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Precinct-scale innovation and the sharing paradigm

Laura Wynne and Chris Riedy

Laura Wynne

Senior Research Consultant

Institute for Sustainable Futures, University of Technology Sydney

PO Box 123, Broadway NSW 2007 Australia

Ph: (02) 9514 4399

E: Laura.Wynne@uts.edu.au

(contact author)

Chris Riedy

Institute for Sustainable Futures, University of Technology Sydney

PO Box 123, Broadway NSW 2007 Australia

Ph: (02) 9514 4964

E: Christopher.Riedy@uts.edu.au

Abstract

Adapting cities through urban infill development is a key alternative to urban sprawl. Infill developments and adaptive reuse projects offer spaces for social innovation that can lead to the discovery new ways of being in the city that are more adapted to sustainability challenges. Such innovations include a reimagining of the way we use spaces, assets and the way we connect with one another. The sharing paradigm captures a broad range of activities and services that are reflective of this reimagining of consumption and ownership. Sharing resources, goods and services can enhance urban resilience by reducing demand for new materials and infrastructure, supporting local economies, and enhancing social networks. This chapter identifies some of the sharing paradigm initiatives that might be enabled through adaptive reuse and infill development in cities around the world.

Keywords

sharing paradigm; collaborative consumption; adaptive reuse; resilience; infill development; cohousing; coworking

1. Introduction

Cities, as centres of human population, production and consumption, are crucial sites for shaping sustainable futures for the planet. In 2014, over half (54%) of the global population resided in urban areas, and by 2050 this will grow to two-thirds of the world's population (United Nations, 2014). Urbanisation has been strongly entangled with neoliberal agendas and has played a fundamental role in the expansion of contemporary capitalism (Harvey, 2008). As argued by Bauman (1998), Harvey (2008) and countless others, this neoliberal paradigm has reconceptualised citizens as consumers, and strongly encouraged and promoted exponential growth in rates of consumption amongst individuals and households. Rising consumption in our cities has hastened the degradation of our natural environment and resources.

In addition to the impact of this growth in consumption, the standard growth pattern of our growing cities—urban sprawl, a perpetual outward expansion of urbanised areas—has contributed significantly to the ecological and human cost incurred by our cities. Urban sprawl can be linked to two related demographic factors—population growth and household size decline (Liu, Daily, Ehrlich, & Luck, 2003), but is also an outcome of planning, market and infrastructure processes. Areas of urban sprawl make greater contributions to carbon emissions than denser, inner-city areas. Sprawl is associated with 8–10 kilograms of daily per capita emissions from transport alone, compared with between 0 and 4 kgs in inner-urban areas (Trubka, Newman, & Bilsborough, 2008). Households in areas of suburban sprawl are likely to incur an additional \$164 per year in health costs compared to those in moderate- to high-density developments with good access to transport and services (Trubka, Newman, & Bilsborough, 2010).

As well as influencing environmental impact, the structure of our cities has a critical influence on the social connectedness that people experience (Leyden, 2003). Cities, when appropriately designed, provide proximity and density that helps to build social capital (Jacobs, 1961). However, long work hours, protracted commutes and single-person households are contributing to what has been identified as a 'loneliness epidemic'. Instead of social connectedness and capital, the structure of our cities might unintentionally facilitate experiences of loneliness and social isolation (Kelly *et al.*, 2012; Jacobs, 1961).

The city is thus a paradox. Cities have great potential to deliver sustainable futures, yet the cities of today fall far short of this potential and may even actively undermine sustainability. We are faced with a messy problem: how to manage the growth of our cities in such a way as to realise their potential and positively benefit both human and environmental health? For Rose (2016, Loc 318), this is a question of restoring balance:

In a time of increasing volatility, complexity, and ambiguity, the well-tempered city has systems that can help it evolve toward a more even temperament, one that balances prosperity and well-being with efficiency and equality in ways that continually restore the city's social and natural capital.

Our chapter explores one partial response to this problem – the role of adaptive reuse and the sharing paradigm in building urban resilience and restoring balance to cities.

