

DE LA RECHERCHE À L'INDUSTRIE



# IMPLANTS: ETHICAL ASPECTS

Alexei Grinbaum  
CEA-Saclay/Larsim

# The Economist

DECEMBER 19TH 2009 – JANUARY 1ST 2010 [Economist.com](http://Economist.com)

Turmoil at British Airways

Greece on the edge

Wall Street v London v Shanghai

China's control freaks

Being foreign | The perfect violin | Going to America | The Harry Potter economy

Amur river, graveyard of hopes | The meaning of rice in Japan | Art of abandonment in Detroit

Gordon Rex, a tragedy | Hedonism and claret | Russia and the Holy Land | Politeness | The joy of dirt

Socrates today | Newspapers under threat | The hardest language | Farewell WW1 | Plus...

## Progress and its perils





Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

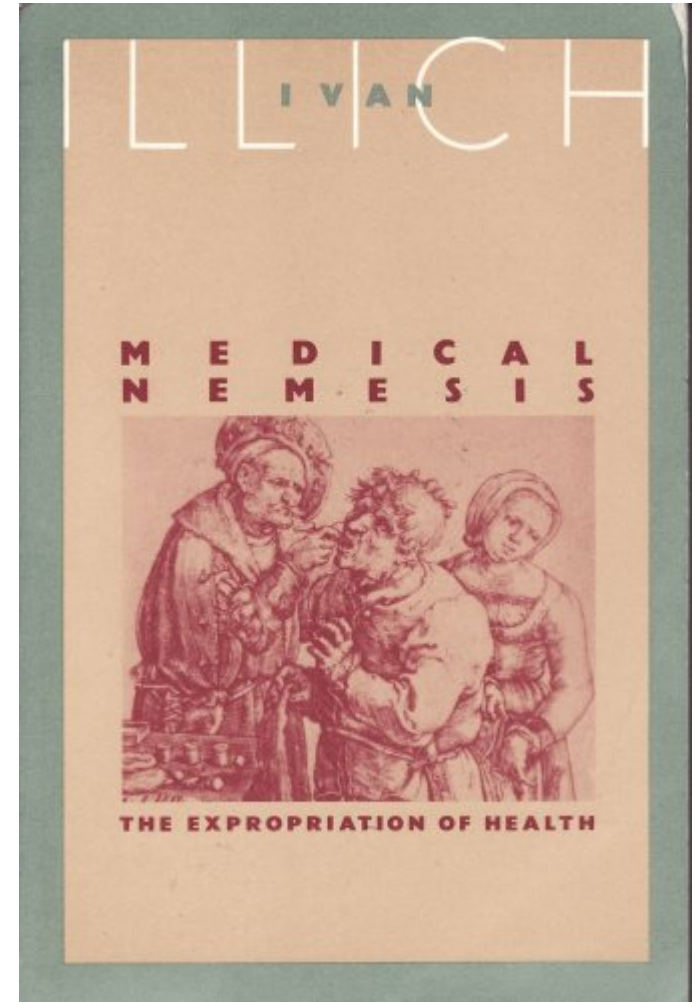




## IVAN ILLICH

### HEALTH AS ONE'S OWN RESPONSIBILITY - NO, THANK YOU!

Adaptation to the genetic, climatic, chemical and cultural consequences of growth is now described as health. Neither the Galenic-Hippocratic representations of a humoral balance, nor the Enlightenment utopia of a right to “health and happiness,” nor any Vedic or Chinese concepts of well-being, have anything to do with survival in a technical system. Health as function, process, mode of communication, health as an orienting behaviour that requires management — these belong with the postindustrial conjuring formulas.

