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A Compass for Navigating Sharing Economy Business Models

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Abstract

The sharing economy has emerged in recent years as a disruptive approach to traditional business models. While relevant and conceptually appealing, there is a lack of clarity about what distinguishes the sharing economy from other platform enterprises. In this paper, we seek to solve this problem. Drawing on a multi-year research program and a design-based methodology, in this paper we introduce a novel actionable framework and generative tool called the Sharing Business Model Compass. As an actionable framework, the Compass helps elucidate the multiple, innovative forms sharing economy businesses are adopting. As a generative tool it enables entrepreneurs, investors, incubators and incumbents interested in entering the sharing economy to create, present and evolve a compelling sharing business model as well as evaluate its extent of robustness, whilst embracing the complexity of this business space. We provide evidence on the current performance of the model and discuss implications for policy-makers, markets and competition, incumbents, and the very same ventures fueling the sharing economy. We conclude by discussing future design opportunities and challenges for the sharing space as whole.

Keywords: sharing economy, business models, design science, design-based methods

1 Introduction

The sharing economy has emerged in recent years as a disruptive approach to traditional business to business (B2B) and business to consumer (B2C) business models, creating opportunities for startups and challenging incumbents to rethink their approach to value creation and formulas to deliver such value[1]. Recent research revealed that by early 2015 sharing startups had raised more than $15 billion (USD) in venture capital, with the top 17 sharing companies each worth more than 1 billion (USD) and employing more than 60,000 people[2]. By 2025, Price Waterhouse Coopers estimates that global revenues from sharing in just five sectors (travel, car sharing, finance, staffing, music and video streaming) will have increased from $15 billion in 2015 to $335 billion[3]. Interestingly, the sharing economy is growing faster than Facebook, Google and Yahoo combined[4], therefore it is no surprise we have witnessed an explosion in sharing economy startups, many obtaining significant financing from venture capitalists.

The promise of the sharing economy goes far beyond the financial sphere. Besides the potential economic value for major players in the sharing space, the increments in efficiency derived from the use of underutilized resources that sharing businesses frequently facilitate is seen as a potential solution to increasing urbanization and overpopulation, climate change and income inequality[5], while responding and influencing unlike any other to changing consumer mindsets and behaviors. As McLaren and Agyeman[6] note: "The sharing economy has sparked a forest fire of excitement in terms of its potential to variously change the way we do business, empower previously powerless people, save resources, and increase our social closeness or civicness."

With the aim of reconciling alternative views on the phenomenon, we leverage a system-level perspective to define the sharing economy as "a socio-economic system enabling an

intermediated set of exchanges of goods and services between individuals and organizations which aim to increase efficiency and optimization of under-utilized resources in society."[7] Within this system, our paper is focused on one type of actor, namely: platform-based firms. Sharing-based businesses have evolved from simple peer-to-peer (P2P) lending initiatives, such as Kiva, Kickstarter and MYC4 to complex platforms and networks of people and companies interacting for the collective use of extant or new resources. These new initiatives range from decentralized, self-organized shared urban farming to worldwide, shared scientific development. Despite the growing complexity of the phenomenon, most media and emergent scholarship seem to paint all sharing activities, and businesses in particular, with the same brush, assuming that a one-size business model -and associated impacts- fits all. We argue that the development of design spaces and categories within the world of sharing businesses has mostly relied on simplified and arbitrary industry- or consumer-based demarcations. Recent debates, for example, around whether the sharing business community generates social capital and generalized trust or whether it actually delivers socio-economic and environmental benefits[8] cannot be examined and resolved by looking at simplified classifications. A better understanding of these issues can only be achieved by looking under the hood, i.e. the composition of elements underlying the creation, delivery, capture and distribution of value in the sharing economy, which constitute the building blocks of business models.

However, although conceptually appealing, in reality business models in the growing diversity of sharing businesses are quite disparate, and require further elaboration. We argue that, in the absence of adequate frameworks and generative business model tools, the sharing space is operating blindly. Current models cannot account for the complexity underlying sharing business

value propositions and neither offer a way forward for those interested in crafting models for the creation and delivery of sharing-based value.

In this paper, we therefore aim to develop a sharing business model artifact. Drawing on design science and methodology, we leverage the findings of multiple pieces of published research to derive meaningful design insights and then develop and test an actionable conceptual framework and generative tool delineating the building blocks of a sharing business model, which we call: *The Sharing Business Model Compass*.

The Compass specifies six distinct dimensions, which in combination allow for expanding the scope of business model possibilities for sharing start-ups and corporate ventures. By means of conceptual prototyping, empirical testing and iterative model refinement , we identified the main sub-dimensions enabling such expansion, namely: platform type, degree of technology reliance, transaction types, business approach or orientation, form of shared resources and type of governance model. The compass allows for overcoming the flaws of traditional normative models in related fields, which in both extremes either assume necessity of variables[9] or leave empty spaces[10] to be (blindly) completed by prospective entrepreneurs. Instead, the compass offers a range of 18 variables to choose from and combine across the six dimensions, providing orientation and supporting the profiling of sharing business. As such, the Compass acts as a complementary tool for those interested in modeling their sharing business solutions. We believe the insights drawn from the design, development and application of the Compass, and the illustrative cases throughout, provide useful insights for aspiring entrepreneurs, investors, established companies seeking to enter the sharing economy and policy agents.

2 Knowledge of the problem domain: business modeling in the sharing economy

While Airbnb and Uber get all the media attention due to their unprecedented valuations and market penetration, they also have drawn the ire of a range of stakeholders who claim these models unfairly compete in an unregulated environment, fail to meet minimum quality and safety standards, exploit "on-demand" workers and, in the case of some listings with Airbnb, have detrimental impacts on local neighborhoods and quality of life in cities[11].

One problem with the sharing economy today, as with many disruptive innovations, is that the media have presented a black and white view of the sharing economy. In terms of outcomes for example, some believe the sharing economy is transformative and could help us transition to a more sustainable and circular economy whereas others equate the scaled, venture capital-backed sharing startups as a threat to society on par with Darth Vader's Death Star battleship[12]. Yet, even the same business model from the same company has vastly differential impacts on the places in which it operates. In the case of Airbnb for example, the acquisition of quality rental property in local neighborhoods by real estate entrepreneurs for the exclusive rental to tourists has reasonably generated angst amongst public officials in cities like New York, Berlin and Barcelona, as this approach depletes housing stock available for local residents leading to gentrification and displacement. However, the rental of a portion of the property such as a couch (couchsurfing) or a bedroom in someone's home can make housing more affordable for the local and travel more accessible, and personal, for the visitor. Interestingly, and paradoxically at the same time, sharing economy businesses seem to enable the coexistence of two otherwise mutually exclusive outcomes within the same business model, i.e. exclusion and inclusion, which certainly detracts from the simplistic notion of *one-size business model design fits all.*

The lack of clarity also reaches the determinants of a sharing economy business and what can be deemed as part of the set. While industry-based frameworks and classifications have been a useful tool for media, startups, investors and users to get a grasp on the growing diversity of opportunity spaces in the sharing economy arena, there is a significant lack of focus on the underlying business models in the sharing economy[13]. Frameworks such as the Honeycomb 3.0[14], the SEUK typology[15], the EU/PWC Collaborative Framework[16] among others, present an arbitrary classification of businesses according to their assumed membership in a particular industry, which are exactly the same ones we use to classify non-sharing businesses. This certainly facilitates a general understanding of the sharing space, yet such early frameworks detract from the disruptive character of the sharing economy by oversimplifying what occurs inside of it. Interestingly, while this is an irrefutable argument when exposed, we still seem to rely on such classification when debating about critical issues such as entrepreneurial support and regulation[17].

As a result, the lack of clarity regarding the diverging business models is hindering the advancement of sharing economy segments as stakeholders such as entrepreneurs, investors and government officials are torn by the tensions between embracing the disruptive nature of sharing economy activities and safeguarding the public via proper regulation.

Traditional approaches to business modeling have been reshaped around the needs of more radical and prosocial business value propositions, leading academics and practitioners alike to reconsider and adjust the components of a business model (e.g. BM canvas's nine essential elements), expanding our collective understanding of business models. Ultimately, the capacity of a business modeling tool to effectively represent the reality and needs of a particular business and enact its intended value proposition is critical to its success. Business models such as

software as a service (SaaS) have been adapted by other companies and industries as disruptive business models in diverse industries ranging from flooring as a service (e.g. Interface) to mobility as a service (e.g. Zipcar). Shared mobility services such as carsharing, bikesharing, ridesharing and others have been amongst the most researched forms of sharing economy business models to date[18].

Exploring what front-runners do is undoubtedly relevant and inspiring in our efforts to better understand the field. However, to date, there has been insufficient application of the business models concept more broadly to the growing diversity of approaches embraced by sharing economy entrepreneurs across multiple industries. In this paper, we seek to tackle this conceptual and design problem.

3   Design methods

In this research, we leverage a design-based methodology to develop and test a business modeling tool for the sharing economy. This method draws on design science, which is a type of applied research that uses knowledge to solve practical problems.

Drawing on the tenants of design science[19], ours is an attempt to create something that serves the needs of the growing sharing community. This is a fundamentally different purpose from what natural and social sciences seek to achieve, which is trying to understand and explain reality. With the field of interest facing conceptual puzzlement and in the absence of adequate modeling tools, design-based research is the most suitable method for tackling our aims since it enables solving problems by introducing a new artifact into the sharing space.

