Coworking: A Transdisciplinary Overview

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Abstract

The purpose of this working paper is to introduce the concept of 'coworking' to an academic audience. It argues that coworking is a complex social phenomenon that can be differentiated from other spatial concepts that relate to work, learning and social interactions. The paper provides an historical account of the origins of coworking and reviews the existing scholarly and popular literature, offering a theoretical distinction between coworking spaces and serviced offices that hinges upon the degree of social collaboration versus the importance of location and facilities of the office environment. An overview of recent data on the number and location of coworking spaces across the world is provided, including a few examples that demonstrate the spatial distribution of coworking spaces within cities. It also provides some data on typical coworking profiles, and links coworking to the broader contextual debates on non-standard and creative work. Finally the paper suggests some future research directions by linking relevant extant theory with key questions across the fields of economic geography, urban planning economics and organisational studies.

Keywords:

Coworking Spaces, Business Incubators, Serviced Offices, Hacker Spaces, Maker Spaces, Startup Accelerators, New Learning Spaces, Third Places

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This paper is the first in an anticipated series of publications as part of an RMIT University research project investigating coworking from four disciplinary perspectives: economic geography, urban planning, economics and organisational studies. The authors would like to thank Caroline McLaren from CoActiv8 and Alex Hillman from Indy Hall for their helpful comments on an earlier version of this paper. As a working paper we welcome further feedback from readers.

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Introduction

Over past decades globalisation and technological change have altered the relationships between geographic location and socio-economic activity (Giddens, 1991; Storper & Scott, 2009; Lechner & Boli 2014). Much of this has been driven by communications innovations, chiefly the growing combination of the internet and mobile technologies that are enabling a reconfiguration of the interactions between individuals and institutions across the domains of work, learning and leisure (Castells 2011; Kostakis & Bauwens 2014). Theorists of late-modernity have long observed some of the consequences of globalisation in the weakening of (some) traditional, religious and class based social structures that historically, in addition to their professed purposes, facilitated associational ties and fostered collective forms of identity (Giddens 1991; Beck 1992, 2002). Some critical sociologists have focused particularly on the fragmenting individualism that the dissolution of these traditional structures, often exacerbated by current forms of mobile, flexible work, confer upon contemporary urban life (Sennett, 1998; Bauman, 2000). However, accompanying the atomising pressures of modern socio-economic relations have been pockets of resistance, adaptation and innovation, including some new forms of collectivism and cooperation. New institutional structures are emerging and old forms are being reconfigured to fit the current technological, economic and social context.

One site in which these dynamics are visible is the remarkable emergence of a variety of spatial concepts in which economic activity, social interactions, learning and community formation are taking place. These spatial concepts for work, learning and recreation underline the persistent importance of local place, and stand in contrast to the anticipated 'death of distance' (Cairncross 2001) or 'flat world' (Friedman 2006) foreshadowed by some observers of the effects the growth of the internet. One of the most prominent of these spatial concepts is called 'coworking', a practice involving shared physical workspace and (often) intentional cooperation between independent workers.

The purpose of this paper is to provide an overview of the coworking phenomenon for a general academic audience by answering the following questions:

- What is coworking?
- What do we know about the *numbers* of coworkers and spaces?
- What do we know about *where* coworkers are located?
- What do we know about *who* coworks?
- What relevant *theory* and *questions* might guide future *research*?

What is coworking?

Coworking Spaces are open plan offices that mobile, independent knowledge workers share as places of work.

Coworking Practices involve independent actors choosing to work in close proximity, interact socially and sometimes collaborate on shared projects.

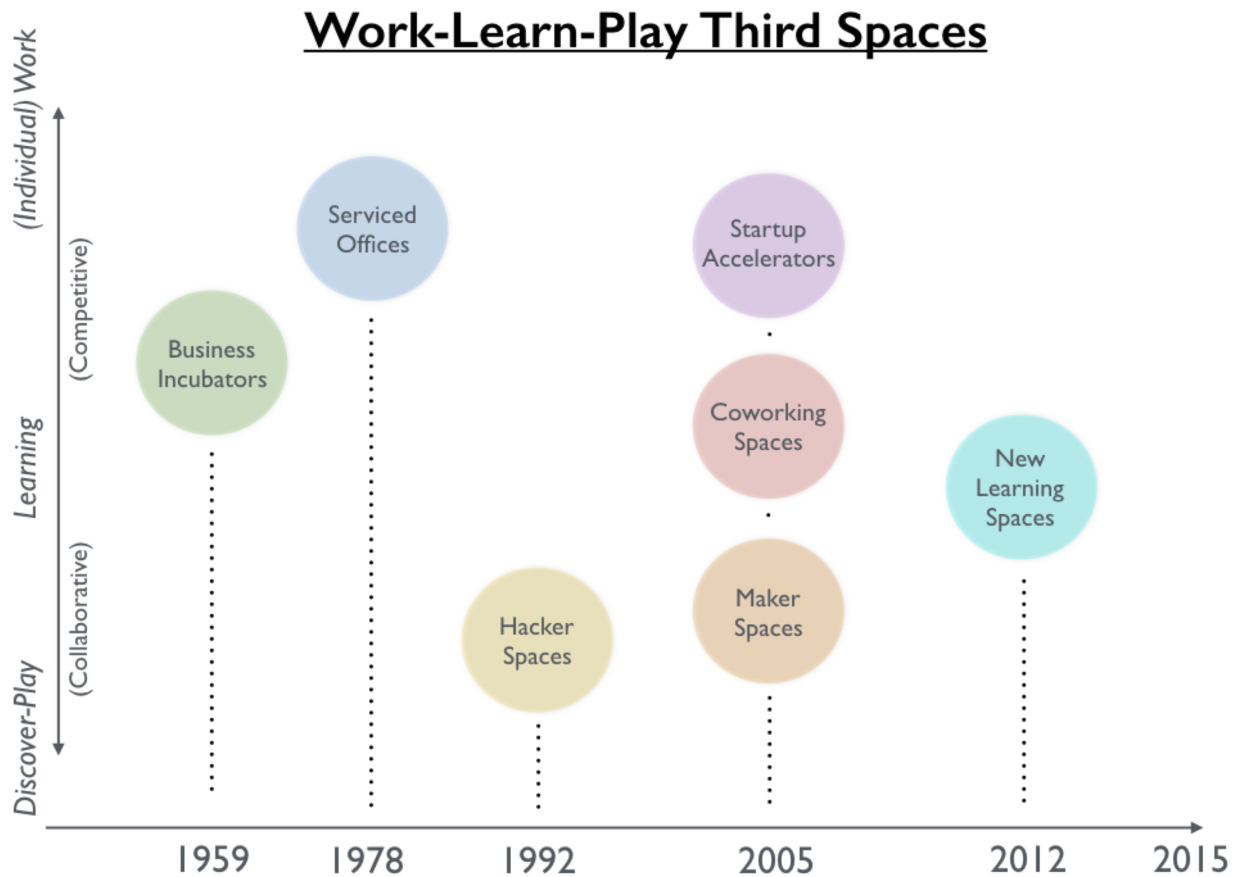
Coworking is a complex social phenomenon. Coworking *spaces* are open plan offices that mobile, independent knowledge workers share as places of work. But *coworking* is usually defined as more than access to space and facilities, in fact it is the elusive quality of this 'working-alone-together' behaviour that is a source of growing attraction for participants, attention for commentators and intrigue for academics (Spinuzzi, 2012; Bilandzic, 2013a, 2013b, 2013c; Capdevila, 2014, 2015; Fuzi, Clifton & Loudon, 2015).

The focus of this paper is on coworking, but in order to comprehensively understand the phenomenon it is important to both situate it within, and differentiate it from, a wider collection of emerging 'third places' for work, learning and play. The sociologist Ray Oldenburg is credited with coining the term 'third place' to refer to informal meeting places between the domestic home, the 'first place' and the productive workplace, the 'second place' (Oldenburg 1989). For Oldenburg, 'third places' such as cafes, bars and bookstores, are '"homes away from home" where unrelated people relate' (Oldenburg 1999: 1) in an 'inclusively sociable' atmosphere, 'offering both the basis of community and celebration of it' (Oldenburg 1999:14). In Oldenburg's conception, third places are not sites for 'gainful or productive' work, but contexts that facilitate the informal social relations and civic engagement that foster a sense of local place and form the foundations for a healthy democratic culture. However this neat separation between spheres of domestic, productive and social activity has become significantly blurred in recent years (Moriset & Malecki 2009; Fonner & Stache 2012; Gold & Mustafa 2013).

Consequently, there are variety of spaces that lie in between the home and primary site of work that facilitate formal productive activity alongside informal social interactions, often in combination with explicit learning programs or undirected 'tinkering' - a combination of play and discovery

These photos are from Hub Melbourne, an early Australian coworking enterprise

whose results are often shared between enthusiasts of new technologies. Coworking spaces are presented alongside a small number of these other spaces[1] in the diagram below.



The X axis represents the historical origins of each term traced to a widely recognised pioneering example. The Y axis represents the focal activity of each spatial concept in a continuum spanning 'discovery-play', 'learning' and 'work'. In practice these activities are often blended and sometimes difficult to distinguish, and many spaces fall into hybrid categories, are undergoing frequent experimentation by their founding entrepreneurs and some change their orientation over time. Nevertheless the conceptual construction of 'ideal types' has a recognised history as an approach to help analysts understand dimensions of complex reality (Courpasson & Clegg 2006). Ideal types can often form an early component of more robust and comprehensive theory building for new phenomena (Weick 1995).

[1] The word 'space' is used to highlight both the physical attributes and explicit, 'official' publicised intention of the spaces rather than the word 'place', which is often used to include the lived experience of the inhabitants or participants of spaces. Although a review of the nuanced history of these terms is outside the purpose of this paper, the distinction between *space* and *place* is considered non-trivial in the philosophy of geography and the appropriate theoretical formulation between the two has been the subject of much debate within geography and related disciplines (for example Lefebvre 1974; Tuan 1979; Merrifield 1993; Harvey 1993).

The primary example referenced in each position on the diagram is represented in the following table:

Year	Category	Example	Location
1959	Business Incubators	Batavia Industrial Centre	New York City, USA
1978	Serviced Offices	Servcorp	Sydney, Australia
1992	Hacker Spaces	L0pht	Boston, USA
2005	Coworking Spaces	Citizen Space	San Francisco, USA
2005	Maker Spaces	Maker Magazine & Maker Faires	San Francisco, USA
2005	Startup Accelerators	Y Combinator	Cambridge, & Silicon Valley, USA
2012	New Learning Spaces	General Assembly	New York City, USA

More information on each of these categories and the cited examples are available in the appendix to this paper along with some further of classes of spatial-concepts that span work, learning and informal social interactions including:

- Free Public Meetups
- Home-Based Coworking
- Federated Work Agencies
- Auxiliary Space Services
- Coliving Spaces
- Emerging Industry Conferences and Associations

The rest of this paper will focus on coworking.

Origin Stories

Where did coworking come from?

Most observations locate 2005 as the defining year when the term ‘coworking’ (minus the hyphen[2]) became identified with shared work practices and office enterprises (Fost, 2008; Sundsted et al 2009; Hunt 2009; Botsman & Rogers 2011; Spinuzzi 2012; Capdevila 2013; Parrino 2013; Kojo & Nenonen 2014; Liegl 2014; Lumley 2014; Bilandzic & Froth 2015; Gandini 2015). Some also draw cultural links between coworking practices and the earlier instances of pioneering ‘hacker’ spaces like C-Base founded in 1995 in Berlin, or other entrepreneurial ‘work clubs’ such as *Schraubenfabrik* founded in 2002 in Vienna (Sundsted et al 2009; Deskmag 2013). In 1999 game designer and theorist Bernard DeKoven also used the term ‘coworking’ to describe the “working together as equals” pattern he observed during game design amongst people that share “a deep appreciation of the joy of participating in a creative, playful community”, although DeKoven never applied the term to characterise shared workspace enterprises (DeKoven, 2013).

There are currently three commonly shared origin stories of coworking practices[3], and, if coworking practices are a logical response to historical changes in socio-economic conditions that influence work, it is likely that other past examples of ‘parallel invention’ may surface with time.

Coworking

The first takes place in San Francisco, where in 2005 a computer programer and open-source enthusiast Brad Neuberg “decided to create a new kind of space to support the community and structure that I hungered for and gave it a new name: coworking” (Neuberg 2014). He rented a ‘beautifully converted Victorian’ in the Mission District called *Spiral Muse* that was operating as a feminist collective at the time, and published an invitation on his blog that has become a celebrated founding moment for the coworking movement:

“Traditionally, society forces us to choose between working at home for ourselves or working at an office for a company. If we work at a traditional 9 to 5 company job, we get community and structure, but lose freedom and the ability to control our own lives. If we work for ourselves at home, we gain independence but suffer loneliness and bad habits from not being surrounded by a work community.

Coworking is a solution to this problem. In coworking, independent writers, programmers, and creators come together in community a few days a week. Coworking provides the "office of a traditional corporate job, but in a very unique way.” (Neuberg 2005)

Although this first attempt was small (limited to five people) and closed its doors within a year, it generated sufficient interest to inspire other coworking pioneers Jay Dedman and Ryanne Hodson to open a second space called the *Hat Factory,* and Chris Messina and Tara Hunt to open a third

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[2] The hyphen is actually considered a non-trivial distinction within coworking culture. The dropped hyphen is said to differentiate the specific use of the term ‘coworking’ from the older meanings of ‘co-working’ as used before 2005, usually as a generic synonym for colleagues, or members of the same formal organisation.

[3] This statement is true of the English speaking world, but as noted there are earlier examples such as Vienna’s Schraubenfabrik (originally UnternehmerInnenzentrum) and Denmark’s LYNfabriikken both originating in 2002 that are now situated as part of the ‘history of coworking’ as promoted by Deskmag (2015): http://www.tiki-toki.com/timeline/entry/156192/The-History-Of-Coworking-Presented-By-Deskmag/#vars!date=1996-01-31_01:02:34!

called *Citizen Space.* The latter space saw the development of the celebrated 'coworking values' of *collaboration*, *openness*, *community*, *accessibility* and (later) *sustainability* (Citizen Space 2007; Hillman 2011; Coworking.org 2012).

