

Political technology mystifies science communication for general public

Why are scientific organisations so hesitant to communicate information on their large-scale projects to the public, and how can they improve? The answers to this question are explored by scientist, communicator, and essayist Dr Michel Claessens, teacher of science communication at the University of Brussels and spokesperson for the ITER project on nuclear fusion from 2011 to 2015. Claessens discusses the potential impact that intermingling political agendas have on the information relayed to the public about important scientific projects of general interest.

Hailing from Belgium, Dr Michel Claessens is a teacher of science communication at the University of Brussels. Currently, he is a nuclear expert at CLI Cadarache, a Local Information Commission. His most recent book, *ITER: The Giant Fusion Reactor* (Springer, 2023) details his time working at ITER (International Thermonuclear Experimental Reactor); first as the leader of the communication department at the international nuclear fusion research and engineering project (between 2011 and 2015), and later as ITER policy officer for the European Commission between 2016 and 2021.

Referring to his book chapter, *The Dark Side of Political Technology*, Claessens 'reviews the institutional difficulties which science mediators may encounter

in their professional activities within the field of public communication of science and technology.' This review is derived from his experience on the ITER project; a venture that stemmed from a mutual agreement between 35 nations to collaborate on a shared goal that was to 'further advances in fusion science and technology.' Claessens emphasises that every ITER member was to 'benefit from this pilot experiment,' which became the foundation for his advocacy for efficient science communication.

SCIENCE COMMUNICATION

Science communication 'describes a variety of practices that transmit scientific ideas, methods, knowledge and research to non-expert audiences in an accessible, understandable or useful way.' Importantly, it relays

On 26 March 2021, the first sector of the vacuum vessel (manufactured in South Korea) was mounted onto the specialised tooling in the ITER assembly hall. It allowed visitors to truly measure the huge volume of the plasma chamber. It was subsequently installed in the tokamak pit in May 2022. However, on 4 July 2023, it was removed as defects were detected in the sector module, which meant that it had to return to the assembly hall for disassembly and repair. This will likely delay the project by several months.



Photo credit: ITER Organization

information to non-scientific audiences in clear and relatable ways, to enhance public awareness of scientific research. Reflecting on his experiences working on the nuclear fusion experiment during his time at ITER, a venture that was globally 'funded by seven members (China, the European Union, India, Japan, Korea, Russia, and the United States),' Claessens discusses the importance of science communication on large-scale projects – something that he set out to improve when he started at the organisation in 2011. When he arrived at ITER, 'only 9% of European citizens were aware of the project' and few resources were available for the public to be well informed. To achieve effective science communication, Claessens discusses the implementation of 'high-level quality communication activities,' as well as the presence of 'professional communicators.'

ITER

Claessens argues that a publicly funded scientific project should aim to deliver accurate scientific information to the public with genuine integrity. He notes that 'science and technology itself is becoming increasingly aligned with a progress model usually associated with politics, industry, and business rather than being the rigorous discipline expected by the public.' Identifying the ITER nuclear fusion project as one such venture, Claessens labels it a political technology – meaning that it was set up through political support for funding.

With agendas to appeal to, Claessens notes that communication of these projects can often lead 'to public deceptions' with, in this case, 'fusion scientists overselling nuclear fusion.' Thus, information communicated publicly has the potential to be incorrect, often overstating progress to satisfy other agendas. Claessens highlights that 'it would be much more transparent for society, and also helpful to scientists working for ITER if the political nature of the project would be highlighted and communicated,' instead of disregarding public perception entirely and questioning the project's integrity. Claessens implores that the communication by directors and management be addressed; there are examples of misalignment behind elements such as budget versus public spending and these areas can be exposed without the backing of scientific research.