Adapting cities through urban infill development is a key alternative to urban sprawl, with the potential to reduce environmental impacts. Urban infill development has provided high-density housing on former industrial precincts in well-served areas of many cities over the last two decades. Examples abound, such as Sydney's Central Park, which has adapted former warehouses, a brewery and worker housing into a mixed-use commercial and residential site, incorporating adaptive reuse of heritage items with new build apartments and office space. Figure 1 shows construction work on the adaptive reuse of the 1911 Irving Street Brewery Building. Formerly the power station providing energy for the brewery, the building has been adapted to house a modern trigeneration facility that burns natural gas to provide electricity, heating and cooling. The site also hosts community markets every Sunday, making it an important urban node for both environmental and social sustainability. We will return to the example of Central Park later in the chapter.

[Figure 1 here].

Urban infill development is most attractive from a sustainability perspective when it conserves resources by adaptively reusing existing buildings, but even infill that only reuses land after demolition and rebuilding has the potential to improve city resilience and sustainability in several ways. First, moribund areas that are no longer contributing productively to the city can be brought back into use, enhancing the productivity of the entire urban system. Second, precinct-scale developments can act as exemplars of sustainable urban form that provide feedback throughout the urban system on what a sustainable, resilient city looks like. They act as nodes around which new ideas and forms of the city can coalesce. Finally, urban infill developments offer spaces for social innovation to discover new ways of being in the city that are more adapted to sustainability challenges. In this chapter, we focus on how urban infill developments can support one particular set of social innovations—the emergence of a sharing paradigm (McLaren and Agyeman, 2015). Sharing resources, goods and services can enhance urban resilience by reducing demand for new materials and infrastructure, supporting local economies, and enhancing social networks. The new sharing paradigm has the potential to make a positive contribution to addressing many of the urban challenges outlined above.

In the next section, we describe the sharing paradigm in greater detail, exploring

different definitions and ways of categorizing this movement. Following this is a discussion of the benefits that the sharing paradigm can provide for our cities. Finally, we provide some examples and case studies of how urban infill can help facilitate the sharing paradigm.

2. The emergence of the sharing paradigm

As the 'loneliness epidemic' has grown, it has been slowly countered by a growing appreciation for community, with some evidence suggesting that 'the age of the individual is being quietly supplanted by a re-emerging collectivism'.¹ Botsman and Rogers (2010) drew popular attention to this movement, which they labelled 'collaborative consumption'. They saw collaborative consumption as a new paradigm in which reputation, community and shared access to goods and services replace credit, advertising and individual ownership as the key characteristics of consumption practices (Botsman & Rogers, 2010). The drivers included new peer-to-peer technologies, a resurgence of interest in community, environmental concerns and cost consciousness (Botsman & Rogers, 2010). The new paradigm was facilitated by the existence of critical mass or density in cities, idle capacity in the form of unused goods and skills, and the emergence of a 'belief in the commons' and 'trust between strangers' as social innovations.

This paradigm is now more commonly termed the 'sharing economy', but this terminology is arguably too narrow because of its emphasis solely on economic transactions. McLaren and Agyeman (2015) argue that the 'sharing paradigm' is a better term, drawing attention to broader human and social development possibilities that go beyond economic transactions and commercial forms of sharing. We follow their terminology here, recognizing that sharing in cities should be about improving human well-being in multiple ways.

Defining the sharing paradigm is notoriously difficult, as the boundaries between categories are often fuzzy, and sharing initiatives are constantly evolving. Writing about the sharing economy, Juliet Schor (Schor, 2014) identifies four broad categories of activity. Her first category is 'recirculation of goods'. These initiatives help to get pre-owned goods to people that want them. The category includes online services such as eBay, Freecycle (which prohibits monetary exchanges), Craigslist and Gumtree (an Australian version of Craigslist). Initiatives have even emerged that seek to reutilize perishable goods, such as 'Taste the waste' which aims to encourage the sharing of food that would otherwise go to waste. The second group of initiatives focuses on 'increased utilization of durable assets'. These initiatives help people to get better value from idle assets, such as cars, homes or tools. Car sharing services such as Zipcar, Car Next Door and GoGet, and space sharing services such as AirBnB and Couchsurfing are prominent

