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A multidisciplinary survey on basic terms, views and current research topics

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If sharing is everything, then it is nothing

A multidisciplinary survey on basic terms, views and current research topics*

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1.   Introduction

The shared use of goods has always shaped human life and the established forms of exchange (Frenken/Schor 2017, p. 4). While consumption and behavioural patterns associated with sharing have been researched in social sciences since the 1970s (see e.g. Felson/Spaeth 1978), economics and media science regularly have devoted themselves to sharing from the beginning of the new millennium (see exemplarily Belk/Sobh 2007). Also in other disciplines, such as communication research, computer science and jurisprudence, sharing is an important topic.

Sharing research, which includes a variety of questions and methodological approaches, is also conducted by scientists at the Faculty of Economics and Media at Ilmenau University of Technology. During a faculty meeting held in May 2017, which was intended to promote the interfaculty dialogue between researchers, it emerged that a lot of faculty members are involved in sharing research, albeit from quite different perspectives. Sharing therefore may also in Ilmenau function as a so-called *umbrella construct*, which encompasses lots of different perspectives and approaches (Acquier/Daudigeos/Pinkse 2017).

During personal conversations, it became clear that sharing includes more than the popular examples currently discussed in the media: car sharing (e.g. *car2go*) and apartment sharing (e.g. *Airbnb*). Thus, the respondents of our empirical survey depicted in the following sections, stated that also

- cloud computing or open source programming can be understood as information and data sharing (viewpoint of information systems engineering),
- capacity utilization of workstations and machines can be achieved by sharing (viewpoint of production economics),
- granting access to consumer durables among friends can be considered as household sharing (viewpoint of social exchange theories).

Even this small selection of examples and perspectives gives an idea of the enormous scope of sharing research. At the same time, however, it is apparent that the complexity of sharing creates problems, e.g. with regard to a unified – or at least to some extent consensual – definition, which makes the understanding difficult or even disrupts cooperation between different disciplines.

Accordingly, the main objective of this paper originally was to derive a unified definition of sharing and a typology of different sharing forms, fitting the views of all participating scientists. This was intended to facilitate the understanding beyond disciplinary boundaries and, thus, create a basis for increased interdisciplinary cooperation.

In order to develop a deeper understanding of the different perspectives of the scientists, an empirical expert survey was conducted, which consisted of three questionings. The experts were asked to answer questions and assess statements on selected sharing issues via e-mail. At first, sharing types, examples and companies should be named. Furthermore, participants were asked to formulate a definition of sharing that corresponds as closely as possible to their individual ideas. The feedback from the first questioning (an overview of the answers is given in section 3.1) provided a complex picture of sharing, which sometimes contained surprising answers.

Particularly, the attempt of combining the participants' various sharing definitions to a single unified definition turned out to be extremely difficult. Thus, another approach had to be found to provide common ground for communication across disciplinary borders. Since sharing has become so diverse and sometimes confusing, instead of just giving another sharing definition a typology based on common features was developed, which makes it easier for researchers to specify their individual sharing views and paradigms.

The paper is organized as follows: Chapter 2 depicts the state-of-the-art of sharing research and outlines the practical and scientific relevance of sharing. Furthermore, the contribution of the paper is defined. Chapter 3 describes the participants and the survey design. Chapter 4 presents commonalities and controversies in the participants' feedbacks, including sharing examples, definitions and key statements. Chapter 5 focuses on the definition problem and provides a typology that enables researchers to specify their own sharing paradigm. Chapter 6 summarizes the results and their practical benefits.

2. Related literature

2.1 Subject-specific sharing research

A keyword search for the terms »sharing«, »sharing economy« and »collaborative consumption« in the *Business Source Premier* database currently results in more than 32,000 articles in peer-reviewed scholarly journals. The practical relevance of sharing, which has also been promoted by the public discourse on sustainability and the best-selling textbook *What's Mine Is Yours: The Rise of Collaborative Consumption* by Botsman/Rogers (2010), is also evident in its scientific reappraisal. In the following section a selection of publications is outlined, which depicts the main topics within sharing research and illustrates the variety of viewpoints and paradigms.

Anthropological and psychological sciences were the first to deal with sharing, defining sharing as exchange based on trust within small groups, such as, e.g., hunting communities and families (Price 1975). Behavioural science and consumer research, e.g., focused on factors encouraging individuals to participate in sharing activities (Felson/Spaeth 1978; Belk 2007; Lamberton/Rose 2012; Möhlmann 2015; Lawson et al. 2016; Weber 2016). Effects of sharing on consumers' attitudes towards ownership (Bardhi/Eckhardt 2012) and materialism were also analyzed.

Closely related to this is sustainability research, which focuses on general aspects, such as the impact of sharing on the natural environment and the society (Frenken/Schor 2017), and on environmental protection motives (Barnes/Mattsson 2016; Möhlmann 2015). The sustainability community also calls for theoretical conceptualisations of sharing, which should include the interplay between consumers' environmental awareness and value systems, respectively, and sharing practices (Heinrichs 2013; Roos/Hahn 2017). Furthermore, sustainability research highlights the importance of connecting sharing research with other disciplines (Plewnia/Günther 2017), thus pursuing a similar objective as the paper at hand.

