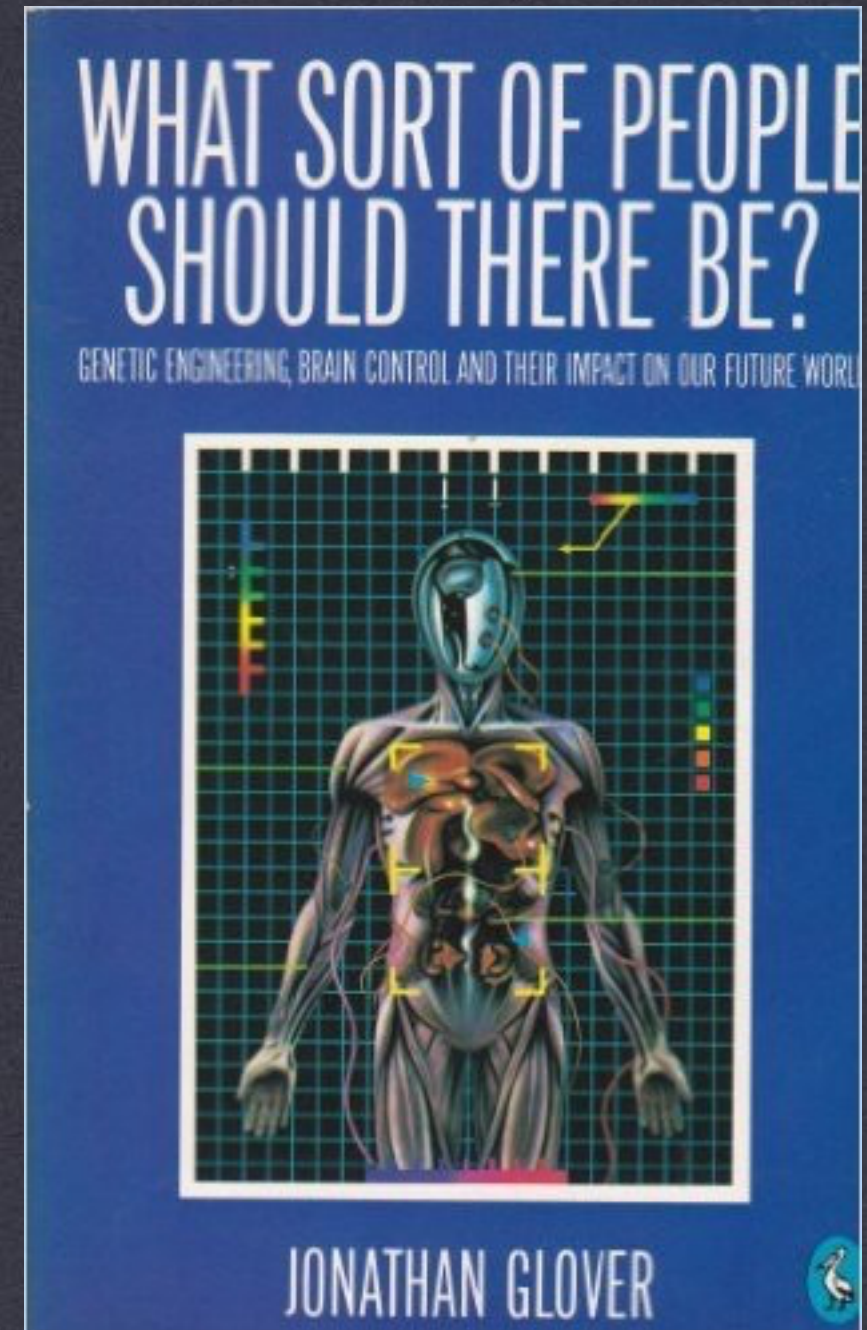
**CRISPR GERMLINE ENGINEERING—THE
COMMUNITY SPEAKS — NATURE
BIOTECHNOLOGY, MAY 2015**

**«I THINK THAT HUMAN
GERMLINE ENGINEERING IS
INEVITABLE, AND THERE WILL
BE BASICALLY NO EFFECTIVE
WAY TO REGULATE OR
CONTROL THE USE OF GENE
EDITING TECHNOLOGY IN
HUMAN REPRODUCTION. THE
QUESTION IS WHEN, NOT
IF » (CRAIG VENTER)**