¹ <https://griffithreview.com/articles/waking-from-the-dream/>

in this category. Sharing services for other assets, such as household tools, have not been particularly successful in Australia to date. They have performed better internationally in dense urban areas. Peerby is an example of such a service in the Netherlands, where expensive, occasionally-required items such as bicycles, luggage, tools and gardening equipment are shared amongst neighbours. The third category comprises 'exchange of services', such as labour and skills. Examples include Airtasker and Task Rabbit, which match people that need jobs done with people willing to do those jobs. The final category—'sharing of productive assets'—includes initiatives like Landshare, which allows farmers or hobby gardeners to access land on which to grow food. It also includes co-working and cohousing initiatives. WeWork is a prominent international example of co-working, providing subscribers with access to shared office spaces. More recently, WeWork has launched WeLive, providing subscribers with access to shared living spaces. This is a form of cohousing, providing a combination of private and shared spaces for people with mobile lifestyles.

McLaren and Agyeman (2015) also recognize multiple dimensions of sharing: sharing things; sharing services; and sharing activities or experiences. They further note that sharing can happen in individual, collective and public spaces. It can be commercial or communal, and take mediated or more traditional sociocultural forms. All of these notions are gathered up into the sharing paradigm that we consider in this chapter. However, like McLaren and Agyeman (2015), we are particularly interested in the transformative potential of communal forms of sharing in our cities.

The link between adaptive reuse and the sharing paradigm may not be immediately clear. We argue here, however, that a key link can be found in the concept of the circular economy. A circular economy aims to minimise waste, maximise reuse and recycling and identify opportunities for industrial symbiosis (Andersen, 2007), moving from an open-ended, linear model of production-consumption to a circular one, in which wastes are reconceptualised as resources. In a circular economy, goods and materials recirculate without net extraction of materials from the environment. Both the sharing paradigm and adaptive reuse attempt to keep existing materials and assets in use. Proponents recognise the value in existing built and other resources that are no longer utilised for their original purpose, and aim to repurpose and revalorise these resources. In this way, the sharing paradigm and adaptive reuse are closely aligned phenomena that can contribute to the emergence of a circular economy. However, the sharing paradigm takes in much more than just adaptive reuse and it is by no means guaranteed that an adaptive reuse development will support broader sharing relationships.

If we are to make our cities more sustainable and resilient, we will be compelled to find ways to sustainably redevelop inner city areas *and* to support the full breadth of sharing paradigm initiatives. Inner-city brownfield sites are ideal niches for the sharing paradigm to flourish, as they offer sufficient population density to provide a critical mass of

participants and resources to gain and sustain momentum (Botsman & Rogers, 2010).

The impact of the sharing paradigm on the resilience of our cities remains an open question. Many claims have been made about the benefits the sharing paradigm can deliver, but evidence for this remains sparse. In the next section, we examine the potential benefits of the sharing paradigm for cities and precincts.

3. Potential benefits of the sharing paradigm for cities and precincts

Advocates argue that the sharing paradigm can deliver triple-bottom line benefits. For example, Heinrichs (2013) argues that there is potential for the sharing economy to ‘meet expectations regarding effective resource use, strengthening social capital and fostering decentralized value production’. Some literature also suggests that the sharing paradigm will bring economic benefits to local economies. On the other hand, critical voices have emerged that draw attention to the ways in which the sharing economy can have negative impacts (e.g. Slee, 2016); much depends on the detail of how sharing is implemented in a particular context.

a. Reduced environmental impact

Activities within the sharing paradigm have been strongly associated by marketing, literature and the media with a reduced environmental impact compared to traditional consumption habits—this is often a key message used in the marketing and promotion of sharing services. Harvey et al (2014) argue that, by exploiting a spare pool of resources, sharing activities can ‘reduce the cost of acquisition and the environmental impact of consumption in comparison to the more typical product lifecycle’. Any resultant environmental benefits are expected to be due to reduced consumption (that is, avoided need to purchase), reduced waste generation (due to increased reuse) or from increased efficiency of use over a product’s lifecycle, (due to sharing one product, such as a car or a lawn mower, between multiple consumers).