A photo from Neuberg's first coworking space

Source: http://codinginparadise.org/ebooks/html/blog/start_of_coworking.html

The [Impact] Hub

The second story originated in London, where in 2005 a small group of social entrepreneurs opened a space they called *The Hub* (now Impact Hub) on the top floor of an old warehouse in Islington, London. As one of the founders Jonathan Robinson explained,

"We discovered this whole set of people trying to realize good ideas from their bedrooms; lonely, cut off from the world, not really fulfilling the potential of their ideas. So it dawned on us: what if these people could come together in the same physical space and have a place to connect?" (quoted in Kennet, 2008)

Founded by young activists inspired by the anti (or alter) globalisation protest movements at the turn of the millennium, the early aims of Impact Hubs were to promote social entrepreneurial action, rather than political protest, through supporting (often market-based) micro-initiatives. In response to the popular Word Social Forum slogan, '*another world is possible*', the first Impact Hubs proclaimed -'*another world is happening*', promoting themselves as places where '*change goes to work*'.

"There was a huge amount of criticism of the current economic models but almost no attention to different modes of progress. We asked ourselves, what if half of that energy went into imagining and demonstrating some real alternatives?" (quoted in Bachman, 2014)

The Impact Hub has grown to be the largest network of coworking spaces that share a single brand identity in the world (although most spaces are owned and managed as separate enterprises), and claims a distinct identity within the wider coworking industry through its focus on social innovation and initiatives that aim to create (social or environmental) 'impact'.

A photo from Hub Islington

Source: http://london.plusacumen.org/files/2014/06/image1hubislington.jpg

Jelly

The third story comes from New York City, where in early 2006, Amit Gupta and Luke Crawford, two room mates and self-employed software programers realised that they missed having "other people to share ideas with" when working from home and decided to start inviting friends to informally work from their apartment (Grossman 2007; DeGuzman & Tang 2011). Gupta and Crawford called the informal gatherings '*jellies*' as they claim to have come up with the idea "while eating jelly beans" (Grossman 2007). Like the San Franciscan coworking pioneers, some Jelly participants used web tools (wikis and google groups) that acted as an explanation of the concept and open invitation on the internet for others to join them at the apartment or create and add their own groups. The founders actively encouraged the free adoption of the concept and 'jellies' have since spread to 'over a 100 cities across the world' for people with a 'laptop and friendly disposition' (http://workatjelly.com/). Some groups that began as informal jellies have later become coworking spaces (for example Indy Hall in Philadelphia).

Although these three examples began as contemporaneous but independently named social practices, we can conceptualise them under a broad frame of 'coworking'. The stories illustrate some of the anecdotal motivations of these early coworking actors, most notably the search for a 'third way' of work relations that involves physical proximity and social cooperation in a shared space outside the boundaries of shared formal employment. Significantly, all appeared to have seen their actions as distinctly separate from the existing shared office industry. The next section will address this point by considering the key differences between serviced offices and coworking spaces.

A photo from an early Jelly

Source: http://archive.wired.com/techbiz/people/news/2007/07/coworking#

The Serviced Office Industry

The business of shared office facilities has a long history. Since at least the 1960s a range of similar services have appeared under different names, including ‘serviced offices’, ‘business centres’, ‘executive suites’ and ‘telecentres’ (Kojo & Nenonen 2014). In broad terms, what these services share is a business model based on flexible, low commitment rental access to office space and amenities. A combination of services are usually ‘bundled’ together in exchange for a single, all inclusive fee, covering the range of expenses associated with office set up and maintenance, such as rent, printing, copying, kitchen equipment, cleaning, maintenance and ongoing utilities. Contracts are typically a minimum of one to three months, although some enterprises offer longer term agreements and others shorter, even ‘pay as you go’ services. In general the short term leases are seen to reduce the investment risk associated with the fixed costs of traditional leasing arrangements (Foster, 1989; Harrison, 2002). Additionally these services may offer access to strategic, attractive, convenient or prestigious locations that would be cost prohibitive for individual users to rent privately. The ability to reduce these costs is enabled through the economics of sharing the space and amenities between multiple users, what is called a ‘club good’ in economic theory (Buchanan 1965; Comes & Sandler 1996). For simplicity, in this paper these services will be referred to as ‘serviced offices’.

The Coworking Distinction

Coworking spaces generally share a similar business model to the serviced office industry, where customers pay a flexible, all inclusive (usually) monthly fee for access to space and amenities. However there are three interrelated features that have historically distinguished coworking spaces from the serviced office industry. The first is the profiles of the original coworkers, the second is the centrality of social interactions and the third the aesthetic design of the spaces themselves.

The Pioneering Coworkers

First, the early years of the coworking movement (from 2005-2008) were led by young people, many in their twenties, who identified as 'independent' workers, generally 'freelance' creative knowledge workers, who were looking to address the challenges of social isolation associated with working from their private homes, or public places such as cafes and libraries. The principles of the open source software movement were a strong influence, 'community' an organising theme, enabled through a 'Do-It-Yourself' ethic (Holtzman et al 2007) where the early members of a space were often involved in the funding, design and construction of coworking spaces. In this sense there was little distance in physical or social proximity between the founding entrepreneurs and other coworking participants. Some of these early coworking groups framed explicit normative commitments around their nascent forms of association (visible for example in the language of the Impact Hub, the Coworking Manifesto, and Gangplank), others simply desired to work alongside each other in an informal, social atmosphere (for example, Jellies, or in the language of 'working as partying' by Nakaya et al 2012). Accordingly, the early culture of coworking translated the informal modes of dress, language and sociality typical of inner urban cafes into the organisational culture of the nascent enterprises. This contrasted with the explicit attempts of serviced offices to replicate the image, language and dress conventions (business suits, jackets and ties) of existing formal organisations. To borrow language from the creativity literature, coworking was established both by and for the 'creatives' and serviced offices predominantly designed for the 'suits' (Thompson et al 2007; Earl & Potts 2013)

Social Interactions and Collaborative Activity

Second, the coworking movement has distinguished itself from the serviced office industry by emphasising the social interactions of its participants as a core feature of its value proposition, in fact coworking spaces usually promote themselves as a 'membership community' (Fost 2008; Sundsted et al 2009; Hunt 2009; Botsman & Rogers 2011; Spinuzzi 2012; Capdevila 2013; Parrino 2013; Kojo & Nenonen 2014; Liegl 2014; Lumley 2014; Bilandzic & Froth 2015; Gandini 2015). Social participation is typically enabled through a variety of 'organisational platforms' (Parrino 2013), from internal digital social network sites, frequent social events, physical boards that display membership profiles, newsletters and people fulfilling a role of 'community hosts, curators or managers' that tend to the social network, facilitate personal introductions and sometimes foster professional collaboration with other 'likeminded' or complementary actors within the membership community. Coworking emphasises light, organic forms of social coordination, suggested through words like 'curation', 'catalysing', even 'community tummling' (Hillman 2014). The presence of material design features, from publicly visible white boards, inspirational quotes, digital discussion platforms projected onto walls, idiosyncratic art and spacious kitchens also encourage such social interactions and communicate the meaning and intention of the space to inhabitants.

Bespoke Aesthetics

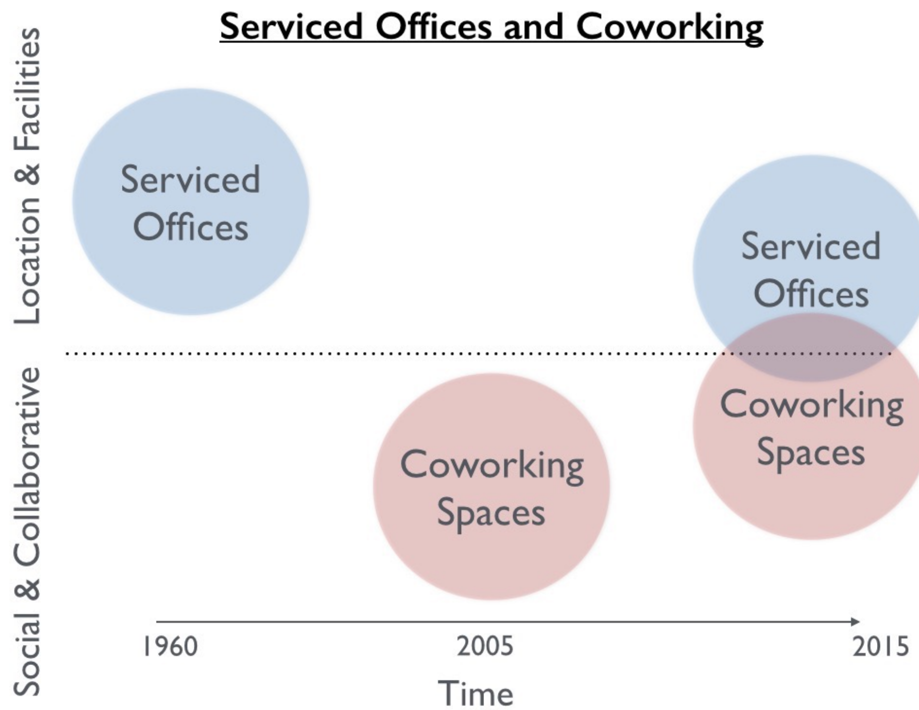
Third, the aesthetics of coworking spaces offer a further distinction. Whilst the serviced office industry has traditionally reflected the standardised, corporate, professional aesthetics of 'Fordism' and 'scientific management' (Guillen 1997), coworking spaces tend to emphasise their idiosyncratic, bespoke 'Post-Fordist' design aesthetics that blend 'work and play' (van Meel & Vos 2001). Such design choices reflect the early coworking movement's attempts to contrast their practices with the predominant images of bureaucratic organisations, whose culture and aesthetics represented the opposite of what many coworkers appeared to desire. A 'google style office for people that don't work at google' was a commonly used description in the early coworking phase (Neuberg 2014). Coworking culture still appears to celebrate creativity and novelty over routine and

Serviced Offices and Coworking Aesthetics

Serviced Offices	Coworking Spaces
Fordist Standardisation	Post-Fordist Idiosyncrasy

predictability, and many spaces frequently change their internal layouts (Elam 2014). The relationship between non-routine, creative work and playful, open and transparent workplaces with distinctly recognisable material identities has been observed as a feature of creative industries more broadly (van Meel, Martens & van Ree 2010; Kojo & Nenonen 2014). Many coworking spaces themselves are located in former industrial era warehouses or factories (in fact 42% exist in buildings 50 years old or older (Deskmag 2015c)), and have repurposed the space for creative knowledge work sometimes involving 'cocreated' contributions in design and labour from coworking members. At times the former industrial purpose of the building is still directly referenced in the name and origin story of the new coworking space, positioning the enterprise as an expression of creative urban renewal amid the obsolete industrial infrastructure (for example Schraubenfabrik [the bolt factory] in Vienna; York Butter Factor in Melbourne). The combination of these factors has seen coworking spaces described in lay terms as 'cheap and funky offices' (van Meel & Brinko 2014).

It should be noted that the distinctions between coworking spaces and serviced offices are not rigid and exist along spectrums. They have also become blurred in recent years by hybridising movements from on the one hand, traditional serviced office providers such as Regus and Servcorp now claiming to offer coworking; and on the other hand, 'coworking spaces', such as We Work and Next Space, offering standardised private offices.



Defining Coworking

Such overlaps are partly why a technical and parsimonious definition of 'coworking' has been a challenge for both popular commentators and academic researchers.

Popular Definitions:

Popular books on coworking describe it in various ways, for example as 'a proper noun to describe a movement…a verb to describe an activity…[and] an adjective to describe coworking spaces… ' (Sundsted et al 2009:15). Coworking spaces are said to "combine the best parts of an office environment- community, collaboration and access to the right tools - with the benefits of working at home or working for yourself - convenience, flexibility, autonomy.' (Sundsted et al 2009:8). *Coworking* has been positioned as a "triumph of the commons" (DeGuzman & Tang 2011: 7), where the "focus on building community and collaboration, as well as the other values of openness, sustainability and accessibility" (DeGuzman & Tang 2011:37) distinguish it from serviced offices.

These values, *collaboration*, *openness*, *community*, *accessibility* and *sustainability*, are frequently held up to provide symbolic coherence for the diverse actors that identity with the 'coworking community'. They originated with *Citizen Space,* an early coworking space in San Francisco, and now also reside at the web addresses coworking.org and coworking.com, the domain purchases of which were 'crowd funded' by early coworking actors as an attempt to avoid proprietary claims on coworking and its values as intellectual property (Hillman 2011). Tara Hunt, one of the founders of citizen space along with Chris Messina, often described coworking as an experience of '*accelerated serendipity*' (Yeung 2008; Hunt 2009) a term later adopted by many other coworking enthusiasts (Sundsted et al 2009; DeGuzman & Tang 2011; Coonerty & Neuter 2013). Others describe coworking in more familiar terms "[c]oworking, in a nutshell, is a working style to realise the atmosphere of a fun and fulfilling party" (Nakaya et al 2012:10).

Coworking *spaces* are thus said to “provide hip, comfortable, professional work spaces…along with a professional collaborative community of people who are living, breathing, and succeeding in this new economy” (Coonerty & Neuner, 2013). “Coworking is the burgeoning movement of people coming together to work in a shared workspace” (Sundsted et al 2014:21). “Coworking is like a halfway house for the corporate delinquent. It’s a *place* and a *style* of working that combines independence and co-dependence. One that allows you to be a soloist, but still play with the orchestra. To be social when you need to and to hold you accountable for delivering the things you say are important.” (Dunstan 2015). Finally, one of the most frequently cited definitions on the websites of coworking spaces is drawn from coworking.org:

“The idea is simple: independent professionals and those with workplace flexibility work better together than they do alone. Coworking spaces are about community-building and sustainability. Participants agree to uphold the values set forth by the movement’s founders, as well as interact and share with one another. We are about creating better places to work and as a result, a better way to work.” (Coworking.org)

We can see that in general terms coworking represents an attempted ‘third way’ between standard organisational employment in a conventional office and the isolation of self-employment at home or the suboptimal public workspaces of cafes and libraries. In fact Oldenburg’s (1989) ‘third place’ concept is frequently cited as an inspirational conceptual model by coworking advocates. Additionally, at least in the early years, many ‘coworking pioneers’ claimed a loose commitment to a shared way of working that expresses the values of collaboration, openness, community, accessibility and sustainability. Although how these values were enacted in practice was largely left up to individuals to determine.