JONATHAN GLOVER

IN THE EARLY DAYS OF THE DEBATE ON GENETIC ENHANCEMENT, SOME OF THE OBJECTIONS RAISED (SUCH AS THAT IT WOULD BE UN-NATURAL) WERE BASED MAINLY ON EMOTIONAL REVULSION ('THE YUK FACTOR'). SOME PEOPLE STILL HAVE THIS KIND OF REVULSION. BUT ONE RESULT OF TWENTY YEARS' DISCUSSION IS THAT THESE RESPONSES HAVE BEEN QUESTIONED AND LARGELY PUT ASIDE. NOW, THE SERIOUS DEBATE IS IN THE SPIRIT OF THE HARM PRINCIPLE AND REFLECTS CONCERN FOR PEOPLE. THE IMPACT OF GENETIC ENHANCEMENT ON HUMAN FLOURISHING, ON THE KINDS OF LIVES PEOPLE WILL LEAD, IS CENTRAL.

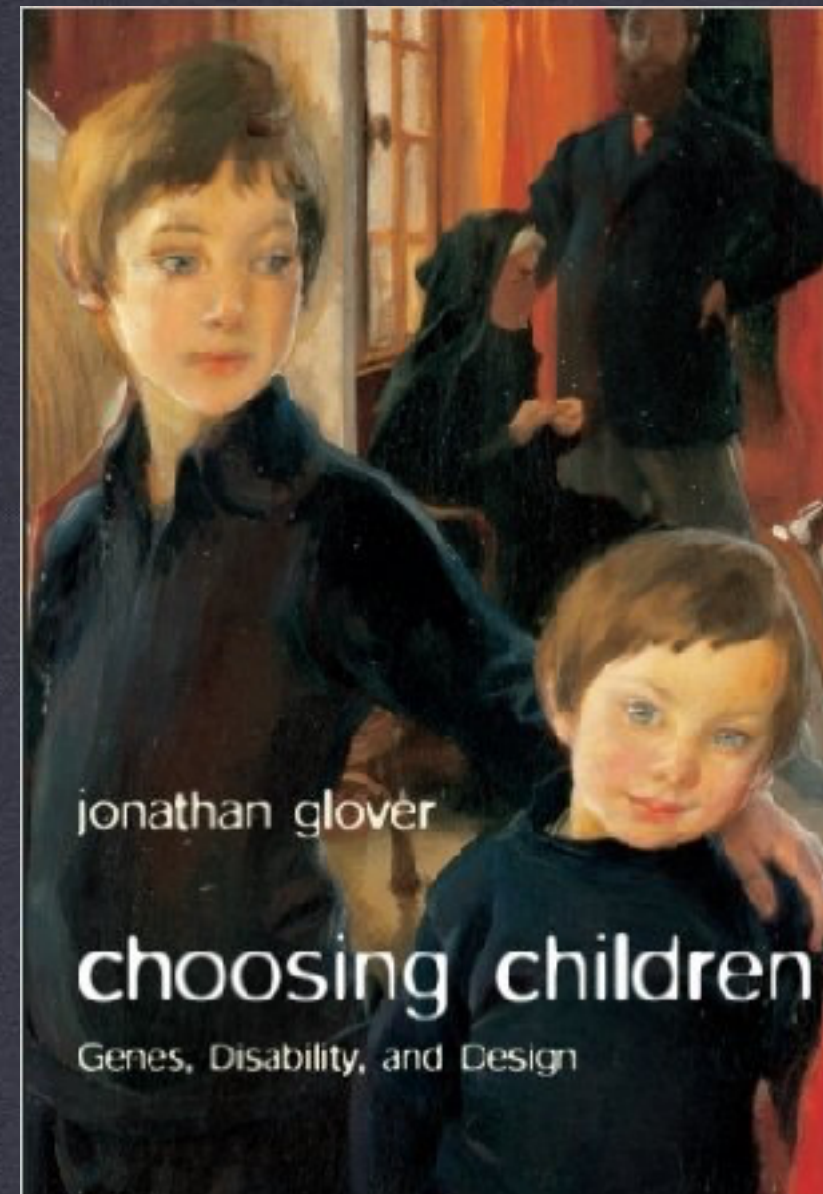


Philosophie libérale

- * Principe central est emprunté à John Stuart Mill: le principe du tort (harm principle) ou principe de non-nuisance
- * La morale n'intervient que lorsqu'un dommage concret injustifié, c'est-à-dire un tort, est infligé à autrui.

