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Scaling Down: Why Designers Need to Reverse Their Thinking

Abstract The growth model of the 20th century required that designers and companies achieve economies of scale. Scaling up involved abstraction to make large-scale production possible for the global industrial economy. In the 21st century, social challenges are increasingly disrupting world markets. This changes the focus of the design process. Designers once needed to learn just a little about large groups of people to serve mass markets. Today, they must learn a great deal about relatively small numbers of people. They must shift from concentrating on what makes groups of people similar to what makes them different. This article explores the process of "scaling down" by describing key principles. It examines these principles at work in three case studies from The Helen Hamlyn Centre for Design to develop a lighting system for inner-city housing estates, a planning tool to create better workplaces, and a suicide-prevention strategy for a public health black spot.

A Close Shave

Today, I wet shaved with a mass-market shaver and shaving foam from the same manufacturer. Despite the unique contours and characteristics of my sixty-year-old face, I had exactly the same experience as billions of other men of different ages all over the planet perched in front of their shaving mirrors. I purchased my shaving kit relatively cheaply in London, but I could just as easily have acquired the same equipment in a hundred other cities (or airports) around the world for roughly the same price. The manufacturer backs up the shaver's brand identity using copious amounts of above- and below-the-line marketing — from sports sponsorship and blockbuster ads to distinctive packaging — *making it instantly recognizable* across different regions, languages, and cultures.

My shaver's optimum performance is the result of extensive research and development. Designers honed its style, materials, and blade configuration into a product with global appeal. They abstracted the act of shaving into a single product form and then wrapped a compelling brand image around it. Globalization, mass marketing, and mass distribution enhance this ability designers have to 'scale up' an abstracted solution so that it serves billions of consumers. I am hooked on it with the loyalty born of laziness and a fear of switching to an inferior product.

So what does my inexpensive little mass-market shaver tell me? That abstraction and scaling up — two significant contributions that designers have made to business practice in the last 70 years — have been central to its success. Designers learn to create designs that appeal to the lowest common denominator. A multitude of consumer products — cars, corporate logos, retail store fit outs, global office spaces — have undergone abstraction and scaling up. How has this come about?

A (Very) Short History of Scaling Up

Some design historians point to the work of pioneering AEG design leader Peter Behrens right before WWI as the moment when scaling up became an industry practice. AEG was the first industrial giant of the modern age — the Sony or IBM of its day. Behrens created a simple, abstract, utilitarian style for its factories, products, and publicity. His ingenuity forged the world's first modern corporate identity.[1]

Behrens was ahead of his time. After World War II, scaling up shifted into high gear as the US financed Europe's reconstruction from a position of industrial strength. By the 1950s, designers had begun to enjoy a position of strength themselves. As visual arts critic Peter Dormer wrote in *Design Since 1945*, "At every turn in the history of the post-war world of technology and manufacturing, the designer finds he or she has a niche."[2] Designing contributed significantly to the profits and power of leading American mass producers. European companies such as Olivetti, Braun, and Philips followed suit.

In the 1960s, influential New York consultants like Raymond Lowey and Henry Dreyfuss created design templates for industry that most would come to emulate. Dreyfuss's *The Measure of Man*[3] was a virtual handbook for scaling up that included human factor data and three basic universal body types. *The Measure of Man* reduced the messy, diverse experiences of real people to a set of proportional measurements that would fit the "Average Joe."

By the time Austrian design educator Victor Papanek sat down at the end of the 1960s to write *Design for the Real World*, a stinging rebuke to the design profession in America, the industrial world had scaled up dramatically. He famously prefaced his masterwork:

"There are professions more harmful than industrial design, but only a very few of them.… Never before in human history have grown men sat down and

1 Wally Olins, *Corporate Identity* (London: Thames and Hudson, 1989), 48–49.

2 Peter Dormer, *Design Since 1945* (London: Thames and Hudson, 1993).

3 Henry Dreyfuss, *The Measure of Man: Human Factors in Design* (New York: The Whitney Library of Design, 1960).

4 Victor Papanek, preface to *Design for the Real World: Human Ecology and Social Change* (New York: Pantheon Books, 1971), ix.

