

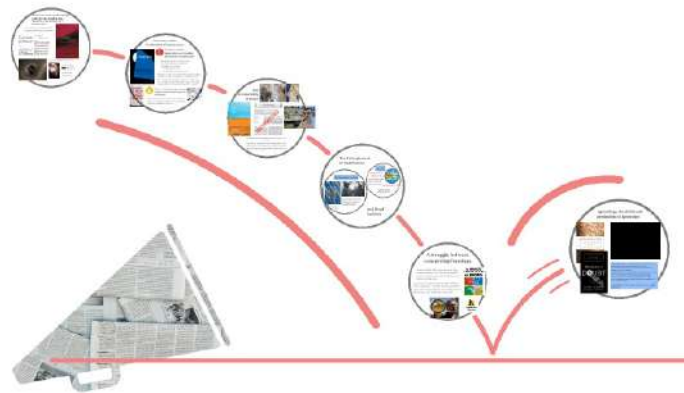
Rethinking Expertise ()

Science and Society

January 19, 2022

Reims Winter School

... through Controversies (3.1)



3.2 Trust in Numbers

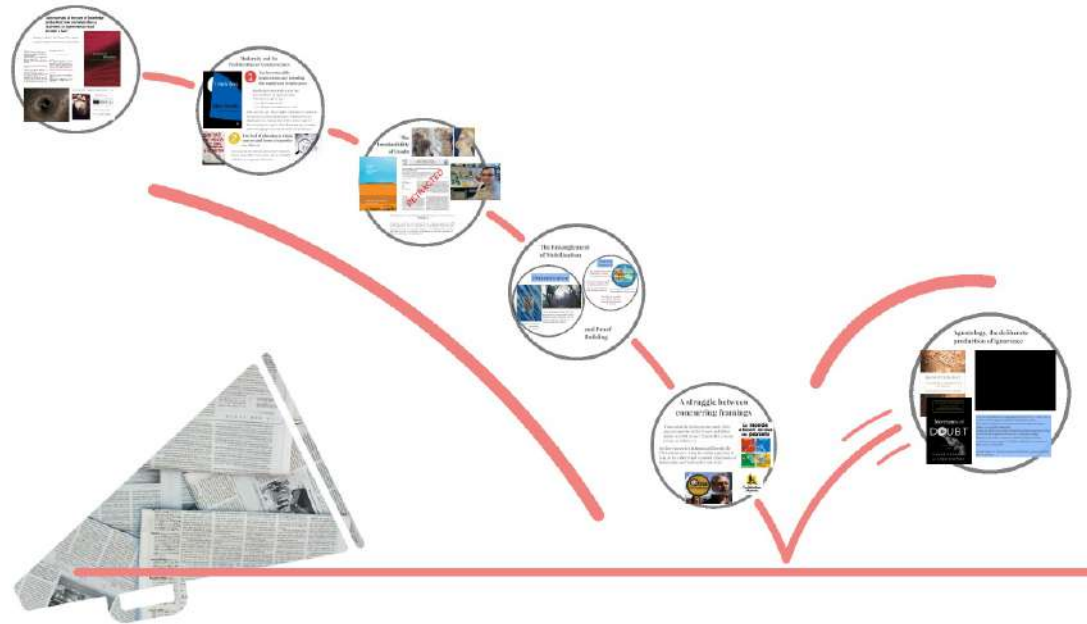


3.3 The Blurred Boundaries of Expertise



Thomas Tari

... through Controversies (3.1)



3.2 Trust in



3.3 The Blurred Boundaries of Expertise



Controversies at the core of knowledge production: how and when does a statement or experimental result become a fact?

Harry Collins' 1972 to 2017-work on gravitational waves detection

Experiment W

Scientist (A) - That's why the W thing though it's very complicated has certain attributes so that if they are something, it's a little more believable. They've really put some thought into it...
Scientist (B) - They hope to get very high sensitivity but I don't believe them frankly, there are more subtle ways around it than being there...
Scientist (C) - I think that the group at W are just out of their minds.

Experiment Y

Scientist (B) - Y's results do seem quite impressive. They are sort of very business like and look quite official rather...
Scientist (C) - My best estimate of his sensitivity, and he and I are good friends in Dept and he has just got no chance of detecting gravity waves.
Scientist (A) - If you do as I have done and you just put your figures to some girls and ask them to work that out, well, you don't know anything. You don't know whether those girls were taking in their opinions or not.