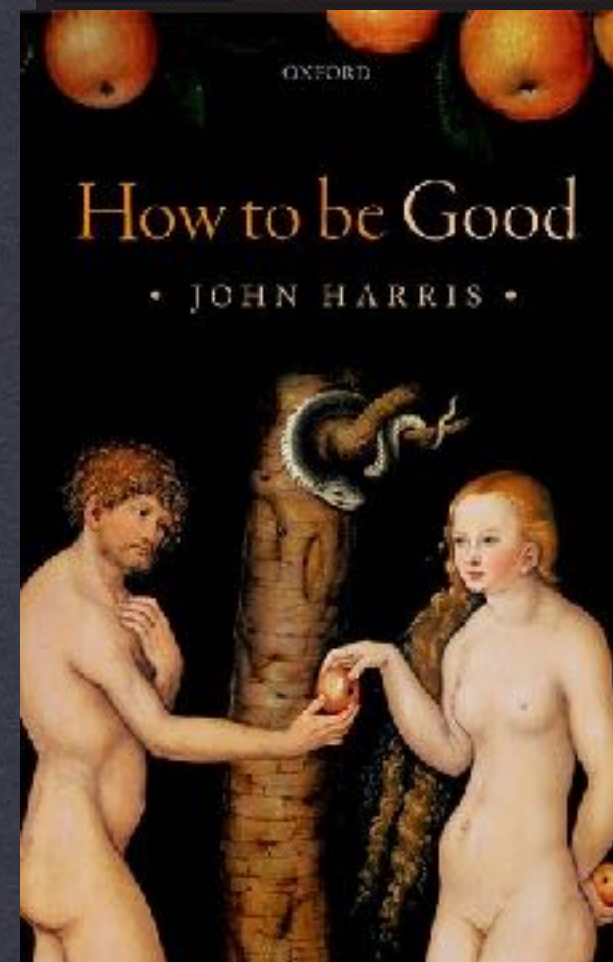
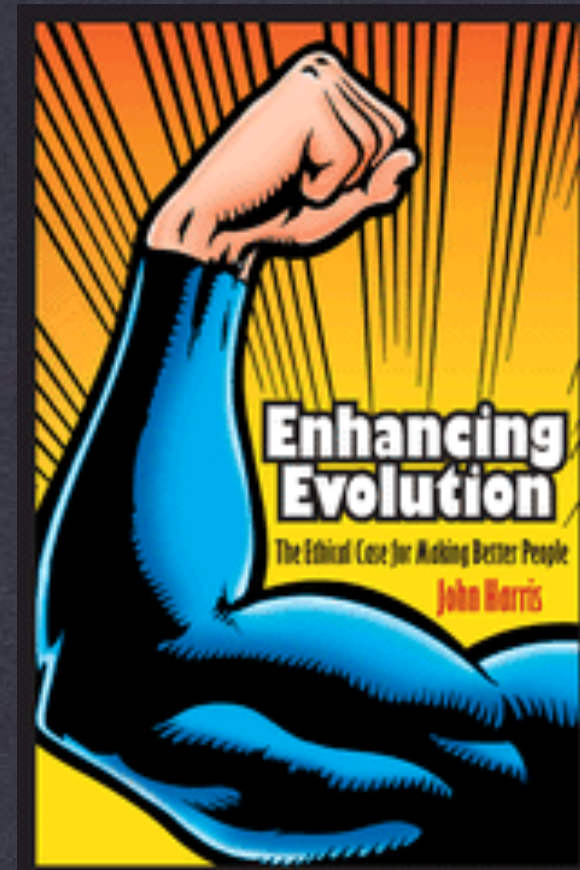
JONATHAN GLOVER

IN THE VERY LONG RUN, THE POTENTIAL TO CHANGE OURSELVES MAY IN SUCH WAYS GIVE US OPPORTUNITIES OF GREAT VALUE. BUT, IN THE SHORT RUN, WE SHOULD REMEMBER THAT THERE ARE DANGERS TOO. THERE IS A CASE FOR OPTIMISM IN PRINCIPLE AND CAUTION IN PRACTICE.