Besides, operations research analyzed sharing using formal models for, e.g., the reallocation of vehicles within logistics networks (Waserhole/Jost 2016; Boyaci/Zografos/Geroliminis 2015), capacity planning (Witschel/Souren 2014), specification of product quality (Jiang/Tian 2018) as well as differences between the utility levels of owned vs. possessed goods depending on different usage levels (Benjaafar et al. 2018). Furthermore, transaction costs and their impact on strategic designs of sharing business models as well as provider and customer benefits have been investigated (Jiang/Tian 2018).

2.2 Theoretical and conceptual sharing research

Only a few publications are devoted to the purely theoretical/conceptual aspects of sharing in particular. Definitions as well as typologies are usually only discussed in basic chapters, but rarely form the actual core of investigations. One publication focuses on these fundamental questions is the study by Benkler (2004), who examines which types of goods can be shared at all and which types of goods are more suitable for free exchange based on social belonging and coherence ("social sharing"). Benkler (2004) finds the characteristics *technological lumpy* and *mid-grained granularity* to be decisive (p. 276).

Furthermore, there are a few contributions that essentially treat sharing terminologically or systematically. These include the conceptual delimitation of generic types of exchange by Belk (2010), who distinguishes between *gift giving*, *sharing* and *commodity exchange*, noting that the borderlines are not precisely defined (p. 718). For Belk, sharing has a social connotation, since it implies profound reflections on property and possession (p. 727). Despite its focus on marketing/consumer research, Belk's study therefore does not pursue a purely economic approach, especially since, according to Belk, sharing is *non-reciprocal*, i.e. does not require compensation. Belk (2010) defines sharing using the features *joint ownership* (no transfer of ownership), while *gift giving* and *commodity exchange* imply a transfer of ownership (p. 720).

Arnould/Rose take up Belk's contribution in their critical replica (2016) and criticize the weak epistemological foundation. Arnould/Rose find the dichotomies used by Belk (2010), such as *altruism* vs. *self-interest*, problematic (2016, p. 78) and the feature *joint possession* unsuitable to distinguish sharing from other forms of exchange (2016, p. 77). Characterizing sharing on the basis of individual-related characteristics, such as motives and attitudes, ignores the institutional arrangements and the effects of sharing on circulation principles and distribution mechanisms (p. 81f.), which are also important (Arnould/Rose 2016; Eckhardt/Bardhi 2016).

In their conceptual study, Acquier/Daudigeos/Pinkse (2017) postulate that sharing research does not require a further definition but an organizing framework (p. 3). They divide the sharing landscape into three generic concepts (p. 4):

- The *access economy* aims at a capacity utilization of underutilized goods,
- the *platform economy* mediates exchanges using digital platforms and
- the *community-based economy* aims at informal, non-hierarchical exchanges.

Acquier/Daudigeos/Pinkse (2017) locate sharing in the overlap of these basic concepts and also introduce hybrid forms of exchange − called *access platform*, *community-based access* and

community-based platform –, each of which being located in an intersection of two basic concepts (p. 7). Similarly, Frenken/Schor (2017) define sharing as an arrangement in which "consumers [are] granting each other temporary access to underutilized physical assets ("idle capacity"), possibly for money." (p. 4f.) Based on these characteristics, they locate sharing in between the *on-demand economy*, *second-hand economy* and *product service economy*, which each have only two of three sharing characteristics (*C2C, access, physical goods*) (p. 5).

Plewnia/Günther (2018) develop a typology of sharing economy activities using criteria such as, e.g., market structure (B2C, C2C etc.), market orientation (for-profit vs. non-profit) as well as (in-)tangibility of shared goods and services (p. 574). In addition, they distinguish between industry sectors, sustainability dimensions and policy fields. Although their morphological box particularly focuses on sustainability and policy issues (p. 578), some criteria used are similar to those described in section 5.2 of the paper at hand. Furthermore, the morphological box serves as a useful rolemodel for building organizing frameworks and sharing typologies.

Summarizing, the literature review shows, that conceptual irritations in dealing with sharing are by no means unusual, but apparently occur in all disciplines. Furthermore, researchers agree that defining the term »sharing« is difficult and may lead to divergent definitions, reflecting subjective viewpoints and preconceptions, which may cause fundamental communication problems. Thus, the authors consider it worthwhile to address the problem of formulating a consensual sharing definition once again and to discuss pitfalls and possible solutions to this problem. Perhaps, a few (or at least one) sharing feature may be revealed, that all sharing researchers agree on and which may serve as a common basis when discussing sharing issues across disciplinary borders. Additionally, as encouraged by some of the researchers cited before, a typology should be developed that gives researchers room for unfolding their individual sharing perspectives and facilitates positioning and navigation within the sharing research landscape.