> The reasoning behind business model research is not the understanding of a phenomenon, rather it is a problem-solution finding approach. It is about finding the concepts and relationships that allow expressing the business logic of a firm in order to be able to

formally seize this business logic. It means designing and building a model that makes it possible to represent the business model of a firm.[20]

Our design effort is focused on developing a set of constitutive dimensions, unique to sharing businesses, and crafting a conceptual model and generative tool for sharing-oriented businesses, which can work alongside extant business modeling methodologies. The former involves creating new conceptualizations aimed at both enriching and refining the lexicon of a domain, which can be used to describe problems within the sharing space, and specify the solutions to those problems. The latter refers to a set of statements expressing relationships among design dimensions. In design science, modeling tools represent situations as problem and solution propositions[21].

This design-based paper is the applied conclusion of a multi-year study the authors have conducted in the area of the sharing economy and sharing business models, including published work on business models in the shared mobility space, the impact of sharing activities on sustainable consumption and production, the strategies used by some urban entrepreneurs operating in the sharing economy arena, among others. In the following, we synthesize these studies to derive meaningful design insights upon which we seek to craft, test and refine an artifact, i.e. an actionable framework and generative tool to be used as a compass for navigating the sharing economy.

4   Research contribution, overview of design insights and early prototypes

The first part of a design-based research requires turning a particular knowledge base into to a productive set of design insights which will establish the building blocks for the artifact development. "The knowledge base provides the raw materials from and through which design science research is accomplished." [22] In this section, we consequently aim to: 1. synthesize the

findings from our previous research focusing on the underlying components of sharing economy business models across several emerging sectors; 2. clarify what sharing economy business models are and identify key commonalities across our findings; 3. derive meaningful design insights; and 4. craft an early prototype of a sharing business model generative tool. In Table 1, we present an overview of our seven published studies and the derived design insights, which are the building blocks for the development of the prototypes of the sharing business model artifact.

---Insert Table 1 about here---

Throughout our multiple studies, we began to observe several within-group similarities coupled with intergroup differences, which are reflected in the development of prototypes. Rather than being concerned with a pragmatic approach to explain why business models operate the way they do or where the business opportunities may be in the sharing space, we sought to leverage our previous findings to derive design insight that can be used as inputs for our artifact. The resulting prototypes are shown in Figure 1.

---Insert Figure 1 about here---

In our first prototype, we identified five patterns and derived a star-based sharing economy model, comprising the following dimensions: collaborative governance, peer-to-peer (P2P) interactions, under-utilized resources, sustainability orientation, and technology basis. Collaborative governance involves the presence of value-creating activities to a crowd, transferred in different ways by a group of firms. P2P interactions relate to the processes whereby the business enables the exchange of information, resources or goods between users of the service or platform. Under-utilized resources refer to the presence of system inefficiencies, which are exploited by the business by enabling (and intermediating) users to share and receive payment for the partial or total use of extant resources. Sustainability orientation involves firm-

level values and actions which are assumed to be present given the social and environmental impacts of any sharing business. Finally, technology basis pertains to the involvement of information technologies as a central enabler of core business activities in the sharing economy.

In refining the model towards Prototype 2, we noticed that collaborative governance operates only in limited number of cases, normally coupled with the presence of certain types of collaborative platforms, which are in turn present (in different degrees) across the sharing business space. We identify collaborative platforms as the presence of distinct types of connection spaces (platforms) used in the delivery of sharing services or articulation of sharing activities. As we were bringing in these new connection spaces, we identified a range of possible transactions between stakeholders, most notably the presence of non-monetary transactions enabling the exchange of sub-utilized resources. In Prototype 2, we also included presence of alternative sources of funding and combinations thereof given the inherent hybridity of the observed business models and value-laden emphasis prominent in the sharing space.

In a third iteration, we refined the model further by turning the start model into a hexagon to integrate the diverse range of *transaction types* that sharing business models can accommodate and offer. In opposing the variety of stated reasons behind the development of sharing businesses against the delivered outcomes, we noticed that (social) mission-driven approach (formerly sustainability orientation) cannot be attributed to the full spectrum requiring a new construct capable of accommodating an eventual variance. As a consequence, in Prototype 3, we introduce the construct *Business Approach* as a replacement. Similarly, we also observed a range of governance and funding forms that tend to work together, enabling one another. This ranges from VC-backed corporation to crowdfunded cooperatives. In prototype 3, we argue that these two dimensions permeate all other six dimensions, influencing the way they are finally shaped in

the model. For example, we would expect to find cooperative forms of governance relying on crowd-based funding alongside collectively-owned platforms for collaboration, where resources are shared and exchanged freely. Changes to the inner circle will necessarily induce changes in the dimensions and vice-versa.

5   Will it work? Evaluation, refinement and validation

Design-based research involves "looking at multiple aspects of the design and developing a profile that characterizes the design in practice"[23]. In order to conceptually test the prototype, we thus returned to our previous studies to reselect 36 cases representing a wide range of industries within the sharing space. In testing for wider applicability, we also aimed in our selection for balanced geographical dispersion, including cases from North America, Europe and Asia.

---Insert Table 2 about here---

Utilizing approximately 350 different data sources including company websites, Crunchbase, media articles, blog posts from CEOs and the like, two researchers evaluated the business models of each of the 36 startups, focused specifically on how they create and capture value. In our assessment, we first used within-case analysis[24] to elaborate a standardized description and case file for each of the selected ventures, focusing on key aspects of value including strategic and operational aspects. This enabled us to reduce and handle the sizable volume of data obtained from the 350 data sources and at the same time allowed us to gain familiarity with each case and increase the robustness of the subsequent cross-case comparison.

5.1 Variable-based assessment

In the first assessment, we sought to explore the variance and relationships between the identified variables. In order to do so, we returned to our typological mapping exercise[25] and transformed the description into numerical data focusing on the extent to which (ranging from 0-100) the specific dimensions were present in each of the 36 cases. In mission statement, for example, Kiva and Everbooked appear in the extremes of the scale. While the former provides micro-loans to low-income entrepreneurs using a non-profit model, the latter focuses on helping short-term rental businesses maximize their profits. Using this quantitative representation of within-case variance, we observed descriptive and correlations as well as conducted a variable-based cluster analysis, using Ward's method[26]. This procedure seeks to identify relatively homogeneous groups of variables based on selected characteristics. Through this method, all possible pairs of clusters are combined and the sum of the squared distances within each cluster is calculated. The results are presented on a dendrogram diagram (Appendix A) that identifies which clusters have been joined and the distance between clusters.

The cluster and correlation assessments reveal two groups of dimensions and potential overlaps between some of the dimensions, which requires further examination in the refinement of the model. Firstly, it shows a close (and perhaps redundant) link between funding, governance model and type of transaction, which is also observed in the correlation table with positive and significant correlation values. While these are distinct constructs, the results raise nevertheless discriminant validity and collinearity concerns, leading us to reflect on potentially embedded dimensions, where, for example, alternative funding is only possible under cooperative governance structures. Secondly, it reveals a close link between platforms and interactions which, unlike the previous cluster, it does trigger issues regarding similarities and perhaps

redundancies between the two constructs, meaning that particular types of platforms for collaboration can only enable and lead to particular types of P2P interactions. Not surprisingly, platforms and interactions show the highest correlation value across the eight dimensions evaluated.

5.2   Case-based assessment

Coupled with our empirical assessment, we then sought to gain a deeper cross-case understanding of the dimensions, focusing on how the dimensions are distinctively used across the sample to potentially uncover cross-case differences and similarities. We did so by means systematic comparative techniques[27] as we were observing in what instances and how the dimensions become salient. Our examination was assisted by contrasting the emergent patterns with the ideal types we identified through a previous typological mapping analysis[28].

Instead of dichotomous decisions (e.g. allowing or not allowing the possibility of direct P2P interactions), it appears there is more nuance in the sharing economy space and most categories can be fairly easily broken down into a selection of one of three different choices. Most notably, these choices can be either categorical or ordinal in nature. We noticed through our examination that what a platform is for each company varies and also that platforms for collaboration seems to imply that the platform must support collaboration instead of just being a platform that connects peers. Likewise, we discovered that platform for collaboration contains a range of differing collaborative work depending on the kind of actors involved, leading us to recognize the presence of platform types and three within categories ranging from peer to peer to business to business interactions being facilitated by the specific platform.

We also notice that the first inferred prominence of social or environmental mission statements was indeed skewed by preconceptions and marketing efforts emphasizing the (side) social and environmental impacts of the specific sharing activity, for example, AirBnb increasing equality by giving access to holiday destinations to low-income segments. We observed for instance that sometimes firms are not apparently focusing on the social mission explicitly in their website but their business model results in it. Social or environmental missions appear then as possible strategic orientations rather expressions of values, leading us to recognize three types of sharing business approaches from profit-driven to mission-driven. Most notably, while many have assumed that sharing business models would also employ alternative forms of financing, such as equity and rewards-based crowdfunding, in our sample this was just not the case. We did not observe significant variance across the sample in terms of funding sources, indeed virtually zero firms from our prior studies have utilized crowdfunding. This is not to say there are no such examples in practice, such as when Amsterdam-based Peerby employed crowdfunding primarily from their existing user base (discussed later). Most of the ventures rely on venture capital and traditional financing sources, likely due to the funds required to scale tech-based firms. We elaborate on this in the following section.