JOHN HARRIS, WHY HUMAN GENE EDITING MUST NOT BE STOPPED, THE GUARDIAN, DECEMBER 2 2015

« WE WILL AT SOME POINT HAVE TO ESCAPE BOTH BEYOND OUR FRAGILE PLANET AND OUR FRAGILE NATURE. ONE WAY TO ENHANCE OUR CAPACITY TO DO BOTH THESE THINGS IS BY IMPROVING ON HUMAN NATURE WHERE WE CAN DO SO IN WAYS THAT ARE “SAFE ENOUGH”. WHAT WE ALL HAVE AN INESCAPABLE MORAL DUTY TO DO IS TO CONTINUE WITH SCIENTIFIC INVESTIGATION OF GENE EDITING TECHNIQUES TO THE POINT AT WHICH WE CAN MAKE A RATIONAL CHOICE. WE MUST NOT STOP NOW. »



HAPPY SOULS

AUGMENTATION DE
L'ESPRIT-CERVEAU

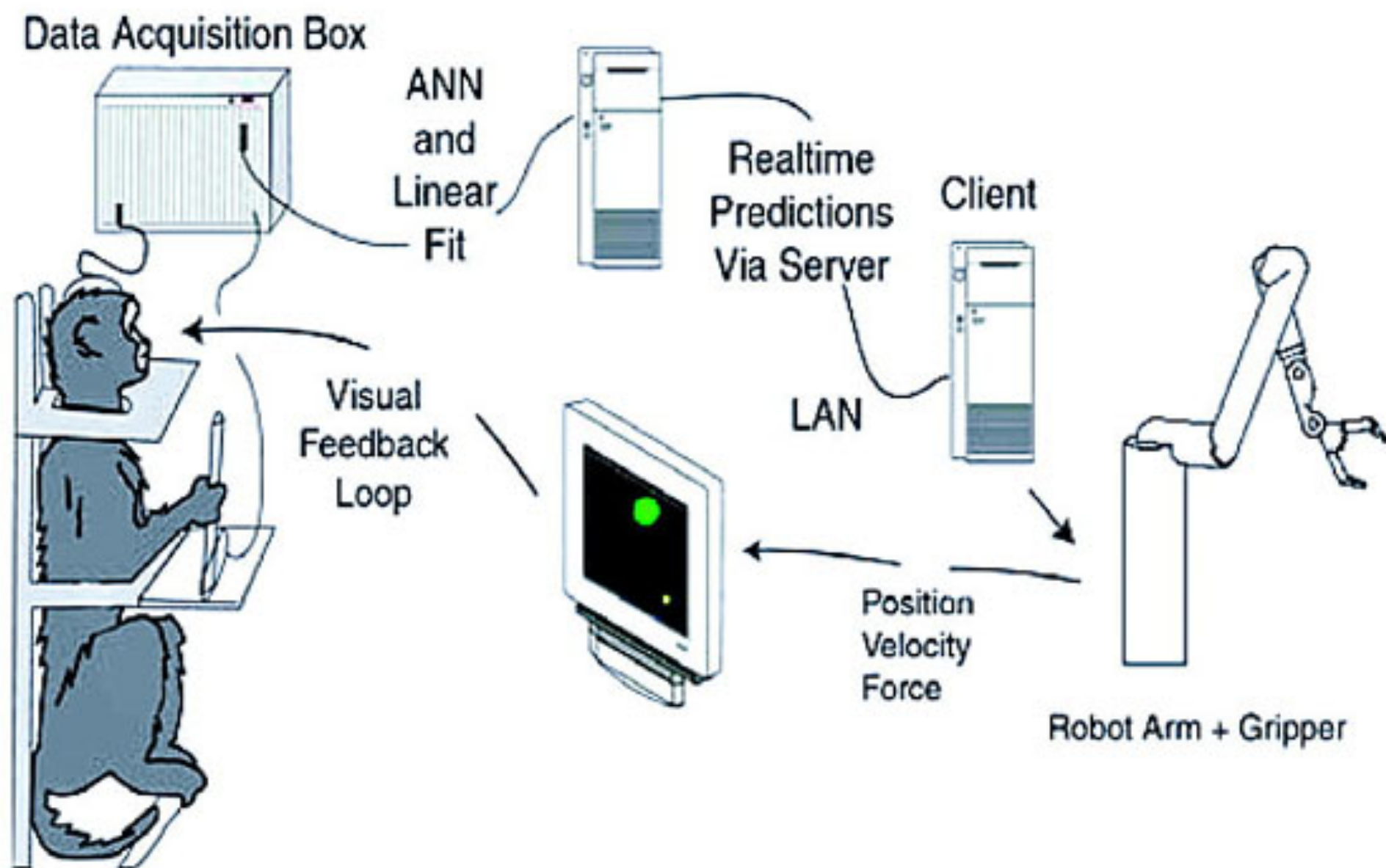


**“I CERTAINLY DO NOT THINK THAT THERE IS
ANYTHING PRIVILEGED ABOUT SKIN AND SKULL AS
BOUNDARIES FOR THE MIND”**

-David Chalmers

**« EMERGENT TECHNOLOGY IS, BY ITS VERY NATURE,
OUT OF CONTROL, AND LEADS TO UNPREDICTABLE