Controversies constitute the core of scientific production

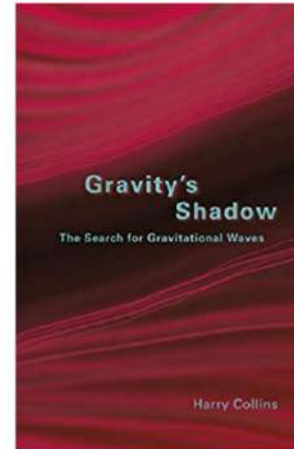
Which experts should one trust?

Experiment X

Scientist (B) - He is at a very small place ; I have looked at his data, and he certainly has some interesting data.
Scientist (C) - I am not really impressed with his experimental capabilities so I would question anything he has done more than I would question other people's.
Scientist (A) - That experiment is a bunch of shit!

Experiment Z

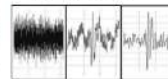
Scientist (B) - Z's experiment is quite interesting, and shouldn't be ruled out just because the ... group can't repeat it.
Scientist (A) - I am very impressed with the Z affair.
Scientist (C) - Then, doesn't Z now the Z thing is an error and not true!



The 'first detection' of gravitational waves by Weber in 1969



how the theory and the experiment are intertwined



the notion of 'experimental regressor'

Garwin charismatic paper establishes a (social) consensus on the new detection

Experiment W

Scientist (a) - That's why the W thing though it's very complicated has certain attributes so that if they see something, it's a little more believable. They've really put some thought into it...

Scientist (b) - They hope to get very high sensitivity but I don't believe them frankly. There are more subtle ways round it than brute force....

Scientist (c) - I think that the group at W are just out of their minds.

Experiment Y

Scientist (1) - Y's results do seem quite impressive. They are sort of very business-like and look quite authoritative...

Scientist (2) - My best estimate of his sensitivity, and he and I are good friends is [low] and he has just got no chance [of detecting gravity waves].

Scientist (3) - If you do as Y has done and you just give your figures to some girls and ask them to work that out, well, you don't know anything. You don't know whether those girls were talking to their boyfriends at the time.

Controversies constitute the core of scientific production

Which experts should one trust?

Experiment X

Scientist (i) - he is at a very small place ; I have looked at his data, and he certainly has some interesting data.

Scientist (ii) - I am not really impressed with his experimental capabilities so I would question anything he has done more than I would question other people's.

Scientist (iii) - That experiment is a bunch of shit!

Experiment Z

Scientist (I) - Z's experiment is quite interesting, and shouldn't be ruled out just because the . . group can't repeat it.

Scientist (II) - I am very unimpressed with the Z affair.

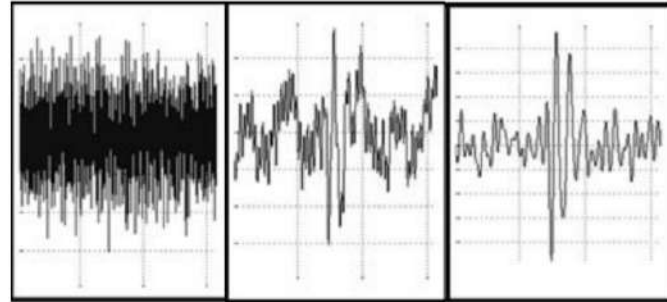
Scientist (III) - Then there's Z. Now the Z thing is an out and out fraud!



The 'first detection' of gravitational waves by Weber in 1969



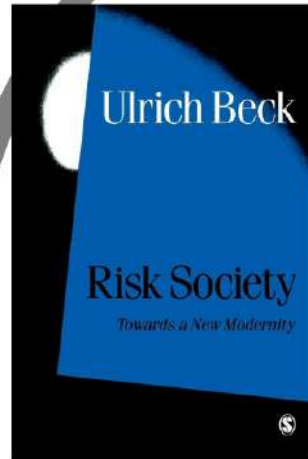
*how the theory and the
experiment are intertwined*



the notion of "experimental regression"

Garwin charismatic paper establishes a
(social) consensus on the non detection

Modernity and the Proliferation of Controversies



1

Technoscientific innovations are invading the world at a frantic pace

Knowledge is not produced as fast as innovation (cf. epidemiology)

Nowadays, experts say :

- "we don't know (yet)"
- "we disagree (even between us)"

Risk Society: an "inescapable structural condition of advanced industrialization". Modern society has become a risk society in the sense that it is increasingly occupied with debating, preventing and managing risks that it itself has produced.