5 Ibid.

6 Opinion, "Company Logos, Signifying Nothing," *New York Times*, July 20, 1988, http://www.nytimes.com/1988/07/20/opinion/company-logos-signifying-nothing.html.

7 Jeremy Myerson and Graham Vickers, *Rewind: Forty Years of Design and Advertising* (London: Phaidon, 2002).

8 John Clarkson, Roger Coleman, Simeon Keates, Cherie Lebbon, *Inclusive Design: Design for the Whole Population* (Berlin: Springer, 2002).

seriously designed electric hairbrushes, rhinestone covered file boxes, and mink carpeting for bathrooms, and then drawn up elaborate plans to make and sell these gadgets to millions of people."[4]

Papanek felt that designers should develop a social conscience along with their creative skills. He wanted designers to consider ecology and the developing world, and include women, older people, children, indigenous communities, and others excluded from designs scaled up for mass markets. "In an age of mass production," he wrote, "when everything must be planned and designed, design has become the most powerful tool with which man shapes his tools and environments.… This demands high social and moral responsibility from the designer."[5]

Such exhortations fell on deaf ears right up to the 1980s, as market liberalization further accelerated the push for worldwide economic growth. The abstractions that underpinned large companies' efforts to scale up earned them worldwide recognition. So rampant was this approach to design that in July of 1988, the *New York Times* ran an editorial attacking the characterless abstractions of corporate logotypes as "lifeless blobs."[6] The piece yearned for the era when America's logotypes and pictorial marks were more engaging, and recalled particular locations, traditions, or activities.

But the whole point of design abstraction is to avoid being too specific or too local, and any association with a recognizable tradition. The whole point is to mean just enough to the greatest number of people to sway their buying choices — or, at the very least, cause no offense. The term "vanilla" became widely used in office design, for example, to describe workplace fit outs that do not arouse passions either way and are, therefore, just about accepted. Of course, this was the opposite of what Papanek argued for.

In the 1990s, the synchronized rise of both globalization and digital technologies took abstraction and scaling up further than anyone had ever imagined. The global brand was a result of that synergy, blurring the boundaries between design and advertising.[7] Just as ad agencies ditched country-specific creative work revolving around dialogue or local references in favor of massive, image-driven worldwide campaigns they could scale up and project across the world, so designers adopted the same abstracted process to build brands — from a Hong Kong telecoms company branded Orange to the global phenomenon that is Nike. Every high street in every city — remodelled and dominated by big retail brands — began to look the same, irrespective of location, heritage, or culture. That little mass-market shaver in my bathroom, used by billions every day, is but a small product of this all-consuming scaling-up process.

Shifting into Reverse

A significant cultural movement against scaling up has been gathering momentum since the year 2000. Urgent calls for ecological sustainability, long-term economic viability, and improved social cohesion have thrown the brakes on industries' relentless pursuit of economic growth.

This move away from rampant growth challenges designers not to abstract people into convenient market segments. Our focus has shifted from learning just a little, or just enough, about very broad categories of people to learning a great deal about relatively small numbers of people and concentrating not on what makes them similar, but what makes them different. I call this approach "scaling down."

The scaling-down impulse I associate with the recent rise in people- versus market-centered design disciplines. The emphasis on inclusive design, universal design, design for all, social design,[8] and so on — each of which delves deeply into

specific human needs and experiences – reflects an emerging new value system. Reversing their thinking requires contemporary designers to challenge some of the most established and entrenched norms of design practice. There are signs that this is happening. The Transition Design at Carnegie Mellon's School of Design is one example. Director of Design Cameron Tonkinwise advances a form of post-industrial interaction design[9] as means for designers to play a greater role in large-scale social change. The spread of participatory design and co-production practices into more commercial areas of design is another. Such practices seek to empower individuals and communities by emphasizing citizen ownership, social capital, and community cohesion.

New digital technologies support this process. 3D printing, local DIY and maker culture platforms, and Fab Labs[10] help people not only hack existing designs and customize products to suit niche groups of users and consumers, but also put the means of production into people's hands. Smart technologies let home dwellers adjust environmental conditions to suit their preferences. Retailers use sensors and digital feedback loops to respond in real time to in-store customer journeys. And corporations are replacing those "vanilla" workplace designs with more authentic environments tailored to specific locations. Instead of scaling up to create a single, universal, take-it-or-leave-it offer, many businesses are now investigating how they can use design to create scaled-down, personalized experiences that target smaller communities of individuals.