OUTCOMES »**

-William Gibson









*"At once scientifically rich and readily accessible,
[the book] inspires both curiosity and hope from one of the field's most
important thinkers." — EEJ MARRIS, Managing Partner, Google*

BEYOND BOUNDARIES

The New Neuroscience of Connecting Brains
with Machines — and How It Will Change Our Lives

MIGUEL NICOLELIS

NICOLELIS DREAM

“RELIEVING THE BRAIN
FROM THE CONSTRAINTS OF
THE BODY AND LIBERATE
THE BRAIN SYMPHONIES”



« THERE IS NO REASON WHY BMI SHOULD BE LIMITED TO SITUATIONS OF MOTOR DISABILITY.

— ACTIONS CAN BE PERFORMED REMOTELY.

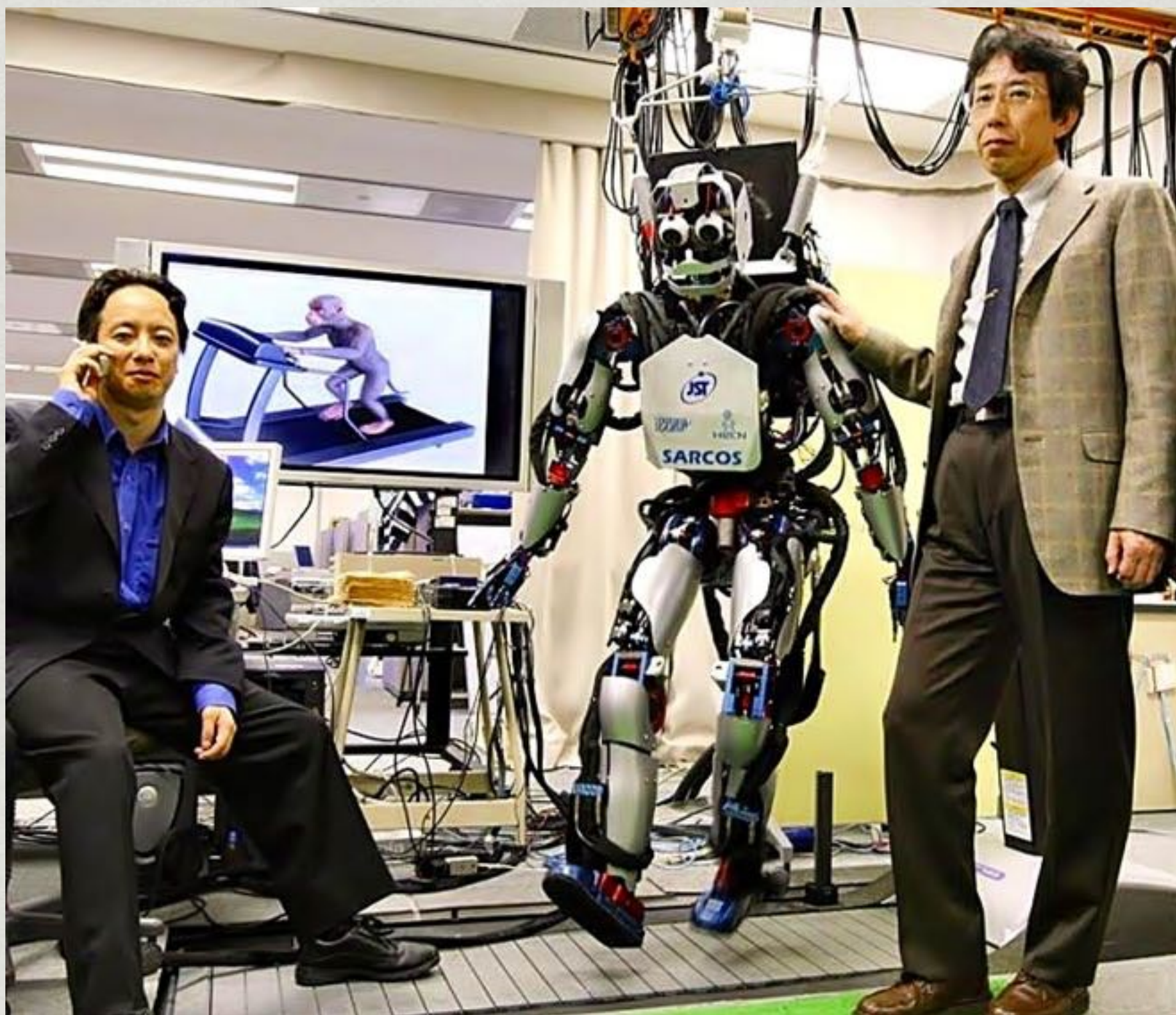
— SENSORY PERCEPTION MAY BE ARTIFICIALLY INCREASED BY THE EXTRACTION OF MODAL INFORMATION THAT WOULD OTHERWISE BE UNAVAILABLE

