Part III

Data Farming
From “farming implements, their various uses and recent modern improvements compared with the old machines.” By F. D. P, page 51
Agriculture is arguably the most transformative technology humankind created before entering the digital age. It allowed the control of natural environments, the creation of complex systems and networks to provide food (energy) supplies for humans, the creation of the sedentary human, and finally of the modern age of cities. The industrialization process of the last 150 years incorporated the mechanization of agriculture, the industrialization of farming, collecting, harvesting, and conservation techniques and processes all powered by fossil fuels (energy). Automation seems to be the next paradigm for agriculture systems, and many other systems that rely on technology today. It contains a set of principles that could be used as a metaphor for our approach to the latest form of resources: data, which is the result of the digital revolution in computation, communication, and fabrication. Bits or data is becoming a precious resource that fuels the emergent global economy, based on information management and knowledge production and distribution. This explains partially the growing and already extensive interest in digital design, or designing with digital tools. It has been part of and is still growing in the discussion in the architectural field for more than 20 years and has seen rapid changes in the last decade with the rise of smartphones, bigger data storage, and faster computing power. We propose in this chapter a discussion on the design of digital systems and processes: farming, harvesting, collection or distribution of bits, storage and conservation, use and interpretation in multiple scales, and levels of engagement. Data is often described as the “new oil”, obviously from the extractive and centralized paradigm of the twentieth century. Our approach is generative and distributive, understanding that it will be in the twenty-first century when the digital age reaches its full potential. As in the food chain, data can be farmed in different ways from small systems at the domestic scale through low-cost and DIY sensors, to big data scrapped by server farms in which algorithms extract patterns from human interactions through digital platforms. Just as food farmers need manual or automated tools, seeds, or tractors, data farmers need to have access to create and choose their own tools for data-driven design at different scales: from sensors to algorithms, to servers, to interpretation and visualization tools. Data is a resource that is produced by many agents in a distributed manner; there is not just one source and one result. It is collected, stored, and processed in decentralized networks that are part of the complex infrastructure behind the bits that organize information. Data is a tool to generate knowledge, to understand patterns, and to program behaviors that are transforming the way we design the inhabitable world. Designers, urbanists, architects, and artists integrate datasets into design and creative processes. Design outputs are determined by the use of data, turned back into another layer of information and by processing algorithms to another set of automatically created (re)interpretations. Digital, parametric, and generative design processes start from the integration of data and computational tools, forming a workflow in which decisions are taken between machine and human:

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1 Read also the Economists printed edition of 6th May 2017 on “The world’s most valuable resource”.

Illustration by David Parkins, in “The world’s most valuable resource is no longer oil, but data”, The Economist, 6 May 2017
Turning atoms into bits: capturing data from the physical world to the digital world
Interpreting datasets to turn them into information
Using bits to create atoms: creating a design output to intervene in the physical world
Transforming the way we read the digital world through design

We, as designers facing these changes, should be asking ourselves: How much we are influenced by the quality of the data and the interpretation processes that are used to inform our decisions? How can we design our own design processes to maintain human input? How can we create our own data inputs, data interpretation algorithms, data storage, and distribution infrastructure?

In this session, we want to question the tools, the processes, and the political issues behind data farming as a new (re)generative design process. One permits design systems that enable the distribution of value as a core principle, and one creates a positive impact and is embedded in the environment and society.

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