The Principles of Scaling Down

Because the shift from scaling up to scaling down implies navigating social, infrastructural, economic, and environmental complexity, some designers might find the following guidelines useful.

1. Cultivate a Participatory Mindset – Not an Expert One

Designers can no longer be "experts" who use design as a kind of proxy to make crucial decisions about form and function for the faceless masses. Scaling down requires a participatory mindset, which means creating *with* people rather than *for* them. Collaborative methods such as co-design, co-creation, and experience prototyping, for example, entail investigating and responding to real needs identified *through* an interactive, democratic process, and make certain design methods obsolete.

2. Make the Process Design-Infused – Not Design-Led

Scaling down involves getting up close and personal with challenging, complex problems, and coordinating input from a range of disciplines. Designers have long been familiar with multi-disciplinary processes of inquiry and delivery, but new circumstances might require a different tack. *Infusing* multi-disciplinary processes with valuable design skills such as facilitation, visualization, and modeling offer a richer, deeper, and more democratic alternatives to standard, designer-led approaches.

3. Design for People – Not Personas

Personas are fictionalized representations of users and customers. These imaginary amalgams of user traits may be useful and convenient design tools in some industries – but they can be dangerous in others because they are based on unreal *assumptions* or idealized stereotypes. For example, I have seen several car design studios use an image of the video game character Lara Croft to represent the quintessential woman driver. Who has ever met Croft, or anyone like her, in real life? Scaling down asks design teams to base their decisions not on abstract ideals, but on the messy and sometimes contradictory experiences of real people.

4. Aim for Engagement – Not Abstraction

Scaling up depends on abstraction. When designers adopt broad, simple, generic ideas about people, they leave no space for the type of contradiction, complexity, or iteration that real life demands. When designers opt for direct engagement with groups and individuals during workshops, consultations, or co-creation activities, they are able to resist abstraction because they are dealing with specifics, real opinions, and lived experiences. Designers should strive for authentic, deep engagement with users wherever possible. This kind of contact may change the kinds of questions designers ask themselves as well as the solutions they provide.

5. Build on Assets – Don't Just Minimize Deficits

Scaling up through abstraction is essentially a zero-sum game that seeks to minimize friction and feedback and maximize passive acceptance and tolerance. To achieve this, designers must look through a negative lens, subtract that negativity, and design something that will avoid offence – often by glossing over what makes us unique. Even the most well-meaning, inclusive design projects will do very little to improve human agency and empower users if they intervene in neutral, non-engaging ways. Scaling down means doing the opposite. It means looking through a more positive lens, trying to enhance people's physical and psychological assets, and building on what individual people and communities have to offer.

Even though these principles contain some criticism of the way designers have operated in the past, for many design projects – mass-market healthcare innovations or software introductions, for example – scaling up is a perfectly desirable course of action. On the other hand, some community-focused projects merit a reversal of tradition. They have a complexity that defies standard, off-the-shelf solutions. And once designers scale these kinds of projects down to create and test a specific proposal, they can then see what works and explore ways to take the key ingredients and "scale back up" to help other communities and individuals.

At my institution, The Helen Hamlyn Centre for Design at the Royal College of Art, we have been exploring key principles for scaling down, and then back up, through a series of practical projects. I describe three here.

Case Study 1: Lighting the Boundary Estate, London

The Boundary Estate project began as a broad investigation into the way cities are artificially lit at night. We wanted to explore ways to address the inequality of London's light distribution. Lighting is generous in urban business districts and tourist areas, while inner city housing estates are left in the dark. They suffer from poor social cohesion and a lack of nighttime foot traffic that might boost local economies. Our study scaled down to focus on London's oldest purpose-built housing estate, the Boundary Estate in Shoreditch, which is home to several diverse communities.

Instead of treating urban lighting as a generic subject, the research team engaged deeply with residents and community groups on the estate over a two-year period (2011–2012). (See Figures 1, 2.) We mapped out our activities and aspirations using a range of workshops, events, and interviews. We gradually built a picture of the lighting situation and what residents might find desirable.

