

Ethical issues when communicating science to the public: the example of the Covid-19 pandemic

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This slideshow is available at:

<http://www.igh.cnrs.fr/equip/Seitz/ECEC2022.pdf>

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Technology makes life more comfortable...

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Technology makes life more comfortable... and it is addictive (food conservation; inter-dependencies,...).

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The screenshot shows the Wikipedia page for 'Smart grid' in a Mozilla Firefox browser. The page title is 'Smart grid - Wikipedia'. The URL is 'https://en.wikipedia.org/wiki/Smart_grid#Definition_of_\"smart_grid\"'. The page content includes a warning box stating 'This article may be too long to read and navigate comfortably. The readable prose size is 63 kilobytes. Please consider splitting content into sub-articles, condensing it, or adding subheadings. Please discuss this issue on the article's talk page. (February 2016)'. Below this, the article text begins: 'A **smart grid** is an electrical grid which includes a variety of operation and energy measures including:'. A list of bullet points follows: 'Advanced metering infrastructure (of which smart meters are a generic name for any utility side device even if it is more capable e.g. a fiber optic router)', 'Smart distribution boards and circuit breakers integrated with home control and demand response (behind the meter from utility perspective)', 'Load control switches and smart appliances, often financed by efficiency gains on municipal programs (e.g. NACE financing)', 'Renewable energy resources, including capacity to charge parked (electric vehicle) batteries or larger arrays of batteries recycled from these, or other energy storage.[1]', and 'Energy efficient resources'. A paragraph follows: 'Sufficient utility grade fiber broadband to connect and monitor the above, with wireless as backup. Sufficient spare if \"dark\" capacity to ensure failover, often leased for revenue.[2][3]'. Another paragraph states: 'Electronic power conditioning and control of the production and distribution of electricity are important aspects of the smart grid.[4][5]'. A section titled 'Smart grid policy' is visible, mentioning 'Smart grid policy is organized in Europe as Smart Grid European Technology Platform.[6] Policy in the United States is described in 42 U.S.C. ch. 152, subch. IX§§ 17381'. A 'Contents' table of contents is shown at the bottom, listing sections like 'Background', 'Historical development of the electricity grid', 'Modernization opportunities', 'Definition of \"smart grid\"', and 'Early technological innovations'. On the right side of the article, there is a diagram titled 'Characteristics of a traditional system (left) versus the smart grid (right)' showing a comparison of traditional and smart grid architectures. A video player titled 'Video about smart grids' is also visible.

(Source: https://en.wikipedia.org/wiki/Smart_grid)

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An educated citizen should understand the basics of:

- ▶ cryptography (online security),

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An unavoidable delay between scientific discoveries and high school teaching.

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Citizens have to make choices (elections, donation to charities, ...) without fully understanding the questions being asked.

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How science is shared with the public

- ▶ Books
- ▶ Media (radio, TV, YouTube, ...)

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Frequently occupied by fake experts



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- ▶ Museums
- ▶ Conferences to the lay public

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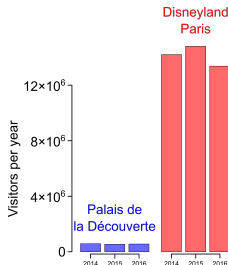
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Needs an effort from the public (→ limited success!)



(Source: https://github.com/HKeyHKey/Scientific_research_ECEC2022)

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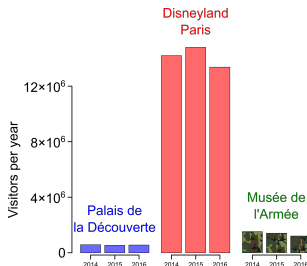
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Para-scientific business: “alternative” medicine; unlimited energy sources; [epigenetics](#), ...

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Well-perceived messages because they are *desirable*.

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Para-scientific business: “alternative” medicine; unlimited energy sources; [epigenetics](#), ...

Well-perceived messages because they are *desirable* (“natural” products vs. chemically synthesized products; myth of the lonely hero vs. corrupted organization; GMO and promethean myth; ...).

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→ A fragile audience needs to be protected by cultivating knowledge and critical thinking.

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In a naïve population (non-immunized, no behavioral adaptation), an epidemics progresses exponentially.

