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Future Sustainability and the Socioeconomic Dimension of Digital Fabrication

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Crowdsourcing and Digital Fabrication are changing the economic terms, as they democratize the means of production and innovation. Urban shapes have always been drawn by the socioeconomic processes. In the present and near future, the massive transportation of commodities that once shaped our cities and territories, is going to decrease radically. Crowdsourcing and digital fabrication allow us to erase a high percentage of transport movements as *designs* market replaces *products* market. A new priorities system regarding urbanization, transportation and labour market is flourishing. We are changing from structured to *floppy* economies. It has to have a reflection on urban shapes and territory occupation, as it has already influenced architecture and manufactured products. At the territory scale, the demographic projections affirm most of the world population will live in urban environments in the near future. But, from now on, there will not be extreme differences on the access to consumer goods or labour depending on our location. So also the territory structures may become *floppy*. In fact, as some farming activities are arriving to the cities building rooftops, technologies based on software and digital fabrication are spreading also into the rural areas. What will be the effect of these radical changes on issues like carbon emissions? The decrease of the number of paths humans and matters have to do, before they get a finished good ready to be sold, will certainly diminish its final footprint. If we are able to produce high efficiency-3D printed ventilated facades, we will reduce carbon footprint during the lifecycle of our building in hot and in humid climates. If we have the capacity to program the thermal and acoustic properties of bio composites, layer by layer, to create a monolithic wall component, we will be solving the entire façade requirements moving just one element instead of several ones to the building site. We will also save the energy and expense of the assembly. If we can choose the wall properties configuration, we can optimize it to meet the exact microclimate needs of a particular site. In a larger scale, if we combine GPS latest topographical technologies, geology latest developments and giant 3D printers to create an entire neighbourhood or a city, we can extremely reduce the impact on the land shape as we can adapt our design with high precision. If we use 4D printed materials, programmed to unfold and get the final shape without any additional energy, we are again saving carbon emissions in high quantities. Things will still be critical at the `front of the pipe´ and at the end of the lifecycle, but 3Dprinting recycled plastics, and 3Dprinting recycled wood filaments, are already available in the market. Also 3Dprinted nanomaterial's, including solar photovoltaic cells, are about to be the energy suppliers of our quotidian.