The standard lighting design on many housing estates consists of CCTV cameras that use motion detection sensors to trigger floodlighting. This cold, intrusive surveillance does nothing for community spirit and does not respond to dynamic living patterns. In response, our researchers developed a flexible, modular system of low-cost, low-energy light tubes. Theirs was a simple but profound innovation – insert an LED strip into the existing scaffolding tubes that all housing authorities

use in abundance for handrails, barriers, and the like (Figure 3).

We created a necklace of soft lights strung out across the estate to illuminate different areas and activities, which we called the "night-time neighborhood network." Researchers tested different light color temperatures and positioning around the estate to probe community reactions and iterate better solutions. The study concluded with the successful implementation of light-tube goal posts on
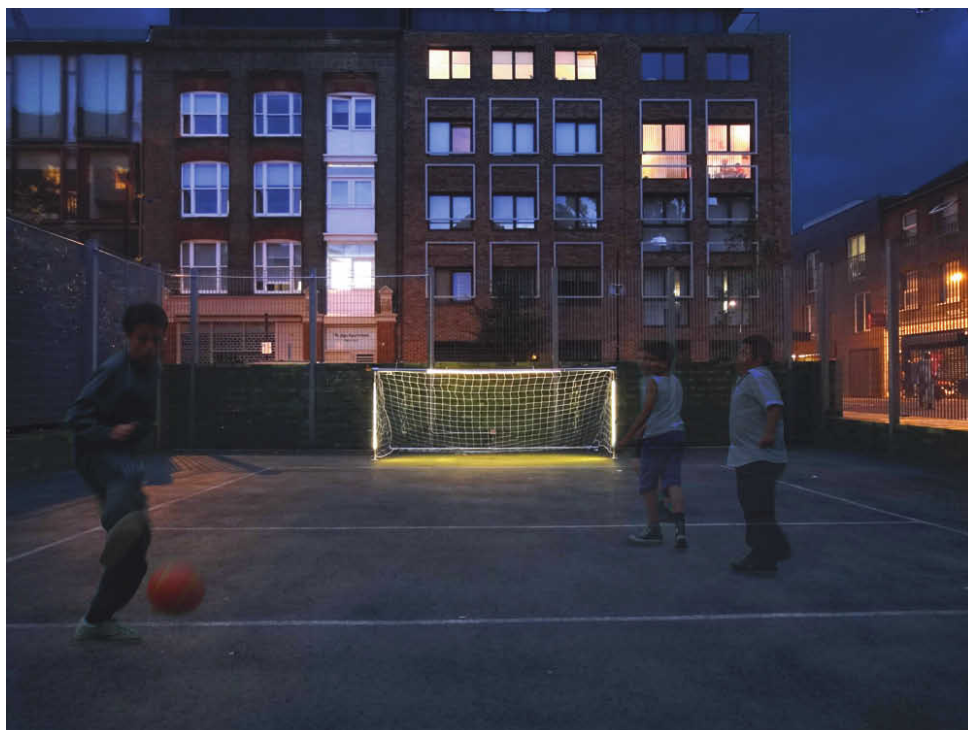
a dark and neglected playground, enabling local families to reclaim the site from drug dealers and prostitutes (Figure 4).

This initiative was different from typical outdoor luminaire development projects that have client, designer, and market briefs. We had the support of the police and local government, who understood that new designs might be a way to address persistent social issues. And in an exciting development, an outdoor lighting company, Paviom, took on the manufacture of the tubes. They named their product TubeLite, and currently market them for use on under-lit housing estates all over Europe.[11] After we scaled our focus down to one estate and engaged directly with

its communities, Paviom scaled the project's focus back up and created a commercial product.

Case Study 2: Planning an Office Environment

We carried out an office environment planning project called Workscapes over three years (2012–2014). We wanted to find ways to counter falling occupancy rates and a lack of employee engagement in the modern workplace. We also saw that public environments such as hospitals could benefit from the project's potential as a space-planning tool. We began with in-depth user research inside three differently-sized media and technology organizations housed in typical buildings in the Greater London area. These were a creative agency with 60–70 employees working out of a converted warehouse, a business consulting firm with 1,800 staff working in a purpose-built office building, and a global communications company whose suburban campus played host to nearly 4,000 employees.