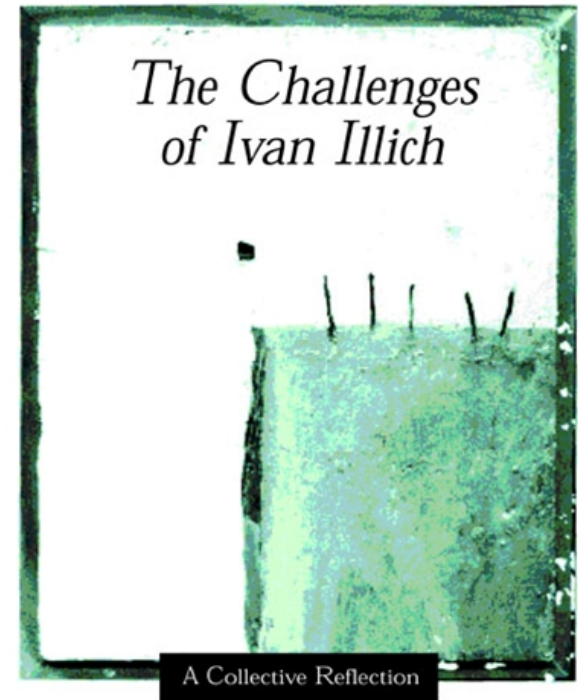




## IVAN ILLICH

### HEALTH AS ONE'S OWN RESPONSIBILITY - NO, THANK YOU!

There is the daily task of accepting the fragility and contingency of the human situation. Yes, we suffer pain, we become ill, we die. But we also hope, laugh, celebrate; we know the joy of caring for one another; often we are healed and we recover by many means. We do not have to pursue the flattening out of human experience.



*Lee Hoinacki and Carl Mitcham, Editors*



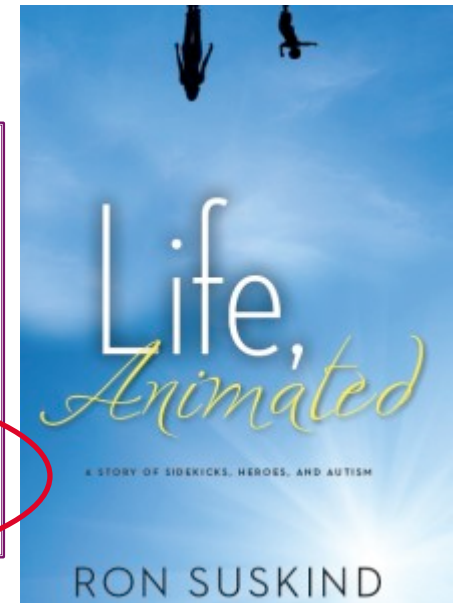
FASHION & STYLE

# To Siri, With Love

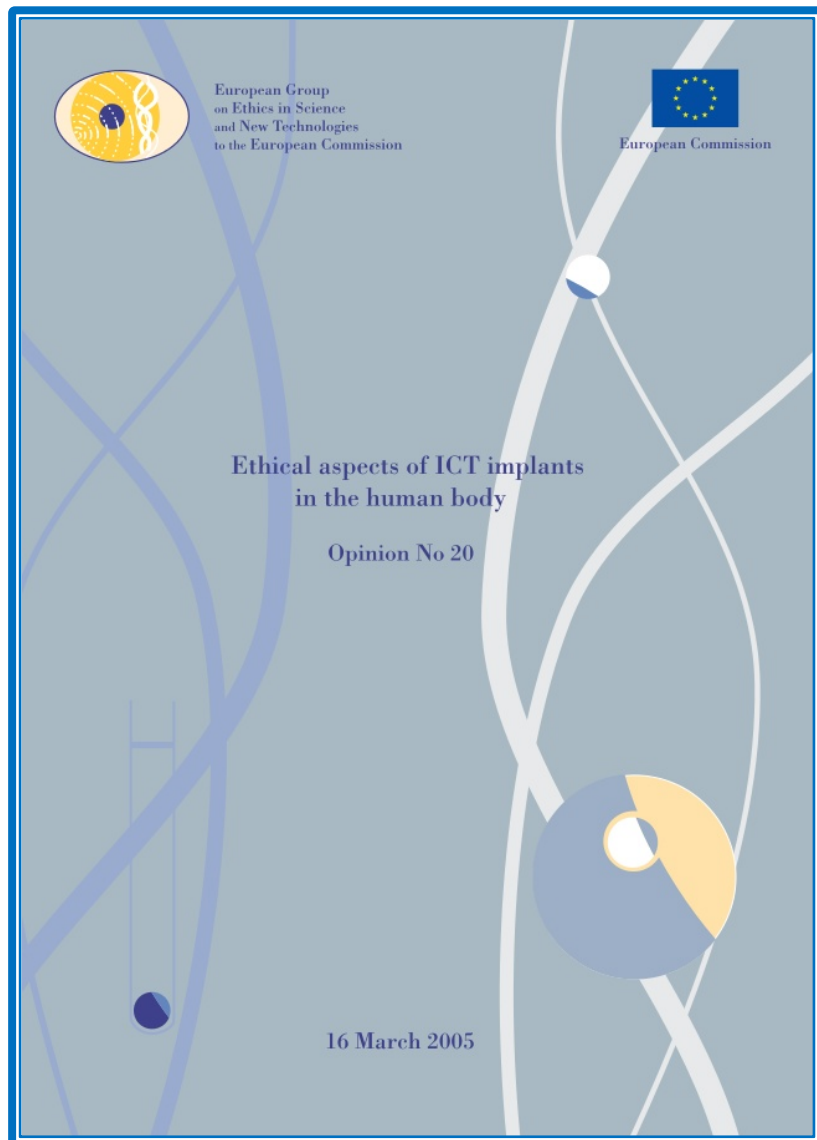
How Apple's Siri Became One Autistic Boy's B.F.F.