2

The level of education is rising, sources and forms of expertise are diverse

Heterogeneous information is now (almost) freely accessible everywhere (from scientific articles to conspiracy theories).

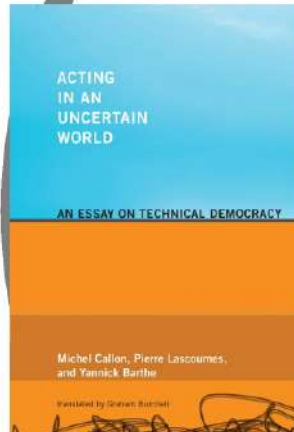


ACTING
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The Irreducibility of Doubt



Rio Declaration on Environment and Development 1992, United Nations Principle 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The Entanglement of Mobilization

Demonstration



Andrew Barry on
A30 protests
(Devon)



"For by developing an inventive form of demonstration, it was possible, however imperfectly and momentarily, to reveal something which would have been otherwise unknown to others"

Cause and Causation

The symmetry between:
- fighting for a cause
- establishing a causality

Diversity of groups enrolled:
- veterans of nuclear tests
- victims of nuclear tests
- anti-nuclear pacifists
- anti-nuclear activists



'Cause politique et politique des causes'
Yannick Barthe, *Politix*, 2010, vol 3/91

The chain of causation
is redefined through
the (self)-identification
of victims.

and Proof Building

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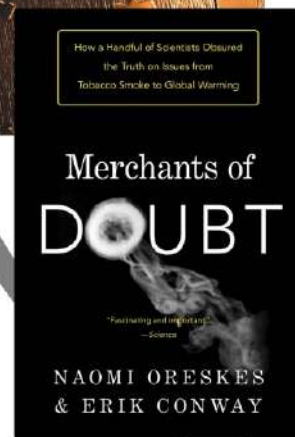
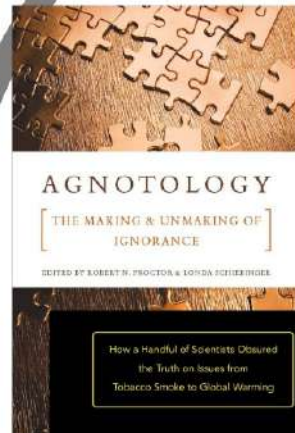
A struggle between concurring framings

"From scientific risk to paysan savoir-faire: peasant expertise in the French and global debate over GM crops", Chaia Heller (2002) in *Science as Culture* 11.1

José Bové succeeded in framing differently the GMO controversy : from the sanitary question of risks, to the cultural and economic dimensions of globalization and "malbouffe" (junk food).



Agnotology, the deliberate production of ignorance



"The scientific debate is closing [against us] but not yet closed. There is still a window of opportunity to challenge the science... Voters believe that there is no consensus about global warming within the scientific community. Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly. Therefore, you need to continue to make the lack of scientific certainty a primary issue in the debate, and defer to scientists and other experts in the field."

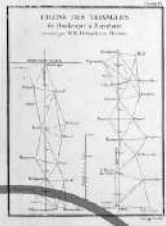
Frank Luntz, in "Memo exposes Bush's new green strategy"
The Guardian

3.2 Trust in Numbers

No double standards



Jean-Baptiste Delambre
and Pierre Méchain



Experimental history: the B.C./A.D. timeline



The secretaries, through the weekly reports, also made the members and guests present at the meetings of the various exhibitions, religious and civic ones before, but for the century is doing up, it was necessary to have the happy coincidences of the End of the World and the End of a Century; and the deep conviction of being a unique instant in history, between two centuries and throughout the century.



This volume is high to one of the major characteristics of the century: its variability. The unbroken information of the century, namely its associated variability, thus becomes the main asset. Of all the systems of periodization, the one that returns to the basic material - the century - is identifiable: it is, therefore, the most clear to what has been said or not said in history - economy, demography, sociology.

How old is
the century?

The overwhelming appeal of quantification

Trust in Numbers

The Pursuit of Objectivity in Science and Public Life

**Theodore
M. Porter**

Porter shows that it is "exactly wrong" to interpret the drive for quantitative rigor as inherent somehow in the activity of science except where political and social pressures force compromise.

Instead, quantification grows from attempts to develop a strategy of impersonality in response to pressures from outside. Objectivity derives its impetus from cultural contexts, quantification becoming most important where elites are weak, where private negotiation is suspect, and where trust is in short supply.