Scholarly Definitions:

The small amount of academic attention coworking has received leaves only slightly more clarity.

Third Places for Weak Cooperation

In one of the earliest academic references, (Aguiton & Cardon, 2007) situate then nascent coworking practices as one expression of the rising strength of Granovetter’s (1973) weak ties and characteristic of the ‘weak cooperation’ visible in web 2.0 practices, where users ‘discover cooperative opportunities only by making their individual production public’ (Aguiton & Cardon, 2007:3) and thus sociologically represents a ‘new articulation between individualism and solidarity’ (Aguiton & Cardon, 2007:2). The authors draw links between the user generated web content services and a number of ‘spectator free’ social practices and gatherings such as Barcamps, Unconferences, Brazil’s World Social Forum and Nevada’s Burning Man Festival. They describe coworking spaces, at the time still relatively unknown, as an attempt to set up ‘third places’ that translate these ‘contact generating’, ‘bottom up methodologies’ into permanent places (Aguiton & Cardon, 2007:11).

The Open Source Idea Translated into Physical Space

In a paper on the spatial organisation and governance of the creative economy in Berlin, Lange continues this theme, ‘co-working spaces reflect the collective-driven, networked approach of the open-source-idea translated into physical space’ (Lange 2011:16). However Lange observes the apparent social contradictions and ‘structural paradoxes’ the coworking concept evokes (Lange:

2011:8). These are seen as an ambivalence around questions of geography and identity. Tensions emerge as coworkers attempt to engage with the abstracted globalised markets on which they are dependent and the embedded local meaning of place; and as they both attempt to belong to these creative, diffuse collectives and differentiate from the crowd by promoting an 'innovative' individualism.

Different Places for Distinct Activities: Community Work Spaces, Unoffices and Federated Spaces for Good Neighbours and Good Partners

Spinuzzi (2012), in what is still the most widely cited peer reviewed paper on coworking, also observed distinct, contradictory activities all transpiring under the rubric of 'coworking' in his Austin based field research. Spinuzzi reconciles this by dividing the coworking spaces he observes into three different types. *Community Work Spaces* serve *local* communities by offering quiet spaces for locals to work alongside each other; *Unoffices* encourage discussions, meetings and social interactions and generally recreate the office dynamics for independent workers; and *Federated Spaces* explicitly aim to foster working relationships and formal collaboration between members. "A coworking space is a place to get work done—specifically, knowledge or service work that originates outside the site in other intersecting activities. Although coworkers work together, that work involves different, contradictory objectives, attached to and pulled by the network of activities in which each coworker engages. These intersecting activities perturbed the development of the object at each coworking site" (Spinuzzi 2012: 21) Spinuzzi observes two further distinct configurations in the mutual expectations of coworkers: good-*neighbours* work alone, focussing on their own tasks, but politely alongside others; whereas good-*partners* actively foster the trust required that can lead to formal work collaborations. Thus 'coworking is a superclass that encompasses the good-neighbours and good-partners configurations as well as other possible configurations that similarly attempt to network activities within a given space' (Spinuzzi 2012:36)

Knowledge Driven Microclusters of Cost-based, Resource-Based and Relational-Based Collaboration

Capdevila, (2013) draws upon the literature on industrial clusters (Porter 1990) to describe coworking spaces as 'microclusters', 'intermediary-configurations between firms and clusters' (Capdevila 2013:11) that cultivate knowledge embedded in local places and relationships. Coworking spaces thus operate as 'hybrid or intermediary' organisational forms, "characterized by the co-location of economic actors that engage in different forms of collaboration, leading in some cases to the emergence of a highly-collaborative community of freelancers, entrepreneurs and professionals. The inter-firm collaboration in coworking spaces is not based on market nor on hierarchies and thus could be defined as an intermediate organizational form." (Capdevila 2014a: 2). Whether conceptualised as 'networks' (Thorelli 1986), 'collaborative communities' (Adler & Heckscher, 2006) 'hybrid arrangements' (Powell 1987) or 'epistemic communities' (Cohendet et al 2014), coworking spaces are positioned as a recent configuration of this 'third way' of organising, where social relations are not dominated by the logic of hierarchies or markets. "Coworking spaces distinguish themselves from mere shared offices by focusing on the community and its knowledge sharing dynamics…coworking spaces are defined as localized spaces where independent professionals work sharing resources and are open to share their knowledge with the rest of the community" (Capdevila 2014:5).

Capdevila echoes Spinuzzi's observations that distinct forms of collaborative activity transpire under the shared guise of 'coworking', and research into coworking practices can help theoretically and empirically distinguish these activities. Capdevila offers a nested model of three kinds of collaborative activities represented by the single term 'coworking'. *Cost-based* collaboration that

aims merely to reduce operational and transaction costs; *resource-based* collaboration where agents seek access to new knowledge and resources; and *relational collaboration* where agents invest in the dynamics of the community as a whole rather than transactions between individuals. Each type of collaborative activity focusses on a different scale. The *individual* is at the centre of cost-based collaboration, where 'sharing' simply reduces the price of access to a conveniently located workspace. *Knowledge* is at the core of resource-based collaboration, often exchanged through the structures of *dyadic relations*. Finally the health, vibrancy and 'absorptive capacity' (Cohen & Levinthal 1990) of the *community* itself is the focus of relational-collaboration. The maintenance of a culture of relational collaboration will thus likely involve judicious selection of participants by a coworking site, based on the logic of shared values and identity rather than a mere market transaction (Capdevila 2014).

Organising Platforms

Parrino (2013), after studying spaces in Milan and Barcelona, defines coworking via three traits:

"1. the co-localisation of various coworkers within the same work environment;
2. the presence of workers heterogeneous by occupation and/or sector in which they operate and/or organisational status and affiliation…
3. the presence (or not) of activities and tools designed to stimulate the emergence of relationships and collaboration among coworkers." (Parrino 2013:11).

Parrino continues the themes of prior research, noting considerable variation on the relational practices between coworking spaces, where "coworking spaces may be positioned along an ideal continuum which sees at one pole the presence of an articulated platform of tools and initiatives designed to stimulate interaction and collaboration, and at the other pole the total absence of such offers" (Parrino 2013:5). Parrino concludes that mere co-location alone does little to foster social relationships and the collaborative interactions that lead to innovation, and that 'organisational platforms' are required to facilitate the social and relational proximity required for collaboration between coworking participants.

Constructed Communities

Butcher (2013b) through ethnographic participation in a coworking space in Melbourne draws attention to the wilful curation of nostalgic symbols of community by the coworking enterprise. Butcher questions how the aesthetic and discursive construction of 'community' serves the commercial purposes of the enterprise and a broader political agenda of 'social conservatism' in which entrepreneurial practices maybe situated. For Butcher, coworking is an expression of recent innovations in 'organised community' that raise questions about the theoretical separation between 'community' and 'organisation'.

Sites of Social Learning

Bilandzic (2013a, 2013b; Bilandzic & Foth 2013), in his explorations of the future of 'hybrid' public libraries draws on coworking spaces as sites 'where social learning emerges as a result of people sharing the same workspace for their creative activities' (2013a:2). 'The core challenge of coworking spaces is to facilitate their users' need for connected learning and networking opportunities to nourish creativity, inspiration and innovation' (2013b). For Bilandzic, the emergence of coworking spaces represent an organic form of 'connected learning' - 'a model that regards learning as an *interest-driven* and *socially embedded* experience' (Bilandzic 2013a:2).

Coworking spaces provide ‘carefully curated shared workspaces that facilitate networking and interaction opportunities across organisational and disciplinary boundaries’ (Bilandzic 2013a:2)

Components of Creative Cities

Moriset (2014) conceptualises coworking spaces as emerging hybrids of ‘telecentres', ‘business centres’ and ‘startup incubators’ wrapped in the accessible sociality of Oldenburg’s third place concept: “Coworking spaces (CS) are regarded as "serendipity accelerators", designed to host creative people and entrepreneurs who endeavor to break isolation and to find a convivial environment that favors meetings and collaboration” (Moriset 2014:1). Moriset locates coworking spaces within broader theories on creative cities, the digitisation of the economy and the shifting nature of urban economic geography, noting their movement from early local private initiatives to adoption of coworking as a component of some creative city strategies. Moriset provides some data on the geographical location of coworking spaces, illustrating their wide global spread but narrower concentration within their inner urban parts of major creative cities. Finally he draws attention to the freedom-security tradeoffs many coworkers negotiate:

“The price for freedom and serendipity paid by many freelancers and creative entrepreneurs – categories who represent the lion's share of coworking creators and users – is often precariousness: low or fluctuant income, fragile health insurance and retirement schemes.” (Moriset 2014: 19)

Summary:

There are two salient points that cut across the popular and academic attempts at defining coworking. The first is that coworking is about more than simply sharing physical space. In fact it is the various forms of shared social participation and collaborative activities that distinguish coworking practices from other forms of shared physical workspace like serviced offices[4]. The second is that many different, possibly contradictory, activities take place under the umbrella term ‘coworking’, and that research should continue to distinguish these activities and find stronger links to theoretical explanations that can account for the empirical data and field observations. This point will be addressed in the final section of this paper.

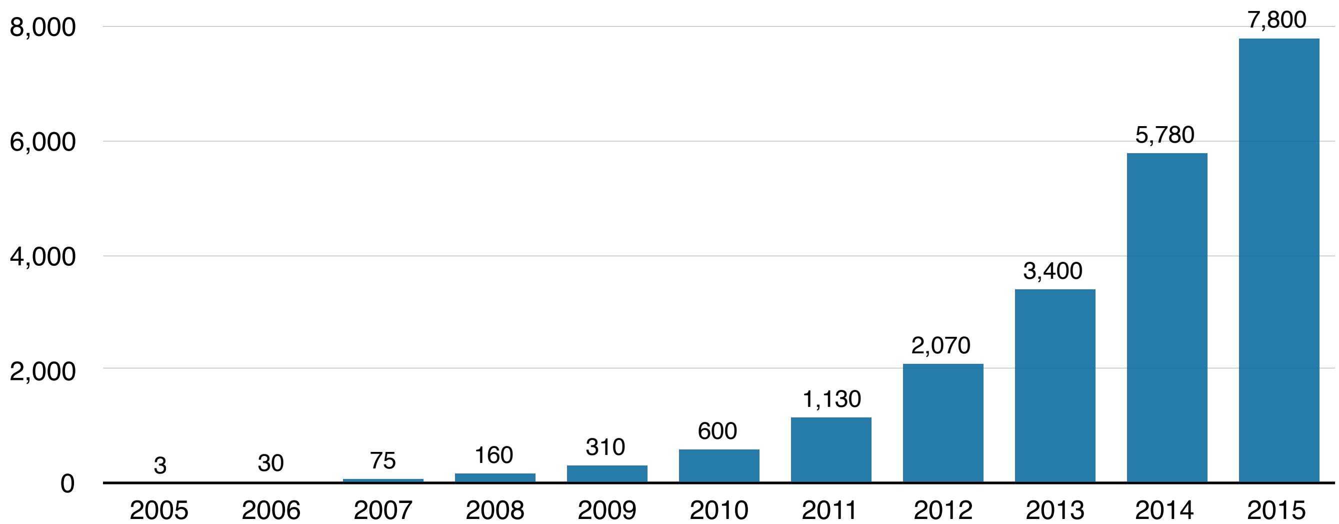
[4] Translating this distinction into the language of club theory in economics (Buchanan 1965), serviced offices are shared goods that are prone to *anonymous* crowding, coworking spaces are prone to *non-anonymous* crowding.

What are the numbers?

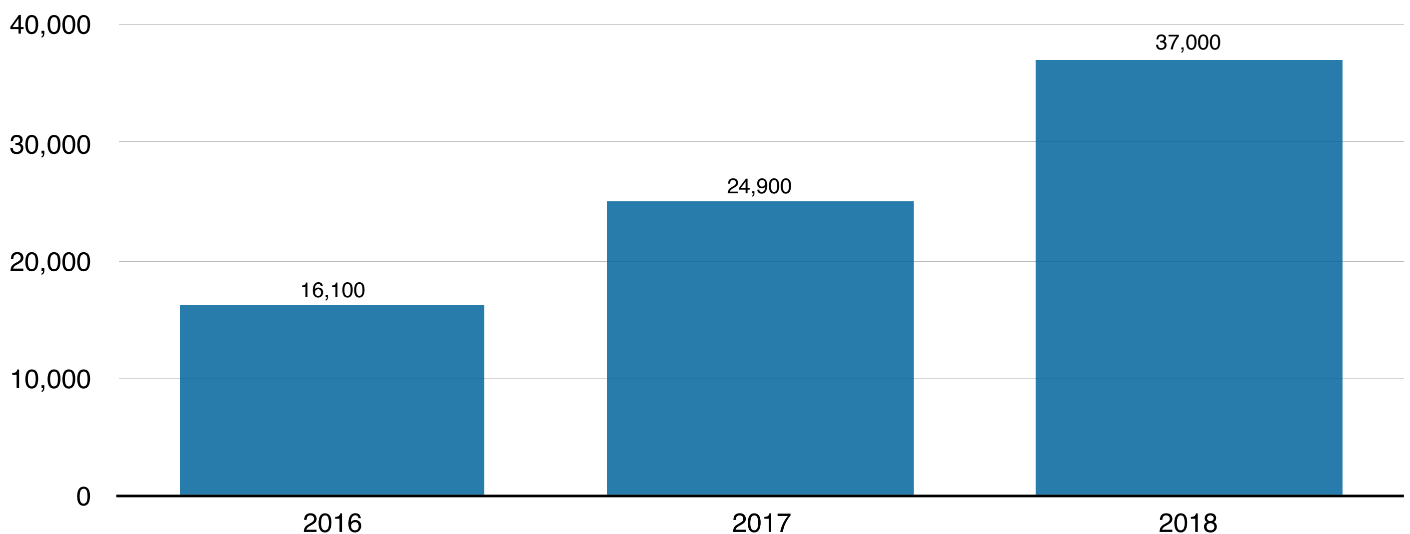
This sections provides the most recent empirical quantitative data on coworking, although locating accurate and reliable data on this emerging field is a challenge. The primary data sources are the periodic global surveys of coworking spaces coordinated by Deskmag (www.deskmag.com), the Berlin based online coworking magazine, and the coworking directory on the coworking wiki (wiki.coworking.org). These sources estimate that as of 2015, there are over 7,800 spaces and 510,000 coworkers worldwide (Deskmag 2015c). Deskmag also curate a timeline on the history of coworking, where significant historical milestones are sequentially mapped (Deskmag 2015b). What is indisputable is that since 2005 the growth in coworking spaces as been exponential. The following charts and tables offer an overview of the trends.