By JUDITH NEWMAN OCT. 17, 2014

Of all the worries the parent of an autistic child has, the uppermost is: Will he find love? Or even companionship? Somewhere along the line, I am learning that what gives my guy happiness is not necessarily the same as what gives me happiness.



# EGE OPINION ON ICT IMPLANTS



- Active and passive implants (energy source)
- Online and offline implants (connectivity)



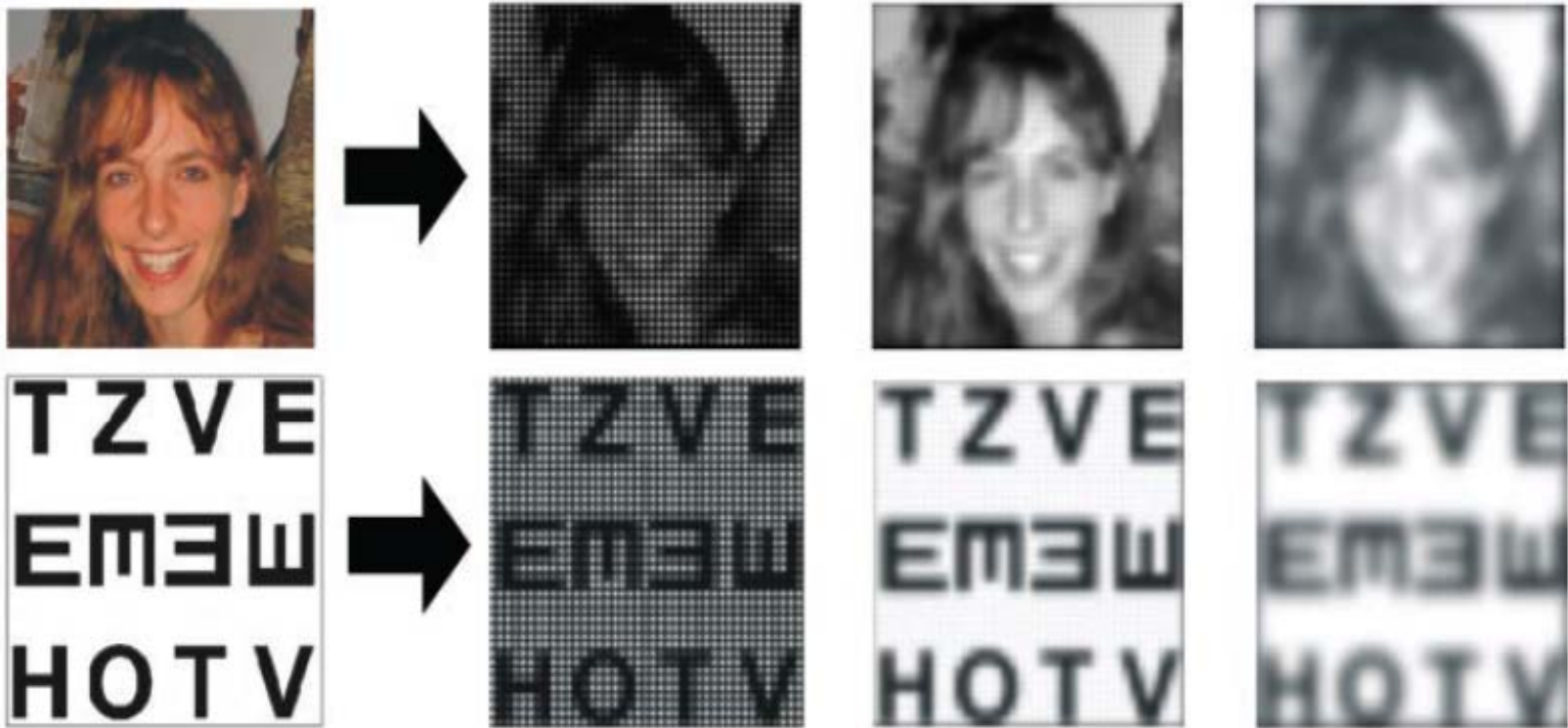
© retina implant ag

## Knowledge gaps by area:

- Human dignity, integrity and autonomy
- Privacy and surveillance
- Enhancement and human self-awareness
- Social aspects
- Risk predictability
- Implants for which special caution is needed