Legibility and simplification

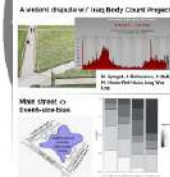


(Hughes-Nelson) on "Legitimate Science" Factors

A new trout, *Salvelinus fontinalis fontinalis*, entered the scientific literature in 1866, the year of the first census. It is morphologically distinct, prefers clearwater and feeding on small aquatic insects and aquatic insects among them (Bryans 1981). However, it is also found in the same habitats as the rainbow trout, and its life history is similar to that of the rainbow trout. It is also found in the same habitats as the rainbow trout, and its life history is similar to that of the rainbow trout.

desire must be treated before it can be the object of satisfaction. Categories of desire and things must be defined according to the circumstances, and the circumstances must be considered as representative of an extended or unextended, changing or unchanging, other with respect to the desire. The desire must be treated as a desire for a certain kind of thing, and the thing must be treated as a thing of a certain kind.

Counting the Dead

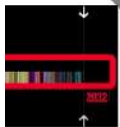
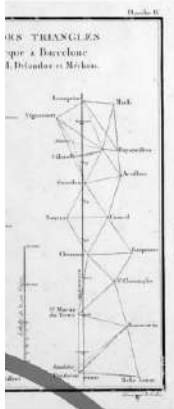


The screenshot shows the Cambridge English Dictionary page for the word 'major'. The word is defined as 'a person who is a member of a military unit, especially one who is a senior soldier or officer'. The page also includes a section for 'Why does event size matter in Iraq?' and a table with columns 'Event size' and 'Significance'.

Event size	Significance
Small	Low
Medium	Medium
Large	High

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ste Delambre
Méchain



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Trust in Numbers

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NEW EDITION

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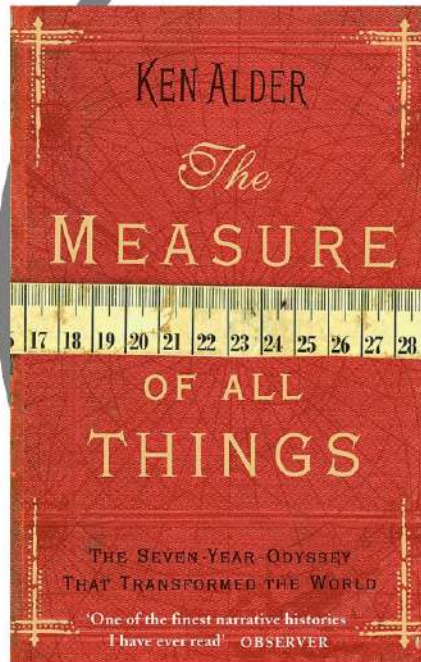


Society
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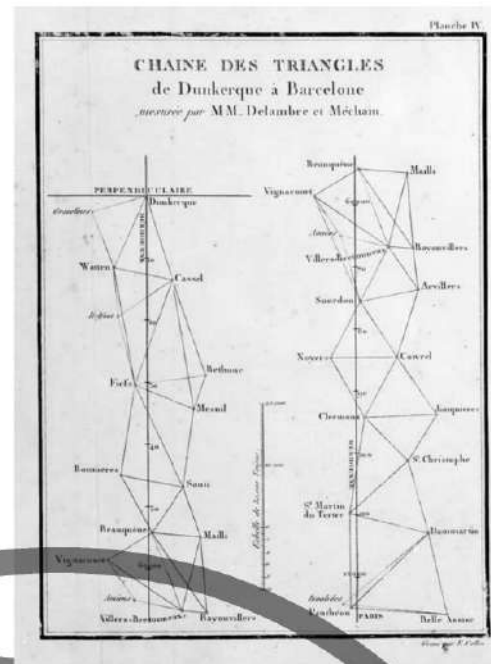
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No double standards



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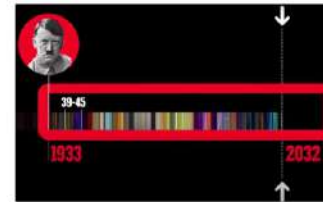
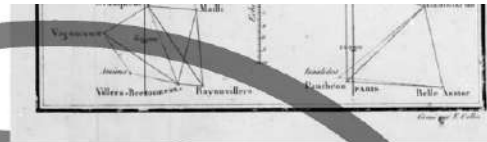