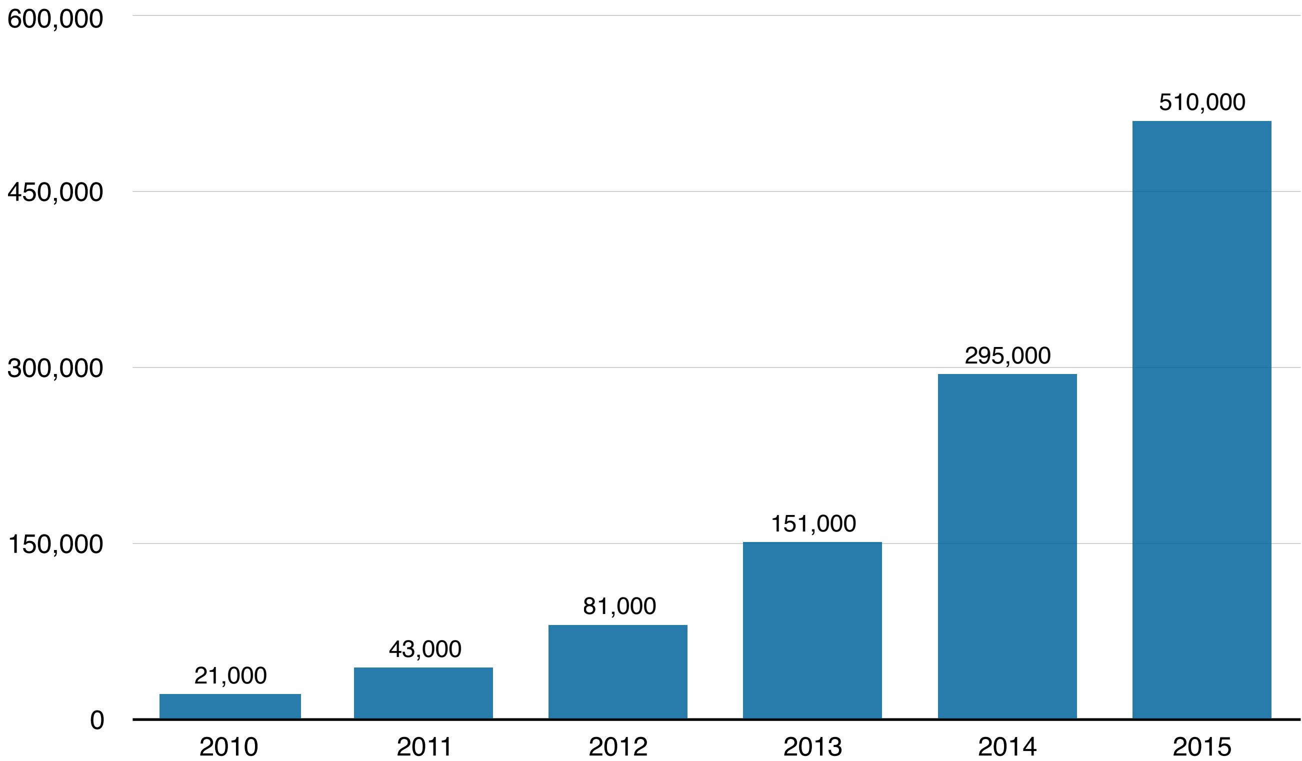
Coworking Global Growth

Global Growth of Coworking Spaces

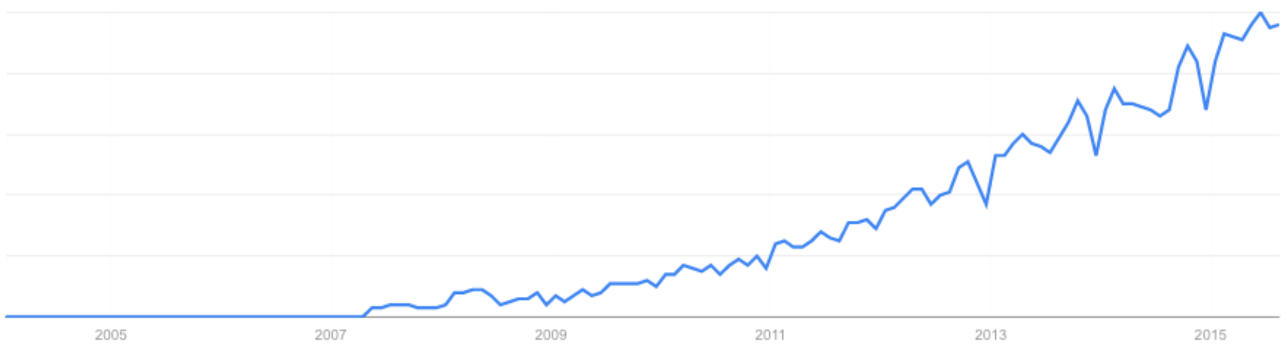


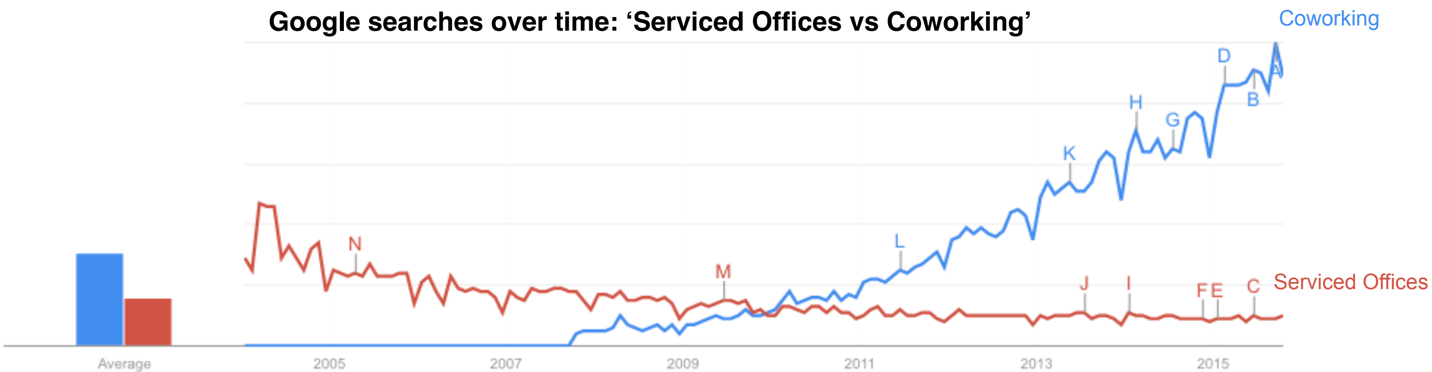
Projected Global Growth of Coworking Spaces





Another broad trend of interest is the growth in awareness of the term 'coworking' itself represented by aggregated google searches. The following data has been captured from google trends.





Somewhat curiously given the Anglo-American origins of ‘coworking’ and the English language origins of the term, neither the USA nor the UK feature as leading countries of origins for google searches for coworking. Spain in general and Barcelona in particular has consistently topped the location search ranks for a number of years. The causes of this are not clear, although the Spanish economic crisis and high rates of youth unemployment are cited as factors present in the minds of Spanish coworkers (Capdevila 2014b).

Major Country Location of Google Searches: ‘coworking’

Region | Town/City

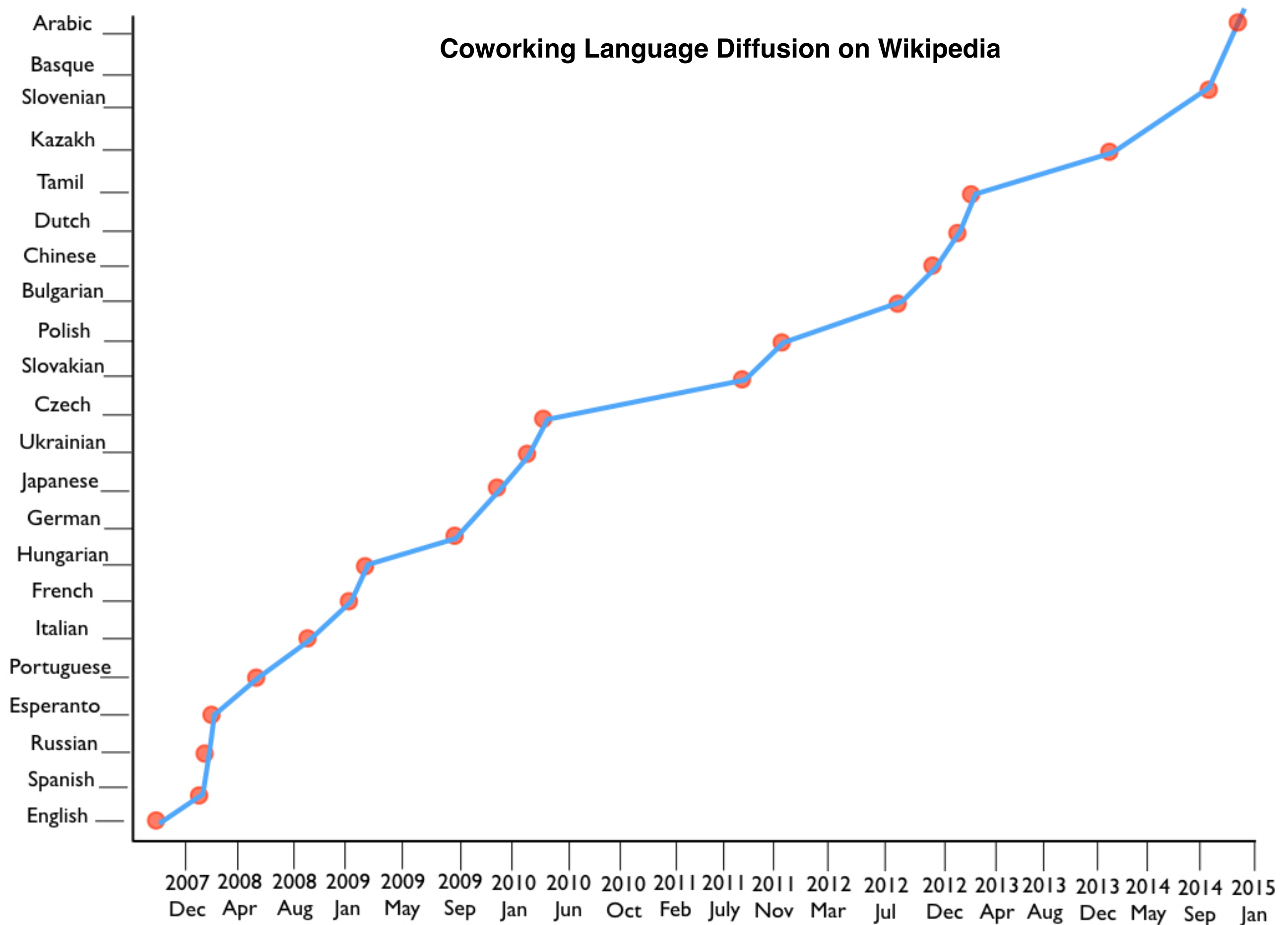
Country	Score
Spain	100
Italy	53
Brazil	53
Czech Republic	45
Portugal	38
Belgium	38
France	35

Major City Location of Google Searches: ‘coworking’

Region | Town/City

City	Score
Barcelona	100
Valencia	67
Porto Alegre	64
Curitiba	60
Diadema	58
Berlin	51
Seville	45

The following graph traces the first appearance of a 'coworking' page on wikipedia from English to other languages since 2007.



Number of Coworking Spaces by Country in 2013

Data on the geographical location of coworking spaces was aggregated in a study by Deskwanted 2013 (Deskwanted 2013). Unfortunately Deskwanted subsequently became insolvent, and data on the geographical distribution of coworking spaces has not been publicly presented in recent years. Moriset (2014) grouped this data in the following geographical categories:

Europe	
Germany	230
Spain	199
United Kingdom	154
France	121
Italy	91
Poland	44
Portugal	42
Netherlands	39
Belgium	29
Austria	26
Czech Republic	16
Sweden	15
Switzerland	11
Greece	10
Hungary	8
Ireland	8
Denmark	6
Finland	6
Latvia	6
Romania	5
Bulgaria	4
Luxembourg	4
Slovakia	4
Estonia	3
Norway	3
Serbia	2
Croatia	2
Lithuania	2
Slovenia	2
Malta	1
Total	**1093**

North America	
United States	781
Canada	80
Total	**861**

Latin America and the Caribbean	
Brazil	95
Mexico	21
Argentina	19
Colombia	9
Chile	6
Panama	5
Peru	2
Costa Rica	1
Dominican Republic	1
Paraguay	1
Puerto Rico	1
Uruguay	1
Venezuela	1
Total	**163**

West Asia	
Israel	12
Turkey	6
Lebanon	4
United Arab Emirates	4
Jordan	1
Pakistan	1
Total	**28**

Africa	
South Africa	5
Egypt	5
Nigeria	3
Senegal	3
Cameroon	2
Morocco	2
Uganda	2
Ghana	1
Ivory Coast	1
Mauritius	1
Rwanda	1
Total	**26**

Russia and former CIS	
Russia	39
Ukraine	4
Kyrgyzstan	1
Moldova	1
Total	**45**

South and East Asia	
Japan	129
China	22
India	18
Singapore	15
Thailand	7
Hong Kong	5
Malaysia	4
Philippines	4
South Korea	4
Taiwan	4
Indonesia	2
Vietnam	2
Total	**216**

Oceania	
Australia	60
New Zealand	6
Total	**66**

Major Coworking Cities in 2015

Whilst coworking is clearly a global phenomenon, coworking spaces tend to cluster in a small number of leading global 'vibrant cognitive-cultural' (Scott 2014) or 'creative' cities (Morisot 2014). Major industrial cities such Detroit, Cleveland, Dusseldorf and Essen have lagged in coworking development (Moriset 2014). The following table is a list of cities estimated to hold a large number of coworking spaces. These numbers have been derived from a range of online data, but as new spaces are opening and old spaces closing frequently, exact numbers fluctuate.

