

## Faire sans, faire avec moins: Les nouveaux horizons de l'innovation [*Doing Without, Doing With Less: The New Horizons of Innovation*]

by Frédéric Goulet and Dominique Vinck (eds.) (2022) Paris, Presses des Mines, pp. 252.

Gabrielle Lavenir 

Concordia University

*Faire sans, faire avec moins* explores the phenomenon of innovation-through-substraction (*innovation par retrait*), a term that describes the process through which actors attempt to reduce or remove problematic entities from a sociotechnical system. Here, subtraction is not merely a matter of not using an entity anymore. Rather, it is a call for political mobilisation, technical alternatives, legislative actions, cooperation between actors, and the reconfiguration of all relevant chains of association. Innovation-through-substraction is a challenging process that rarely succeeds. As the editors note, examples showing how subtraction can fail are quite common. Chemicals identified as dangerous by European Union (EU) agencies continue to be widely used and commercialized across Europe, pharmaceutical drugs remain available in the midst of controversies about their side effects, and attempts to halve pesticide use in France have only managed to slow its increase.

The book is a collection of case studies conducted in various countries (including France, Switzerland, Canada, the United States, Argentine, and Brazil) gathered by Frédéric Goulet and Dominique Vinck. The editors are also the co-authors of the paper that, already a decade ago, popularized the theoretical framework for innovation-through-substraction (Goulet and Vinck 2012). Each of the thirteen chapters expands on Goulet and Vinck's argument, which was based on a study of farmers' attempts to avoid plowing, a time-consuming and costly practice that exacerbates soil erosion, and to develop alternative agricultural techniques. The innovation-through-substraction framework proposes to enrich innovation studies by de-centring classical narratives of innovation as the introduction of a new technology (Godin et al. 2021). Shifting the priorities set by Schumpeterian definitions of innovation, it contends with the "destruction" rather than the "creation" aspect of the process. Goulet and Vinck's framework is in line with STS' historical focus on innovation as a process that involves tweaking, re-using and abandoning aspects of new as well as existing technology, as in Akrich's case study of the adaptation of a wood waste compacting machine from Sweden to Nicaragua (1989). Innovation-through-substraction also shares Actor-Network Theory's interest in assemblages (Akrich et al. 2006), but with a focus on the detachments and disentanglements of actants. This "sociology of detachment" pays close attention to the problematization of an

actant, which in turn brings to the fore entities and associations that were previously unseen. As new entities enter the assemblage to compensate for the exclusion of the problematic actant, they trigger a reorganization of entities within the assemblage.

The book's ambition is to develop and systematize the editors' 2012 theoretical proposal by testing it against varied case studies. The book therefore takes part in the ongoing discussion about the uses of innovation as a concept, a narrative and a socio-technical imaginary (Godin et al. 2021). Thematically, the book also significantly engages with the growing field of agri-food studies in STS (Creager and Gaudillière 2021). In the introduction, the editors identify several fields in which innovation-through-substraction is already an object of study. Conceptually, besides engagements with STS and innovation studies, their framework resonates with *transition studies*, particularly the literature on ecological transitions, and the studies of frugal innovation (Geels 2002). Yet Goulet and Vinck argue that there is a need for a framework that specifically and fully engages with the substraction process, its implications and its challenges. The focus on substraction, rather than frugality, brings into view the paradoxical additions that are necessary for substraction to happen: developing alternative technology, adding new actors into the network, and making problematic substances newly visible.

The editors of *Faire sans, faire avec moins* are both sociologists of agriculture. This disciplinary approach is also reflected in the book's contributions. Most of the chapters concern food: how we produce it, prepare it, eat it, and most crucially, why we remove some food from our diets and how. Case studies explore what it means not to eat gluten (Ch. 3) or meat (Ch. 4), to reduce the use of pesticides in crop farming (Ch. 7) or antibiotics in livestock farming (Ch. 8), to set up food-to-cafeteria circuits (Ch. 9) or decentralized agricultural data collection systems (Ch. 10), and to get rid of food packaging (Ch. 11). The book also broaches other topics, such as vaccine hesitancy (Ch. 6) and pharmaceutical drug withdrawal (Ch. 13), electricity non-consumption (Ch. 5), and regulations about chemical substances in industrial production (Ch. 12). It also offers more theoretical perspectives, including a historical analysis of the concept of innovation (Ch. 1) and a reflection on systemic disruption (Ch. 2).

Six themes return throughout the book's chapters. First, the phenomenon of innovation-through-substraction relies on a powerful narrative that calls for the return to a simpler and often more natural way of life. The push for getting rid of a substance or a practice is not only a collective negotiation of the acceptable level of risk. It draws on hopes for a better future, a "promise of difference" (p. 143) that would grant people more freedom, a simpler life, and a closer connection with nature. Several chapters illustrate that these hopes are bound to be disappointed, as substraction almost always implies the establishment of an alternative as well as new mediations to sustain it. In a word, things rarely ever get simpler or more natural: whenever an actor is taken away from the assemblage, one or several others are introduced in its place in order to stabilize the sociotechnical system as a whole. Yet the narrative endures and finds its roots in a historical condemnation of innovation(-through-addition) as a dangerous challenge to the natural order of things (Ch. 1).