Experimental history: the B.C. / A.D. timeline

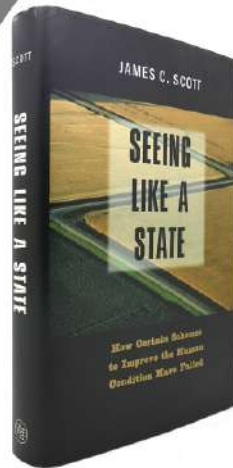
'The Revolution, through the metric reform, has made the number 100, always present in the numerologies of human civilizations, infinitely more visible than before. But for the century to spring up, it was necessary to have the happy coincidence of the End of the World and the End of a Century; and the deep conviction of living a unique rupture in History, between two coherent and incompatible entities.'

This brings us back to one of the major characteristics of the century: its neutrality. The constitutive aberration of the century, namely its nonreferentiality, thus becomes its main asset. Of all the systems of periodization, the secular system is the least marked – by reality, by historiography. It is, therefore, the most open to what has been little or not studied in history: economy, demography, mentalities.

How old is the century?



Legibility and simplification

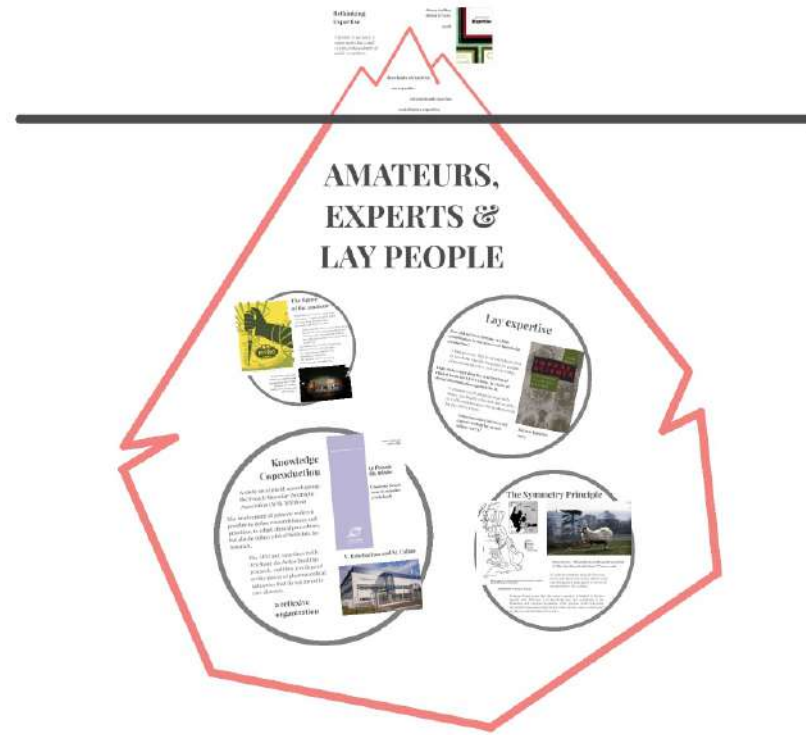


Illegible Natural vs. Legible "Scientific" Forests

A new term, Waldsterben (forest death), entered the German vocabulary to describe the worst cases. An exceptionally complex process involving soil building, nutrient uptake, and symbiotic relations among fungi, insects, mammals, and flora— which were, and still are, not entirely understood— was apparently disrupted, with serious consequences. Most of these consequences can be traced to the radical simplicity of the scientific forest.

Society must be remade before it can be the object of quantification. Categories of people and things must be defined, measures must be interchangeable; land and commodities must be conceived as represented by an equivalent in money. There is much of what Weber called rationalization in this, and also a good deal of centralization.
—Theodore M. Porter, "Objectivity as Standardization"

3.3 The Blurred Boundaries of Expertise



Rethinking Expertise

Harry Collins
Robert Evans

2008



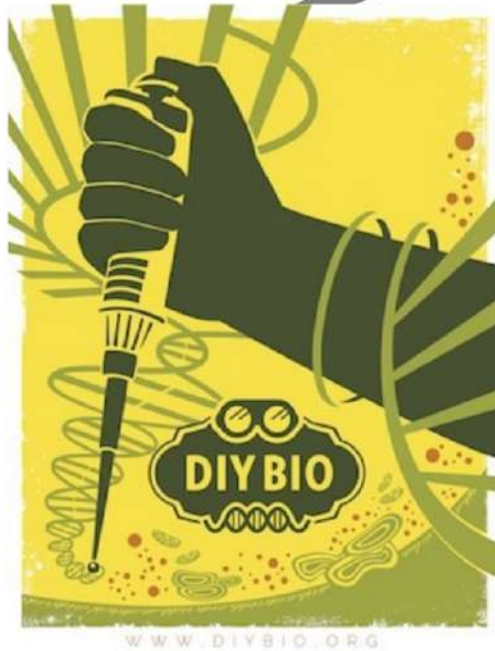
Expertise is not solely a social status, but a skill existing independently of public recognition.

