Saving the Bees Through Distributed Design

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The loss of biodiversity in cities and it's challenges

Cities have been seen as one of humanities greatest inventions, inhabitants crowded together collectively to create a better life with more opportunities, meanwhile at the expense of the nature and fauna that was there in the first place. The world's population is projected to reach 8.5-9.9 billion people by 2050[1], with 55-78% living in urban areas[2]. Global assessments show that urban expansions has caused biodiversity loss on an average of 52%, meaning everything from animal, plants and insects has dramatically decreased and it's not showing any signs of slowing down[3]. The effects of biodiversity loss has many consequences not only for the environment but it affects every part of the ecosystem including human beings in terms of loss in soil, agriculture, food production and the whole economy itself[4].

A critical part in our human food production chain is Pollinators, Bee pollinators. Tree-fourths of the world's flowering plants and about 35% of the whole world's food crops depend on animal pollinators to survive[5]. That's one out of every three bites of your food you consume.

To assist the pollinators in urban areas, habitats needs to be built by landscape designers and gardeners through widespread planting and more green spaces through rooftop gardens and green roofs. Also man made homes and systems to monitor the wellbeing and population size in cities are required. How can Distributed Design be shown as a key factor in creating such a system?

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[1], S. &Kc Lutz, W. The human core of the shared socioeconomic pathways: Population scenarios by age, sex and level of education for all countries to 2100. *Glob. Environ. Change* **42**, 181–192 (2017).

[2]Jiang, L. & O'Neill, B. C. Global urbanization projections for the shared socioeconomic pathways. *Glob. Environ. Change* **42**, 193–199 (2017).

[3] Newbold, T. et al. Global effects of land use on local terrestrial biodiversity. *Nature* **520**, 45–50 (2015).

[4]https://www.iberdrola.com/sustainability/biodiversity-loss

[5]https://www.usda.gov/peoples-garden/pollinators#:~:text=Three%2Dfourths%20of%20the%20world's,bees%20help%20increase%20crop%20yields

OSBH

Year 2018 a group through the Fab Academy Barcelona incubated by Fab Lab Barcelona created Open Source Bee Hive (now its own spin off company). They call themselves "a community of Beekeepers using hive design that promote colony health with non intrusive observational instruments"[6]. Using open source technology sharing their idea with anyone that is willing, distributed design and distributed manufacturing via it's shared data and technology making the design and manufacturing accessible for anyone. This means that hives are accessible for anyone with access to a Fab Lab, maker space or CNC.

Biodiversity loss is a global, territorial and local problem, making the OSBH founders aware that the only way to solve this problem is sharing data collection that is uploaded as part of the public domain to the Smart Citizen Platform. The data is numbers showcasing the welfare of each bee colony, factors impacting their welfare such as temperature, noise and humidity, tracking bee and pollinators globally. Realising through sharing this data scientist, beekeepers any stakeholder involved can predict, plan and educate the best beekeeping practises and factors to stop the decreasing of pollinators. Furthermore to encourage citizens to participate in the process of supporting bee health.

OSBH has more than 600 hives currently in over 20 countries[7]. A technology that is available for any prospective and existing beekeeper, who wish to download, build and test the beehives. It's also for existing beekeepers who have valuable knowledge to share with communities. The innovation is available for technologist wishing to contribute towards testing and developing hardware and software, for designers wishing to develop beehive design. Lastly it's for the green-fingered who wish to plant pollinating plants in their community and surrounding. All stakeholders collaborating addressing a global problem using a global community .

6 https://fablabbcn.org/projects/osbh-open-source-beehives

7 https://fablabbcn.org/projects/osbh-open-source-beehives

Distributed design as a game changer, present and future change maker

From the OSBH project we learn the power of distributed design, OSBH provides a framework for designers, makers, and creatives to innovate a field through shared collaborative practises. Problem that were usually isolated to each region is now open data globally. With distributed design the designer realising the importance and the effectiveness of sharing information to solve problems, problems that commonly are shared on a global scale. Creating global connectivity through local productivity and creating a more sustainable design process. OSBH creating nature learning in both urban and rural areas. This is innovative especially the hives placed in urban areas where pollinators haven't been studied before. Simply putting it distributed design made the OSBH project foster activities to exchange knowledge and data for collaboration and make design inclusive and accessibly for everyone.

How would the future look like if it had distributed design at it's core or more designers thinking like it. I believe it would be a more equal world, a more efficient world, collaborating to solve its issues, learning from each other and understand the strength in unity. Understanding relationships between all stakeholders, as a designer understanding that every design decision generates economic, social, ecological changes in local, regional and global scales. Design that is purposeful, non bias, innovative that works to the enrichment of our local and global society. Understand the importance that design should be something that is not static, that design is always evolving and adapting to the futures never ending challenges. For our specie distributed design could be a tool that can help us detach our need for oil as an energy source and plastic as a main material, helping to solve a critical future challenges. Also changing our outlook on our social differences and see ourself as global community we are. Distributed design is part of the future solution to improve the world for both humans and the environment.