3. Empirical expert survey on sharing paradigms

The participants, 7 professors and 8 phd students, were identified by means of a database, which lists up faculty members including preferred research topics, methods and institutional association.[1] They were offered participation in the study by e-mail. Furthermore, information about the study was given to the heads of the departments, who were asked to inform other possible participants. Figure 1 gives an overview of the faculty structure and the number of participants from each department.

Institute of Business Administration	
▪ Marketing	(3)
▪ Sustainable Production & Logistics Management	(2)
▪ Accounting & Managerial Control	(1)
▪ Management & Organization	(1)

Institute for Economics	
▪ Economic Theory	(2)
▪ Economic Policy	(1)

Institute for Business Information Systems Engineering	
▪ Service Information Systems Engineering	(1)
▪ Information & Knowledge Management	(1)

Institute of Media and Communication Science	
▪ Empirical Media Research & Pol. Communication	(2)

Institute for Law	
▪ Public Law	(1)

Figure 1: Participants from different institutes/departments

The participants were questioned via e-mail using a 3-stage survey design to evaluate the sharing issues described in figure 2:[2] The feedbacks were structured and prepared for a final group discussion, which took place in May 2018. Figure 2 illustrates the survey design, the inquired issues and the timeframe. The survey was based on a mixed-methods and mixed-theories approach. Since sharing includes encompassing phenomena of dematerialization, need orientation and social exchange within all fields of economics and society (Belk 2014, p. 14; Heng 2017, p. 1340), there is no unified theory capable of covering all facets. Therefore, contributions from different disciplines were relevant and had to be explored. The most important theoretical foundations originated from transaction cost economics, social exchange theories and the theory of public and immaterial goods. Furthermore, selected topics from information systems research (e.g. data sharing) and law (e.g. distinctions between possession, property and ownership) were used to approach sharing phenomena.

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[1] One of the authors, Rainer Souren, at the same time participated as a sharing expert.
[2] Two participants did not participate in all questionings; one participant quit after the first round and another participant after the second round.
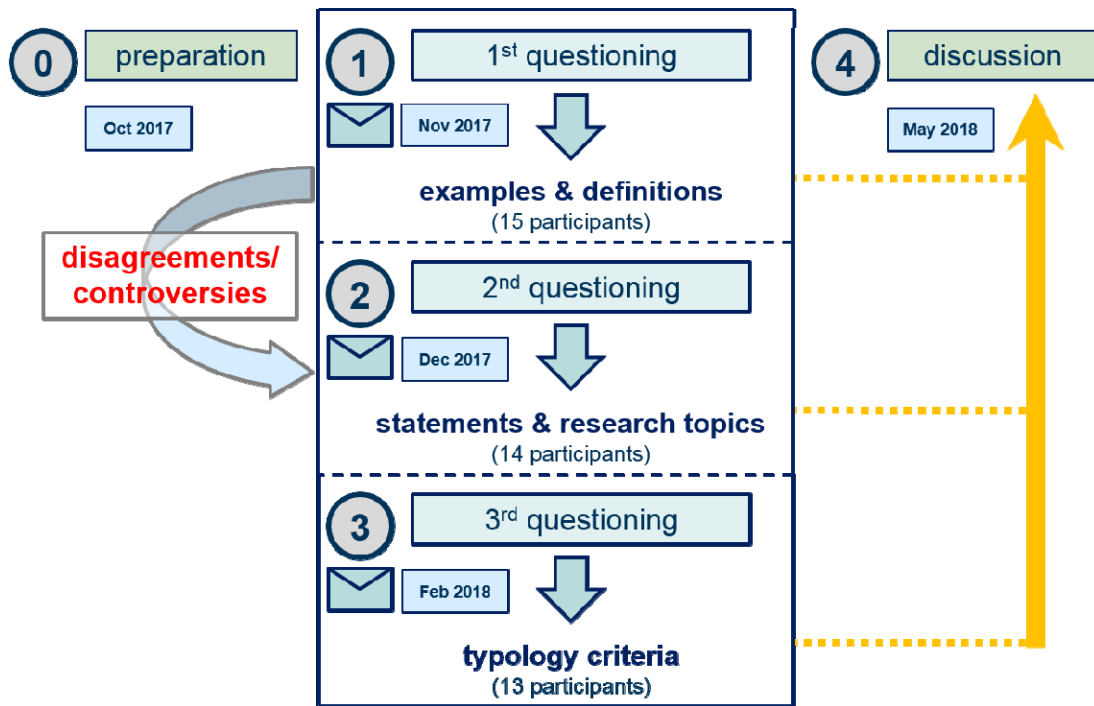
Figure 2: 3-stage survey design on sharing

4. Commonalities and controversies

4.1 Sharing examples and definitions

In the first questioning, the participants were asked to name popular sharing examples and companies. Furthermore, they should name examples which they considered to be inappropriately called »sharing«. Table 1 shows a selection of the most frequently mentioned types of sharing and the numbers of positive ("*... is a form of sharing*") and negative ("*... is not a form of sharing*") nominations.[3]

positive nomination	sharing type	negative nomination
7	appartment sharing	3
10	car and bike sharing	3
5	food sharing	5

Table 1: Examples of sharing types

As shown in table 1, there is not even an agreement on the three most frequently mentioned sharing types. In particular, the sharing character of food sharing seems questionable, the

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[3] An overview of all questions and answers is given in appendix 1. For the sake of simplicity, synonymous or very similar mentionings were aggregated and added accordingly (e.g., the category "car and bike sharing" includes the corresponding number of nominations "mobility sharing", which have not been specified in detail).

more so as five respondents explicitly cited food sharing as a positive example, whereas five researchers classified food sharing as non-sharing.