We used our findings to create a framework for office interiors that we based on the urban planning principles of architect Kevin Lynch,[12] and inspiration we drew from Bernard Tschumi's winning 1982 design entry for the Parc de La Villette in Paris.[13] The Workscapes architectural framework (Figure 5) makes workplaces more socially engaging and dynamic by redesigning programmable surfaces, circulation pathways, large objects for wayfinding, and social interaction points.

We piloted the spatial framework in two very different contexts — a bank's corporate headquarters, and the mental health unit at a large Scottish hospital. Scaling down into these specific environments and communities made it possible for us to test ways to create more ownership, social capital, and social cohesion in a given space.

This industry-funded project scaled up into an online toolkit designed to support global furniture manufacturer Herman Miller in creating novel, people-centered work environments for their customers' employees (Figures 6–8).[14] This more broad application would not have been possible if we had chosen to abstract, rather than directly engage, real communities of office and hospital workers in the design process.

12 Kevin Lynch, *The Image of the City* (Cambridge, MA: MIT Press 1960).

13 For more information, see http://www.tschumi.com/projects/3/.

14 For more information, see https://www.rca.ac.uk/research-innovation/helen-hamlyn-centre/research-projects/2014-projects/workscapes/.

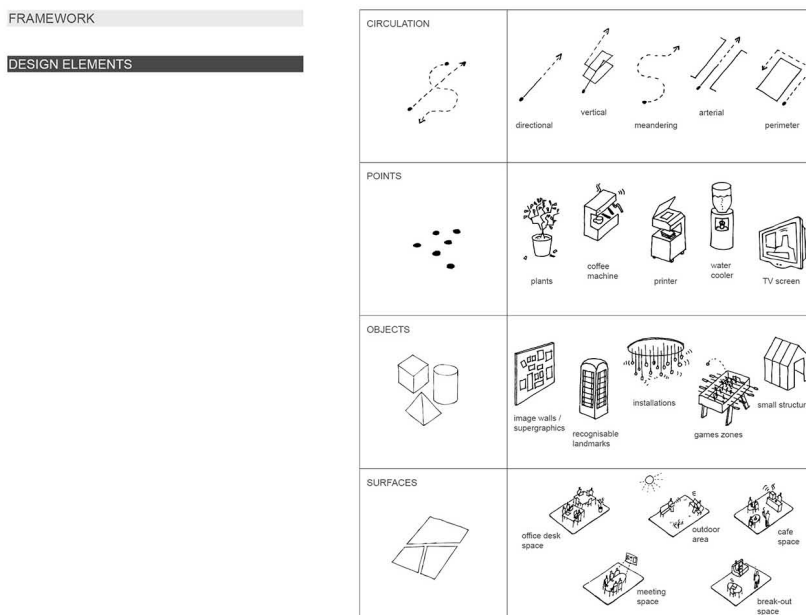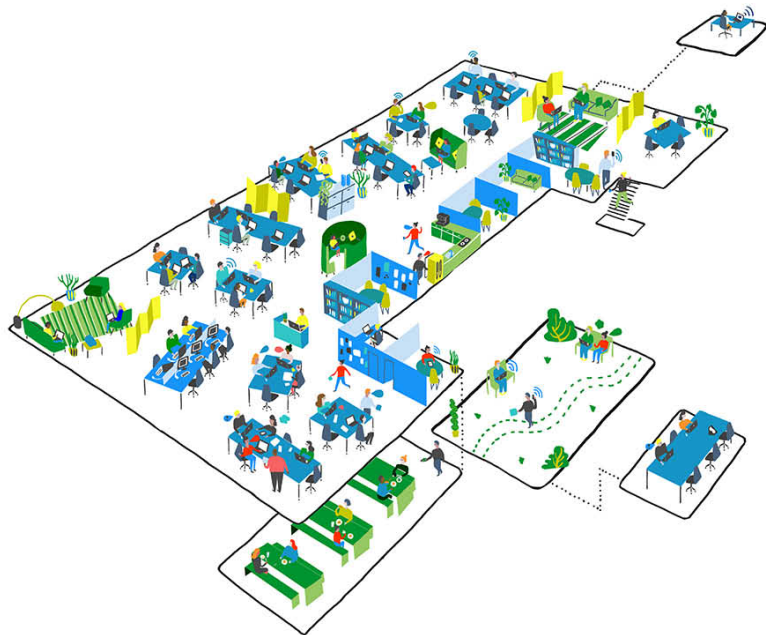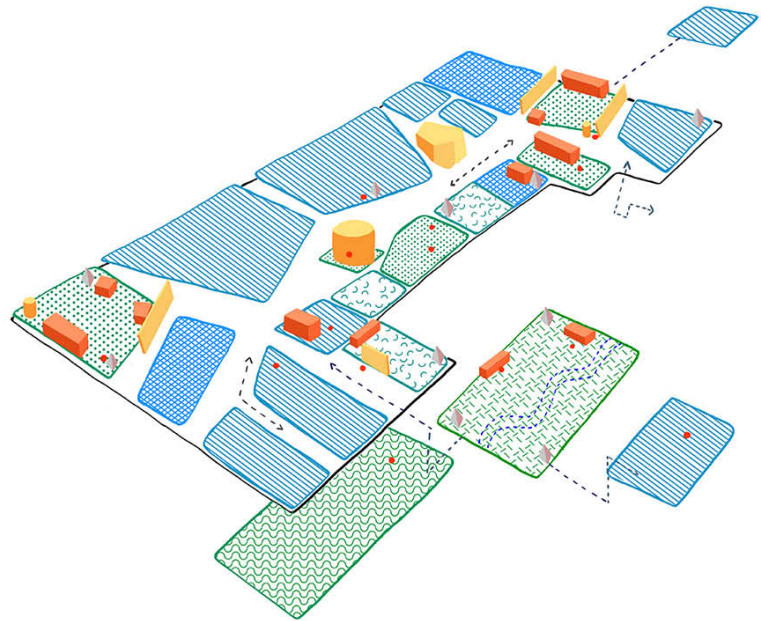Figure 5 Workscapes architectural framework by Benjamin Koslowski. Image courtesy of The Helen Hamlyn Centre for Design, RCA.