Major Global Coworking Cities			
New York	~100	Toronto	~30
London	~100	Chicago	~28
Berlin	~100	Boston/Cambridge	~24
Paris	~100	Sao Paulo	~24
Barcelona	~100	Atlanta	~22
Madrid	~100	Austin	~22
San Francisco	~80	Washington DC	~22
Amsterdam	~50	Tokyo	~22
Sydney	48	Montreal	~14
Seattle	~32		

Australian Coworking Spaces in 2015

More recent data was compiled for the 2015 Australian Global Coworking Unconference.

Australia	
Sydney	48
Melbourne	24
Brisbane	12
Adelaide	10
Perth	8
Canberra	10
Hobart	3
Regional	25
Total	**140**

Multisite Coworking Companies in 2015

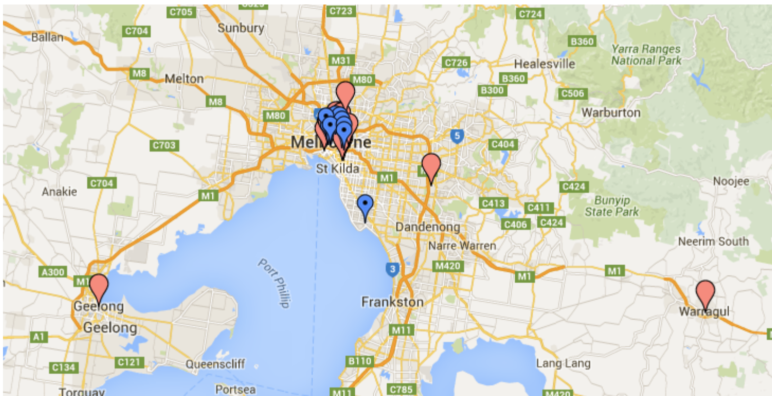
Whilst the majority of coworking spaces are single space sites operated by entrepreneurs, many of whom have side projects and other sources of income, over recent years a number of multisite coworking space providers have emerged. Some of these are owned by a single overarching entity, others are franchise models with different local owners and operators. The most prominent of the single owner model is We Work, with a recently estimated valuation of $10 billion, at the time of writing We Work has seventy six spaces across eight countries, with aggressive expansion plans. The most prominent of franchise model is the Impact Hub, which currently has 77 spaces across 48 countries. The coworking industry is beginning to attract significant investment, that will potentially drive further consolidation of multiple sites under single umbrella entities (see Gray 2015 for a snapshot of recent investment in coworking enterprises).

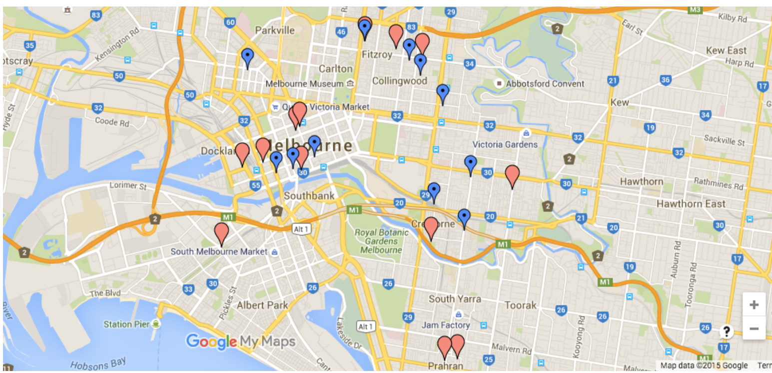
Name	Number of Spaces	Countries	Cities
Single Operators			
We Work	76	USA, UK, Israel, Netherlands, Canada, Germany, Mexico, India	Atlanta, Austin, Berkeley, Boston, Chicago, Denver, Los Angeles, Miami, New York City, Philadelphia, Portland, San Francisco, Seattle, Washington DC, Be'er Sheva, Herzliya, Tel Aviv, London, Amsterdam, Montreal, Berlin, Mexico City,
Workspace	16	UK	London
People Squared	13	China	Shanghai, Beijing
Make Offices	12	USA	Chicago, New York City, Philadelphia, Washington DC
Cove	11	USA	Boston, Washington DC
Talent Garden	11	Italy, Spain, Lithuania, Albania	Milano, Bergamo, Brescia, Cosenza, Padova, Genova, Pisa, Torino, Barcelona, Kaunas, Tirana
Next Space	9	USA	Santa Cruz, San Francisco, Berkeley, San Jose, Los Angeles
Soho 3Q	9	China	Beijing, Shanghai
Bar Office	8	Belgium	Antwerp, Leuven, Edegem, Melle, Mechelen, Leper, Turnhout, Kortrijk
Galvanize	8	USA	Austin, Boulder, Denver, Fort Collins, Phoenix, San Francisco, Seattle
Grind	5	USA	New York City, Chicago
Pipeline	5	USA	Miami, Philadelphia, Coral Gables
Sandbox Suites	5	USA	San Francisco, Berkeley, Palo Alto
Central Working	5	UK	London, Manchester
L'Office	4	Hungary, Austria	Budapest, Vienna
Betahaus	4	Germany, Spain, Bulgaria	Berlin, Hamburg, Barcelona, Sofia
Remix	3	France	Paris
Rentadesk	3	UK	London
Neue House	3	USA, UK	New York, Los Angeles, London
Third Spaces	3	Australia	Melbourne, Sydney, Adelaide
Networks & Franchises			
Impact Hub	77	48 countries	Locations available here: www.impacthub.net/where-are-impact-hubs/
Urban Station	17	Mexico, Colombia, Chile, Argentina, Turkey	Mexico City, Bogota, Santiago, Conception, Buenos Aires, Istanbul

Coworking location within individual cities

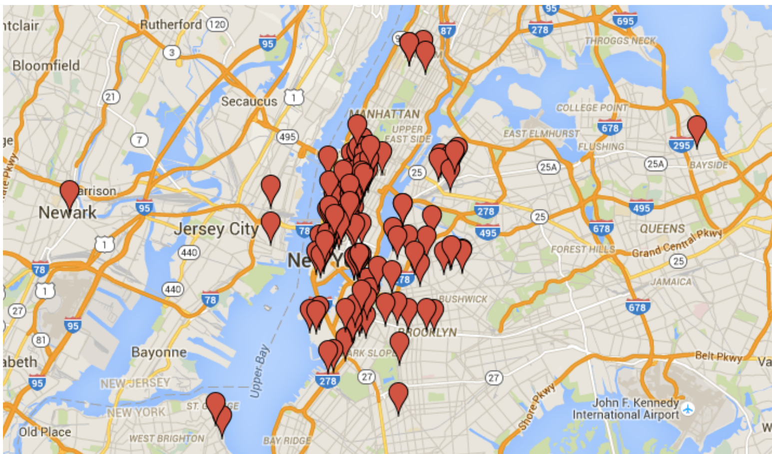
The location of coworking spaces within single cities appears to cluster around inner urban, creative suburbs. Here are three examples of google maps with mapped coworking locations in Melbourne, Sydney and New York City.

