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'THE MOST SUSTAINABLE URBAN COMMUNITY DEVELOPMENTS IN THE WORLD'...IN THEORY

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Abstract: There is an ongoing debate about how 'success' in the field of sustainable community development should be prescriptively defined and framed at different scales. This essay provides a summary of research that attempted to turn this (often rather theoretical) debate on its head. Rather than taking the diverse intentions and goals of development projects as the starting point, it aimed to directly compare the actual performance of different developments in the real world, using whatever data was available, in the hope that this would reveal the most sustainable communities and practices. However, in the process, this research revealed a new insight: across most communities, there is a distinct lack of post occupancy monitoring, meaning that it is difficult or impossible to know how sustainable many of these communities actually are.

Keywords: sustainable community development, performance gap, sustainability assessment, post occupancy evaluation.

As a society, we are still figuring out the best ways to lower the negative impact of our built environment. Alongside the attempts of developers, architects and engineers to lower environmental impacts, there is an ongoing debate about how 'success' in the field of sustainable community development should be prescriptively defined and framed at different scales. But I wondered if we could turn this (often rather theoretical) debate on its head. Rather than taking diverse intentions and goals as the starting point, I wanted to begin by directly comparing the actual performance of different developments in the real world, using whatever data was available. This, I hoped, would provide a clear steer on where specifically, in practice, we could

find 'THE MOST SUSTAINABLE COMMUNITY DEVELOPMENTS IN THE WORLD!!' (cue the fireworks and fanfare)... By extension, these grounded findings would reveal which particular strategies and frameworks, or elements thereof, appear to lead most effectively to optimal outcomes.

The first step was to identify a wide range of 'best practice' community developments around the world touted as 'sustainable' or 'low impact'. I then reached out to these with requests to take part in a survey. My main concerns at this stage were about potential methodological difficulties in comparing different measurements on a like-for-like basis. However, when survey responses began to return, a rather more serious problem arose: very few of the communities surveyed could provide post-occupancy sustainability performance data – because it did not exist. Many communities had estimates based on design and models, but few were measuring actual impacts post occupancy. The communities were sustainable in theory...but few could provide post-occupancy data to substantiate any claim that they were actually performing sustainably or with lower impact when compared with conventional community developments.

The lack of data revealed something far more startling than what I had originally aimed to discover. One of the paramount concerns regarding sustainable community development is about 'closing the loop' by measuring the impacts of these green building systems. Without measuring and monitoring performance in sustainable developments post occupancy, how will the industry know if current strategies are effective and whether the development is reducing its overall negative impacts? Measurement and long-term monitoring is critical to understand whether or not these strategies are effective at lowering negative impacts, and what is needed to improve.

My research therefore shifted focus to the question of whether sustainable community developments in the post-occupancy stage are monitoring their performance, as well as how, what and why they monitor it. For those currently under construction, I wanted to gauge intentions to monitor in future. Based on the 16 communities which responded to the survey (10 in post occupancy, and 6 under construction), I found the following:

- Only 4/10 post-occupancy communities monitor a variety of sustainable indicators within the community ('a variety' being defined as more than four areas)
- 0/10 post-occupancy communities monitors long term on a recurring basis.
- Only 2/6 communities still under construction plan to monitor a variety of sustainable indicators within the community
- Only 1/6 communities designed under the LEED-ND framework monitored or planned to monitor a variety of sustainable indicators post occupancy – even though all six had invested time and money to design to LEED-ND requirements.
- The communities designed under the One Planet Living framework stood out from the crowd: all three monitored (or planned to monitor) a variety of sustainable indicators post occupancy.

- European communities that responded to surveys tend to monitor to demonstrate effectiveness of a particular technology or framework, while American communities that responded tend to monitor are motivated by either compliance or economic drivers.
- (More detailed conclusions and actual survey responses can be found in the research paper itself – see contact details below.)

Overall, then, the responses suggest that few communities are measuring or monitoring post-occupancy holistic performance. Instead, perception is reality for many sustainable community stakeholders. As designers and developers alike know, the best sustainable designs can deliver unsustainable performance post occupancy for a number of reasons. Few of the surveyed developments can verify or substantiate their claims. Sustainable community frameworks are being developed and utilized with little feedback on the effectiveness of these frameworks. Do these frameworks actually achieve sustainable community developments? Until we measure and monitor performance, there is still a large gap between perception and reality, and an uncertainty surrounding our progress towards lower negative impact from sustainable community developments.

It's time to close the gap between perception and reality in sustainable communities and assess the situation. To paraphrase Alan Durning of the Sightline Institute: "what gets measured gets fixed". Monitoring not only indicates what's working, it indicates what's not working. Monitoring data can pinpoint inefficiencies and issues that impair sustainable performance, leading to improvement and progress towards the goals of each community and refining sustainable community development frameworks.

Ultimately, the goal is to develop communities that perform sustainably and reduce negative impacts. Without post-occupancy monitoring, the development industry cannot know if communities are reaching this goal. Unless we measure and assess the magnitude of impact from a community development, we cannot effectively manage and understand the gravity of the situation. Is it responsible to designate a community as 'sustainable' without performance data to substantiate the claims? We are quick to challenge claims in other rather more trivial consumer sectors. The solution is to refute that perception is reality in this case and increase holistic post-occupancy monitoring in sustainable community developments. The label 'sustainable community' development should be reserved only for the developments that can substantiate their sustainable performance and lower impact.

- *Central research question:* Do 'sustainable' community developments know if they are sustainable or have a lower impact?
- *Answer:* If they don't measure and monitor post occupancy performance, they don't know the actual impacts of their development.

The summary above is based on Marcella Whitfield's own research and is published with her permission. The full research report is available from:

- ResearchGate:
https://www.researchgate.net/profile/Marcy_Whitfield/publications?ev=prf_pubs_1
- Academia.eu: <https://the-bac.academia.edu/MarcellaWhitfield>
- Or by contacting the author directly: mrwhitsie@gmail.com

This research project was presented to Boston Architectural College's Sustainable Design Institute culminating the author's Masters of Sustainable Design degree. The work was supervised by Professor Richard Strong, Senior Research Fellow for the Center for Sustainable Building Research at the University of Minnesota. Ms. Whitfield, LEED AP, CEM, is a sustainability consultant with a background in resource and energy efficiency management for commercial and industrial clients. Her current research focuses include post-occupancy sustainability monitoring and urban resilience.

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