In the sharing business modeling space, we observe the potential shifting away from original peer-to-peer interactions to more traditional platform-based non-cooperative models. In a review of Airbnb's business model, we noticed that while the firm was initially founded to focus on optimizing under-utilized resources (empty bedrooms) amongst peers (i.e. a peer to peer platform), over time Airbnb has evolved where a growing number of listings are now offered by real estate entrepreneurs instead of owner-occupied listings. This suggests a shift from Peer to Peer towards a business to crowd type platform. The fashion sharing arena shows similar

evidence. When *Rent the Runway* first launched, they aimed to be a P2P dress sharing platform for individuals, mostly women, who have under-utilized dresses in their closet to gain extra income by renting them out to those seeking short-term access to such clothing. On the surface, like Airbnb, this seems to be an infinitely scalable P2P model. Yet in 2014, Rent the Runway, a company valued at over $500 million (USD), switched to a business to crowd model whereby, instead of encouraging peers to rent less frequently worn dresses, Rent the Runway began acquiring a massive inventory of new dresses and renting them out to users much like Zipcar did with carshare vehicles. Rent the Runway´s Unlimited business model rents out new clothes, even everyday items, to consumers almost like clothing as a service, where users pay a subscription model to have unlimited access to a variety of wardrobe options. This business model is of course much more expensive in initial inventory costs, but the company believes it will allow for greater scale over the long term by assuring more variety of styles and sizes for their customers than the P2P dependent business models. These changes are disruptive, defying the emerging building blocks of the still novel sharing economy. Facing this uncertainty, we believe our Compass offers an adaptive tool capable of dealing with the velocity and disruptive nature of such changes.

While such a small sample of observations does not warrant any definitive statements on this potential trend, we believe it is possible that over time more venture capital backed sharing companies will opt to move up the scale to business to crowd or even business to business models. P2P models depend on peers to provide the inventory necessary to meet the demands of a growing user base. For sharing companies seeking to become one of, if not the dominant players in their sector, the reliance on peer provision for a growing diversity of needs around the globe can be challenging. Whereas a business to crowd or sharing B2B model, leveraging big

data can more reliably ensure demand is met by predicting demand and producing the supply necessary to meet it. While Uber is not a classical sharing economy enterprise, Uber has been on a mission to eliminate the need for "peer" drivers in their model as they seek to shift to autonomous vehicles, leading Uber towards becoming a more traditional business to crowd driving service.

We observe that this shifting away, instead of showing a "drifting away" from assumed sharing values, reflects the inner diversity of models, from Market Sharing to Commons Sharing. In sharing economy circles around the globe, there is a growing division between those who aspire for a more altruistic version of the sharing economy versus those advocating for, and investing in, more market-based models. Some refer to market based models of sharing as platform capitalism and the dichotomous alternative as platform cooperatives. While we do not wish to enter into a political discussion here, we do believe it is useful to recognize that, in aggregate, some of the business models we observed embrace many characteristics associated with traditional market-based capitalism with the addition of being enabled in many cases by a technological platform facilitating scaling, while others approximate something quite different and, of course, there are many business models in the grey areas in between. In Table 3, we summarize the findings of our two evaluations and the key implications for the final design.

---Insert Table 3 about here---

6   **Crafting of an Artifact: The Sharing Business Model Compass**

Leveraging the design insights from multiple research projects combined with prototype testing of how 36 cases effectively create and deliver value, we were able to derive six key dimensions of sharing business models, within dimension variance as well as the interaction between them.

Drawing on these artifact components and testing, our design-based work led us to the creation of an actionable conceptual model which we label: *The Sharing Business Model Compass* (Figure 2).

<div align="center">---Insert Figure 2 about here---</div>

In the following, we will provide two complementary explanations of the artifact. The first one presents the compass dimensions along within factor variance, where we use case data for illustrative purposes. In the second part, we return again to our cases and mapping exercise to explain how the model would work for three generic sharing business model combinations, which for illustrative purposes we label: platform corporation sharing model, platform cooperative sharing model, and hybrid sharing model.

6.1   Compass Dimensions

As shown in Figure 2, all six dimensions of the Compass are accompanied by three different choices, or decisions, made by sharing economy entrepreneurs. As such, the Compass could generate more than 100 different permutations of business model combinations.

It is worth noting that the Compass only covers those dimensions unique to sharing-based businesses, and assumes that the user will reflect on the other necessary dimensions when developing or assessing a particular business model. As a domain-specific generative tool, the Compass operates as a design instrument for this space but it is capable of working (and should be used) alongside other business modeling tools, providing inputs for the crafting of a sharing business model. Decisions made with the Compass can lead to financial models, value propositions, income streams, and customer engagement strategies, which can be subsequently presented using the business model canvas or the flourishing canvas. Other dimensions, such as

cost structure and relationships with suppliers, can be assisted by decisions made with the Compass (e.g. a cooperative ownership structure will most likely lead to collaborative production), but the tool is not designed to cover areas that are not unique to sharing economy businesses since this can be done with current generalist tools.

As shown in Figure 3, four dimensions (platform type, transaction, business approach and governance model) are situated as concentric circles where "close to the core" decisions move the business model closer to a commons-oriented business type and "close to the edges" decisions move the business model closer to a market-oriented business type. For example, there are fundamental differences between cooperatives and corporations (ownership, decision-making, funding, profit distribution, among others) with profound implications for how they create, capture and share value. Decisions in this sphere can create ripple effects across the Compass and other areas of the business model, most notably in the funding strategy. The two remaining dimensions (technology and resources) are also distinct of sharing economy business models, but with no implications for the final orientation of the business model. Our observations from the sample did not suggest that a particular choice regarding how technology is used or resources shared necessarily implied that the overall business model was more or less likely to be of the platform corporation or the platform cooperative variety. This is why both *Technology* and *Shared Resources* business model choices are depicted horizontally instead of vertically in the Compass.

<div align="center">---Insert Figure 3 about here---</div>

6.1.1   Technology

Technology is the first dimension represented at the top of the Compass. For the purposes of the Compass, we define technology as the reliance on digital technologies for facilitating discovery and exchange on the platform. The role of *technology* employed in sharing economy startups range from tech-driven (Uber is a great example) to Tech-enabled (most of the sharing economy startups using a platform but also largely benefiting from face-to-face interactions belong here) and low or no tech. Although most of the current sharing economy businesses rely on technological platforms to operate, cases such as Talent Garden (Co-Working) and Prep Atlanta (Kitchen) demonstrate that the sharing economy is active outside the tech realm. In such spaces, however, the physical spaces tend to be privately owned by real-state firms or public entities and rented to members with the aim of utilizing new physical resources more efficiently and keep the operating costs of the members down.

Co-working has been taking off globally. While co-working models range to some extent, the traditional business model for a co-working space is to consolidate basic office essentials like printers, good internet access, meeting rooms, etc. in a shared environment that is a hybrid between a coffee shop and open office spaces. Many co-working spaces have also embrace their role in the early-stage startup community and host Meetups, entrepreneurship speakers and other events designed to create a stimulating, decidedly entrepreneurial spirit. In return for access to these shared spaces, users can pay for as little as one visit to as much as regular and unlimited use of the facilities on a monthly basis. Some co-working spaces are independent local operators which would be expected of low-tech business models. However, there are examples of this business model type that have scaled impressively at a regional or even global such as Talent Garden and We Work. We Work, for example, currently has co-working facilities in 21 cities in

six countries, and, according to the Wall Street Journal, at the end of 2014 raised $355 million in a round that valued the company at a $5 billion valuation.[29]

6.1.2   Type of Transaction

The next dimension, *type of transaction,* is the least explored in our research, yet central to enabling variance. We define type of transaction as the extent to which transactions on the platform are left to market forces or if they are suppressed or altered by the intermediary. Like the other four dimensions of the model, business model decisions regarding type of transaction are treated on a continuum from platform corporation outside towards platform cooperatives on the inside. On the outside, we have market transactions, whereby a platform intermediary allows the marketplace to dictate the value of products and services exchanged on the platform. This of course can be found in many sharing business models including Uber, Airbnb and Rent the Runway. Timebanks, Yerdle and BlaBlaCar help us explain the introduction of alternative transaction types. Timebanks (timebanks.org) enables local communities to use their open source software to facilitate exchanges of services amongst members without cash trading hands. Instead of letting the market dictate the cash value of a service such as teaching guitar or Spanish to a community member, the time is credited to the provider of the service while the recipient of the service is now indebted by that amount of time to provide other services to other members of the network. Yerdle facilitates swapping of used possessions between users in exchange for "Yerdle dollars" instead of traditional currency. Both Timebanks and Yerdle represent examples of alternative currencies for facilitating "transactions" within the community. While BlaBlaCar users do pay cash for obtaining a ride from a driver to a shared destination, BlaBlaCar fixes ridesharing rates in a way to disincent drivers from turning the service into a business. Instead

the fees paid by riders are often much less than the market would dictate, but enough to help subsidize the cost of gas for the driver, while facilitating more social cohesion. While free transactions make it difficult to create a sustainable business model, there are examples of sharing projects with such an approach. Leftover Swap aimed to facilitate a free exchange of leftover food via a mobie app. Kiva could arguably be free in the sense that the provider of value on the platform (i.e. the lender) expects no return on their loan but will hopefully eventually receive their original loan back once the recipient of the micro-loan is able to repay (interest free).

