

*Thanks to the growing uberisation of science, opportunities to participate in world class research could soon no longer be limited to researchers in well-funded labs. According to an opinion piece by Barend Mons, professor at the Leiden University Medical Centre, The Netherlands, technology has now made it possible to distribute part of the interpretation of scientific results across a geographically widespread work force, to include scientists from developing countries. In the first of a two-part contribution, he also envisions that a new business model allocating free access to those who share, and charging a premium to those who don't, could soon disrupt research and innovation and further open science.*

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## **When privacy-bound research pays for open science**



### **A new open science business model charges those who want to keep information private to subsidise those who share it**

In theory, open science should involve students and scholars from developing regions too. Yet, there is still an imbalance between developed and developing countries, as research is not yet truly open. Colleagues in developing countries are often relegated to the position of second-tier scientists,

partly living from intellectual and financial charity from developed countries.

In many cases, they are penalised by sub-optimal Internet access and insufficient research funds to subscribe to pay-walled scientific literature. Meanwhile, the advent of open access journals only partly solves their problem. They now need [exceptions to publication fees](#), just like [HINARI](#), a joint initiative between WHO and publishers, is an exception to reading fees.

To support open science, it is time to radically change the business models for scholarly communication, way beyond just open access articles. The idea is to draw the line very differently, following a new logic. Only those who wish to keep research discoveries private pay. Others have free authorship and copyright if they are prepared to share their knowledge without restrictions.

This logic would introduce a bias to-wards greater and faster sharing of scientific discovery and give a boost to open science. And more importantly, it could open the door to millions of scientists from developing regions to take part to future advances in research.

## Opening science further

In this scenario, researchers in developing countries are treated exactly the same way as colleagues in the most advanced scientific power regions. So how would this work? First, scientists publish their elementary findings or concepts in [FAIR format](#) for instance as [nanopublications](#). Following these principles, not only data become citable, but individual assertions, such as annotations, do as well. These are all nano-contributions to open science. That is to say, if the person making these assertions makes them open.

This approach can be facilitated if scientists adopt the unique researcher identifier scheme, defined by [ORCID](#). Indeed, any of their online interactions can be recorded via their ORCID. Thus, making it possible for them to be credited--and in time rewarded--for their contribution to open science.

Second, we redefine what research objects actually are. We recognise that in open science all results of scientific activity are again potential sources of knowledge discovery. This includes any form of querying that is recorded, tweeting, blogging, data publication and ultimately narrative communication from person to person. Once these principles are established, all scientific activity that is made available in the public domain--i.e. fully open for anyone to re-use--should be free.

## Sharing versus closing

However, we all know free does not really exist. It is a euphemism for 'others paid for it.' So who pays for it in this model? The people having ownership of new knowledge, but consciously choosing to not share it. Obviously, not sharing data, information or knowledge--at least temporarily--can be justified by valid underlying reasons. For example, to preserve the [privacy of patients](#), protect national security or guarantee a commercial advantage.

These people, institutions or companies deriving knowledge they do not share could conceivably pay a new kind of 'tax' to support the furthering of open science. This tax is justified by the fact that also 'private knowledge' is partly built on public knowledge available for sharing that we have collectively paid for.

To illustrate how it could work in practice, see our case study, focusing on [disease mechanism discovery](#). This is not very different from [dual licensing](#) in open source software. In such case, if users do not want to share their additional code, because it is to be re-used within a proprietary software product, they have to pay.

A great opportunity to make great strides in this direction is offered by the recently announced European [Open Science Cloud](#), a virtual environment to store, share and re-use their data across disciplines and borders.

To me, the proposed approach would be more just a model than the current open access model, where people publishing in open access need to pay. The new model would request that people keeping things private collectively subsidise the open realm of our knowledge creation. This logic calls for the development of closed as well as open services, business models and partnerships in science.

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*Disclaimer: This is a vision for the future: all elements to make this happen are there, but connecting them will still be a major effort, but worthwhile. This is also the personal opinion of Barend Mons as a scientist and cannot be quoted as the formal opinion of the High Level Expert Group for the European Open science Cloud, of which I am a member.*

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