However, although participation in these activities is ‘generally expected to be highly ecologically sustainable’ (Hamari et al, 2015, p5), there is little research to provide evidence of any such environmental benefits. Many commercial initiatives operating under the banner of the sharing economy may actually stimulate more consumption and increase environmental impacts (Slee, 2016). For example, Couchsurfing and Airbnb, which may make it cheaper to find accommodation in cities, could encourage increased leisure travel, increasing demand for commercial flights—a heavily emissions-intensive industry. Cities need to facilitate types of sharing that do actually lead to reductions in resource use.

b. Economic benefits

The sharing paradigm also has the potential to improve local economic outcomes. Sharing activities, through their largely peer-to-peer nature, can boost local economies by providing alternative and supplementary sources of income. Airbnb, for example, is expected to boost local economies by assisting city-dwellers to meet escalating real-estate costs by allowing them to supplement their income by renting their home (or part of it) to tourists.

However, others warn against embracing the sharing paradigm too quickly, arguing that it has the potential to threaten existing businesses. Airbnb, for example, has been criticized due to its failure to protect consumers with the same regulatory frameworks that apply to hotels (King, 2015), its potential to take business from existing hotel businesses that are large employers (Zervas, Proserpio, & Byers, 2015), its purported potential to inflate residential property prices (Oskam & Boswijk, 2016), and its failure to protect employees due to its 'informal' work arrangements (King, 2015). Cities need to take care when facilitating the sharing paradigm that people are not made worse off, particularly vulnerable households.

c. Fostering social connections

Much has also been written about the positive social outcomes of the sharing paradigm. Albinsson and Perera (2012, p.308) find that sharing events deliver a range of benefits whose scope includes 'not only the goods and services but also the interactions between the individuals who participate in the giving and receiving'. By bringing people together, it is expected that the sharing paradigm has the potential to go some way in addressing the 'loneliness epidemic' mentioned briefly above, by fostering improved social connections.

Social capital may also be fostered through sharing activities. Albinsson and Perera note that these interactions involve the exchange not just of goods but of 'skills, knowledge, space and ideas' (2012, p.308), indicating a broader suite of benefits may result from participating in the sharing economy. McLaren and Agyeman (2015) see the sharing paradigm as having great potential to strengthen communities and build civic participation. On the other hand, critics, including McLaren and Agyeman, raise concerns about the monetization of sharing; when every social relationship becomes an opportunity for financial gain, social capital may be eroded rather than built. Again, the key is to pay careful attention to the types of sharing that are facilitated in cities and to continually evaluate and adapt to their impacts.

In the next section, we consider three specific ways in which adaptive reuse in cities can facilitate the type of sharing that is likely to deliver the benefits described above.

4. How building and land conversions could help enable the sharing paradigm

Adaptive reuse and urban infill developments provide important opportunities to shape the urban commons and incorporate the sharing paradigm into the city fabric. This section describes three examples with potential to deliver sustainability benefits in cities.

a. Cohousing

One of the most obvious intersections between the sharing paradigm and urban resilience is in development of cohousing. Current urban form is biased towards provision of private dwelling spaces. Each private dwelling needs to perform similar functions for its household, such as providing spaces to sleep, cook, eat, wash and relax. This replication is both inefficient and isolating. In cohousing, some of this private space is given up in favour of shared living spaces and facilities. By sharing spaces such as communal kitchens, living areas, laundries and gardens, cohousing developments make more efficient use of space and materials. At the same time, they provide spaces in which social interaction is actively nurtured.

Cohousing is a form of housing that contains a mix of private and communal spaces, 'combining autonomy of private dwellings with the advantages of community living' (Williams, 2005). It can occur at a variety of scales, from multi-unit developments (usually between 4 and 30 households) to small, self-organised clusters of 2-3 households. Most cohousing models attempt to respond to 'triple bottom line' challenges, by securing the 'three pillars of sustainable lifestyles': social (through being community-oriented and facilitating social interaction), environmental (through efficient designing and shared resources) and economic (through striving to achieve affordability) (Tummers, 2015).