—IT IS POSSIBLE TO SHARE MOTOR INTENTIONS WITH ONE OR MORE OTHER AGENTS

-Miguel Nicolelis







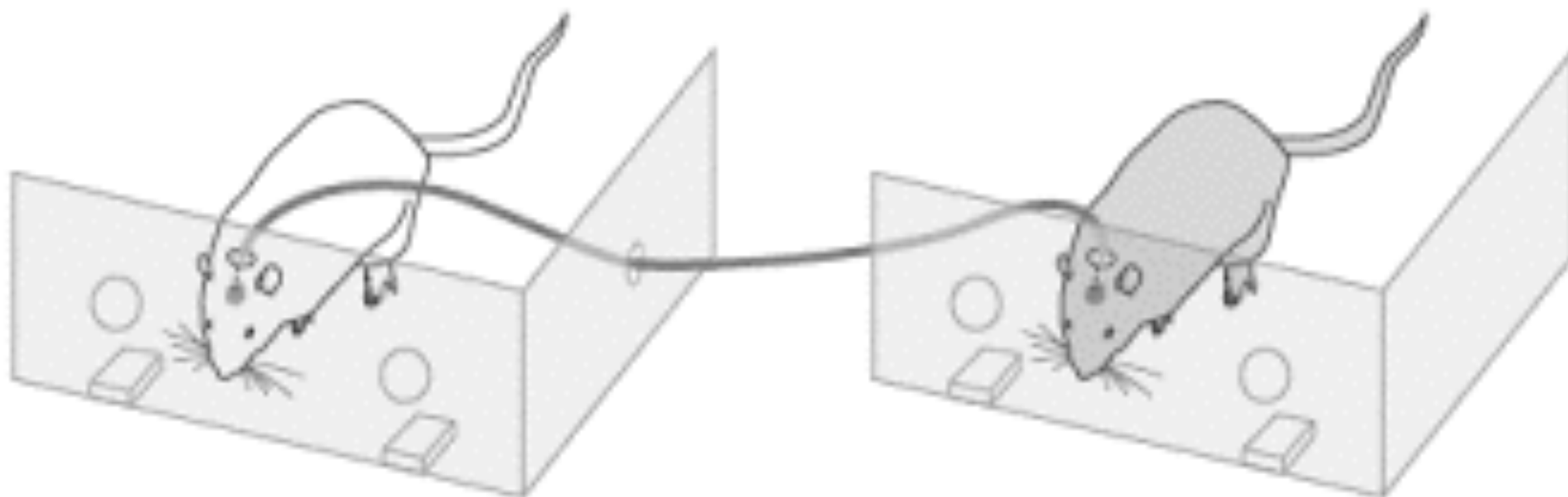
« SIXTH SENSE »

"WHAT WE DID WAS TO
DEMONSTRATE THAT WE COULD
CREATE A NEW SENSE IN RATS BY
ALLOWING THEM TO "TOUCH"
INFRARED LIGHT THAT MAMMALS
CANNOT DETECT » (M. NICOLELIS)