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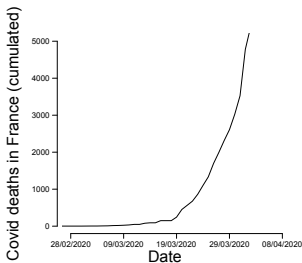
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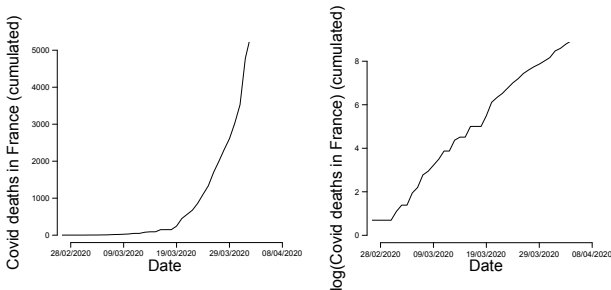
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Collective fear (Covid was a joke in February 2020, became a sudden tragedy at mid-March): the term “exponential” (mis-used in everyday talking) had not been understood.

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→ The public was receptive to personalities looking for recognition.

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(Source: <https://www.youtube.com/watch?v=8L6ehRif-v8>)

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Rumors on the efficiency of hydroxychloroquine against Covid-19: mostly frauds and erroneous argumentations.

(Source: <https://hal.archives-ouvertes.fr/hal-03231601/document>)

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Comforting lies attracting much success:

- ▶ In the public and among celebrities: a great hope; everybody becomes familiar with RT-PCR, many improvised experts express their love to D. Raoult under various forms (e.g., [I. Aberkane](#), [É. Cantona](#), [L. Hallyday](#), ...);
- ▶ In the political personnel: much praise (e.g., [C. Estrosi](#), [J.-L. Mélenchon](#), [S. Royal](#), ...).

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Scientific fame is a financial opportunity:

► Book sales



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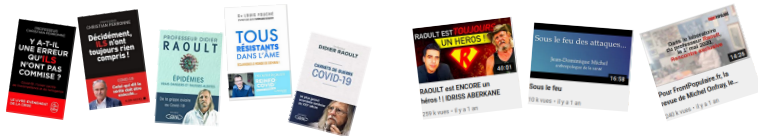
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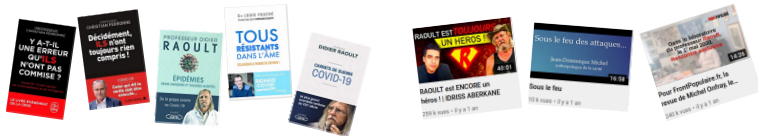
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Huge sales in bookshops [[source](#), [source](#)]

→ personal financial gains (despite the motto “I do not have any conflict of interest”).

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In terms of communication: a major failure for scientific institutions.

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In terms of communication: a major failure for scientific institutions.

Press releases:

- ▶ from French academy of sciences and French academy of medicine on March 25, 2020
- ▶ from medical doctors' professional organization on April 23, 2020
- ▶ from CNRS on July 22, 2020.

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Communication was timely, but invisible (press release on a website $\neq$ presence on TV).

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Give details on overwhelmed hospitals, on economic measures, ... but no scientific explanation, or weird explanations (e.g., September 2020, “viral RNA detected months after the infection”).

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In France, the only scientifically reliable information accessible to the public ...

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Some examples:



(Source: <https://tanialouis.fr/>)

(Source: <https://www.adioscorona.org/>)

(Source: <https://www.youtube.com/channel/UCq-8pBMM3I40Q1rhM9ExXJQ>)

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Summary: scientific popularization in France during the Covid pandemic:

- ▶ Efficient diffusion of pseudo-science (looks like scientific popularization, but spreads fake rumors).
- ▶ Official scientific communication was shy, invisible in medias.
- ▶ At best: opinions of medical doctors on TV, not always scientifically accurate.
- ▶ Independent personal initiatives of high quality, but not popular enough.

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A huge interest from society for scientific questions.

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Freedom is just an illusion if information is not sincere.

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Public researchers are funded by society, and they do research in the name of society: they are morally indebted to citizens.

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How much time will such interest last?

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The influence of scientific questions on society will become heavier.

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Sustain the effort: culture is not just about arts !
→ A new definition of “general culture”.

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