The first questioning also focused on sharing definitions, as the term is not clearly defined (Puschmann/Alt 2016, p. 95f.), i.e. »sharing« has various meanings (Plewnia/Günther 2018, p. 571). Participants were asked to give a definition that best matches their understanding of sharing. The most frequently mentioned characteristics to define sharing were *temporary use* (»temporäre(r) Nutzung/Übergang«) (9), *collaborative use* (»gemeinschaftliche Nutzung«) (5), *no transfer of ownership* (»kein Eigentumsübergang/Abkehr von Eigentum«) (5), *usage right* (»Nutzungsrecht«) (5) and *network/community* (»Netzwerk/Gemeinschaft«) (5).

Furthermore, characteristics should be given, which should *not* be used to define sharing. Most frequent mentionings were *transfer of ownership* (»Eigentumsübergang«) (5), *payment/compensation* (»Entgelt/Gegenleistung«) (5), *commercialization/profit orientation* (»Kommerzialisierung/Geschäftsinteresse«) (4) and *C2C* (3).[4] The *transfer of ownership*, which five respondents explicitly integrated into their sharing definition, proved to be particularly controversial, the more so as five others stated that aspects of the *transfer of ownership* are not relevant for characterizing sharing. As a result of these controversies, a second round was conducted, proposing more precise statements on sharing which the participants were asked to assess.

4.2   Statements

The statements and answers of the second questioning are listed in table 2.[5] Besides *yes* or *no*, the respondents could choose *not sure*. In the latter case, they were asked to briefly explain their uncertainty. The purpose of the statements was to elicit the controversies of the first questioning.

The answers in table 2 confirm the terminological irritations about sharing. Thus, the partly diametrical positions of the participants, which already emerged in the definitions, became apparent again in the characteristic *transfer of ownership* (statement 1).

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[4] A further characteristic mentioned, that should not be included in a sharing definition, was *profit orientation*, which was stated twice. Depending on how the characteristics are aggregated, the numbers of mentionings change. E.g., *profit orientation* and *commercialization/profit orientation* combined would add up to six and, thus, lead the ranking.

[5] As depicted in figure 2, the second questioning also focused on the participants' research topics. An overview of the topics mentioned is given in appendix 2.

	statements[6]	responses		
		yes	*no*	*not sure*
1	"Sharing precludes a transfer of ownership."	9	4	1
2	"Crowd-concepts do not belong to sharing."	8	2	4
3	"Sharing takes place only between consumers."	0	14	0
4	"Sharing requires the participation of a professional company."	0	12	2
5	"Non-durable goods (e.g. food) can be shared."	7	5	2
6	"Sharing exclusively implies a sequential use of goods."	2	10	1
7	"Sharing exclusively implies a simultaneous use of goods."	0	12	1
8	"Immaterial/intangible goods can be shared."	11	2	1
9	"Data can be shared."	12	1	1
10	"Services can be shared."	9	3	2

Table 2: Sharing statements and responses

In addition, the answers reveal also a disagreement regarding the durability of shared goods (see statement 5): 7 respondents were convinced that non-durable goods, such as, e.g., food, can also be shared, whereas 5 respondents deny this. This disagreement logically corresponds with the previously mentioned controversy on food sharing, which raises the question of whether goods that are used up in the context of consumption can be shared at all. With regard to the *temporality of use*, addressed with the statements 6 and 7, however, almost all respondents think that different concepts are permissible, i.e. *simultaneous* (e.g. "ride sharing") as well as *sequential* use (e.g. classic "car sharing").

While definitions should be as selective as possible and, thus, should refer to most exclusive characteristics, the exact opposite is true in the case of typologies: In the opinion of many participants, the *temporality of use*, e.g., shows that the qualification of a certain type of exchange as »sharing« is not determined by whether sharing objects are used simultaneously or sequentially. Therefore, the *temporality of use* is suitable for typologizing sharing but *not* for defining! For an organizing framework, like a typology, that helps to distinguish between the different types of sharing, however, the criterion *temporality of use* is therefore predestined – precisely because it does *not* exclude any sharing phenomena. This logic also applies to other sharing characteristics, such as *materiality of object* (see the statements 8, 9 and 10), which have no (or little) exclusive power.

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[6] The original statements in German are contained in appendix 2. The statements in bold were presented and discussed at the 5th International Workshop on the Sharing Economy, Mannheim, Germany, 2018.

5. Towards an organizing framework for sharing

5.1 Pifalls of a unified sharing definition

In chapter 4 the participants' various understandings of sharing were depicted. The diversity of views is illustrated once again by the following comparison of definition proposals of two respondents:[7]

- Participant A: Sharing is a "usually paid (... in monetary or non-monetary form ...) ... provision of usage rights to objects".
- Participant B: "Sharing is characterised by ... public welfare orientation (i.e. no or no direct compensation is demanded by the resource provider)".