Reprogrammable surfaces

Allocated desks

Hot desks

Meeting spaces

Break out spaces

Outdoor spaces

Cafés and public spaces

Case Study 3: *Our Future Foyle*, Northern Ireland

Our Future Foyle is an ongoing project at The Helen Hamlyn Centre for Design. We began, in February 2016, to reimagine conditions along a six-mile stretch of the River Foyle, which runs through the city of Derry-Londonderry in Northern Ireland. This portion is well known to locals as a suicide black spot. In partnership with Public Health Agency Northern Ireland, the research team is exploring how design can be used to uplift an area associated with poor emotional wellbeing and encourage residents to help make the banks, river, and bridges a lively and lived-in place.

Through extensive engagement with different communities along the Foyle – one event involved building a giant wooden replica of Dopey Dick, a killer whale that famously swam up the river in 1977 – we were able to flesh out a picture of how locals perceive this troubled area. We have developed a suicide prevention strategy to support the emotional wellbeing and mental health of the communities living in and near the area (Figure 9). Our approach has three elements – installing physical and soft barriers, and increasing footfall.

One outcome of this consultation is *Foyle Reeds*, an art installation that will create a physical suicide barrier. We based our design on the natural reeds around the site. *Foyle Reeds* will be deployed along an 864-meter-long bridge in the city to deter jumpers minus the prison-like bars and cages that reinforce the stigma surrounding suicide.

The bridge is exposed to the elements because of its span and height. Through consultation, the team found that local people feel uncomfortable crossing the bridge – which means that the two halves of the city are disconnected – because it does not offer enough shelter from wind and rain. The installation will combine the visual language of the local fauna with interactive lighting to create an appealing sensory experience – as people walk along the bridge, the reeds will change their color and brightness.