Melbourne

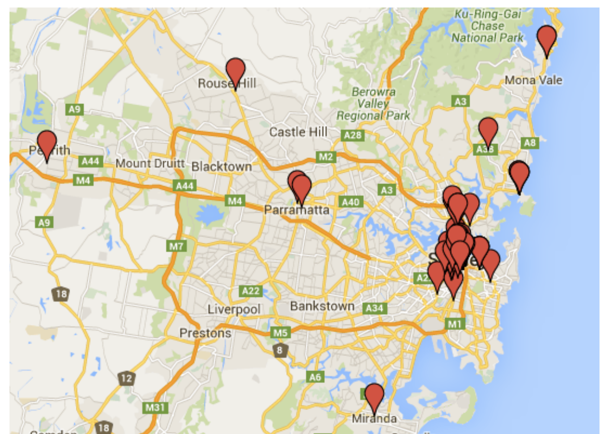


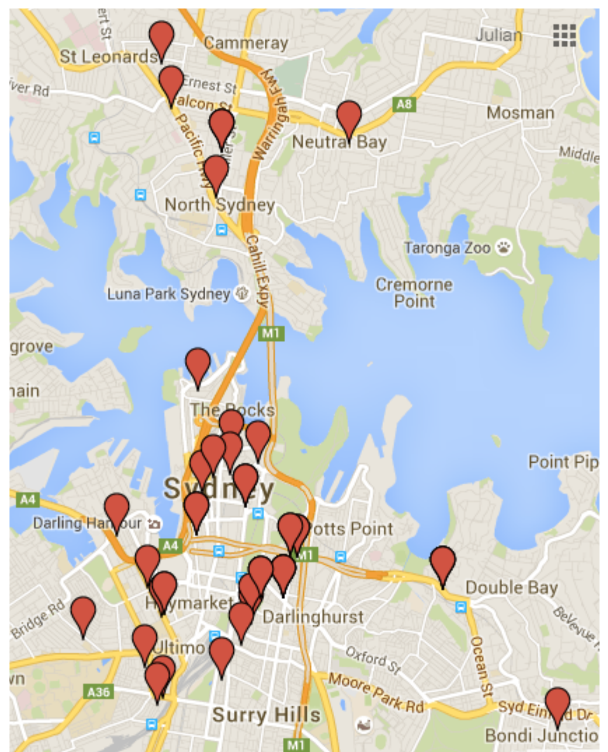


New York City



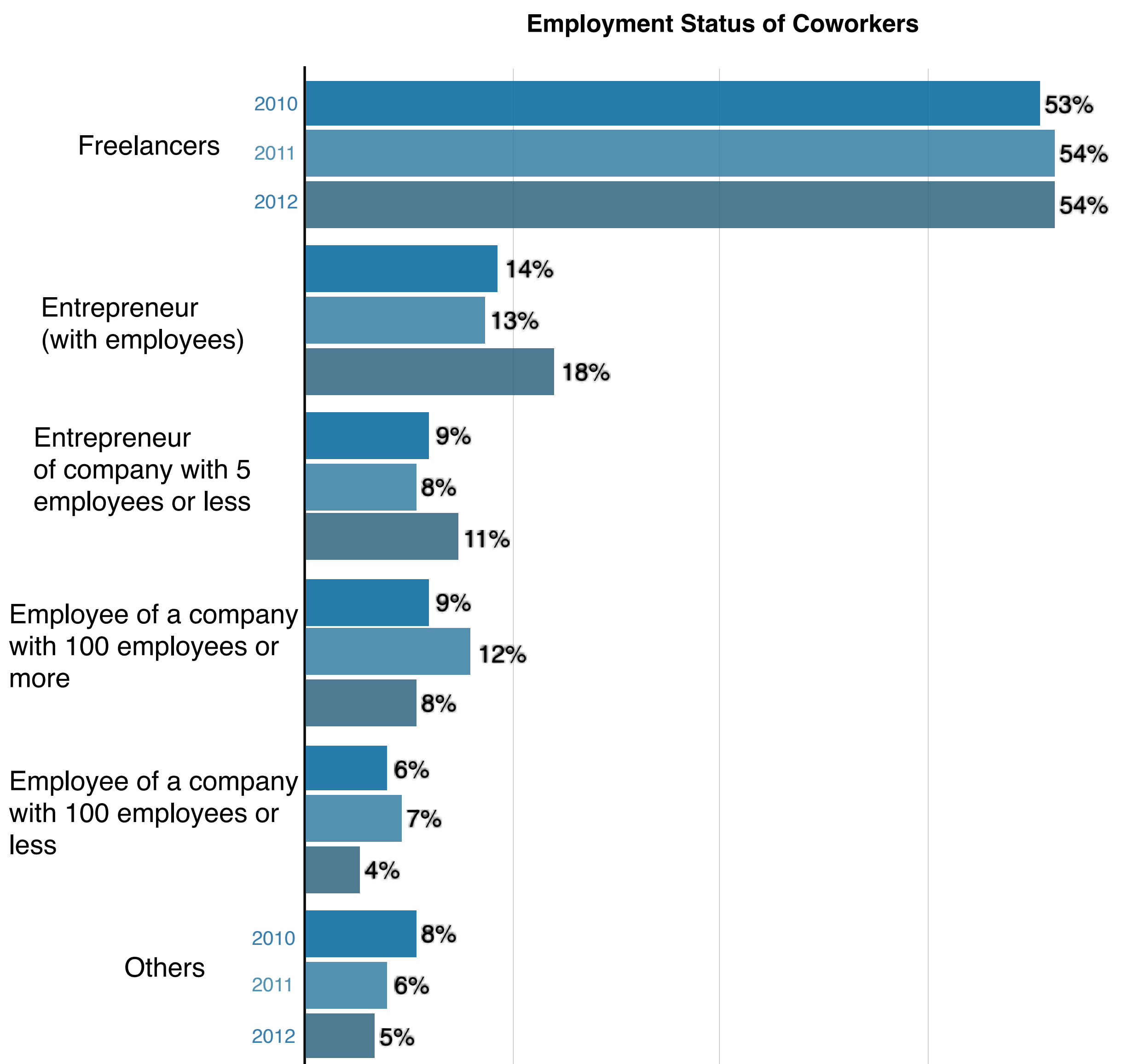
Sydney





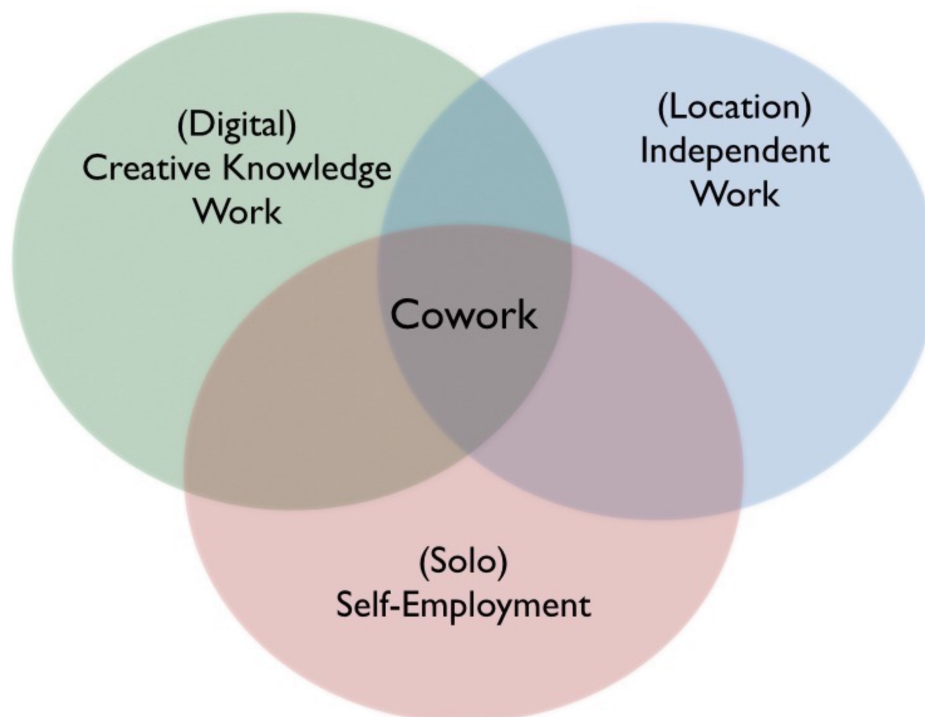
Who coworks?

Deskmag has conducted a number of global coworking surveys which demonstrate some consistent patterns in the profile of coworkers. The majority of coworkers fall into three categories of 'independent knowledge workers': solo-self employed (freelancers), early stage entrepreneurs, or members of startups and small business teams. A small proportion of coworkers are employees of larger organisations located outside the coworking space (Deskmag 2012). The majority work in creative industries, with new media featuring notably. Prominent industries include software engineering and web development, graphic and web design, professional relations and marketing consultants, and a smaller proportion of journalists, writers, architects and artists, although the 'boundaries between job descriptions are fluid' (Deskmag 2012:1).



The population of coworkers thus reflects three significant and inter-related trends in work and employment relations that have been observed over past decades. The first is the rise in the statue of 'creative knowledge work', both as a perceived driver of macro-economic performance and as class of activities that is disproportionately rewarded over other forms of routine labour and service work (Storper & Scott 2009; Scott 2014). These rewards position creative knowledge work as

relatively more attractive than the alternatives, which in turn attracts the aspirations of many younger workers towards these fields (Tapscott 2009). Although ‘creative knowledge work’ is a term that can be applied across a wide range of industries, we can see a clear subset amongst coworkers in *digital* forms, such as software development and web design. Second is the rise in ‘independent work’, where organisations relinquish control over labour processes, including the time and place of work (Ashford et al 2007; Cappella & Keller 2013). Independent work has been enabled through rapid developments in mobile communications technology and often deliberately pursued as a workforce strategy by many organisations under the mantle of ‘flexibility’ (Sennett 1998; Arnold & Bongiovi 2012). The third is the rise in various forms of self-employment (OECD 2000; Wennekers et al 2010). Coworking can be positioned at the centre of these trends, the literature on non-standard work will be briefly reviewed here.



Over past decades there has been a rise in ‘non-standard’ work arrangements, in particular self-employment across OECD countries (OECD 2000; Wennekers et al 2010; Casale 2011; Gaile 2014; Kazi et al 2014; Singer et al 2014; Eichhorst & Marx 2015; Bögenhold 2015 et al; Buddelmeyer et al 2015; CEDA 2015). Standard employment has been defined as “work performed on a fixed schedule (usually full time), at the firm’s place of business, under the firm’s control, and with the mutual expectation of continued employment” (Kalleberg, Reskin & Hudson 2000: 257) Non-standard employment refers to all other work arrangements, including self-employment, temporary and fixed term contracts, permanent part-time work and marginal part-time work, often characterised by short and unpredictable hours (Casale 2011). The inclusiveness of this definition means non-standard workers are a highly heterogeneous group. Although non-standard labour has been associated with lower paid and precarious forms of work (for example

Barbieri 2009; Boeri & Garibaldi 2009; Bosch et al 2009; Palier & Thelen 2010), more recently scholars have questioned the simple conflation of standard employment arrangements with 'good jobs', and non-standard employment with 'bad jobs' (Cappelli 1999; Kalleberg et al., 2000). For instance some temporary contractors, such as IT consultants have better 'jobs' than some full time employees, such as fast food workers (Cappelli & Keller 2013). Accordingly, scholars have suggested new conceptual classifications to distinguish contemporary forms of urban labour that cut across the standard versus non-standard divide. Examples of these include the diverging fortunes of a globally mobile, highly paid 'creative class' of symbolic analysts and a growing cohort of low-wage service workers that experience precarious work relations (Reich 1992; Florida 2002; Standing 2011; Scott 2014).

The various forms of self-employment are classified as 'non-standard work', and labour statics tend to divide this group into 'three main sub-categories: self-employed without employees, or own-account workers; self-employed with employees, or employers; and unpaid family workers' (OECD 2000:2). The largest increases over recent years have been in self-employment without employees, particularly in high skilled, fast growing, creative areas of the economy (OECD 2000; Wennekersa 2010). In many developed countries, over 50 per cent of the self-employed fall into this 'solo self-employed' category (Boegenhold & Fachinger, 2007). Some of the growth is remarkable, for example, self-employment is estimated to have grown 45 per cent in the past decade in Europe, although from a notably lower base than the Anglo-American economies (Leighton 2014). In the UK there are an estimated 4.5 million self-employed, and although the ranks swelled after the 2008 economic crisis, they continue to rise despite the economic recovery (ONS 2014). In Australia, recent estimates put the number of self employed at 18% of the workforce, with 900,000 solo self-employed and 1 million 'self-employed employers' (ABS 2010). In the USA, a recent report on the 'contingent workforce' notes that although comprehensive data has not been collected since 2005, depending on the definition used, the size of the contingent workforce can range from 5% to 40% (GAO 2015). When the definition of 'freelancing' is used to include engaging in any form of supplemental, temporary or project based work in the past 12 months, industry research finds almost 54 million or 34% of the working population engage in this form of work (Freelancers Union & Elance-Odesk 2015).

There are a wide and colourful variety of terms used in popular literature to refer to solo-self employment, and while the term 'freelancer' is common in the Anglo-American vernacular, other terms include 'lone eagles' (Beyers & Lindahl 1996), 'lattepreneurs' (Dunstan 2015), 'free radicals' (a term used by coworking space Grind) , 'free agents', or 'self-employed knowledge workers, proprietors of home based businesses, temps and permatemps, freelancers and e-lancers independent contractors and independent professionals, micropreneurs and infopreneurs, part-time consultants, interim executives, on-call trouble shooters, and full-time soloists.' (Pink 2001: 22). The normative connotations of the popular language (such as 'free') may be problematic if simply adopted uncritically. This point is especially relevant in the presence of what is termed 'fake' or 'bogus' self-employment (Dombois & Osterland 1987; Kuhl 1990), where workers are officially categorised as independent contractors, but in reality only contract to a single firm and have little control over work schedules and processes (Vandenheuvel & Wooden 1997). These forms of contract labour are sometimes used by employers to avoid taxes or other legal obligations that accompany employment. Accordingly, Cappelli & Keller (2013) argue that 'independence', or the degree of control of work processes, may be a more meaningful marker of contemporary working arrangements than 'standard' or 'non-standard' and even 'employed' or 'self-employed'.

Despite the plethora of terms and at times complex relationship between descriptive language, constrained choices and lived experience of workers, there is a clear consensus that the trends in non-standard employment in general, and 'solo self-employment' in particular are rising across

OECD countries. This is has been noted as a marked reversal of an employment trend that saw agricultural workers move towards urban waged labour in the late 19th and early 20th century (Wennekers et al 2010). Scholars have also observed differences in the aspirations between the categories of self-employment. For example many solo-self employed have been categorised as ‘lifestyle entrepreneurs’, and have little ambition to grow their enterprises beyond providing personal income for themselves and immediate dependents (Ateljevic & Doorne 2000; Mottiar 2007). This is contrasted with ‘innovative’, ‘ambitious’ or ‘high growth’ entrepreneurs whom aspire to scale their enterprises and become employers themselves (Kirchhoff 1994; Acs 2008; Baumol 2008). In the context of coworking spaces these differences have been observed to translate into distinct needs, largely because ‘lifestyle’ orientated, solo-self employed do not necessarily intend to take on employees and ‘outgrow’ the open plan shared working arrangements typical of most coworking spaces. Ambitious entrepreneurs and small startups planning high growth may see the exit of coworking arrangements as a mark of success, signifying their team has outgrown the need for shared office arrangements. Further research and the practical experiences of coworking space enterprises will clarify this relationship between user needs and spatial concept in the future.

What relevant theory might guide future research questions on coworking?

The preceding data has demonstrated that coworking is a relatively new, rapidly expanding complex social phenomenon. Consequently there are many disciplinary and theoretical pathways into researching coworking. This paper has been informed by four general disciplinary lenses: economic geography, economics, urban planning and organisational studies. The following section presents a number of preliminary questions, mapped to relevant existing theory within each of these disciplines. One or two general questions that coworking presents for each discipline is posed under each heading followed by a number of specific questions mapped to relevant areas of theory.

Economic Geography

- What is the relationship between the presence of coworking spaces and spatial distribution of economic activity?

- How does coworking resolve the problems posed by post-industrial knowledge work?

Questions	Theory
Does coworking increase productivity and competitive advantage?	Cluster Theory (Marshal 1890; Rosenfield 1997; Porter 1990; 1998; 2000; Kua 2002)
Does coworking foster creativity and innovation?	Proximity Theory (Gertler 1995; Boschma 2005; Torre & Rallet 2005; Knoben & Oerlemans 2006)
Does coworking create new jobs or attract talent?	Creative Cities Theory (Florida 2005) Urban Amenities Theory (Glaeser 2011) Cognitive-Cultural Capitalism Theory (Scott 2014)
Does coworking reify or ameliorate urban socio-geographic disadvantage?	Theories of Urban Social Structure (Harvey 1973; Dear & Flusty 1998; Scott 2014)

Urban Planning

- What is the relationship between coworking, residential location and urban mobility?
  - What implications might this have for transport and land-use policy?

Questions	Theory
Can coworking encourage localised, polycentric economic activity beyond the inner urban core?	Polycentric Urban Development Theories (Governa & Salone 2005; Meijers 2005; Lin et al 2012)
What is the relationship (and optimal distance) between coworking spaces and urban ammenities such as public transport?	Hub and Spoke Theory (Cambell & O'Kelly 2012) Consumer Decision Theory (Payne et al 1988; Batman et al 1991)

Economics

- What economic problem is coworking solving?

Questions	Theory
What are the exchanges that take place in coworking?	Microeconomics and Contract Theory
What is being bundled or unbundled in coworking?	New Institutional Economics [Organisation and Governance Theory]
What does coworking mean for innovation?	Schumpeterian Economic Theory
How does coworking affect other markets - real estate, labour, education?	Externality Theory
How does coworking internalise externalities?	Club Theory and Information Economics
What is the relationship between coworking and (bridging and bonding) social capital?	Social Network & Social Capital Theories (Putnam 1995; Rogers 2003; Granovetter 2005)
How does club theory, especially anonymous and non-anonymous crowding dynamics apply to coworking spaces?	Club Theory (Buchanan 1965; Comes & Sandler 1996)
What is the relationship between coworking and tacit coordination between actors under conditions of uncertainty?	Tacit Coordination/Focal Point Theory (Schelling 1960; Srikanth & Purina 2011)
What kind of (compensatory, non-compensatory or heuristic) decision strategies do coworkers employ when choosing coworking spaces?	Choice Theory Consumer Decision Theory (Lancaster 1966; Payne et al 1988; Bettman et al 1991)

Organisational Studies

- What is the relationship between coworking and extant organisational theory?

Questions	Theory
How do we conceptualise these coworking entities: as 'organisations', 'markets' 'social movements' or 'communities'?	Social Movement & Organisational Theory (King & Whetten 2009; Weber & King 2013; Butcher 2013)
What is the relationship between coworking and wellbeing for the solo self-employed?	Social & Professional Isolation Theories (Thoits 1983; Diekema 1992; Golden et al 2008; Sardeshmukh et al 2012)
How do (virtual) management practices need to adapt to accomodate coworking practices?	Theories of Virtual & Distributed Management ('Virtual Organisations' Handy 1995; 'Social Impact Theory' Latane et al. 1995; 'Virtual Teams' Gibson & Cohen 2003; 'Firm as Collaborative Community' Adler 2006)
How do coworking spaces foster organisational membership identity?	Organisational Identity Theory (Albert & Whetten 1985; Whetten 2006)
What organising *platforms* and *practices* best support the social learning, creativity and innovation that coworking promotes?	Social Learning and Practice Theory (Bandura 1977; Lave 1988; Bourdieu 1992; Wenger 1998)
How do coworking entrepreneurs foster cognitive and sociopolitical legitimacy for the 'new' coworking industry?	Institutional Theory & Legitimacy Construction (Powell & DiMaggio 1991; Aldrich & Fiol 1994)

It should be clear from this presentation that there is great potential to develop an extensive trans-disciplinary research program to parsimoniously organise theory that explains coworking, test these theoretical propositions empirically and translate these findings into recommendations for the relevant industry and policy actors. Further research in each of these fields will be form the focus of subsequent papers from the current authors.