Variations on cohousing models abound, but a few key elements appear to be consistently identified across the literature as being common to most cohousing developments. These common factors include:

- Resident involvement in the design of the cohousing development (Durrett, 2009).
- Self-governance and active participation by residents who manage the community (Brenton, 2013)
- Common facilities (Durrett, 2009)
- Use of social contact design (Williams, 2005) in planning the development to encourage community interaction, placing an emphasis on communality rather than privacy (Jarvis, 2015).

Unlike communes and intentional communities, cohousing does not generally feature:

- A shared community economy (Glass, 2009)
- A common ideology (Williams, 2005).

The design of a cohousing community is generally developed by the residents, led either by the resident group themselves, by a facilitator (such as an architect) or by a developer (Durrett, 2009). Often drawing on principles of deliberative design/development, these processes ensure that the shared values of the community are reflected in the neighbourhood design. Cohousing, through use of extensive communal space and resident management, goes some way to 'combating the alienation and isolation... recreating the neighbourly support of a village or city quarter in the past.'²

At the small end of the cohousing spectrum, adjacent suburban blocks can be adapted to accommodate two or three smaller dwellings with some shared spaces, reducing the overall ecological footprint of each household (McGee and Benn, 2015). An example of this kind of adaptive reuse is the redevelopment of two single storey workers cottages in Balmain, Sydney by Suzanne Benn and her son Andrew Benn (McGee and Benn, 2015). Suzanne bought the adjacent, rundown cottages and the family renovated them into a single cohousing property. The property is now able to accommodate up to three families, or multiple generations of a single family. Gardens, equipment and guest spaces are shared, while the residents retain their own private spaces. This kind of adaptive reuse is still rare and difficult in Australia. The cohousing proposal was initially rejected by the local approval authority due to concerns about the impact on the heritage value of the properties.

Larger, multi-unit cohousing communities use social contact design (or some variant of it) to encourage social interaction in neighbourhoods (Williams, 2005). Social contact design includes principles that are intended to emphasise community and maximise the sharing of resources and experiences. In this way, they differ significantly from standard, speculative development designs that tend to be designed and built with privacy, rather than communality in mind (Jarvis, 2015). Key features of social contact design usually include:

- Higher densities to ensure proximity between neighbours
- Good visibility of public and semi-private (e.g. porches) spaces
- Clustering of dwellings with entrances in close proximity to one another
- Shared facilities such as laundries, waste units, gardens, sheds
- Car parking located on the periphery of communities to encourage walking (Williams, 2005).

² <http://cohousing.org.uk/>

Examples of adaptive reuse into cohousing at a larger scale, particularly at a precinct scale, are scarce. Of the numerous cohousing case studies catalogued by McCamant and Durrett (2011), only three involved retrofitting existing buildings. While there have been many larger cohousing developments, these are typically new buildings on greenfield sites or cleared infill sites. One example is Murundaka in Melbourne, where the members of the Earth Housing Co-operative (a common equity rental housing cooperative) collaborated in the development of 18 private, self-sufficient apartments situated around a common house. The common house contains a commercial kitchen, dining and living space, guest rooms and office space. All the apartments are approximately 10 percent smaller than they otherwise would have been, offset by the benefit of access to the common house (Daly, 2015). Figure 2 shows the communal living area at Murundaka from above, and Figure 3 shows the communal kitchen.

[Figures 2 and 3 here].

Another example in Melbourne is The Commons, which omits car parking space in favour of car sharing and provides communal spaces for the residents to eat, relax and do their laundry. The Commons used a development approach known as deliberative development, where residents collaborated with the architect on making decisions about what to incorporate and what to omit from the final design. Invariably, the residents chose to include features that promoted greater sharing and a sense of community for the building.

As well as sharing actual space, cohousing developments provide platforms or hubs for other forms of sharing. The residents of Murundaka share vehicles, have allocated a space for storing materials for reuse and share food from their communal garden. As such, cohousing developments demonstrate how a sharing paradigm could spread across cities. To date, however, cohousing developments have not been realised at the large scale of a precinct. Further, as noted above, they have rarely involved adaptive reuse. To improve the resilience of our cities, both of these opportunities should be pursued.

b. Supporting sharing businesses

Precinct-scale infill development provides an ideal opportunity for facilitating sharing paradigm initiatives: dense populations of households living in small apartments with minimal storage, little-to-no parking, and a high cost of living will likely be well-situated to participate in sharing activities.