An app will put ownership of the installation directly into the hands of local people – they will be able to adopt a reed for a small sum and take control of its color and brightness (Figure 10). *Foyle Reeds* can turn the bridge into a landmark and a visual icon the community can relate to privately and publicly. Reed sponsorship will dynamically support future initiatives and river-based charities and organizations.
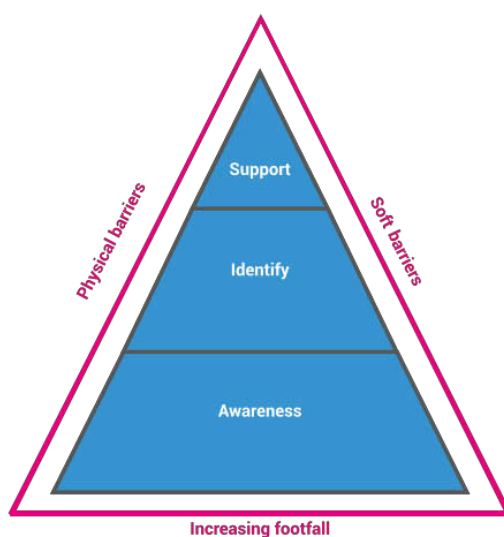

Figure 9   Strategy for suicide prevention along the River Foyle, Northern Ireland, by Ralf Alwani and Lizzie Raby. Image courtesy of The Helen Hamlyn Centre for Design, RCA.

Foyle Bubbles are a series of movable satellite spaces designed to house arts, commercial, educational, and well-being activities around the riverfront. The spaces will act as soft barriers to the riverbank. By increasing foot traffic, they achieve a kind of natural surveillance. Not only will the portable pods support local business and community engagement, but individuals or organizations who use the pods will undertake mandatory mental health training in return for reduced rent. This mechanism will mean that more support and counselling will be on offer on an everyday basis, without being too overt or clinical, thus leading to a better effect on mental health within the community.

The portability of the pods is key to their success as they can respond to negative spots along the riverfront, addressing areas with poor footfall or anti-social behavior or poor quality lighting. Local people will be able to run a *Foyle Bubble* just as they can sponsor a *Foyle Reed*. Indeed, by designers scaling down to focus on the precise needs of the river's communities, a whole business ecosystem of new products, services, and apps is set to emerge around this public sphere intervention to create a healthier, livelier city.

Rather than seeking to develop products and services for market acceptance—as the conventional client-designer relationship dictates—this project uses challenging social conditions as the catalyst for its design innovations. This is very much a twenty-first-century design paradigm. It is a far cry from the mid-twentieth century economic growth model Victor Papanek railed against so elegantly.

Conclusion

There are many design examples emerging around the world that explore different facets of scaling down. Consider the work of Malmö Living Labs at Malmö University; or the cable car public transport project in Medellin, Colombia; or the work of Paula Dibb with indigenous communities in Brazil; or Julia Cassim's Extraordinary Design Workshops in Bosnia-Hercegovina, Croatia, and Macedonia, which she based on a model first trialed in Sarajevo. Each of these examples reflects some of the principles discussed in this paper and each has achieved exemplary results.

The three cases I present share the same guiding principles—a participatory

mindset that treats design users as equals; an interdisciplinary process infused with design techniques; engagement with real people, not fictional personas; and the positive building on existing assets – particularly human ones, but also material ones. More broadly, scaling down is an approach that can give the designer more control when addressing complex sociotechnical problems – which is our DesignX challenge.[15] But more work needs to be done. We shall continue ours by measuring the impact of the Foyle River project over time.

Of course, that simple everyday shaver of mine does not have to provide a localized, culture-specific experience. But I do want the more complex socio-cultural domains of our neighborhoods, hospitals, and workplaces – and the services and experiences within them – to exhibit some sense of place, and sensitivity to their inhabitants and occupants through design.

Scaling up has been the automatic reflex of designers for so long that it will be a habit hard to kick. But scaling down is now on the rise. As business and governments everywhere explore what a socially-challenged, post-globalized economy might look like, it might be time for the design professions to change gears.

15 Donald A. Norman and Pieter Jan Stappers, "DesignX: Complex Sociotechnical Systems," *She Ji: The Journal of Design, Economics, and Innovation* 1, no. 2 (2015): 83–106.