Encoder rat

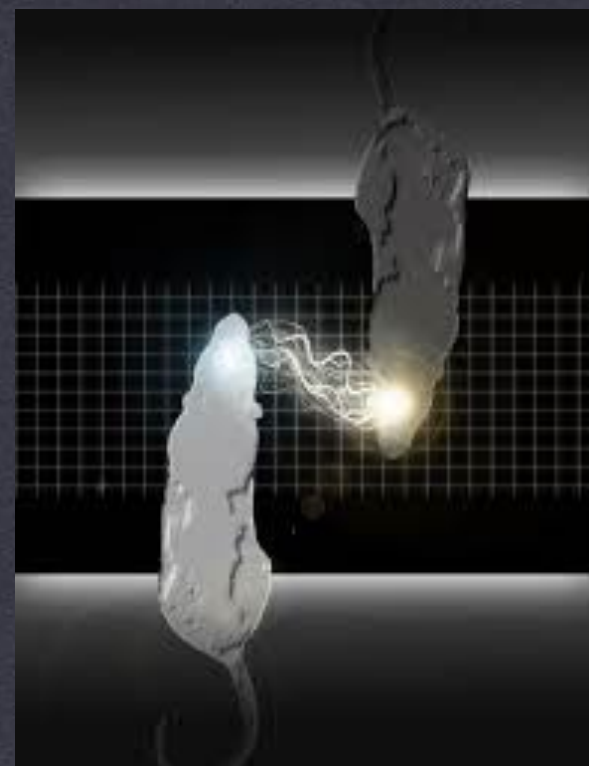
Decoder rat



NICOLELIS

“BASICALLY, WE ARE CREATING AN ORGANIC COMPUTER THAT SOLVES A PUZZLE.”

« IN THE FUTURE, THE CONCEPT MIGHT BE EXTENDED TO PRODUCE NEURALLY CONNECTED “SWARMS” OF RATS WITH COLLECTIVE INTELLIGENCE »



« WE CANNOT PREDICT WHAT KINDS OF EMERGENT PROPERTIES WOULD APPEAR WHEN ANIMALS BEGIN INTERACTING AS PART OF A BRAIN-NET. IN THEORY, YOU COULD IMAGINE THAT A COMBINATION OF BRAINS COULD PROVIDE SOLUTIONS THAT INDIVIDUAL BRAINS CANNOT ACHIEVE BY THEMSELVES, SUCH A CONNECTION MIGHT EVEN MEAN THAT ONE ANIMAL WOULD INCORPORATE ANOTHER'S SENSE OF SELF »

-Miguel Nicolelis

NICOLELIS

“ IT IS UNLIKELY THAT HUMANS WOULD EVER BE ABLE TO DIRECTLY SHARE COMPLEX MENTAL EXPERIENCES. YOU’RE NOT GOING TO SHARE YOUR EMOTIONS OR PERSONALITY TO A BRAIN-NET. THESE ARE NOT REDUCIBLE TO A DIGITAL ALGORITHM. YOU CAN’T REPRODUCE THESE INDIVIDUAL HUMAN ATTRIBUTES» (MIGUEL NICOLELIS)



TRANSHUMANISME

« LIVING LONGER,
HEALTHIER, SMARTER AND
HAPPIER »



VOIE BIOLOGIQUE - VOIE IA/SINGULARITÉ

LA VOIE BIOLOGIQUE COMPTE SUR LES PROGRÈS DES TECHNOLOGIES DU VIVANT (BIOTECHNOLOGIE, GÉNÉTIQUE, NANOTECHNOLOGIE, NEUROSCIENCE...) POUR RÉALISER UNE MODIFICATION DIRECTE DE LA STRUCTURE BIOLOGIQUE DE L'HOMME.

LA VOIE IA/SINGULARITÉ SE BASE SUR LES APPORTS DE LA ROBOTIQUE ET DE L'INTELLIGENCE ARTIFICIELLE POUR CRÉER DES MACHINES NOUVELLES DOTÉES DE SENSIBILITÉ ET DE CONSCIENCE QUI POURRAIENT SUCCÉDER À L'ÊTRE HUMAIN.