6.1.3 Business Approach

We consider business approach to reflect the financial and impact objectives of the founding team. The *business approach* taken by sharing economy startups ranges from profit-driven (e.g. Airbnb, Task Rabbit), hybrid where the firm has explicit social or environmental objectives (e.g. Etsy, Kickstarter) and mission-driven where the primary goal is social and/or environmental benefit (e.g. Kiva, Timebanks). Hybrid approaches come in many forms but both Etsy and Kickstarter are interesting in that they have both become certified B Corps. B Corps make a legally-binding commitment to adhere to rigorous, and transparent environmental and social objectives. This commitment inherently precludes certified firms from purely seeking a profit motive. Recently, however, Etsy has come under fire[30] for abandoning these hybrid values in lieu of a short-term profit orientation and an exit from their B Corp commitment. Meanwhile some scaled sharing platforms are almost purely driven by a social or environmental mission. Kiva falls into this category. Kiva is a P2P micro crowd-lending model mostly focused on drawing small loans from individuals in developed countries to service the needs of

microenterprises in developing countries. While there is an expectation of eventual repayment, there are no interest payments made to the lenders. Instead, the social mission of Kiva appeals to P2P lenders who can also choose which micro-entrepreneurs to loan and track the progress of the microenterprise. Notably, Kiva is one of the only non-profit business models we reviewed.

6.1.4 Shared Resources

The fourth dimension of the Compass is *shared resources,* which as mentioned previously is the second dimension of the compass which is not depicted as a continuum of business decisions because such a continuum was not discovered. We define shared resources as the different origins of the resource being shared on a sharing platform. The approach to *shared resources* includes the optimizing of new resources, finding a new home for used resources and the optimization of under-utilized resources. The optimization of new resources is frequently combined with business to crowed platform models. Drive Now from BMW, and Zipcar, the carsharing company which was acquired by Avis rental car leverages such a model. A new home for used resources is commonly found in used good marketplaces such as Ebay, Yerdle and many others. Optimizing under-utilized resources occurs with asset sharing models whether they be homes or parts of homes (e.g. Airbnb), home goods (Peerby), vehicles (BlaBla Car) or even medical equipment (Cohealo).

6.1.5 Governance Model

In the Sharing Business Model Compass, we define *governance model* as the approach adopted by the platform with respect to decision-making and value exchange. While we observed only a few examples of alternative *governance models* in our sample, the broader sharing economy is

witnessing several alternative forms of organizing and governing. The major global players are mostly adopting traditional corporate governance models. Yet increasingly other sharing economy startups are embracing crowds in different ways. Peerby raised a funding round via crowdfunding with their own user community, which we consider to be reflective of collaborative governance, since the user community became partial co-owners in the platform as a result. In response to competition from Uber, several hundred taxi drivers in Denver formed Green Taxi, as a cooperative governance model. Later in this paper we will go into depth about the growing interest in platform cooperatives which merge centuries old cooperative governance model with emerging distributed technologies in hopes of competing locally and globally with more traditional platform corporation models, as discussed in the following section.

6.1.6 Platform Type

For the Compass, we define *platform type* as an expression of the type of actors being connected in the two-sided market by the intermediary. While many scholars and media consider the sharing economy to be specifically about facilitating exchange between peers (the P2P economy) it is clear that the concept of platforms for sharing assets and services has permeated other sectors including the business, government and healthcare sectors. We observed a range of examples of platforms ranging from business to business models such as Cohealo for hospitals to exchange access to expensive hospital equipment, Cargomatic for sharing access to local trucks for crowdshipping, and MuniRent which facilitates shared access to expensive equipment amongst local governments. Business to crowd models are usually based on acquiring new resources and then providing access to them (e.g. Rent the Runway, Velib). Indeed, our sample

contains numerous examples of peer to peer transactions through intermediary platforms (e.g. Kickstarter, Skillshare and BlaBlaCar).

6.2 An illustration of generic sharing business model combinations

While there is of course insufficient space to elaborate on all possible combinations that can be derived from the *Compass* and show its full potential, in this section we will provide an illustration of the *compass in action* by depicting three generic business models.

The majority of the media attention regarding the sharing economy to date has been focused on derivations of the *platform corporation* combination of business models, which is our first generic model. Per the Compass, a Platform Corporation business model would tend toward a combination of market transactions, profit maximizing objectives, corporate governance models and a higher presence of incorporated business actors involved in the platform. Meanwhile, as the *Compass* demonstrates, we could perhaps find a mix of approaches to technology and shared resources amongst the platform capitalist business model. *Instacart,* for example, is a grocery delivery platform that facilities doorstep deliveries of groceries in major cities of the United States. This online platform seeks to *build the best way for people anywhere in the world to shop for groceries* and facilitates the interaction between customers and trained personal shoppers. While Instacart is of course under threat by global platform players like Amazon, Instacart has a headstart, having obtained nearly $700 million (USD) in seven rounds of financing from the venture capital community including many of the biggest names in Silicon Valley (Y Combinator, Sequoia Capital, Andreesen Horowitz and Kleiner Perkins Caufield & Byers)[31]. We would place Instacart between tech-driven and tech-enabled. A purely tech-driven business model can support transactions on the platform without any need for offline interaction. While

Instacart gets close to that, there is still a need for a delivery driver and a user to physically receive the goods that have been ordered. Of course, as we shift to autonomous vehicles or drone delivery in the future, companies like Instacart can become even more tech-driven and reduce reliance (for good or bad) on offline human interaction. Transactions on Instacart are market-based and Instacart is profit-driven in their business approach. With respect to resources, Instacart seeks to new resources by enhancing the efficiency of logistics for getting groceries from local stores to local user´s homes. Naturally, Instacart´s governance model is corporate. Instacart leverages a multi-business to crowd business model by connecting users to local grocery stores. While the perceived infinite scalability of true peer to peer models (P2P) seems like a perfect fit for platform corporations, we observed that even when startups embrace P2P in the beginning it is common that they shift this part of their business model over time in pursuit of profit maximization.

On the other side of the spectrum, we introduce our second generic model: *Platform Cooperative*. Late in 2015, hundreds of sharing economy thought leaders and activists were brought together in New York City to debate and discuss how the sharing "movement" could be benefitted by embracing "platform cooperative" business models. The impetus for the movement is to counteract the "platform deathstars" alluded to earlier by engaging in business models that embrace collaborative governance and more distributed profit or revenue sharing, or ownership structures. The possibility of cooperative business models in the sharing economy is a lively debate in both academic and practitioner circles. While they were not found in our sample, there are small examples emerging around the world, such as taxi cooperatives forming to counteract Uber's model. The general consensus is that the cooperative model could be one worth exploring in many segments but may not be a panacea to solve all the concerns of *platform*

deathstars. In general, embracing collaborative governance, something that was rarely observed in our sample, could be a good first step. Platform cooperatives are a new phenomenon and were not really contemplated by Owyang´s framework. Yet, platform cooperatives exist, appear to be on the upswing and can be easily tackled by our *Compass*. The Platform Cooperative Consortium (PCC) defines Platform Cooperativism as:

> "a growing international movement that builds a fairer future of work. It's about social justice and the bottom line. Rooted in democratic ownership, co-op members, technologists, unionists, and freelancers create a concrete near-future alternative to the extractive sharing economy. Making good on the early promise of the Web to decentralize the power of apps, protocols, and websites, platform co-ops allow households with low and volatile income to benefit from the shift of labor markets to the Internet. Steering clear of the belief in one-click fixes of social problems, the model is poised to vitalize people-centered innovation by joining the rich heritage and values of co-ops with emerging Internet technologies."[32]

The PCC has been working to develop their own sectoral model, inspired by Owyang´s Honeycomb, where they highlight emerging successful platform coops across different verticals. In the Consortium´s first attempt, they identified examples in journalism, transportation, short-term housing rentals, data co-ops, food, home services, marketplaces, consulting, finance, governance, web services, incubators and music[33].

Resonate is a blockchain-based streaming-to-own music cooperative founded in Berlin in 2015 by Peter Harris. Resonate currently has more than 1,400 musicians and nearly 200 labels represented. Resonate fits the platform cooperative model as they have embraced cooperative governance while distributing the wealth more than platform cooperative models. Artists who contribute to Resonate collectively own 45% of the platform, while listeners own 35% and employees own 20%. Artists on Resonate generate 2.5 times more earnings than with Spotify[34]. Stocksy, another artist supporting platform cooperative was founded in 2013 in Victoria, Canada. Stocksy is a platform cooperative co-owned by artists around the globe who contribute high quality, curated photography and video to the platform in return for a share of the revenues from

the sale of the stock images and videos through an as a service model. By 2016, Stocksy had reached more than $10 million in sales servicing 25% of the Fortune 500 while sharing the wealth with their nearly 1,000 contributors around the globe.[35]

Platform cooperatives are not just for artists. Founded in Germany in 2013, Fairmondo is a member-owned platform cooperative designed to compete with Ebay and others in the peer to peer marketplace arena, but with a particular focus on facilitating the exchange of ethical and environmentally responsible products. Fairmondo has embraced cooperative governance models relying on crowdfunding through members to fund operation. With active chapters in Germany and the United Kingdom and three new countries added by mid-2018, their goal is to support the creation of a network of Fairmondos operating in countries around the globe. Aside from a commitment to cooperative governance, Fairmondo has chosen to avoid taking a percentage of the transactions that occur on the platform, at least in the United Kingdom. As stated by PCC, it is not a requirement to offer free transactions on a platform for it to be considered a platform coop and even though a platform like Fairmondo may opt for a free transaction model, there are other ways to finance the project and even scale. Members can be asked to be a cooperative membership fee, sellers can be given an option to donate a small percentage of the sale to its operations, the coop can offer other value-added services for fees (insurance, shipping, certification of validity of the products, etc.)[36]. As declared by Felix Weth, founder of Fairmondo, the platform will soon start offering a suite of services regarding support with legal incorporation, the software platform for facilitating exchanges and consulting to each of the national level enterprises in return for a type of franchise fee.