Participants A and B agree that *compensation* is an aspect that is relevant to sharing, as they both base their definition on this characteristic. However, A and B define »sharing« on the basis of *diametrical specifications* of this characteristic: the existence of a particular kind of compensation for A is a constitutive feature of sharing, i.e. a necessary condition, whereas B considers only such types of exchange as »sharing« that do *not* require compensation (see characteristics c_{A2} and c_{B2} in figure 3). Figuratively speaking, by using his individual definition, every researcher cuts off parts of the sharing research landscape, so that ultimately it contains only those types that match all the characteristics used in the definition.
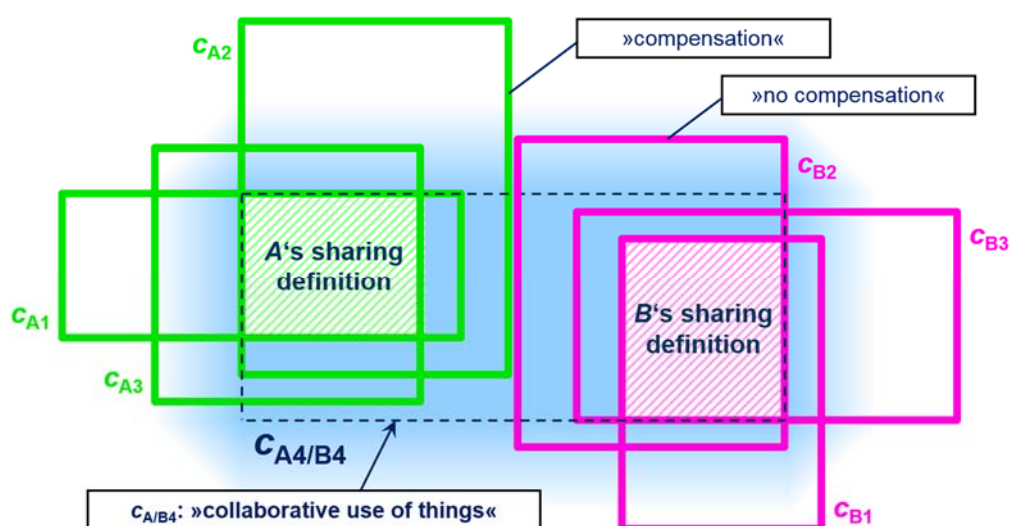

Figure 3: Different perspectives on the sharing definition

In this case, the definitions of A and B lead to disjoint parts of the sharing research landscape – see the green hatched area in figure 3 for A's sharing definition and the pink hatched area as B's sharing definition – , i.e. there is not a single phenomenon left that A and B would concordantly call »sharing«.

Acquier/Daudigeos/Pinkse (2017) also complain that "the criteria used for each definition may be too specific, resulting in a list of individually coherent, but overall incompatible definitions" (p. 2). The only thing sharing researchers agree on is the fact that it is extremely difficult to define sharing accurately (p. 1f.). Sharing has become a catch-all label which also attempts to cover concepts such as, e.g., *platform capitalism*, *on-demand economy*, *gig economy*, *collaborative consumption*, *gift economy*, *peer-to-peer economy* and *access economy* (Acquier/Daudigeos/Pinkse 2017, p. 1f.; Plewnia/Günther 2018, p. 571).

Acquier/Daudigeos/Pinkse (2017) also say – with reference to a work by Hirsch and Lewin (1999) – that there is the danger of getting lost in endless discussions about what sharing should be and what it should not be. Ultimately, the term »sharing«, including the concepts associated with it, will presumably be skipped due to its fuzzieness and replaced by another "clone", a new term, which in turn, sooner or later, will be doubted and eventually has to collapse (p. 3, in conjunction with Hirsch/Lewin 1999, p. 203).

One solution to the problem is to position oneself between definitions that are too narrow and an "anything goes" approach. Thus, Acquier/Daudigeos/Pinkse (2017) take the view that "instead of new definitions, the sharing economy is in need of an organizing framework that allows mapping different perspectives on the sharing economy." (p. 3) Their so called *mapping approach* draws conceptual lines between sharing and its neighbouring concepts *access economy*, *platform economy* and *community-based economy* (p. 4) and, thus, remains open to different perspectives.

We agree with this middle way in principle, but we also consider an even more criteria-based typology to be useful. This is supported by the fact that nevertheless there is a large number of commonalities between the different views on sharing – only a *complete* agreement could not be achieved. Particularly, in the context of the discussion with the participants, it became clear, that sharing researchers associate sharing with some kind of *collaborative use of things* (see $c_{A4/B4}$ in figure 3). So there is at least a consensus with regard to the sharing characteristic of making things accessible for use by several people. The participants' common denominator *collaborative use of things* is symbolized in figure 3 by the blue field, which is wide enough (see the dashed border line in figure 3) to include even the most divergent sharing views.

