**Innovating: a doer's manifesto**, by Luis Perez-Breva, MIT Press, Cambridge MA, 2016, 396 pp., £27.95 (hardback), ISBN 9780262035354

'At its genesis, no thing about an innovation is new'. This is Luis Perez-Breva's opening sentence. His book makes and explores a number of other thought-provoking assertions about innovation. Two that resonate with me are that the language and mental models we use to describe innovation mislead the aspiring innovator to expect to begin with a breakthrough solution to a problem; and, that while much has been written about managing innovation once the solution to the problem is evident, little has been written to guide someone to innovation from no more than a hunch.

Stuart Macdonald, the editor of this journal, seemed to be agreeing that little has been written in this area when he invited me to review this book. I had written a similar, but relatively unknown book, 15 years ago (Douthwaite, 2002). In it, I develop a model to guide grassroots innovation processes based on my experience developing rice harvesting and drying equipment in the Philippines and Vietnam. The model is tested and further developed on wind turbines, Linux software and local money systems. It begins with a bright idea that is prototyped and co-developed in a collaboration between an R&D team and the key stakeholders who will reproduce and use the innovation. Like the process laid out in Perez-Breva's book, innovation happens as a result of repeated experiential learning cycles involving the innovators and the key stakeholders in which the innovation evolves and becomes fitter.

Perez-Breva's book made me realize that my model was weak on arguably the most important part of the process – coming up with the bright idea in the first place and developing it into something tangible with which the innovator can start to engage key stakeholders. The author explains that the reason we overlook the genesis of the innovation process is that our understanding of innovation comes from after-the-fact accounts of successful innovation processes. In all these accounts, the innovation and the problem it solves are clear, and because we know the end of the story, the steps along the way seem obvious, almost inevitable. Another reason we expect a linear narrative is that humans are hardwired to see the world as more ordered and predictable than it actually is (Kahneman, 2011). This, apparently, is adaptive, because if we were more realistic about how the world actually is, we would not risk getting up in the morning!

But this 'hindsight' thinking, as Perez-Breva calls it, is misleading. Looking forward, at the beginning of a putative innovation process, nothing is clear. There will be many wrong turns before the form of the problem and solution become clear to key stakeholders, the 'community' as Perez-Breva calls them. Hindsight thinking carries two risks: on the one hand there is paralysis, an inability to start in the absence of perfect clarity about the bright idea; and, on the other hand, over-commitment to the prototype solution ending in costly failure. All you need to start, according to Perez-Breva (p.33), is:

1. a hunch about a real-world problem;
2. a 'set of parts' and access to a community of people to render the problem tangible;
3. a strategy to engage in trial and error, and an appetite to learn by being wrong.

The mistake that most people make, myself included, is to assume that the set of parts is already the prototype innovation and that engagement with the community is simply adapting and perfecting this prototype. Wrong. At the start, you are not an expert and so the process is to learn about the problem and the solution with the community of potential replicators, users and beneficiaries. This shift in thinking is liberating, Perez-Breva says, because it means one can start almost anywhere, with the resources at hand. What is learned will help clarify the problem and solution, and help make the pitch for resources needed to take the innovation to scale later on. So, instead of allowing uncertainty to paralyze, it should be embraced and exploited to advantage.

Perez-Breva justifies delaying fixing on a solution because changes in the onset of an innovation process may have unpredictably large effects on the outcome and *vice versa*: slight differences in the outcome envisaged may greatly affect the starting point. This he calls 'non-linearity'. Perez-Breva wants us to get out of bed and innovate motivated by the potential that comes with non-linearity. Critical to Perez-Breva's approach is the way he says a problem should be structured. There must be: *recognition* that the problem is a real-world problem; at least one imagined *solution* to the problem; and, a way of *verification* that the problem has been solved. With engagement, understanding of the problem, solutions and forms of verification can all change, and almost certainly will.

My own experience in enabling grassroots innovation processes in developing countries very much concurs with this formulation. A compelling development challenge has to be identified and solutions sought to provide the motivation to innovate (Douthwaite and Hoffecker, 2017). However, what is frequently overlooked is how to select those modifications that are beneficial and discard those that are not. Who decides whether a particular pathway is an innovation dead-end, and how? In any innovation process, a multitude of different types of selection decisions need to be made if the innovation is to evolve. The innovation literature talks about product champions fulfilling this role – people who have the best interest of the innovation at heart (Peters *et al*., 1982). Perez-Breva does not highlight this role in his approach, assuming (I think) that it is carried out by the single innovator for which the book is written. However, some form of decentralization of selection decisions is needed when nurturing grassroots innovation processes, and this is an area the book rather neglects.

At some point, the innovator must systematize the innovation prototype, perhaps after successfully lobbying for the required resources. This means building an organization to take the innovation to the next level of scale. According to Perez-Breva (p.305), the logic is simple: 'You present what you did (the past) to motivate where you will go (the future) but what you work on is the middle (the present)'. As you build the organization, you use what has been learned to simplify where possible, and to grow. One level of organization gives way to another, in an organic, evolutionary process.

Perez-Breva says that most emerging organizations fail because they focus on the future and ignore the present that learns from the past. This certainly resonates with my experience of helping agricultural research and development projects think through how they will have an impact. Again and again, I saw the rosy future painted for donors coming back to undermine and undervalue the real-world muddling that is the only vehicle that reaches that future. The rosy narrative assumes a clean, linear progression to impact at scale: any muddle, iteration or wrong turn is seen as a sign of failure.

A central theme of the book is how the language of innovation constrains how we think. In response, Perez-Breva dispenses with almost all of the innovation jargon to develop a language of his own. For example, while the innovation literature talks about artefacts and agents (e.g. Axelrod and Cohen, 2000), Perez-Breva helps the reader break away from hindsight thinking by talking about parts and people. As with reading *Clockwork Orange* or *Trainspotting*, it takes a while to get used to the language. Even so, I think a second edition of the book would benefit from some of Perez-Breva's own scaling-up thinking. Some passages are hard to understand and there is a lot of repetition. No doubt the author will take guidance from the book's 23 Amazon reviews, all of which award a full five stars.

## References

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Boru Douthwaite
*Boru-Consult, Westport, Ireland*
bdouthwaite@gmail.com


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