three kinds of expertise:

no expertise

interactional expertise

contributory expertise



The figure of the amateur

In field sciences (botany, ornithology, entomology...) amateurs watch, gather and sometimes structure local knowledge and their networks.

These contributions to science have been threatened by the professionalization of sciences in the 19th and 20th centuries, they still play an active role in knowledge production.

- the amateur as a sensible living being (tacit, practical, local knowledge)
- the amateur as a member of a community, a social club
- the amateur as an eco-citizen, (Peasant Seeds Networks etc.)

A movement that now claims the symbolic and material structure of the lab (makers, fablabs, biohackers, garage and DIY biology...)



Lay expertise

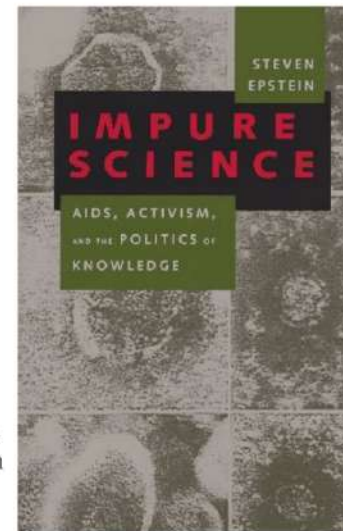
How did activists become credible contributors in the process of knowledge production?

A long process, that involved to learn how to speak the specific language (or pidgin) of medicine practice, to learn its codes.

High stakes regarding the redefinition of clinical trials for AIDS victims, in a time of strong discrimination against the ill.

A singular social group (young white males, gay, highly educated and wealthy, in California) becomes the spokesperson for the AIDS victims.

A new boundary between lay experts and lay people within Act Up?



**Steven Epstein,
1993**

Knowledge Coproduction

A study on a hybrid research group: the French Muscular Dystrophy Association (AFM-Téléthon)

The involvement of patients makes it possible to define research issues and priorities, to adapt clinical procedures, but also to collect a lot of field data for research.

The AFM and Genethon (with Telethon) also helps fund this research, and thus less depend on the power of pharmaceutical industries that do not invest in rare diseases.

a reflexive organization



V. Rabearisoa and M. Callon



A new boundary between lay experts and lay people within Act Up?



Figure 3. Contours of UK radioactive cesium contamination in June-July 1986. The data are in units of Bq m⁻².

Sellafield Nuclear Plant

It means being specific field, the definition, and the useful forms are diverse and in

llon



The Symmetry Principle

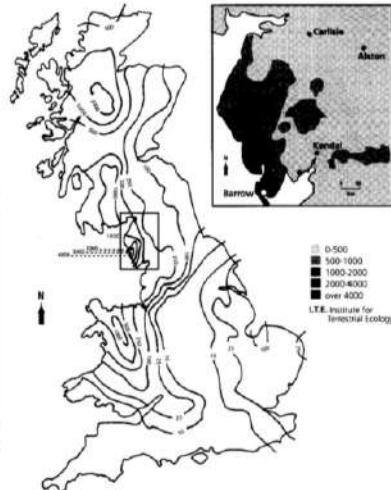


Figure 2. Contours of UK radioactive cesium contamination measured from vegetation, June-July 1986. The data are in units of $Bq\ m^{-2}$.

Sellafield Nuclear Plant

It means being aware that the expert expertise is limited to his/her specific field, that tacit, local knowledge may also contribute to the definition, and sometimes resolution, of the problem. In the real world, the useful forms of knowledge to deal with a specific issue or controversy are diverse and not limited to 'science'.



Brian Wynne, "Misunderstood Misunderstanding" & "May the Sheep Safely Graze?" (1992; 1996)

To apply the symmetry principle (between losers and winners, the strong and the weak) is not being naïve about power or nice to the marginalized or the excluded.