Conclusion

This paper has argued that coworking is a complex social phenomenon. It has provided an historical account of the origins of coworking and reviewed the existing popular and scholarly literature on coworking. In doing this, it has situated coworking spaces within a broader gamut of spatial-concepts that span work, learning and recreation. It has also provided a simple theoretical distinction between coworking spaces and serviced offices, hinging upon the degree of social collaboration versus the importance of location and facilities of each office environment. The paper has offered an overview of recent data on the number and location of coworking spaces across the world, including a few examples that demonstrate common spatial distribution within cities. It has provided some data on typical coworking profiles, and linked coworking to the broader contextual debates on non-standard and creative work. Finally it has offered some suggested future research directions by linking guiding questions with relevant extant theory.

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Appendix

Emerging Spatial Concepts for Work, Learning and Play

We have seen that in the ten years since its inception the number of shared workspaces referencing the word 'coworking' has grown remarkably. Accordingly, the diversity of these shared workspaces has also grown, with a range of distinct offerings reflecting the different motivations of the founders and different interests and needs of users. An initial typology that highlights some of the key differences is presented here, featuring some prominent examples of each type. The examples have been selected because the services they offer and/or the language they use to describe their purpose illustrate the distinct features of each category. However as with previous distinctions in this paper, these should be conceived as continuous spectrums rather than discrete categories, and there are current examples that overlap across several categories, and entrepreneurs experimenting with new hybrids frequently. The categories include:

- Serviced Offices
- Coworking Spaces
- Hacker Spaces
- Maker Spaces
- New Learning Spaces
- Incubators and Accelerators
- Free Public Meetups
- Home-Based Coworking
- Federated Work Agencies
- Auxiliary Space Services
- Industry Conferences and Associations
- Coliving Spaces

Serviced Offices

Serviced Offices, have existed for decades under various guises such as telecenters, business centres and executive suites (Kojo & Nenonen 2014). The focus of the offering is access to office space and facilities, often strategically located. In past decades these services frequently included fixed communications facilities, fixed telephone lines, fax machines, physical mail addresses and answering services. As the technical mobility of unwiring (such as mobile phones) and digitisation (such email) of these business communication processes, independent workers and small businesses have become less dependent on the provision of these services. Accordingly In recent years some serviced office companies are offering 'coworking' services, usually defined as access to open plan, shared desk spaces rather than private offices.

Prominent examples include:

Servcorp: (http://www.servcorp.com)

Servcorp was founded in Sydney, Australia by Alf Moufarrige in 1978 to provide 'executive suites' and later 'virtual offices'. The business is organised around 'one principle - by reducing your costs and sharing your overhead, your business will succeed.' (http://www.servcorp.com/en/about-us/). The executive suites aim to 'create a professional environment with the very best technology solutions and team support…for a company wanting the corporate presence, infrastructure and

support of a multi-national without having to make the capital investment and commitment normally required' (http://www.servcorp.com/en/about-us/history/). In the 1980s Servcorp promoted a 'virtual office' service, essentially a mail address and secretary services in major cities. The company expanded to Asia, Europe and the USA over subsequent decades and now offers space or virtual office services from 122 locations across the world. It was listed on the Australian Stock Exchange in 1999.

Regus: (http://www.regus.com/)

Regus was founded in 1989 in Brussels, Belgium by Mark Dixon that offer 'beautiful, modern, tech-powered spaces' and 'an unmatched local, national and global network for you to do your best work' (http://www.regus.com/). During the 1990s Regus expanded to China, Latin America and throughout the USA and listed on the London Stock Exchange in 2000. In 2004 Regus acquired HQ global Workplaces, the then largest serviced office provider in the USA. Regus' services include a variety of offices (including a shared space 'co-working option'), meeting rooms, virtual offices, business lounges and a number of business programs. As of 2015 they claim to service 800,000 workers a day across 3000 locations in 900 cities within 120 countries.

Workspace Group: (http://www.workspace.co.uk)

Workspace Group was founded in 1987 (then known as London Industrial) in London, UK by 12 investors disposing of former Greater London Council real estate. It was listed on the London Stock Exchange in 1993 and is now a real estate investment trust. Workspace Group currently owns 84 'attractive premises in prime locations' across London (http://www.workspace.co.uk).

Coworking Spaces

As this paper has detailed, coworking spaces are usually distinguished from serviced offices by the emphasis on social interactions and collaborative activities facilitated through organising platforms. Most coworking spaces offer a combination of workspace and office facilities, public events and classes or workshops focused on skill development. The curation of the events, classes, physical design, and the descriptive language and images selected to represent each coworking space reflects the different target audience of the enterprise. As these examples demonstrate, the audiences are considerably diverse.

Early and Iconic Coworking Spaces

Citizen Space: (http://citizenspace.us/)

Founded in 2006 in San Francisco by Tara Hunt and Chris Messina, it is one of the pioneering 'coworking' spaces from which the widely disseminated coworking values and the phrase 'accelerated serendipity' are derived. The name itself and the intention in the words of the founders as "a space that's community driven, that meets those social needs that we all have while creating local communities and local bonds" (http://codinginparadise.org/ebooks/html/blog/start_of_coworking.html). "A place to collaborate. Get creative. Inspire a fellow entrepreneur. Make business deals. Meet new people. And even get some work done." (Citizen Space 2015). In Citizen Space now has an additional space in Detroit.

Indy Hall: (http://www.indyhall.org/)

Indy Hall was established in 2007 in Philadelphia by Alex Hillman, after working with the founders of Citizen Space (De Guzman & Tang 2011). It has risen to prominence as the first coworking space 'crowd funded' from a pre-existing coworking community regularly attending meetups before the space existed. Hillman is a visible public advocate for community orientated coworking, frequently speaking and publishing on the topic through his blog http://dangerouslyawesome.com. Indy Hall explicitly distinguishes its purpose from transactional use of office facilities, rather they always 'help unlikely groups of likeminded people to form relationships' where 'spontaneous conversations are our greatest natural resource' and never 'prioritize a transaction before a relationship'. Indy Hall frames its purpose around the classical Greek concept of 'eudaimonia - which translates to "the good life". More specifically, they described the good life as *"...rich with relationships, ideas, emotion, health and vigor, recognition and contribution, passion and fulfillment, and great accomplishment and enduring achievement."* Both the name and the descriptive language positions the enterprise in the tradition of American civic innovation: 'Ben Franklin hung out in these parts a couple of centuries ago. If he were still alive today, he'd probably hang out at Indy Hall.' (http://www.indyhall.org/place)

BetaHaus: (http://www.betahaus.com)

Betahaus was founded in 2009 in Berlin envisioning "a combination of a Vienna-style coffee house, a library, a home office or a university campus" and now has four spaces across Europe (Berlin, Hamburg, Barcelona, Sofia) (http://www.betahaus.com/berlin/story/). The company offers space for 'quiet, concentrated work' as well as "separate meeting rooms, large event space, maker space, electronics lab and our café on the ground floor for relaxed entertainment" Betahaus also has an explicit education program, offering "workshops and courses with multidisciplinary topics (e.g. 3D printing, Product Design, Arduino, Adobe Illustrator) taught by people who are experienced specialists in the field" (http://www.betahaus.com/berlin/story/).

Coworking Subset 1: Social Impact Orientated

Impact Hub: (http://www.impacthub.net)

The first Impact Hub (at the time simply called 'the hub') was founded in 2005 in Islington, London by a group of 'of students, makers, and innovators who wanted to create a home of radical ideas that create positive social change' (http://islington.impacthub.net/about-us/team/) . 'The main idea was to 'create a place where unlikely allies would meet by serendipity' (http://www.impacthub.net/what-is-impact-hub/). The Impact Hub network spaces aimed to draw upon "a prototyping lab, a start-up incubator, an inspiring office, a learning space and a think tank – to create a unique ecosystem for social innovation. Spaces with all the tools and trimmings needed to grow and develop new ventures for sustainable impact by providing access to the right experience, knowledge, networks, finance and markets. But above all, spaces for meaningful encounters, exchange and inspiration, full of diverse people doing amazing things." (http://www.impacthub.net/what-is-impact-hub/). Prominent Impact Hub advocates have argued the network is an expression of a new 'civic economy', which is not a franchise or 'centrally owned by us, we've proved globalisation in a different way…we've gone all around the world, and we didn't do it like Starbucks.' (Indy Johar: https://www.youtube.com/watch?v=9ne7IbCZ5H8). There are now 72 Impact Hubs around the world. The Impact Hub network is not the only coworking-hybrid focused on positive social impact. For example, The Centre for Social Innovation (http://socialinnovation.ca/) began in Toronto in 2004 and now has four spaces including one in New York

City. Jokkolabs are a similar Francophone network that began in 2010 in Dakar, Senegal and now includes six spaces across four countries, Senegal, Mali, Burkina Faso and France.

Coworking Subset 2: Barter/Non-monetary Exchange

Gangplank: (http://gangplankhq.com)

Gangplank was founded in 2008 by Derek Neighbors and Jade Meskill in Phoenix, Arizona. The early organising theme was a response to people claiming to leave Phoenix due to a lack of capital, talent or social connections required for entrepreneurship and product launches. Regular lunch 'meetups' between a group of entrepreneurs evolved into the idea of a 'collaborative workspace' rather than a coworking space. Gangplank has a non-profit structure with five locations (three around Phoenix, one in Richmond, Virginia and one opening in Sault Ste. Marie, Ontario). A distinct feature of Gangplank is the bartering system, access to their space and services must be exchanged for some non-monetary compensation. Gangplank developed their own 'manifesto' that, like the aforementioned five coworking values, has been adopted and promoted by other coworking spaces and as part of a wider 'coworking manifesto'. The manifesto values are 'collaboration over competition; community over agendas; participation over observation; doing over saying; friendship over formality; boldness over assurance; learning over expertise; people over personalities'. Gangplank has a focus focus on education, youth and community development and has partnered with several universities and municipal governments, which have assisted in funding the rent of their buildings (Neighbours 2012).

Coworking Subset 3: Workation and Relocation Spaces

Some coworking spaces are intentionally located in places that would typically be holiday or travel destinations for urban knowledge workers from wealthy countries. Although at times they may include some 'local' members, these spaces largely market their services to 'digital nomads', foreign workers looking for 'workations' (http://www.nytimes.com/column/business-workstation), 'sabbaticals' and sometimes longer term relocation to these areas. In this context coworking spaces provide the digital and physical infrastructure and complementary social relations required to continue internet mediated work in locations in cheaper and attractive locations than major creative cities.

Hubud: (http://www.hubud.org/)

Hubud was founded in 2012 in Bali, Indonesia by three expatriates, John Alderson, Peter Wall, Steve Munroe (http://www.hubud.org/team/). The intention was to create a collaborative workspace for 'local and visiting creatives, techies, entrepreneurs and business folks, change makers, downshifts and truth-seekers' an 'office in paradise' (http://www.hubud.org/). Hubud explicitly markets to foreigners interested in combining work and travel, or longer term relocation to Bali. For example they feature a 'moving to Ubud' guide on their website.

Coworking Subset 4: Industry Specific

Open Government: (opengovhub.org)

The OpenGovHub was founded in 2012 in Washington DC, by two organisations, Development Gateway and Global Integrity. The intention was to create a 'coworking community in downtown Washington DC that serves as the day-to-day home of a wide range of organisations working on open government issues' (http://opengovhub.org/). The space explicitly aims to be a 'focal point for

collaboration, innovation and learning for diverse organisations working to promote open government/governance reforms…work on transparency, accountability, anti-corruption, citizen participation, technology and advocacy' (http://opengovhub.org/).

Fintech:(http://tyrofintechhub.com/)

Tyro Fintech Hub was founded in 2015 in Sydney, Australia by the payments technology company Tyro (https://tyro.com/) on a floor within their company building. It is promoted as 'Australia's first dedicated space for fintech entrepreneurs' (http://tyrofintechhub.com/) intending to host 'accelerators, conferences, hackathons, meetups and seminars in a push to build and support Australia's burgeoning fintech community' (https://tyro.com/press-releases/australias-first-fintech-hub-opens-in-sydney/).

Hacker Spaces

"Hackerspaces are community-operated physical places, where people share their interest in tinkering with technology, meet and work on their projects, and learn from each other." (Hackerspaces.org). Although some contemporary coworking and hacker spaces may resemble each other in facilities and design, historically hacker spaces have not been promoted as primary work places but as sites of learning, tinkering, and communities of cultural or ideological resistance (Levy 1984; Lobo 2011; Moilanen 2012; Kostakis et al 2014; Lindtner et al 2014). Early 'hacker ethic' principles include "Access to computers—and anything which might teach you something about the way the world works—should be unlimited and total; Always yield to the Hands-on Imperative! All information should be free; Mistrust authority—promote decentralization; Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race or position; You can create art and beauty on a computer; Computers can change your life for the better." (Levy 1984)

L0pht: (http://www.l0pht.com/)

L0pht was founded in 1992 in Boston, Massachusetts by a small group of computer enthusiasts as a space to 'tinker' and is recognised as one of the first 'viable' hackerspaces in the USA. It was conceived of a "non-home home…a place to chill, a place to party, a place to work: a place to worship the technology that makes up its members hearts and dreams…people who live and breathe computers: who want and need them for all they do, who draw from digital devices the strength to do whatever they damned well want. In that sense then, this is a place of worship" (L0pht 2009). The group's reputation grew over coming years, partly assisted by the notorious claim that they could shut down the internet in thirty minutes (Timber 2015). Eventually their increasing recognised credentials in cyber security transitioned into commercial work and L0pht closed in 2000. Its website maintains some of its history in archives.