# EXAMPLE OF MODIFIED HUMAN CONDITION



“If a regular three-dimensional image is transformed into a two-dimensional excitation profile, the image would be represented by a two-dimensional array of 40 by 40 excitation spots. When the light intensity is increased, each of the excitation spots enlarges and a more homogenous picture emerges. A further increase in luminosity causes... a blurred picture.”



CERNA

Commission de réflexion sur l'Éthique de la Recherche en sciences et technologies du Numérique d'Allistene

ALLISTENE  
L'alliance des sciences et technologies du numérique



Éthique de la recherche en robotique

Octobre 2014



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[cerma@allistene.fr](mailto:cerma@allistene.fr)

Rapport accessible sur <http://cerna-ethics-allistene.org>



## De la réparation à l'augmentation

- [RAH-1] Ethique médicale
- [RAH-2] Autonomie et intégrité de l'individu
- [RAH-3] Réversibilité de l'augmentation
- [RAH-4] Discrimination sociale induite par l'augmentation



Source: Y. Charlon et al., IRBM 34, 60-63 (2013)

What does it change for an Alzheimer patient to be permanently monitored and observed? Do they feel better or yet further diminished?

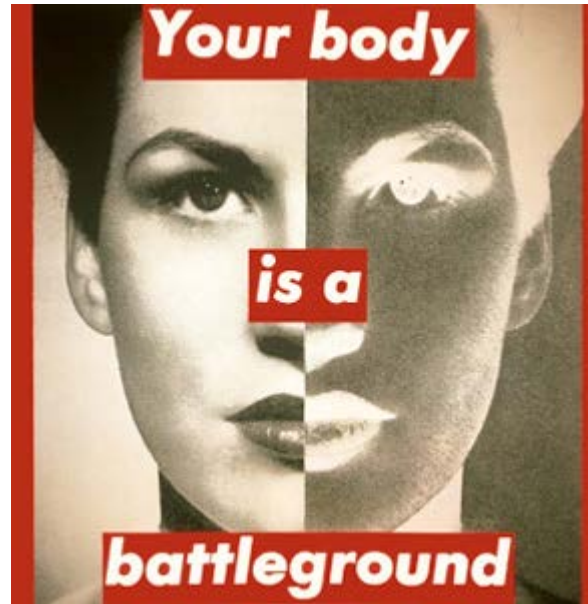
Must the patch be detachable by the patient or should it be fixed so that the patient can never take it off? What other sensors can be integrated in the patch?

Alexei Grinbaum | 10 AVRIL 2012

## An intellectual and cultural movement

that affirms the possibility and desirability of transcending the limitations of the human body

by using technology to eliminate aging and enhance human intellectual, physical, and psychological capacities.



## Technoprog !

Association Française Transhumaniste

Le Transhumanisme est un mouvement de pensée philosophique, proposant une vision matérialiste du monde :