The generality of the feature *collaborative use of things* is also its strength, as it leaves scope to concretise all individual, usually even more specific sharing ideas and concepts. As already mentioned, such general similarities are the ideal "breeding ground" for a typology, which is derived in the next section, based on the experts feedbacks of the third questioning.

5.2 Building a new typology of collaborative use

Since there is no unified definition of sharing, the following typology is actually not a *sharing* typology but a typology of *collaborative use of things*. It is based on the participants answers[8] to the third questioning and might (implicitly) include a researcher's individual conception and definition of sharing as a special case, but it is not restricted to such single viewpoints.

As shown in figure 4, the characteristics which are used here for typologizing[9] – referred to as *criteria* and abbreviated with c – do not have any exclusionary force, i.e. all specifications are permissible. As mentioned before, the criterion *temporality of use* is particularly suitable for typologizing, because both of its specifications (*simultaneous* and *sequential*) are suitable for specifying phenomena of shared use. Therefore, in figure 4 c_2 might represent the criterion *temporality of use*, which has the specifications c_{21} (*simultaneous*) and c_{22} (*sequential*). The criterion draws a line within the landscape of *collaborative use of things* – i.e. the blue field – and divides it into smaller subsections.
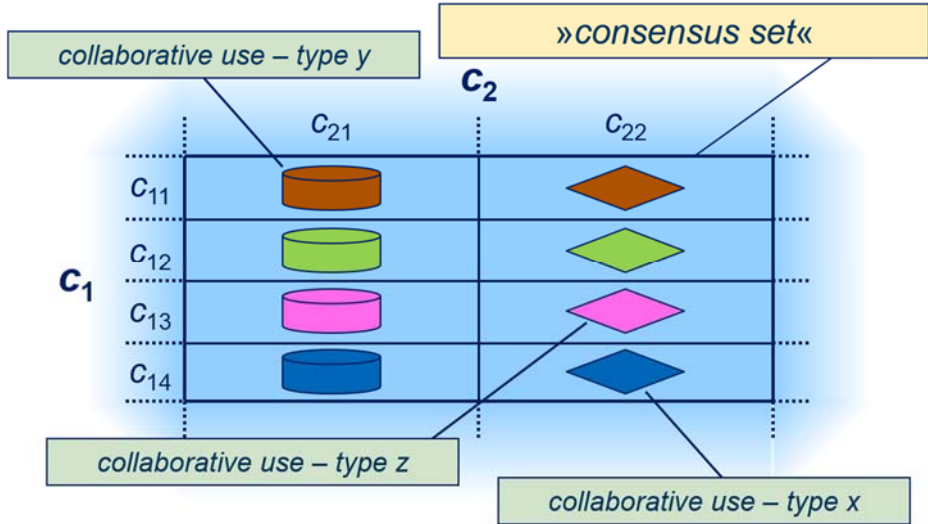
Figure 4: Mechanisms of typologizing

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[8] Appendix 3 gives a complete overview of all typology criteria mentioned and the number of their namings.
[9] Benoit et al. (2017) use quite similar criteria (*number and type of actors involved*, *nature of the exchange*) to distinguish *collaborative consumption* from other types of exchange discussed in the literature, such as, e.g., *buying*, *renting*, *non ownership/access based services* and *sharing* (or the so called *co-owning*) (p. 220). Also Plewnia/Günther (2018) use the distinction *B2C* vs. *C2C* as well as the market orientation (*for-profit* vs. *non-profit*) for their "morphological box on sustainability and policy fields within the sharing economy" (p. 578).

These sections each contain specific phenomena of *collaborative use*, which are identical with regard to the respective criterion and, thus, are called "types".

Further criteria can be applied for typologizing in order to parcel out even smaller subsections. In figure 4, the criterion c_1 might, e.g., refer to the criterion *parties/actors*, for which, in the expert survey, four specifications – *B2B*, *B2C*, *C2B2C* and *C2C* (see table 3) – were identified. These specifications, called c_{11}, c_{12}, c_{13}, c_{14} in figure 4, can be combined with the specifications of the aforementioned criterion *temporality of use*, which leads to eight types.

criterion	specifications			
excludability	yes		no	
rivalry	yes		no	
parties/actors	B2B	B2C	C2B2C	C2C
compensation	monetary	non-monetary	none	
temporality of use	simultaneous		sequential	
materiality of object	tangible (»material«)		intangible (»digital«)	
wear of object	durables		non-durables	
intensity of interaction	high		low	

Table 3: A new typology of collaborative use

While figure 4 visualizes the theoretical aspects of typologizing, table 3 shows the results of the third questioning of the expert survey. In combination, there are 768 theoretical types of *collaborative use of things*, but not every single combination may be relevant or possible.

The criteria *excludability* and *rivalry* both originate from economic theory and can be specified with either *yes* or *no* (Mankiw 1999, p. 245).[10] Their combination yields to four generic types of goods, namely *private goods* (*yes*–*yes*), *public goods* (*no*–*no*), *club goods* (*yes*–*no*) and *common goods* (*no*–*yes*). The criterion *compensation* specifies whether a sharing offer implies certain returns from the receiver of the sharing object to the supplier or owner or the sharing object; compensations may be of monetary or non-monetary nature, or not be required at all (*none*).