Our final generic model provides an alternative to market-rate transactions and provides evidence for *hybrid sharing models.* As we alluded to earlier, many stakeholders think of the

sharing economy as black or white. Yet, there are many shades of grey in the sharing economy and we discovered some of these in the cases we studied. Consider the case of BlaBla Car, founded in France in 2006. BlaBlaCar offers a P2P ridesharing platform, connecting drivers with empty seats to passengers looking for a ride, with the aim of creating a people powered, city to city transport network. Since its found, BlaBla Car has expanded throughout Europe through seven acquisitions while raising more than $300 million in investment across five funding rounds and by the end of 2016, had 40 million users[37]. BlaBla Car seeks to optimize under-utilized resources, in this case, empty seats in passenger cars for people traveling between cities. However, BlaBla Car has a corporate governance model which precludes it from being classified as a platform cooperative. This combination is central to hybrid business approach, enabled by the compass. Unlike Uber, for example, which focuses on transactions at market rates (including their highly controversial surge pricing in moments of high demand), BlaBla Car does not allow drivers to convert their car into a business by letting supply and demand dictate maximum prices for offering rides. Instead, rates for rides are established by BlaBla Car and area only designed to help subsidize the driver´s cost for driving from Paris to Barcelona for example. Their choice to contain fees on the platform arguably reduces their profitability.

6.3　Does it work? Evidence so far

As these knowledge outputs become applied, the researcher aims to answer the questions "Does it work?" and "Is it helpful?". Because these questions are posed in the context of a specific framing / action hypothesis, by reflecting on what has worked and what has not, the researcher can then suggest ways to refine, extend or otherwise improve these models as well as to specify the contextual conditions in which they work[38].

The Compass, as a conceptual framework, has been in the public domain since March 2016; disseminated informally and assimilated in the most diverse forms, beyond the authors' control.

Complementing our effort to explain how the model came into being and how it is intended to work, we would also like to respond to an essential question in design science: "Does it work?".

Since no specific goals or performance criteria were set from the outset for the Compass, we will reflect upon the notions of design narratives, consequential validity and reproduction[39]. In Table 4 we provide illustrative evidence of application and impact of the tool[40], across three areas: practice (e.g. entrepreneurship, consulting, management), policy debates (e.g. local councils, government reports) and education (e.g. executive training, undergraduate degrees). Early evidence suggests that the Compass works for its intended purpose and it has been adapted for its use beyond the business modeling realm. At the time of this writing, The Compass has been translated by third parties into seven languages (Spanish, Catalan, Portuguese, Indonesian, Chinese, German, Dutch) and we have collected evidence of its direct use in at least 16 countries (Australia, Belgium, Brazil, Chile, China, Ecuador, France, Germany, Indonesia, The Netherlands, Portugal, Spain, South Africa, UK, Uruguay and USA).

As seen in Table 4, the Compass has influenced design narratives in the sharing arena and beyond, inducing changes in the lexicon, meanings and ways of understanding the problem space. In the United Kingdom for example, ACCA, supported by the Economic and Social Research Council, highlights the Compass as a key tool for the business models of the future. UK-based *Volans*, in their report "Asset sharing: How to unlock the access economy" also highlights the Compass as part of a set of *business model features that are profoundly reshaping today's markets*. Günther Oettinger, former European Commissioner for Digital Economy and Society, made a similar statement in 2016. In the ACCA policy report the authors emphasize:

> A number of attempts have been made to categories platform-based business models. The sharing business model compass provides six useful lenses for categorization of the different phenomena an actor in this complex ecosystem might embody.

Relatedly, the evidence shows us that the tool is also considered useful and has started to produce changes across the three areas, beyond localized consequences and declared utility (e.g. not only useful for our own students where we simply show the components of a sharing business model), exhibiting strong consequential validity. Innovation Tactics in Australia is using the Compass to deliver sharing economy consulting. In Brazil, the business accelerator Bizcool, a Brazilian incubator, is using the Compass as part of its entrepreneurship program. Likewise, the Brussels-based co-work TransformaBxl is using the Compass as a tool to support local change agents:

> The Sharing Economy Business Model Compass offers a way of making sense of the sharing economy spectrum and organize what is in it in a more coherent and systematic way… it is an excellent companion tool allowing to assess the type of sharing economy business is in front of us regarding 6 dimensions. Worth using it.

Interestingly, in less than two years, the model has evolved into the production and testing of new conceptualizations and designs, showing reproduction and adaptation to different contexts. In the New School Parsons in New York, for example, a graduate design student decided to turn the Compass into a 3D DIY tool and a guiding video (since the original article was not sufficiently useful for actually guiding entrepreneurial efforts), so students can work their own models. This, after realizing that there was a growing interest in starting sharing businesses but no tools available to assist the students in their attempts. In an interview, she told us:

> …a lot of student groups are creating sharing economy start-ups. Often, the various aspects of the sharing economy are so new and misunderstood that students are lost when it comes to formulating their business models. I felt this was the best tool I had come across for the sharing economy and that all other students must check it out.

While the Compass has shown a significant impact within and beyond its intended area of application, we can see new design challenges and opportunities ahead. A clear one pertains to model refinement both in terms of the dimensions included and actual design. We can expect that as the sharing economy advances, along new technologies and consumer trends, some of the

dimensions will require amendments or a complete reconsideration. Take for example blockchain technology allowing fully disintermediated transactions or holacratic organizing and management, as seen in Zappos and Medium, where information is openly accessible and issues are processed in a contingent manner, allowing for completely distributed decision-making within the organization. These two developments will require us - in the not so distant future - to return to the design board and rethink two of the Compass dimensions (technology and governance) and the implications of complete disintermediation and holacracy for our understanding of the market-commons sharing continuum. Likewise, it is yet to be seen how the rapid expansion of new local and crypto currencies will impact the transaction dimension in the Compass. So far, the Compass has been able to accommodate most of these currencies in the alternative transaction category, however, we cannot anticipate what changes would be required if new types of currencies force part of the market to divergence from the current transactional logic.

7   Conceptual and practical implications

7.1   Implications for entrepreneurs and investors in the sharing space

The potentially infinitely scalable nature of P2P business models seems to be one of the reasons for optimism amongst ambitious entrepreneurs and venture capitalists in the sharing economy. Airbnb, worth more than $30 billion despite not owning really any commercial property whatsoever, demonstrates the power and scalability of some so-called sharing business models. However, as we discussed, it appears to be increasingly more common for scaled, venture-capital backed firms to pivot over time toward a business to crowd model as opposed to a true peer to peer model. This suggests that for entrepreneurs and investors seeking to scale their platforms in

a platform corporation approach, they may reconsider drawing from P2P resources toward a business to crowed model earlier in their development.

From our review of dozens of cases, it seems more likely that true P2P models may increasingly trend toward more platform cooperative organization models and governance structures, although time will tell. In the elaboration and testing of the *Compass*, we have come to the conclusion that trust, and building community for models that are highly dependent on P2P interactions, seem to be significantly more important than the technology itself. This is to say that technology must play a role as an enabler of the interactions, and in supporting trust and community building, but perhaps having a founding team full of software engineers for a P2P reliant business model is perhaps less important than having sociologists and community builders. For example, as part of the broader research program, we interviewed the founder of Sharetribe, Juho Makkonen, based in Helsinki, Finland. Sharetribe is a software as a service (SaaS) tool for startups aiming to develop P2P sharing business models. Sharetribe has had over 15,000 aspiring entrepreneurs test their software and several hundred startups are actively using and paying for a monthly subscription service which allows for full customization, transaction management and peer review capabilities. Yes, as sharing platforms scale beyond a certain point they will likely want to customize even further and have in-house, senior software engineers, but our point is that for startups, and investors, given the availability of affordable software tools for P2P marketplaces, we believe the focus should be on validating the need and demonstrating the capability to build community on both sides of the P2P market. After all, Airbnb is not worth $30 billion because of its technology, but rather for its proven ability to generate scalable revenue through the growing mass of users and listings on its platform.

7.2   Implications for markets and competition

If we were concerned about the disruptive nature of the sharing economy while numbed with the blurriness of the space, think again. From VC-backed high-tech platforms growing exponentially to neighborhood-based (sharing) cooperatives, we are witnessing entire markets being reshaped along a new set of rules; where companies with vast investments in fixed assets, such as hotels, cannot find ways to compete against businesses with no tangible assets whatsoever. The sharing economy, in some form or another, appears to be here to stay, and if estimates are to be believed, will likely become an even more important, and disruptive, contributor to a shift from acquiring products to one of access to products as a service. As evidenced in the rapid expansion across multiple industries[41], it appears that the broad framing of the sharing economy is catching on in dozens of sectors of the economy, including some, like municipal and hospital equipment, or even medical services which just a few years ago seemed unreachable by the business models we studied here.