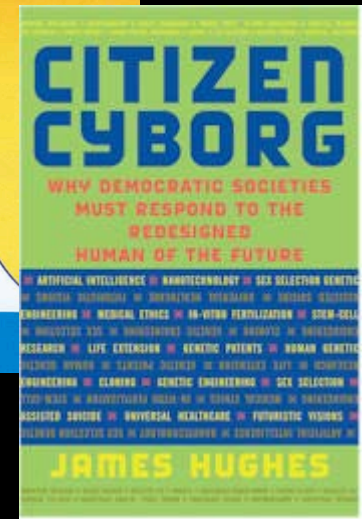
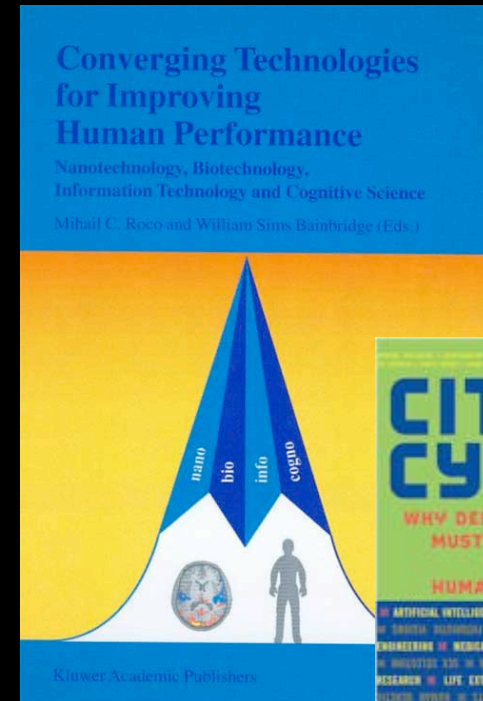
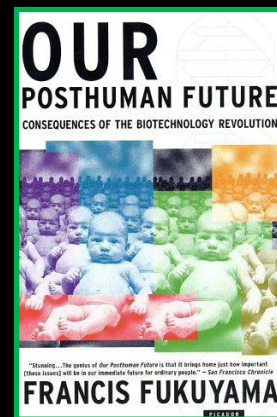
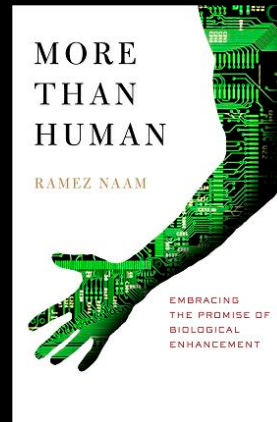
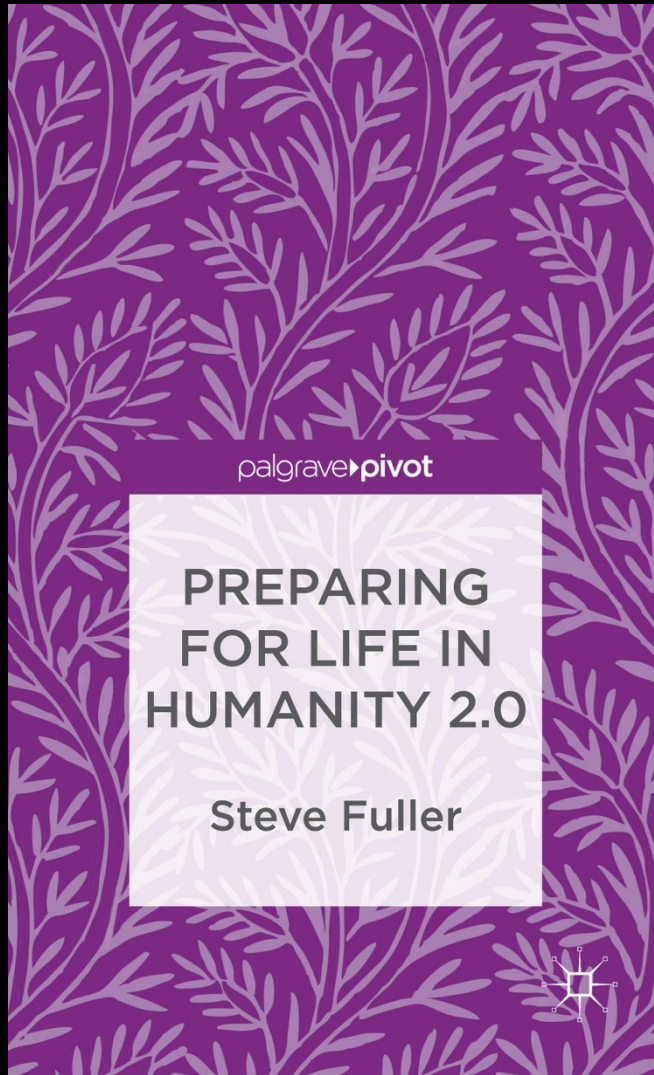
L'humain est en constante évolution et non un être stable.



## MANIFESTO DEI TRANSMANISTI ITALIANI

Noi transumanisti ci siamo dati un obiettivo chiaro e ambizioso: creare nel nostro paese le condizioni per una rivoluzione morale e intellettuale di orientamento prometeico. Vorremmo

“We are not fully human until or unless our biological bodies are somehow enhanced, if not outright transcended.”