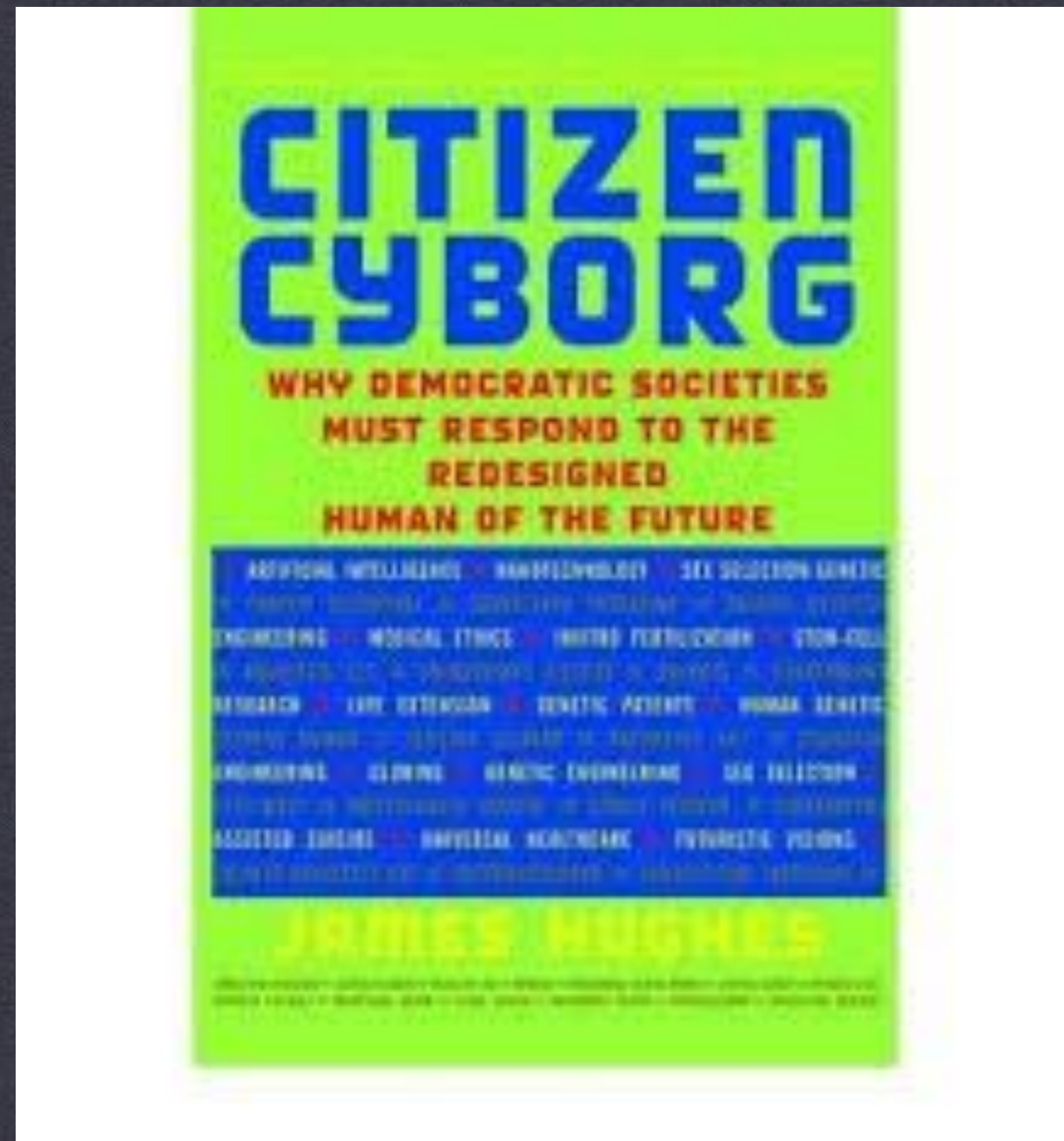
RAY KURZWEIL

DANS SON OUVRAGE
THE SINGULARITY IS
NEAR, RAY KURZWEIL A
REPRIS ET DÉVELOPPÉ
LE THÈME D'UNE
SINGULARITÉ CAUSÉE
PAR L'AUGMENTATION
EXPONENTIELLE DES
P O U V O I R S
TECHNOLOGIQUES DE
L'ÊTRE HUMAIN



JAMES HUGHES

TRANSHUMANISTS
ASSERT THAT ALL
INTELLIGENT
“PERSONS” ARE
DESERVING OF RIGHTS,
WHETHER THEY ARE
HUMAN OR NOT



FROM THE BESTSELLING AUTHOR OF SAPIENS

Yuval Noah
Harari



Homo Deus

A Brief History
of Tomorrow

G. Hottois, J.-N. Missa et L. Perbal (dir.)

Encyclopédie du trans/posthumanisme



L'humain et ses préfixes