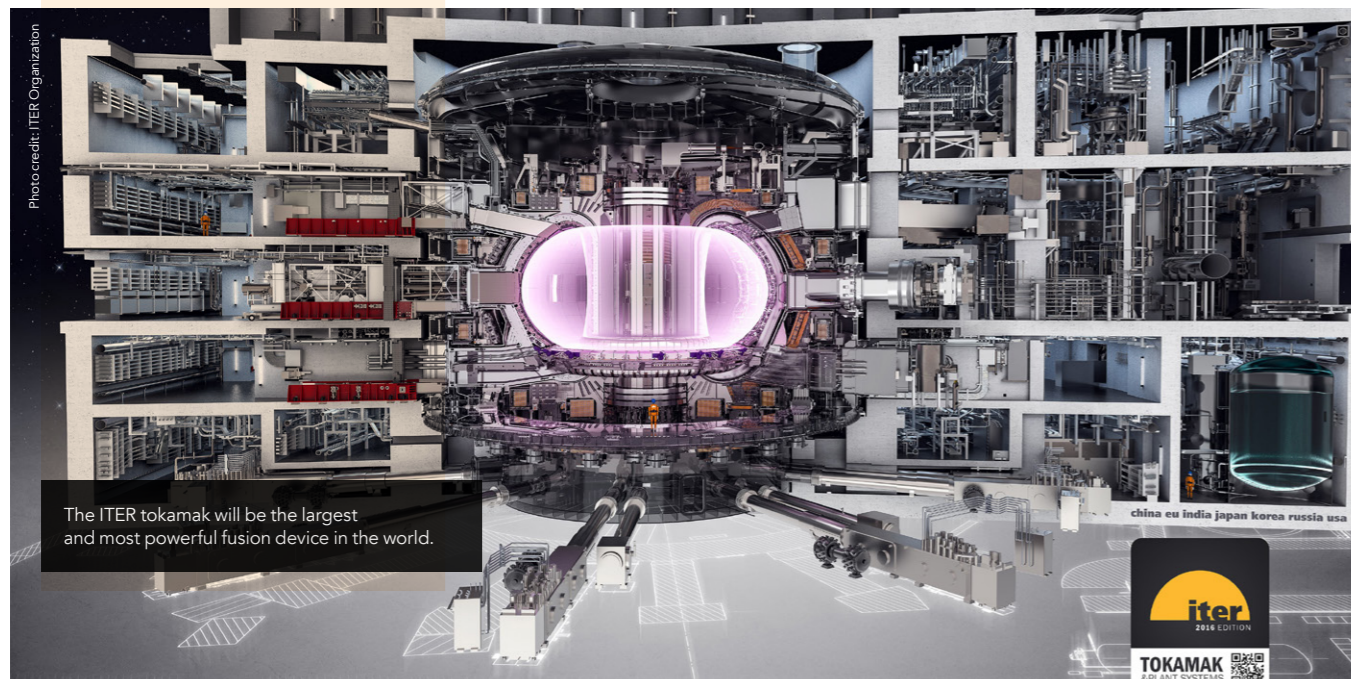
which further showed 'that science and politics cannot be separated,' with the case of new mRNA vaccines being a prime example. Reviewing some of the activities undergone by various research organisations, it was evident that 'science communication often mixes with institutional pressures and public affairs activities to control the institution's corporate image.' Used in other 'scientific institutes and universities to attract staff, students, funding, and research partners,' scientific knowledge can, at times, not be the aim of what organisations would consider as science communication. Rather, they can instead be shaped to act more as 'a form of public relations (PR).' Claessens states that 'the scientific community is still lacking a culture of genuine communication' and warns that, should this quality of communication not be revised, the 'failure to properly communicate prevents the public at large from anticipating technological crises.' This is evident in the case of the Heidelberg scandal in 2019. In February of that year, there was a disclosure '...of non-peer-reviewed results about a new breast cancer blood test and alleged scientific misconduct.' As a result, 'the scandal caused reputational damage to the medical hub in Heidelberg' and led to both the hospital's chairperson and its financial officer resigning from their positions.

With such a political influence, organisations can be faced with opposition from various activists who engage on a political level rather than with issues relating to the science itself. Furthermore, Claessens states how these debates, which are few and far between, 'are not matters of science in any narrow sense, they relate to decisions

How does science maintain its integrity within the political and institutional complexities of a big-money project(s)?