Not only are these business models disrupting established industries, but also industry incumbents are also getting on board, even if it appears they are cannibalizing their core business model. Companies like BMW and Mercedes Benz have introduced carsharing schemes which on the surface, could reduce demand for purchasing their vehicles. In most cases, we believe established corporations should opt for more platform corporate business model choices from the Compass as this is more consistent with their own organizational model and customer and investor expectations. While established companies who already have stakeholders expecting more collaborative, less profit-driven approaches to engagement, such as the outdoor clothing retailer, Patagonia may have made the right choice of business model for entering the sharing economy when they embraced several elements of platform cooperatives from the Compass

when by partnering with e-bay to develop a used Patagonia portal to encourage consumers to not buy new Patagonia gear!

7.4   Implications for established companies entering sharing

Established, multinational companies are also entering sharing segments. While some may seek to use entry into sharing to create some positive brand value as a corporate responsibility initiative, the majority of entrants from multinationals appear to be more based on an "eat your own" model.   The general theme of access over ownership which prevails in the sharing economy and with participants in the sharing economy has grown to a point that established companies can no longer ignore the trend. Just in the automobile industry, Tesla, Daimler, Audi, GM, Toyota and BMW have either launched their own carsharing services, partnered with others or announced plans to enter the carsharing arena.

BMW´s Drive Now was one of the original cases we captured data on for this research. Founded in Munich in 2011 in a partnership with Sixt rental car company, Drive Now is a business to crowd carsharing business. The vehicles are owned by Drive Now, similarly to the popular Zipcar service in North America. Yet, instead of being required to return the vehicle to the same place it was picked up or only at other designated parking stations, Drive Now was one of the first to offer point-to-point carsharing whereby users can leave the vehicle at in any legal parking space in the city where other users can locate it and use it for their needs. In 2016 BMW decided to enter the US market with a carsharing service, independent of Sixt. In both cases, BMW is going after the growing market for access to vehicles instead of ownership. As carsharing services have grown substantially in the past decade, car manufacturers have begun to realize that their core business of manufacturing and selling or leasing vehicles to individual

owners is being disrupted, both by sharing startups like Zipcar, and consumer trends away from ownership of expensive assets which typically spend 95% of their time unused. Aside from embracing the eat or be eaten mantra, BMW, and the other car manufacturers entering the carsharing arena, are hopeful that exposure to their fleets through carsharing may breed brand awareness and loyalty if their primarily younger users decide to buy a car in the future. Drive Now is a tech-enabled, business to crowd service aimed to create new revenue streams for BMW, charging market rates for access to BMW vehicles (optimize new) model typical of platform capitalist approaches.

We have witnessed numerous entry strategies for established companies into the sharing economy. In the case of BMW, they formed a joint venture with *Sixt* to launch the service in Europe before developing their own technology and solution for the US market. In other cases, such as the following one from Caterpillar, entry into sharing has come via investment and acquisition. Yard Club was founded in San Francisco in 2013 as a startup supporting the sharing of expensive agricultural and construction equipment. Recognizing the growth of the sharing economy, and not wanting to be left behind, in 2015, Caterpillar Inc. led a minority investment round in Yard Club. With Caterpillar´s help, in 2016, Yard Club processed $120 million (USD) in sharing transactions amongst 2500 construction contractors and equipment rental providers.[42]

In justifying the investment, Caterpillar´s VP of America´s Distribution Services Division noted:

> Peer-to-peer technology has changed other industries like transportation and lodging, and Yard Club has developed an innovative solution initially for the construction equipment industry. Using this platform, a contractor can rent an excavator that's in between jobs to another contractor who needs that machine. The Cat dealer will use this tool as another avenue to strengthen customer relationships by increasing the utilization rates of heavy equipment and lowering the total cost of equipment ownership.[43]

Two years after the initial investment in the startup, Caterpillar acquired Yard Club for an undisclosed amount. As an independent startup, Yard Club supported exchanges of equipment

from multiple OEMs (original equipment manufacturers). Yard Club now focuses on supporting shared access to Caterpillar equipment. Yard Club primarily supports B2B transactions on the platform and displays all the expected business model aspects of a platform capitalist enterprise from the Compass (corporate governance, profit-driven and market transactions). Yard Club has had a primary focus on allowing equipment owners to optimize under-utilized resources by facilitating rental and fleet management solutions to the sector.

7.5 Implications for policy debates and entrepreneurship support

The controversial nature of high profile sharing enterprises has led to significant debate in policy circles regarding the best approach to regulate or even ban some forms of sharing enterprises. For aspiring entrepreneurs, it is important to understand what components of their business models may create friction with policy-makers which could jeopardize their venture's license to operate in some jurisdictions. In April, 2015, Business Insider published a map of 12 jurisdictions around the globe which have partially or fully outlawed Uber, for example. Airbnb has also faced moratoriums, bans, and other barriers in places like New York City, Berlin and Barcelona, while Paris is seeking to force Airbnb to heed France's maximum annual short-term rental regulations (4 months). Regulation and policy for the sharing economy is complex in large part because the variation in business models adopted have varying negative and positive impacts for communities. Teasing out which business models should be supported and which should be discouraged is a critical and important next step for policy makers. Local governments seem to be particularly interested in, and therefore should encourage business models that rely on recirculating under-utilized resources.

The sharing cities space is heating up, with cities like Seoul and Amsterdam proactively seeking to encourage sharing which lead to benefits for local residents and visitors. Sharing startups that do have the potential for improving local conditions should follow the lead of companies like Carrot (Mexico) and Zipcar who proactively engage with local regulators prior to entry instead of Uber and Airbnb, who, at least initially, began by trying to skirt local regulators. Sharing startups are increasingly recognizing they are better off collaborating with local governments in order to frame their playing field than be stuck on the defensive and in constant reactionary mode to forthcoming policy[44].

With the emergence of a new generation of sharing start-ups in cities, some jurisdictions could and are going even further to actively promote sharing business models which they deem consistent with citizen well-being. As more cities get on board with these proactive efforts to encourage and promote desirable sharing, we believe more attention will be paid to the underlying components of the business models such as those which we leveraged in our data collection process. For example, the city of Barcelona has an entire policy initiative focused on supporting the growth of locally-developed platform cooperatives. As part of this initiative, one of the authors of this paper was invited to present the Compass as a potential tool for informing the city´s policy to promote desirable sharing economy initiatives. This has resulted in the formation of a platform cooperative incubator sponsored by the city referred to as La Comunificadora.

8   Final thoughts

After years of researching the space, it is evident to us that a confusion exists amongst the media, entrepreneurs and scholars regarding what constitutes a sharing economy business model. This

confusion is inhibiting both the emergence of sharing business models and the growth of research in the sharing economy. When experts in the field have their own difficulties defining what the sharing economy is, we as scholars have a role to play in helping to develop an analytical frameworks and generative tools to support its expansion.

As we discovered through our research and in the elaboration of the compass, the reality about sharing business models deviates somewhat from the utopian views of sharing as a transformative socioeconomic movement. It is true, however, that in most cases the narrative offered shows the business as an alternative to traditional market capitalism, one where society and the planet benefit from converting our current mode of production and consumption to one of sharing in harmony with nature and contributing to enhanced community-building. That narrative goes far beyond what one should expect out of a business model, making the whole sharing economy idea even more intractable and difficult to grasp.

In the same way, companies making false or exaggerated claims about their corporate social responsibility and sustainability aims have been accused of greenwashing[45], our studies suggest that an increasing number of startups claiming to be part of the sharing economy are at risk of being accused of "share-washing" because much of their business model is more similar to traditional market firms, such as most of the platform capitalist models discussed and observed in this research. In response to this complex and still fuzzy scenario, we hope that the *Sharing Business Model Compass* and the analysis included herein will provide guidance for startups, investors, policy makers and the media regarding enhanced understanding of the opportunities and challenges inherent within different business models in this emerging space.