Second, the substraction of an entity results from an active and prolonged mobilisation on the part of concerned groups and institutions. The identification of a substance or a technology as dangerous or even deadly is not enough to prompt its withdrawal. The continued use of Di(2-ethylhexyl)phthalate (DEHP), a chemical used in plastic goods, within the EU is a

striking case (Ch. 12). While the EU's institutions instances have acknowledged the dangerosity of DEHP, industrial firms manage to circumvent the EU Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), taking advantage of the joint submission process (which lets several companies present a shared application for the authorization of a molecule) and substituting dangerous molecules with similar substances that have not (yet) been examined and banned under REACH. In sum, for a subtraction to happen, a crisis is not enough. Existing sociotechnical systems are solidly locked into place, and the process of withdrawal has to be organized and governed in the long run to succeed (Ch. 2).

Third, innovation-through-subtraction can paradoxically stabilize, rather than change, a sociotechnical system. Subtraction can be a way of "changing everything to ensure that nothing changes" (p. 37) by removing the problematic entity before it endangers the system as a whole. Pharmaceutical firms use withdrawal as a loss management strategy when sales are low or when a drug becomes embroiled in a controversy, evading more fundamental critiques about the industry as a whole (Ch. 13). The trajectory of appetite suppressants in West Germany between the 1960s and the 1980s illustrates this process. A scandal about the drug's dangerous side effects led to a withdrawal of the medication, changes in its composition, and a reintroduction on the market under the same name. There would be two more scandals and two more cycles of withdrawal and reintroduction over the next two decades. This highlights the stability of sociotechnical systems as well as the importance of the substitution process in the conduct of innovation-through-subtraction.

Fourth, and this is at the heart of the book's theoretical proposal, innovation-through-subtraction is as much about bringing new entities into the system and creating new relationships as it is about excluding actants and undoing attachments. Efforts to minimize the use of antibiotics in livestock farming are typical in this regard (Ch. 8). Depending on the sector (poultry, pigs, dairy cows), the diminution of antibiotics use depends on the introduction of new entities and practices: reorganizing the barn's space, keeping a closer watch on early symptoms of disease in animals, using aromatherapy and homeopathy, etc. In some sectors, the process intensifies farmers' involvement in large agribusiness conglomerates that oversee "antibiotics-free" labels, and in others, farmers enter new networks organized around local peer groups and alternative farming techniques. The (partial) subtraction of antibiotics therefore has very different implications for farmers, particularly in terms of network reconfiguration. As for the creation of farm-to-cafeteria circuits, in which institutions that oversee school cafeterias and other canteens attempt to switch to locally-produced food, it produces "quasi-detachments" rather than revolutions (Ch. 9). The proximity of farmers willing to sell their products and cafeteria managers willing to buy them is not enough to ensure a transition to locally-produced food. To account for numerous constraints, such as regulation about food safety or farmers' refusal to deal directly with clients, assemblages bring together old and new entities and mediators.

Fifth, innovation-through-subtraction is at its core a matter of making certain entities visible and others invisible. The problematization of an entity, designated as dangerous and intolerable, brings to light the functions it fulfills and the relationships it maintains with the rest of the assemblage. The history of food sale and specifically of food packaging provides an illustration of this aspect of innovation-through-subtraction. In France, where the rise of the supermarket and pre-packaged food throughout the second half of the 20th century has du-

rably shaped market mediations, the return of bulk selling brings to light the work performed by food packaging (Ch. 10). To make up for the absence of packaging, consumers have to self-serve and portion the food they buy, bring their own reusable packaging, wash it between two store runs, and collect the nutritional and origin information that is usually displayed on the packaging. By substracting prepackaging as well as salespeople, the modern bulk store makes their work visible to the consumer, to whom it is handed down.

Finally, innovation-through-substraction relies on the construction of categories. The delineation between entities that are problematic, still-acceptable, and virtuous alternatives is a typical exercise in political debate under the guise of technical planning. A comparison of France, Brazil and Argentina on pesticide reduction policies illustrates that the same entity can be problematized, defined, and categorized very differently depending on the actors involved in its withdrawal (Ch. 7). In Brazil and Argentina, the preoccupation with pesticides is driven by export requirements and productivity gains. This leads to the simultaneous use of natural and chemical pesticides as well as intensive biotech research, leading to the creation of the “bio-intrant” category. In France, the State’s ambition to curb pesticide use and tense negotiations with agricultural actors has inspired the “biocontrol” category, which includes chemicals that are classified as both not synthetic and not dangerous for the environment.

*Faire sans, faire avec moins* successfully meets the challenge of expanding the framework of innovation-through-substraction, significantly enriching its initial expression. In this instance, the format of the case studies collection works well, as it allows the reader to confront a ambitious theoretical frame with studies that test its limits and supplement its intuitions. The case studies and their diversity are a strength of the book, but also a challenge for readers who have to grapple with multiple and diverse topics that are sometimes very succinctly described. Nonetheless, each chapter contributes to the overall argument of the book, and many are excellent STS case studies in their own right, with original concepts, thought-provoking fieldwork, and a critical distance with the normative stances encountered in the field. There is, perhaps, one area that calls for further research: the experience of users and consumers with innovation-through-substraction. Some chapters engage with the topic, particularly Chapter 3 on the trajectories of individuals with gluten-free diets. Nevertheless, an additional focus on users, their cooperation and resistance to substraction processes, their own bricolages to substract problematic entities, or their alternatives to the “official” alternative would further enrich the framework of innovation-through-substraction.

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