Driving much of the informative exports, 'this intermingling of science, communication, and politics is not new;' political interferences are detrimental to effective science communication. They cause significant issues in the transparency of information issued by organisations and those who manage them, which was highlighted by the COVID-19 pandemic

of organisational, industrial, or political nature.' With reference to his experience at ITER, he discusses how one incident saw 'trade unions and anticapitalistic groups' oppose ITER, arguing that their 'contractors do not respect French law, either by employing undeclared illegal immigrants or hiring seconded staff.' This opposition, as Claessens



phrases it, 'shows you the limits of what science communication can achieve' with such an influence interfering. He does, however, acknowledge the need to improve the communication of the scientists themselves in pursuit of clearer communication: 'As witnessed in debates on climate change and COVID-19 vaccines, scientists are hardly able to express their voice, let alone their arguments.'

EFFECTING CHANGE AT ITER

The efforts behind science communication can suffer for multiple reasons, not least the fact that managers and directors on certain projects don't view open and honest communication with the public as an important goal.

During his role as spokesperson, Claessens attempted to implement his knowledge into developing clearer science communication of all of ITER's activities and fusion research. A large, public project, Claessens' intent was to ensure that information about the experimentation at ITER was made aware to the populace. However, this was a tough case to solve, with such a little budget afforded to this cause. Nevertheless, Claessens implemented various ways to enhance this level of communication; remarking that 'better oversight by the public and the press is needed' requesting that his 'scientific colleagues and managers to be open and honest whenever they speak to the public.' He started by making sure that 'ITER's communication team was working closely with scientists and engineers employed by the ITER Organization...' This attitude that was championed with the establishment of ITER Organization's Newline, an English language newsletter published weekly, which provided regular updates about project development – regarded as '...a masterpiece of fusion science and technology popularisation.'

To improve the situation, Claessens believes that organisations need to implement a professional code of conduct that every employee working on a scientific project should adhere to. 'This situation calls for the lack of professional integrity to be addressed, not just scientific integrity but also within the staff regulations and codes of conduct of scientific organisations and public research projects.' Furthermore,

Claessens stresses that it is not enough for these measures to simply be put in place; 'it can be concluded that it [code of conduct] is not properly enforced' meaning that organisations need to take charge. Claessens experienced this at the ITER Organization, who 'engaged in overselling fusion and implemented a sort of marketing campaign... with common (and often intentional) misrepresentation of research, which could therefore be considered dubious.' Claessens pleads for scientific data to be communicated truthfully and openly to the public, to ensure projects and their organisations aren't misrepresented and, in turn, challenged.

ORGANISATIONAL CHANGES AND GOING FORWARD

Claessens recognises the various issues in the culture of science communication that organisations tend to align themselves with. With affiliations with political agendas, 'politicians are exploiting science, but scientists are also exploiting politics to promote their own research and ideology, and engage in a kind of "consumer marketing".' Claessens

Science and technology itself is becoming increasingly aligned with a progress model usually associated with politics, industry, and business.

references Brian Martin when expanding on the dangers of this issue. Martin remarks, on the subject of scientific fraud, that 'it is convenient to most of the powerful groups associated with it, including government, corporate sponsors and the scientific community itself, especially its scientific elites.' It is this relationship which means that 'many types of bias and misrepresentation are often tolerated.' This has been the case with an assortment of countries, such as France, where nuclear energy is a highly sensitive and strategic issue. 'ITER is part of the national strategy, and political leaders hope that fusion will reconcile their populations' hesitancy about nuclear energy.' It is clear that within this framework, 'promoting science is not necessarily the prime objective' and because of that, there is an encouragement for 'managers to act in a way that lacks the

integrity' that is expected in this sector. Claessens summarises that 'scientific and technological organisations such as ITER remain genuine "black boxes" for the public and the media, which prevent them from accessing detailed real information.'