## 'Cut off my foot so I can run faster': Sporty teenager who had one limb amputated for medical reasons now wants the OTHER one removed

- Danielle Bradshaw, 15, has the condition developmental dysplasia
- Meant her right leg was effectively useless and she relied on a wheelchair
- Decided in 2010 to have the leg amputated and was given a prosthetic limb
- Enabled her to take up sport and she developed a love of running
- This has caused strain on her 'good' leg, causing pain and slowing her down
- Now wants left foot - which has deformed toes and severe tendon damage - removed so she can run with two prosthetics and compete at paralympics

By ANNA HODGEKISS FOR MAILONLINE

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Life



Novelty



Perfection



Imitation



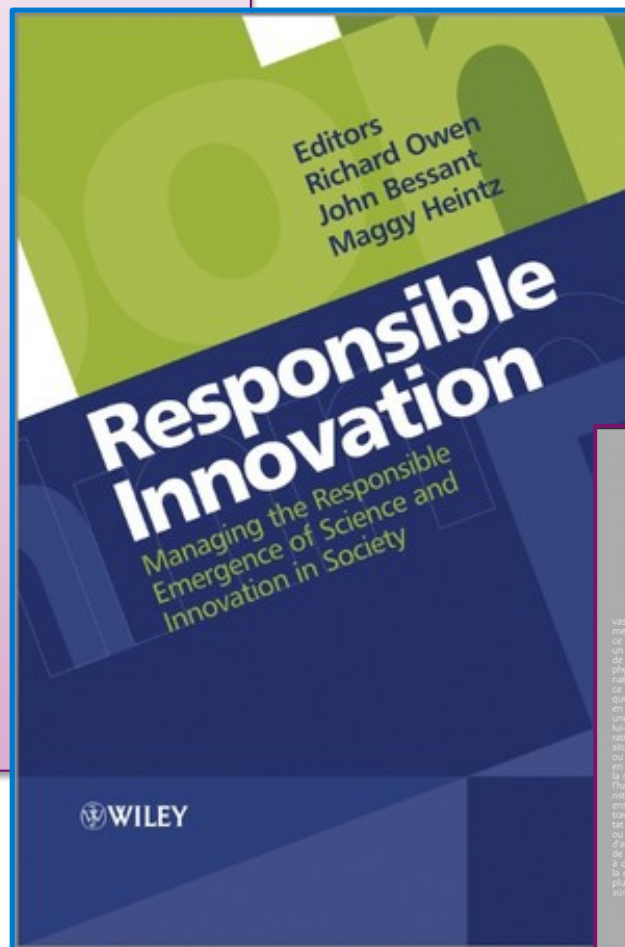
Purpose



Desire



Responsibility



observatoryNano:  
European observatory for science-based and economic expert analysis of nanotechnologies

Work package 4: Ethical and societal impacts

**TOOLKIT FOR ETHICAL REFLECTION AND COMMUNICATION**

(DELIVERABLES D4.4.1 AND D4.4.2)

CEA-LARSIM

À PRÉSENT

**Mécanique des étreintes**

Alexei Grinbaum

Une vaste évolution technique a vu l'intervention croissante du traitement computationnel des données dans la science elle-même. Pour ce que nous apprenons dans ce livre, il ne s'agit pas de prétendre posséder en la matière un savoir premier, mais de contribuer à l'intervention se faisant déjà constater de façon spectaculaire et physique. Après tout, les expériences de la physique ont été parmi les premiers clients de la publication des résultats. Une telle époque où le grand public en ignorait tout, ce n'est pas seulement que le laboratoire présente le résultat, mais qu'il est communiqué en lui à travers l'ordinateur qui constitue l'outil de travail. En fait, les sorties dans leur rapport aux entrées. C'est aussi, encore une fois, ce qui est compris, que le travail de coopération théorique lumineuse dans un certain nombre de cas, est délégué à des explorations computationnelles dont le physicien peut, dans une certaine mesure, estimer quelles sont les vicissitudes ultérieures ou de validation. En amont de cette utilisation, il y a une situation où nous avons leur insupportable ignorance de la physique mathématique. D'un côté, les mathématiques ont l'habitude d'employer les unités de calcul dans un langage mathématique, afin de donner les phénomènes ou les formes qu'ils voyent ensuite s'employer à démontrer ; d'un second côté, il arrive qu'un travail démonstratif rigoureux, la tâche de l'établissement d'un résultat à l'aide d'un nombre énorme mais fini de cas numériques ou numériques, en telle sorte qu'un programme est en mesure d'achever à preuve ; d'un troisième côté enfin, on s'attarde depuis de longues années, dans des formes de plus en plus convaincantes, à développer des systèmes de démonstration formelle ou d'aide à la démonstration, auxquels les mathématiciens professionnels n'hésitent plus, de temps en temps, à faire appel lorsque la situation le justifie. Mais, bien sûr, l'ordinateur joue également un rôle fondamental - en aval -

encre marine