The criterion *materiality of object* leads to the distinction between *tangible* (*material*) goods and *intangible* (*digital* or *immaterial*) goods. The criterion *wear of object* describes, whether the sharing object outlasts the consumption process (*durables*) or not. If the sharing object is materially consumed, like, e.g., food and beverages, it is called *non-durable*. The *intensity of*

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[10] Sometimes instead of *yes* or *no* the criteria *excludability* and *rivalry* are specified as either *high* or *low*.

interaction can be specified either *high* or *low*, depending, e.g., on the durance, contingency and complexity of the underlying exchanges between provider and user.

Using the typology, every researcher is capable to specify and clarify to other researchers his individual sharing viewpoint and paradigm by chosing appropriate specifications for the eight sharing criteria shown in table 3. As indicated with the dots, the typology can be extended, if necessary, by adding further sharing criteria and corresponding specifications.

To illustrate the application and benefits of the typology, it is now applied to the example of the authors from the Department of Sustainable Production and Logistics Management (see the gray shaded areas in table 3). Due to our focus on profit oriented companies, the criteria *excludability* and *rivalry* should be fulfilled (both *yes*) in order to guarantee positive market prices. This issue is closely linked to arrangements in which at least one company is involved; accordingly, the third criterion *parties/actors* should have the specifications *B2B* or *B2C* (and under certain circumstances also C2B2C, which is, however, of secondary importance to us) and be linked to the specification *monetary* of the fourth criterion *compensation*. Due to our sustainability operations orientation, which includes capacity planning and utilization, both specifications, *simultaneous* and *sequential*, of the criterion *temporality of use* are admissible. Simultaneous use would focus on the so-called intensity-related utilization (e.g. ride sharing), whereas sequential use serves the time-related utilization (Souren/Dyckhoff/Ahn 2002, p. 371; Plewnia/Günther 2018, p. 575). Since capacity planning traditionally focuses on tangible goods, the criterion *materiality of object*, in our view, should be specified as *tangible* (or "*material*").

Logically linked to materiality is the criterion *wear of object*, which specifies the preservation of objects. Since our understanding of sharing is limited to durable goods, i.e. to objects that still remain after being used, the specification *durables* is decisive to us. In this context it also becomes apparent that not all specifications of the criteria can be combined: Since, e.g., only *material* goods are (in a physical sense) perishable, the combination of *intangible* ("*digital*") objects and *non-durables* is impossible.

With regard to the criterion *intensity of interaction*, we believe that both specifications *high* and *low* are permissible. This is due to the fact that interactions do not belong to the main research of (classical) production economics. Nevertheless, interactions are relevant for our research on a theory of service production – but then independent of their intensity, which is therefore of little relevance to us as a criterion.

With the individual specification of the criteria (or the indication of irrelevance), the sharing paradigm of each researcher can be outlined. The typology thus serves to find positions and contributes to uncovering common ground between sharing researchers and disciplines.

6. Summary

The starting point for this research was a meeting held in spring 2017 at which scientists from Ilmenau University of Technology discussed interdisciplinary cooperation possibilities. The subject of the paper was the terminological and conceptual clarification of sharing and the identification of the associated characteristics and research topics.

In order to get a deeper understanding of the different points of view and possibly to uncover similarities between the researchers, a survey was conducted, which provided the following controversial results:

- The most frequently mentioned underline examples are apartment, car, bike and food sharing. They were cited both as positive and negative examples, i.e. by some respondents as inappropriate examples that should not be included in the term "sharing". Food sharing, in particular, proved to be very controversial.
- The definitorical features *temporality of use*, *transfer of ownership* and *compensation* were considered particularly relevant. However, aspects of the *transfer of ownership* were considered irrelevant by some participants. The *compensation*, which was classified as constitutive by some reseachers but neglected by others, also seems controversial.
- The most controversial statements are "sharing precludes a transfer of ownership" and "non-durable goods (e.g. food) can be shared." They confirm the controversies on the role of property and the principle suitability of non-durable goods for sharing.

It turned out that sharing refers to a wide range of types of collaborative use, which show serious differences and also contradictions. For example, some respondents argued that only non-compensatory forms of exchange could be sharing, while others said that sharing requires compensation. Due to these diametrical positions, a unified, consensual sharing definition proved impossible.

However, there is an agreement on the collaborative character of sharing. This feature is useful for creating a common understanding of sharing, as it is comprehensive enough to meet all sharing paradigms of the study participants. *Collaborative use* is therefore at the heart of our

typology, which includes the different sharing paradigms as special cases. The criteria originally requested for the purpose of *defining* sharing do *not* exclude certain types *in the context of a typology*, but rather result in a comprehensive and integrative framework (see section 5.2). With the help of the typology criteria, specific types of *collaborative use of things* can be derived, which might then agree with individual *sharing* understandings of researchers. The typology thus serves as an orientation framework in which researchers can locate themselves and reveal their relative position to other researchers. Despite the fact that there is no unified definition of sharing, an exchange of ideas between the disciplines seems possible.