Tables and Figures

Table 1. Summary of research contribution and design insights

Study	Findings and Contribution		Design insights
Mobility Business Models for the Sharing Economy[46]	Identifies shared mobility business models in an effort to unveil the optimal relationship between service providers and the local governments to achieve the common objective of sustainable mobility.		Business models in the sharing space should address market failures in the private and public spheres, and thus seek to combine private/ corporate and public/cooperative logics.
Purpose-Driven Urban Entrepreneurship[47]	Identifies a particular type of purpose-driven entrepreneur, embedded in different urban contexts. It derives models around three complex civic and geographic layers.		Sharing business models need to emerge as a natural response to sustainability challenges.
			An effective way of organizing in response to challenges should be around collaborative business models.
			Sharing business activity should heavily rely on information ubiquity and communication technologies in highly dense contexts.
The Making of the Urban Entrepreneur[48]	Identifies alternative forms of private-public-people partnerships and unique collaborative business strategies used by urban-based entrepreneurs to solve social and environmental problems.		Sharing business models should enable multi-level collaborations and interactions within and across different social, institutional and geographical spaces.
Entrepreneurship in the Civil Society[49]	Explains how new civil society ventures operate distinctively using mixtures of informal and formal mechanisms, unbounded labor, non-economic transactions, purpose-driven profit, collaborative governance and ownership, territorial attachment, and non-scalability.		Sharing businesses tend to be rooted in civil society organizations.
			Sharing business models should accommodate into their structure the possibility of non-economic transactions, purpose-driven profit, collaborative governance and collective ownership.
Alternative Currencies and Post-Capitalism[50]	Explains several fundamental problems with the way our market economies are operating and not leading to inclusive prosperity, which has given rise to cooperative models using alternative currencies to create, capture and distribute (economic and non-economic) value.		Sharing business models should enable the co-existence of cooperative-based venturing, alternative currency modes and alternative funding sources.
Sharing cities and SCP[51]	Provides a comprehensive view of sustainable consumption and production (SCP) systems in cities by integrating and examining sharing economy activities in the context of two continuums.		When viewed through the lens of value creation/delivery and private/public orientation, sharing businesses need to vary in terms of their business approach, and their business models can fall under many different categories.
Configurational approach to sharing business modeling[52]	Identifies business models' dimensions and derives a typology comprising five ideal types that collectively account for the diversity of possible business models across the sharing economy.		Sharing business models need to be distinct and should contain a diversity of dimensions reflecting such distinctiveness.
			Business models need be represented in a spectrum ranging from corporate profit-driven models to cooperative mission-driven models.

Table 2. Selected cases for conceptual and empirical testing

Category	Subcategory	Company	Location
Goods	Loaner Products	Rent the Runway	New York (US)
Health & Wellness	Healthcare	Cohealo	Boston, (US)
Corporate	Supply Chain	Cargomatic	Venice, CA (US)
Food	Shared Food Prep	Shareyourmeal	Utrecht (NL)
Utilities	Energy	Vandebron	Amsterdam (NL)
Transportation	Transportation Services	BlaBlaCar	Paris (France)
Corporate	Employee Services	Warp it	London (UK)
Learning	Instructor-Led	Udacity	Mountain View (US)
Learning	Peer to Peer	Skillshare	New York (US)
Learning	Peer to Peer	Maven	San Francisco (US)
Municipal	Safety	Musketeer	Morgan Hill (US)
Money	Crypto Currencies	OKCoin	Beijing (China)
Money	Crowdfunding	Kickstarter	Brooklyn (US)
Goods	Bespoke Goods	Etsy	Brooklyn (US)
Space	Personal	Airbnb	San Francisco (US)
Utilities	Energy	Mosaic	Oakland (US)
Services	Business	Upwork	Mountain View (US)
Logistics	Shipping	Nimber	London (UK)
Logistics	Local Delivery	Instacart	San Francisco (US)
Municipal	Equipment	Velib	Paris (France)
Health & Wellness	Healthcare	Medicast	Palo Alto (US)
Space	Rental Optimization	Everbooked	Oakland (US)
Transportation	Driver Optimization	SherpaShare	Menlo Park (US)
Transportation	Loaner Vehicles	DriveNow	Munich (Germany)
Services	Personal	TimeBanks, USA	D.C. (US)
Logistics	Storage	Boxbee	Brooklyn (US)
Corporate	Private Label	Button	New York (US)
Space	Work Space	Talent Garden	(Italy)
Food	Shared Food Prep	Prep Atlanta	Atlanta (US)
Money	Moneylending	Kiva	San Francisco (US)
Municipal	Equipment	MuniRent	Ann Arbor (US)
Goods	Pre-Owned Goods	Yerdle	San Francisco (US)
Health & Wellness	Wellness	Vint	San Francisco (US)
Food	Shared Food	LeftoverSwap	San Francisco (US)
Utilities	Telecommunications	Fon	Madrid (Spain)
Services	Personal	TaskRabbit	San Francisco (US)

Table 3. Summary of prototype assessments: findings and implications for artifact design

Pattern identified	Finding	Implication for artifact design
Governance, funding and transaction	Close relationship between governance model, source of funding and transaction brings to light potential discriminant validity or collinearity issues, although there is a clear construct validity. Eventual unnecessary redundancies.	The variable with highest relative correlation value needs to be reconsidered. In light of the quantitative and qualitative evidence, type of funding can be discarded as a stand-alone dimension and be reincorporated into the implications of governance-type decision
Platforms and interactions	Close relationship between platforms and interactions brings to light evident redundancies between constructs.	Platforms and user interactions can be conceptually combined and presented a single dimension. This will require recognizing alternative categories within the new dimension.
Overall within dimension variance	Dimensions are not dichotomous and can be broken down into three different choices per dimension.	The artifact should accommodate within dimension categories and allow for intuitive selection of decisions. Users should be made aware of that the selection within dimensions is mutually exclusive (only one of three different choices) but can be combined with choices from the other dimensions. This means that the derived model will be a combination of six decisions.
Categorical vs. ordinal dimension expressions	Distinction of two types of within-dimension expression, one that shows alternative categories or forms (technology and resources) and one that shows ordered categories. In the latter, however, the spacing between the categories may not be the same across the levels. It simply moves the business closer to the extremes of the type of sharing continuum.	The final visual representation needs to reflect these differences. It will give the user clear indication that the decisions made in the dimensions of ordinal-type will have an effect on the overall type of sharing activity articulated by the business model along a commons-market sharing continuum. Whereas, decisions made in the categorical dimensions will simply provide different sets of tools to shape the business model, with no definitional implications.
Social or environmental mission	Inconsistencies between overall presence of social or environmental missions in the sharing space and the actual delivery of social or environmental values as primary outcomes. This is also inconsistent with the profit-orientation of the business.	The final artifact should allow for inclusion of alternative business approaches. Instead of focusing on kinds of mission statements, the model should offer alternative driving orientations, along a social-commercial logics continuum.
Alternative funding misconception	Given the heavy involvement of users, sharing businesses have been assumed to rely on alternative sources of funding. Evidence shows prominence of traditional source (e.g. venture capital) given the investment requirements for scaling up technology-based global businesses.	The artifact should accommodate alternative types of funding sources, because sharing business model does not necessarily imply sharing-based funding. Users should be made aware of that the kind of funding strategy and source works normally alongside form of governance and transaction type.
Shifting P2P interactions	Business models relying on P2P interactions can transition to business-to-crowd models.	The artifact should allow for alternative categories of P2P interactions, enabling differing growth strategies. Users should be made aware of that selecting alternative platform types involves different costs and assets, thus discarding P2P interactions as primary form of interaction within the platform and between the business and its

			users may have consequences.
Commons-market sharing continuum	Identification of within dimension variance with predominantly ordinal categories brings to light an overall continuum from market-based sharing business models to commons-based sharing business models.		The final visual representation should clearly show two distinct extremes and that decisions made in those ordinal dimensions are summative and will have an impact on whether the business model gets closer to a market type of sharing activity or commons type of sharing activity.

Table 4. Compass in action: illustrative evidence of applications and impact*

	Practice	Policy debates	Education
Design narratives	In Ecuador, a leading local entrepreneur used the Compass to discuss what is the collaborative economy at the Economia Colaborativa & OuiShare Quito meeting. In Australia, an innovation consultant is using the Compass for value mapping within Melbourne-based sharing networks.	In Germany, *OuiShar*e's Connector in Berlin is using the Compass to discuss the definitional challenge in the sharing economy. In Spain, the founder of *Consumo Colaborativo* used the Compass to discuss Opportunities in the Sharing Economy at an event organized by *La Coruña City Council.*	In the USA, *Anxious to Make* transformed the Compass into a programmable software for the delivery of ideation workshops to help tech and civic workers reimagine sharing platforms and design cooperative solutions for the post-capitalist future.
Consequential validity	In Australia, *Innovation Tactics* is using the Compass to deliver sharing economy consulting. In Brazil, the business accelerator *Bizcool* is using the Compass as part of its entrepreneurship program.	In Europe, the EU Digital Single Market Strategy recommended the Compass as a tool to guide business growth in the region.	In Canada, USA, Spain and the UK, several leading business and design schools have incorporated the Compass into their executive education, MBA and undergraduate curriculums.
Reproduction	In Spain, the *Sharing Accelerator* in Barcelona used the Compass to develop a "sharing canvas" which is part of the selection process for new ventures.	In Indonesia, the Compass was transformed into an analytical tool with the aim of improving the creative industry in city of Bandung	In the USA, a graduate design student at the *New School Parsons* transformed the Compass into an actual 3D generative tool for the sharing economy. Further interactivity required an adaptation of the original model.