Central Park, a former brewery located next to Central train station in inner-city Sydney, is an example of how adaptive reuse and infill development might encourage sharing paradigm activities. Central Park is a large site of 5.8 ha, a former industrial site in a

rapidly growing residential and commercial growth precinct. At completion, the site will include 3,000 residences, 65,000m² of commercial and retail space, and 6,400m² of open green space. It includes the adaptive reuse of former Victorian terrace housing (now repurposed as commercial space, including restaurants and bars), and the brewery's coal loader and an intact warehouse (to be adapted to become a multi-use space for community and commercial use). Though adaptive reuse comprises only a small part of the site, it combines reuse of existing buildings with high-density residential infill and new commercial spaces.

Throughout construction, the developers made available three warehouses on Kensington Street, at the edge of the redevelopment precinct, for shared use as artist studios, exhibition galleries and rehearsal spaces. This was a response to the need to provide affordable spaces for artists and creative industry professionals in the inner-city, recognizing that real estate costs often prove prohibitive and provide a disincentive for artists and other creative industry workers to establish themselves in a city. The initiative also recognized the potential of temporary uses of space to provide multiple benefits as such projects can provide a (modest) income stream throughout the pre-development and construction periods; can improve security by reducing the number of uninhabited and unused spaces on site; and can create a draw card for the site even before its final form is realized. The warehouses, known as Fraser Studios, supported dozens of local artists. Brand X, the organization formed to manage Fraser Studios, now creates opportunities for local artists by identifying and repurposing otherwise-vacant spaces around the city. These warehouses have since been transformed into commercial uses, such as restaurants and offices (see Figure 4). Temporary uses of space such as this demonstrate the synergies between adaptive reuse initiatives and the sharing paradigm, in that both seek to identify opportunities to capitalize on underused infrastructure and facilities, making use of opportunities to foster new initiatives within our cities.

[Figure 4 here].

The shopping mall within the Central Park redevelopment includes a community space managed by Brand X. This space allows Brand X to facilitate community events, art exhibitions, installations and creative industry gatherings, provide space and resources for community activities, and support creative and social enterprises to develop.

Central Park has fostered sharing paradigm initiatives that capitalize on its location in close proximity to the city and public transport nodes. Located next to Sydney's major bus and rail network hubs, the development's need for resident parking spaces was minimal. By providing a large number of dedicated parking spaces (at least 25 spaces) specifically for car share programs, Central Park has facilitated the sharing of resources

and simultaneously avoided the significant development costs that would be associated with providing parking for every apartment in the redevelopment project.

Central Park has also included ‘dual key’ apartments within its design. Dual key apartments, typically located in inner-city areas where population densities are high, consist of two separate units on the one title that share a lobby and laundry but have their own entrances. Central Park’s first phase of development included 18% dual key apartments, with a variety of configurations. These apartments might allow for cohousing with separate households or for adaptation to changing household circumstances (growth in the family or children moving out of home).

Finally, Central Park retained several heritage buildings on the site and incorporated these into the more modern site landscape. Figure 5 gives an example, showing the retained Old Clare Hotel with the new One Central Park looming above.

c. Coworking

Coworking, like cohousing, is a model that aims to create opportunities for peer-to-peer sharing and collaboration, while eliminating inefficiencies in urban use of space and minimizing business costs for freelancers. Coworking, initially fostered within the technology start-up sector and now being adopted across other sectors including the creative industries, brings freelancers, remote workers and small businesses together in a shared workspace. Such spaces usually comprise desk space, meeting rooms and flexible spaces to provide members with a professional, quasi-office set up that enables them to run their business, meet clients and access resources. Coworking spaces respond to a recognition that professionals and companies no longer require the same things from a work space as they may once have done. Mobility and flexibility are being prioritized over permanence and stability, with workplaces changing to respond to this (Spinuzzi, 2012). Many traditional workspaces have been transformed to reflect these changes, with many companies implementing flexible workspaces, ‘hot desking’ arrangements and recognizing that worker productivity is not necessarily linked to time spent in the office.