C-Base: (http://www.c-base.org/)

C-Base was founded in 1995 in Berlin by 17 computer and internet enthusiasts. C-Base has promoted free public access to the internet through community wireless networks undergirded by a commitment to the ideals of internet freedom (Lindtner et al 2004). It is a non-profit association that hosts many clubs, performances and events that promote 'tinkering' and skill development in computer software and hardware under the rubric of digital rights, freedom of information, data transparency and network neutrality in the emerging information society. The German Pirate Party,

for example, was launched from C-Base in 2006 (Neuman 2009). C-Base, in a playful symbol of its identity, promotes a mythical origin story, claiming to be constructed within the remnants of a space station that crashed 4.5 billion years ago (C-Base 2015).

Maker Spaces

The 'maker movement' is often described as related to, and sometimes a subset of the broader 'hacker movement' (Moilanen 2012; Maxigas 2012; Capdevila 2013), most saliently in sharing a 'do-it-yourself' attitude towards learning and production but with an emphasis on the manipulation and creation of material artefacts rather than software, or 'personal fabrication' (Gershenfeld 2005; Anderson 2012). In general, it less ideologically driven than the early hacker movement, suggested in the selection of the less confrontational name 'makers' (Dougherty 2012), which emphasises the reimagining of the 'shared machine shop' (Hess 1979) and draws light inspiration from peer production models and the 'hacker work ethic' (Himanen 2012). The name 'maker' became more common after 2005 with the launching of 'make' magazine (http://makezine.com/) by Dale Dougherty (Dougherty 2012) as a call to re-establish the art of 'do-it-yourself tinkering' which had been lost through deskilling of industrial mass production. 'Maker Faires' are gatherings which are 'part science fair, part county fair' in which makers gather for 'show and tell' (makerfaire.com). They began in 2006 in the Bay Area and have spread to hundreds of cities around the world (makerfaire.com).

FabLabs *(*www.fablabs.io*)*

Fab Labs are brand of maker spaces with roots in collaborative interactions between Nick Gershenfeld from MIT's Centre for Bits and Atoms and Grassroots Invention Group in 2001. The labs are designed to assist participants 'make (almost) anything' and typically feature programable technological tools like 3D printers, laser cutters and even sewing machines that enable users to design and prototype material artefacts. Fab Labs follow the MIT and Fab Lab Foundation charter which stipulates that they be open to the public for little or no cost, include education activities for children and the wider community and broadly benefit community organisations, education institutions and non-profit concerns (CBA-MIT 2012). Fab Labs also offer limited commercial use for prototyping new products. There are currently 432 Fab Labs in the world (http://www.fabfoundation.org/fab-labs/).

TechShop (http://techshop.ws/)

Techshop is a commercial franchise of maker spaces, or 'open access public workshops' founded in 2006 in Silicon Valley by Jim Newton and Ridge McGhee. Techshop offers public classes and members pay monthly fees for access to a range of workshop tools for micro-manufacturing, such as machining, welding, woodworking, sewing, and computer controlled (CNC) fabrication machines. There are currently ten locations across the USA.

Independent Maker Spaces

Artisan Asylym: (http://artisansasylum.com/)

Artisan Asylum was founded in Sommerville, Massachusetts, USA in 2010 by robotics engineer Gui Cavalcanti and costume designer Jenn Martinez (http://wiki.artisansasylum.com/index.php/Our_History) as a maker community that celebrates 'creativity, education, and collaboration' (http://artisansasylum.com/). It is a 'non-profit community fabrication centre that empowers individuals to

give form to their ideas through membership, education, and workspace…To fulfill that mission, we offer classes & tool trainings open to the public, membership to our shared community workshop in Somerville, MA, and affordable workspace rentals.' (http://artisansasylum.com/)

Columbus Idea Foundry: (http://www.columbusideafoundry.com/)

Columbus Idea Foundry was started in 2008 in Columbus, Ohio, USA by engineering researcher Alex Bandar and received public financial support from then city Mayor Michael Coleman. The Foundry provides access to machines and tools for members, runs classes and hosts events. They describe themselves as 'a community resource for democratized design and fabrication.' (http://www.columbusideafoundry.com/#!casey-mccarty/c15a3) and a 'a Montessori school for adults, learning from each other and with each other.(http://www.dispatch.com/content/stories/life_and_entertainment/2014/11/02/01-work-in-progress.html).

New Learning Spaces

We have already seen that learning, both through the provision of formal classes and the informal social learning that spill over from proximal relations, is a key feature of the collaborative spaces described so far. There are a variety of spaces that focus primarily on the kind lot learning creative knowledge workers appreciate, both 'hard' technical skills and 'soft' skills in self-management and reflective inquiry. The first example demonstrates hard skills of contemporary knowledge work, the second soft skills and the third a combination of these for children.

General Assembly: (www.generalassemb.ly)

General Assembly was founded in 2011 in New York City by Jake Schwartz, Adam Pritzker, Matthew Brimer, and Brad Hargreaves. General Assembly began as an 'innovative community for entrepreneurs and startups' which combined a coworking space with classes in software engineering, but soon dropped the coworking offering to focus on the expanding learning business. It now offers a range of full-time, part-time and online courses that teach 'the most relevant skills for the 21st century - from web development and user experience design, to business fundamentals, to data science, to product management and digital marketing (https://generalassemb.ly/about). The aims is to transform 'thinkers into creators' by inviting them to 'never stop learning' 'skills in design, marketing, technology and data' (https://generalassemb.ly/). General Assembly now has 19 locations spread across the USA, UK, Hong Kong, Singapore and Australia.

School of Life: (http://www.theschooloflife.com)

The School of Life was founded in 2008 in London by the author and philosopher Alain de Botton and former Tate Modern curator Sophie Howarth. It functions as a bookshop, cafe (in some locations) and school that offers classes in 'useful themes of life' and develops 'emotional intelligence through the help of culture' (http://www.theschooloflife.com). The schools enlist local authors, academics and artists to deliver programmes and services that are 'concerned with how to live wisely and well'. Common themes of classes include how to 'master the art of relationships', 'how to find fulfilling work' and how to 'achieve calm'. In addition to classes, some schools offer 'Sunday morning sermons', or public lectures on topics of note, and 'bibliotherapy', where reading

lists are ‘prescribed’ after an individual consultation. There are now eight locations, with branches in Paris, Antwerp, Amsterdam, Belgrade, Istanbul, Melbourne and Sao Paulo.

826 National Learning Spaces (http://826national.org)

826 Valencia was founded in 2002 in the Mission District of San Francisco by author Dave Eggers and educator Ninive Calegari as a non-profit ‘dedicated to supporting under-resourced students ages 6-18 with their writing skills’ (http://826valencia.org/). The founders claim that due to retail zoning restrictions, they were required to open a shopfront, and chose to open a ‘pirate supply store’ as a tongue-in-cheek front behind which they operated a drop in learning lab for student to work on creative writing under the supervision of local volunteers. The space functioned as third ‘place that’s not home and not school’, ‘a writing lab, designed to be a place kids would want to spend time, with a cozy reading tent, big work tables, and lots of books’ (http://826valencia.org/about/history/). The combination attracted interest from other cities and now the 826 national network has seven chapters each with a different themed front store. These include a ‘superhero supply store’ in NYC, a ’robot supply store’ in Ann Arbor, ‘secret agent supply store’ in Chicago, ‘time travel mart’ in Los Angeles, ‘big foot research institute’ in Boston, and a ‘museum of unnatural history’ Washington, D.C. Since 2008, ‘826 National’ has provided administrative and strategic support for the growing number of spaces.

App Academy (www.appacademy.io/)

App Academy was established in 2012 in San Francisco and New York City, USA by computer programmer Ned Ruggeri and hedge fund manager Kush Patel as a 12 week intensive programming school that teaches the ‘full stack’ of web development. App Academy has an unusual ‘job guaranteed’ financing model, where students only pay tuition fees upon finding employment after graduation.

Dev Boot Camp (devbootcamp.com/)

Dev Bootcamp was established in 2012 in San Francisco, USA by Shereef Bishay, Jese Farmer and Dave Hoover and have since opened locations in Chicago and New York. They offer a 19 week intensive programming course have been acquired by the education company Kaplan, Inc.

Incubators and Accelerators

Business incubators, as the name suggests, provide an environment and range of services that aim to assist entrepreneurs survive and grow during the early startup phase of building a company (NBIA, UNECE, ANPROTEC) http://www.nbia.org/resources/business-incubation-faq). The ‘business incubator’ concept has existed since at least 1959, when Joseph Manusco opened the Batavia Industrial Centre in New York (Liming, 2010). The concept was adopted by local governments concerned with economic development in the 1970s and further elaborated through university partnerships aiming to commercialise technology research in the 1980s, and has expanded to include more profit driven enterprises with the growing digital economy (Nunberg 2005; Somsuk et al 2011). Typical services include the provision of shared office space, educational programs, networking events, individual mentorship, access to loans and other forms

of financial support (Nunberg 2005). Many business incubators are non-profit organisations whose primary aim is economic development and job creation (Tavoletti 2013). ‘Startup accelerators’ typically offer similar services but usually include seed funding in exchange for equity in exchange for equity. Many take a cohort of companies through a time-bound, shared experience, a form of ‘startup boot camp’ (Levy 2011). The distinct feature of incubators and accelerators is the focus on enterprise growth within a specific time frame, after which participants finish. Most also require selection through an application process. There are estimated to be over 7000 business incubators world wide.

Y Combinator (https://www.ycombinator.com/)

Y Combinator was founded in 2005 by Paul Graham, Robert Morris, Trevor Blackwell and Jessica Livingstone in Cambridge Massachusetts but soon relocated to Silicon Valley. It has become one of most famous incubators for startups in the world with many attempts at emulation (Stross 2012; Carmel & Richman 2013) . The core offering, called the ‘new deal’ (http://blog.ycombinator.com/the-new-deal), sees selected entrepreneurs offered $120k USD for 7% equity in their company after which they move to Silicon Valley for three months where Y Combinator works ‘intensively with them to get the company into the best possible shape and refine their pitch to investors’ (www.ycombinator.com/). The preparation culminates in a series of ‘demo days’ where startups ‘present their companies to a carefully selected, invite only audience’. Since its inception, Y Combinator has invested in more than 900 startups, notable successful graduates include dropbox, airbnb, reddit, coinbase and stripe. Since 2013 they have decided to also fund and incubate non-profits.

ATP Innovations: (http://atp-innovations.com.au)

ATP Innovations was founded in 2006 within the Australian Technology Park (ATP), itself established by four major Australian Universities (UNSW, ANU, UTS, USYD) in 1995. They have worked with over 80 businesses since their inception, with innovation in the pharmaceutical, IT and engineering industries. ATP Innovations was voted ‘incubator of the year’ in 2014 by the National Business Incubation Association (NBIA) in the USA (http://www.atp.com.au/News---Resources/Newsletters/2014-Newsletter/May/ATP-Innovations-awarded-best-incubator-in-the-world).

BlueChilli: (www.bluechilli.com)

Blue Chilli was founded in 2012 by Sebastien Eckersley-Maslin in Sydney. It operates along similar lines to Y-Combinator, aiming to help ‘talented founders build businesses’ that do something ‘better, faster or more efficiently by leveraging technology to give it a competitive advantage in the market’ (www.bluechilli.com/about-bluechilli/).

Free Public Meetups

The origins of the Jelly model of free coworking meetups has already been described in the body of this paper. There are many ‘free coworking-like’ meetups available through the online platform meetup.com. These meetups usually occur in public or semi-public spaces like cafes and libraries. Occasionally they are organised within private organisational spaces or existing coworking spaces.

Jelly: (http://workatjelly.com/)

Cowork Meetups: (http://coworking.meetup.com/)

Home-Based Coworking

There are also examples of platforms that enable people to open their residential homes up for coworking.

Free

Collective Self: (http://www.collectiveself.com/)

Lori Kane was a pioneer in sharing this approach and writes about it on her website and blog 'collective self'.

Hoffice: (http://hoffice.nu/en/)

Is a model of free, home based working that began in Sweden.

Paid

Openspace: (www.bookopenspace.com)

An early attempt to create an 'airbnb for workspaces' by renting appartments as workspaces during the day that began in San Francisco.

Breather: (www.breather.com)

A similar 'airbnb' inspired model to temporarily rent apartment spaces to 'work, meet or relax' during the day that began in New York.

Federated Work Agencies

These are experiments in 'post-corporate' organisational forms of creative agencies or consultancy offerings that been designed around a coworking space. The following examples are both drawn from New Zealand.

Enspiral (http://www.enspiral.com/)

Biz Dojo/The Collaborators (http://bizdojo.com/agency/)

Auxiliary Space Services

These are examples of businesses offering coworking space and services for their customers on their premises, despite coworking being marginal to their core business.

Nab Village: (www.nabvillage.com.au/)

Wix Lounge: (www.wix.com/lounge/new-york)

Cobrew: (www.cobrew.com.au)

Industry Conferences and Associations

These are examples of coworking industry conferences and industry associations attempting forms of knowledge sharing and cooperation amongst the actors of the new industry.

Global Coworking Unconference Conference: (http://gcuc.co/)

League of Extraordinary Coworking Spaces: (http://lexc.org/)

Coworking Europe Conference: (http://coworkingeurope.net/)

Coworking Africa Conference: (http://coworkingafrica.com/)

Coworking Asia Unconference: (http://www.cuasia.co/)

Coliving Spaces

There are emerging examples of bundling together coworking services and residential appartments with shared spaces.

Prue House: (http://purehouse.org/)

WeLive: (in development from coworking provider We Work)

More information available here:

(http://www.fastcompany.com/3050772/fast-feed/weworks-coliving-spaces-could-debut-this-year)

http://www.fastcompany.com/3055325/from-wework-to-welive-company-moves-members-into-its-first-residential-building

Common: (in development from founder of General Assembly)

More information available here:

(http://www.fastcompany.com/3047371/general-assembly-cofounders-next-startup-is-a-co-living-company)