*Compendium of evidence: www.sharingcompass.com
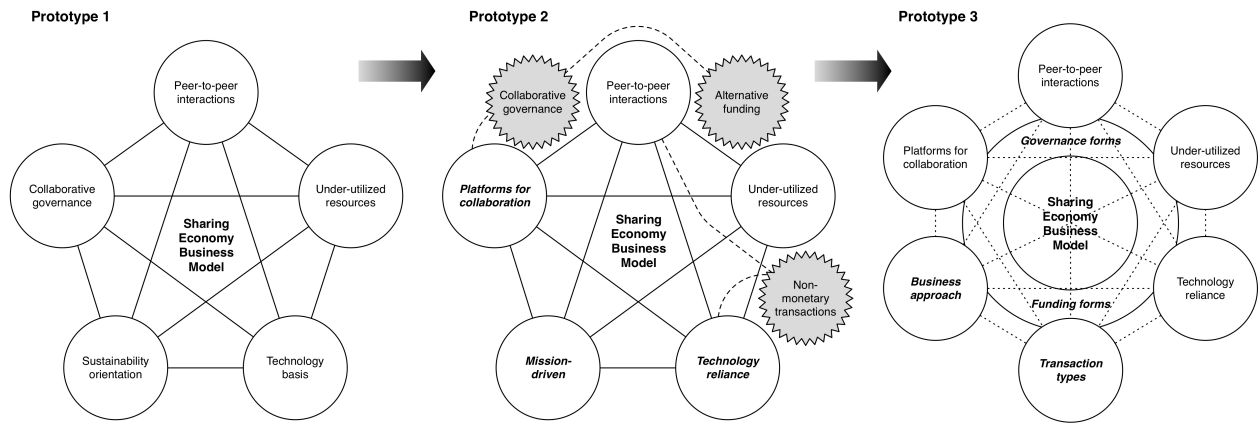
Figure 1. Early prototypes

Prototype 1 · Prototype 2 · Prototype 3

Figure 2. Sharing Business Model Compass

Figure 3. Compass in detail

Range of parallel choices with no effect on business model orientation

Business model orientations

Compass dimensions

Compass dimensions

TECHNOLOGY

MARKET SHARING

TRANSACTION

PLATFORM TYPE

BUSINESS 2 BUSINESS

B2CROWD

P2P

COMMONS SHARING

TECH-DRIVEN

TECH-ENABLED

LOW/NO-TECH

ALTERNATIVE

MARKET

FREE

Sharing Business Model Compass

COOPERATIVE

COLLABORATIVE

CORPORATE

COMMONS SHARING

UNDER-UTILIZED

NEW HOME 4 USED

OPTIMIZE NEW

MISSION-DRIVEN

HYBRID

PROFIT DRIVEN

BUSINESS APPROACH

GOVERNANCE MODEL

MARKET SHARING

SHARED RESOURCES

Range of concentric choices affecting business model orientation
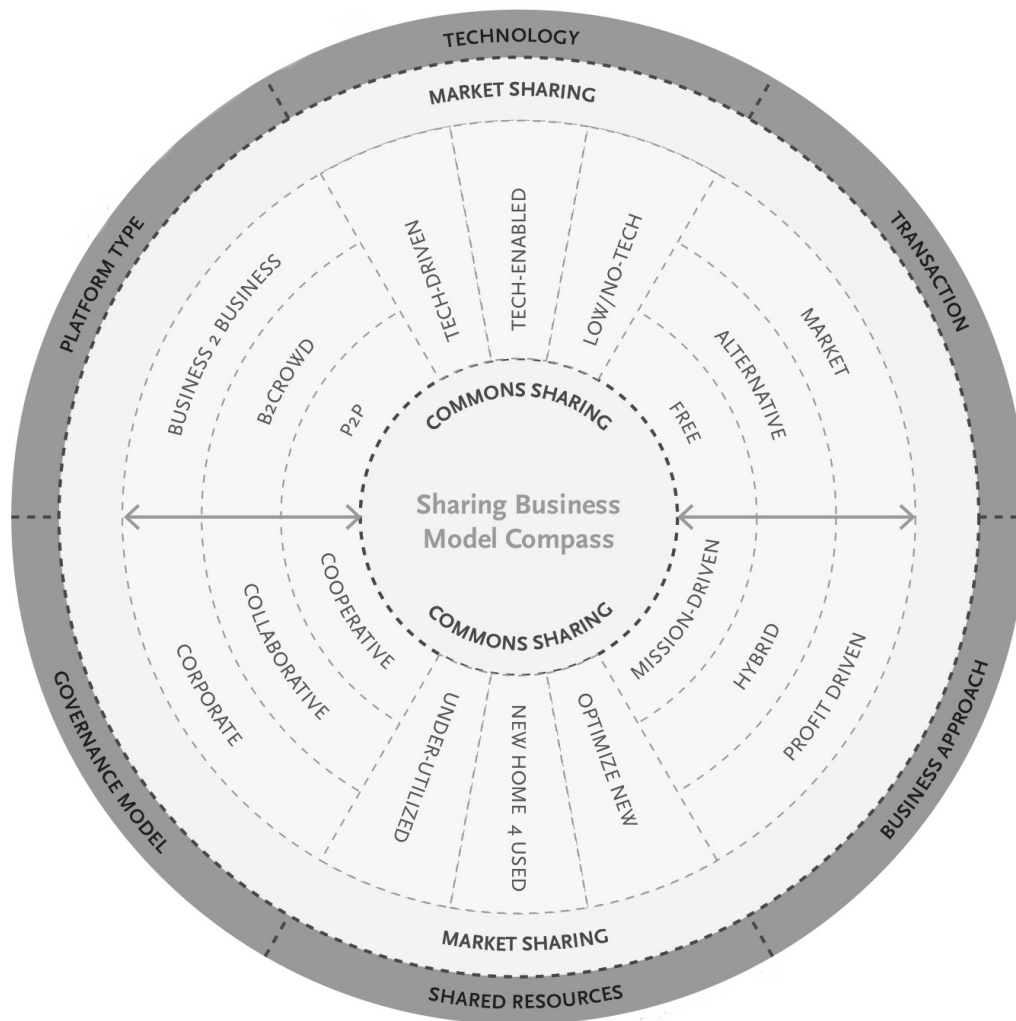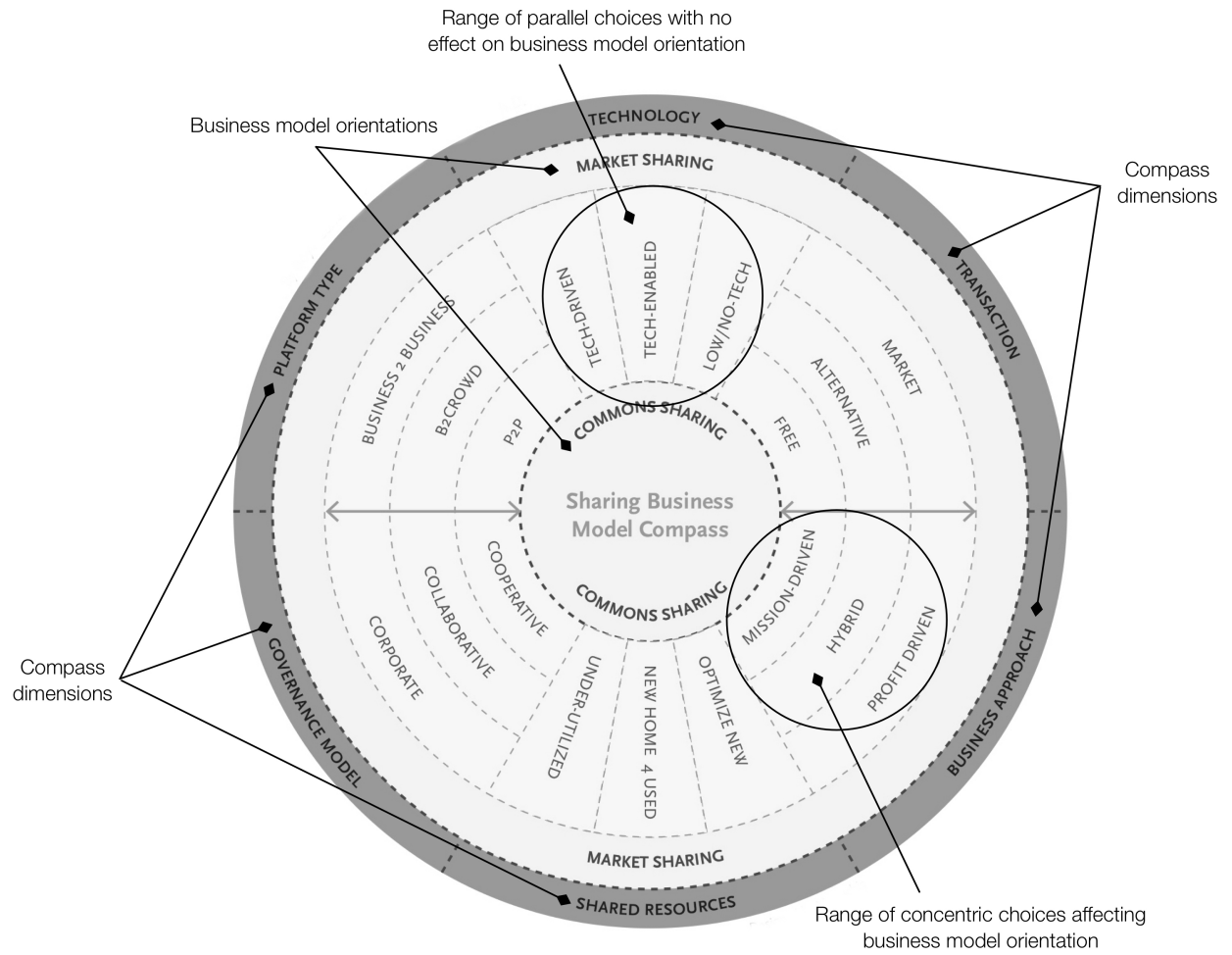
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