Claessens discovered this to be the case when working at ITER; one such example was identifying that the organisation was 'actively marketing and overselling fusion energy' due to the 'political dimension of the technology and the project.' The company was, as Claessens discovered, stating that 'Fusion fuels are widely available and nearly inexhaustible,' which was simply untrue, based on the research conducted by Krivit and Clery, who remarked that 'fuel supply may hamper the large-scale industrial development of fusion.' Reflecting on the issue, Claessens asks: 'how does science maintain its integrity within the political and institutional complexities of a big-money project like ITER,' particularly when members of staff, whether it be research, science, or engineering, are viewed as 'being an accomplice to fusion propaganda and public deceptions.'

Claessens refers to the Norwegian writer Jo Nesbø (2022), who identifies that 'facts no longer carry the weight they once did [because we live] in an era in which the truth has been devalued by fake news.' To maintain this integrity, keeping the public informed on large scale projects that are of significant interest, it is vital, as Claessens puts it, to claim 'responsibility, as science communicators, to disclose and denounce mismanagement and misconduct, especially in publicly funded research projects.'

Today, Claessens is happy to see that the ITER Organization has taken many of his points onboard and corrected many exaggerations and overstated claims on its website (www.iter.org). For example, the 'Unlimited energy' slogan which appeared on ITER website's homepage has been replaced by 'Fusion energy'.



Behind the Research

Dr Michel Claessens

E: michel_claessens@yahoo.fr T: [@M_Claessens](https://www.instagram.com/M_Claessens)

Detail

Bio

A scientist, communicator, and essayist, Michel Claessens was spokesperson for the ITER project on nuclear fusion from 2011 to 2015 and since 2022 has been an advisor to ITER and several European projects. His latest books include *ITER The Giant Fusion Reactor* (Springer, second edition in the press) and *The Science and Politics of COVID-19* (Springer, 2021).

Competing interest statement

The work and research I report in this paper is part of the work I have been carrying out as a whistleblower and is based on facts, public information, and discussions I have had with some of the ITER staff, including several senior managers, of the ITER Organization and Fusion for Energy.

Collaborators

I would like to thank Bernard Schiele, Martin Bauer, Steven Krivit, and Peter Weingart for the fruitful discussions in recent years.

References

- Claessens, M, (2023) *ITER: The Giant Fusion Reactor*. Springer, In press
- Claessens, M, (2022) ITER: a systemic drift, Critique de la science et du scientisme ordinaire, 3 March 2022. sniadecki.wordpress.com/2022/03/03/claessens-iter-en
- Claessens, M, (2021) *The Science and Politics of COVID-19 – How Scientists Should Tackle Global Crises*. Springer, 216 pp. doi.org/10.1007/978-3-030-77864-4
- Nesbø, J, (2022) Vladimir Putin knows the power of stories. With a better one, we can beat him. *The Guardian*. www.theguardian.com/commentisfree/2022/mar/17/vladimir-putin-power-stories-occupied-jo-nesbo
- Claessens, M, (2014) Research institutions: neither doing science communication nor promoting 'public' relations. *JCOM*, 13(03), C01. doi.org/10.22323/2.13030303
- Martin, B, (1992) Scientific fraud and the power structure of science. *Prometheus*, 10(1), 83–98. documents.uow.edu.au/~bmartin/pubs/92prom.html
- ITER. *Advantages of Fusion*. www.iter.org/sci/Fusion

Personal Response

Given the relationships between scientific research and various social/political affiliations, do you think that there'll ever be a way of communicating research authentically to the public that isn't charged by specific agenda?

|| We should rely on scientists to communicate research. The point is that scientific organisations tend to more and more control their scientists' communication. Science communication is now a strategic activity, as shown by John C Besley and Anthony Dudo, in their recent book *Strategic Science Communication* (Johns Hopkins University Press, 2022). Until about fifty years ago, communicating scientists were mainly interested in bringing science into culture and promoting the wider diffusion of scientific knowledge. But times have changed. Nowadays, science communication is complicated by the institutional pressures which stem from the fact that many research organisations not only have scientific priorities, but also strategic and even political objectives. ||

The ITER site in Saint Paul lez Durance, France.