COMMUNE, a coworking space for creative freelancers in inner-city Sydney, is housed in an adaptive reuse site (see Figure 6). The disused warehouses of the former industrial areas of Sydney provide the ideal setting for coworking, with large flexible spaces adaptable to a variety of uses. Further, such spaces often provide an aesthetic appropriate to the creative and design sector—unpolished floorboards, exposed brick walls and industrial fittings. COMMUNE believes that the very space itself (a former paint factory) is conducive to creativity and design, due to its industrial aesthetics, its

high ceilings and its flexible spaces.

[Figure 6 here].

Coworking in such shared spaces delivers potential triple-bottom line benefits. Firstly, freelancers and small businesses are able to reduce consumption of resources by sharing facilities such as printers, scanners, projectors and other IT equipment. With paper and other hardware becoming increasingly irrelevant for creative industry jobs, occasional access to such facilities is far more important than ownership of the equipment. This fits with models within the sharing paradigm which see access to a centrally-managed product being prioritized over exclusive ownership.

Secondly, these spaces can provide a boost to business viability. COMMUNE provides a space to meet clients, to meet potential collaborators and to develop business ideas. These facilities help creative businesses flourish by providing the infrastructure needed to support them. The cost of renting professional office spaces in which to occasionally meet clients and conduct meetings would be prohibitive for many creative industry businesses—especially those that are still in the start-up phase. Coworking spaces provide a leg-up to such businesses, by reducing the cost of accessing professional spaces by sharing resources.

Thirdly, coworking spaces provide freelancers with the opportunity to meet others within their industry, to collaborate and network. Many freelancers work as sole traders, meeting with clients and others only occasionally. This business model can be potentially isolating, involving minimal contact time with others. Coworking potentially reduces the mental health impacts felt by those working alone, by providing opportunities for interaction and connection (COMMUNE, pers comm). Further, physical proximity facilitates connectivity and collaboration, increasing the likelihood of shared learning and the realization of potential opportunities for partnership and collaboration between businesses (COMMUNE, pers comm).

5. Conclusions: Sharing the city

While much can be achieved at the scale of individual buildings and precincts, the real potential of the sharing paradigm can only be realised when we shift our attention to the scale of the whole city. The city is itself a shared public realm—an urban commons—that can be collaboratively designed and adapted to facilitate a sharing paradigm (McLaren and Agyeman, 2015) and to deliver more resilient cities. However, this requires transformation not only in material infrastructure but in the social, cultural and political engagement of citizens in shaping the city. The public spaces of the city can support a crucial social infrastructure in which democratic deliberation can flourish, or

they can narrow social and political interaction into a series of commercial transactions.

Around the world, examples of cities that are actively adapting urban spaces to support social, cultural and political sharing are beginning to emerge. The most prominent example is Seoul, South Korea. In 2012, the Seoul Metropolitan Government declared Seoul a Sharing City and passed the Seoul Metropolitan Government Act for Promoting Sharing. The Sharing City project 'is working to connect people to sharing services and each other, recover a sense of trust and community, reduce waste and over-consumption, and activate the local economy' (Johnson, 2014). Among many initiatives, it has: provided grants for establishment of lending libraries, community gardens and tool libraries in apartment buildings; supported startup companies to catalyze sharing; opened up public buildings for public use during idle hours; established the ShareHub online portal for information on sharing opportunities; pursued intergenerational cohousing; and established car sharing, car park sharing, public wifi and the Seoul Photo Bank (Johnson, 2014). While government has provided leadership in Seoul, the focus is squarely on public-private partnerships to weave sharing into the urban fabric.

While Seoul remains the leading light in city-scale sharing, the international Sharing Cities Network now has more than 50 member cities, on all inhabited continents. Shareable's Sharing Cities Toolkit contains a wealth of resources for establishing sharing initiatives, from timebanks (programs that allow exchange of services between individuals), to tool libraries, to cooperatives. So far, few cities have even begun to explore the potential to embed sharing opportunities into the urban fabric. Adaptive reuse developments provide an opportunity to experiment with support for sharing and create sharing nodes or hubs around which sharing cities can crystallise.

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