Appendix 1 – Details of the 1st questioning

Translated questioning:

I.) *Name (any number) of sharing <u>types</u> (general designation), as well as <u>specific offers</u> of those sharing types.*
(≤ 5 minutes)

As an illustration: In the context of service science examples of service types could be <u>consulting</u> services or <u>cleaning</u> services; accordingly, offers of the <u>McKinsey & Company Corporation</u> represent specific offers of consulting services, and offers of the <u>Sodexo Group</u> represent specific offers of cleaning services.

II.) *Name economic offers and companies which in your opinion are <u>incorrectly</u> described as sharing offers or providers.*
(≤ 3 minutes)

As an illustration: In the context of the theory of service production publishing a daily newspaper, in our view, ist not an appropriate example of a service.

III.) *Try to define the term "sharing" by a definition that seems plausible to you. Please make sure that your definition contains so-called <u>constitutive features</u> (see the underlined terms in the definition example) and is <u>formulated positively</u> (i. e. sharing should <u>not</u> be defined by saying what it is <u>not</u>). You are also welcome to note your definition using bullet points for the individual definition characteristics.*
(10–15 minutes)

As an illustration: In our view, »production« is defined as a <u>value creating transformation</u> of <u>input in output</u>, that is <u>target-oriented controlled</u> an induced by man.

IV.) *Specify characteristics/attributes that you think should <u>not</u> be included in a definition of the term sharing because they lead to a blurred or even wrong delimination of the term.*
(≤ 5 minutes)

As an illustration: In the context of service management, often services are – <u>in our view incorrectly</u> – linked to the feature »intangibility« („services are intangible goods…"). As a consequence certain other types of economic activities are included in the term service inaccurately.

Original questioning in German:

I.) *Nennen Sie (beliebig viele) Ihnen bekannte Sharingformen (allg. Bezeichnung), sowie konkrete Angebote für die betreffenden Sharingformen.*
(≤ 5 Minuten)

Zur Verdeutlichung: Im Dienstleistungsbereich wären Formen von Dienstleistungen z. B. Beratungsdienstleistungen oder Reinigungsdienstleistungen; die Leistungen der X-Case GmbH wären entsprechend konkrete Beratungsangebote und die Leistungen der Putzteufel GmbH konkrete Reinigungsangebote.

II.) *Nennen Sie wirtschaftliche Leistungen bzw. Unternehmen, die Ihrer Ansicht nach unzutreffend als Sharing-Angebote bzw. -Anbieter bezeichnet werden.*
(≤ 3 Minuten)

Zur Verdeutlichung: Im Forschungsbereich Dienstleistungsproduktion wäre etwa das Herausgeben einer Tageszeitung u. E. kein zutreffendes Beispiel für eine Dienstleistung.

III.) *Versuchen Sie, den Begriff »Sharing« mittels einer eigenen, Ihnen plausibel erscheinenden Definition zu fassen. Bitte achten Sie darauf, dass Ihre Definition sog. konstitutive Merkmale (s. die unterstrichenen Terme im Definitionsbeispiel) enthält und positiv umschrieben ist (d. h. Sharing nicht daran fest macht, was es nicht ist). Sie können Ihre Definition gerne auch mithilfe von Bulletpoints für die einzelnen Definitionsmerkmale notieren.*
(10–15 Minuten)

Zur Verdeutlichung: Nach unserem Verständnis ist »Produktion« definiert als „eine vom Menschen veranlasste, der Nutzenstiftung dienende Transformation von Input in Output, die zielgerichtet gelenkt wird."

IV.) *Geben Sie Merkmale bzw. Attribute an, die in einer Definition des Sharingbegriffs Ihrer Ansicht nach nicht enthalten sein sollten, weil sie zu einer unscharfen oder gar falschen Begriffsabgrenzung führen.*
(≤ 5 Minuten)

Zur Verdeutlichung: Im Dienstleistungsmanagement wird der Dienstleistungsbegriff häufig – und u. E. unzutreffend – an das Merkmal »Immaterialität« („Dienstleistungen sind immaterielle Wirtschaftsgüter…") gekoppelt. Hieraus resultiert eine unzutreffende Inklusion andersartiger Leistungen in den Dienstleistungsbegriff.

Complete list of definition criteria (translated):

definition criterion	frequency of mention
temporary use/provisory transfer	9
collaborative use	5
no transfer of ownership	5
right of use	5
network/community	5
economic purposes	4
public welfare orientation	4
access to resources of others	3
intermediation via platform/internet	3
data generation	3
temporality of Use	2
capacity/utilization	2
compensation/payment	2
rivalry/excludability/privacy	2

Complete list of definition criteria (original):

Definitionsmerkmal	Häufigkeit
Temporär(r) Nutzung/Übergang	9
Gemeinschaftliche Nutzung	5
Kein Eigentumsübergang	5
Nutzungsrecht	5
Netzwerk/Gemeinschaft	5
Ökonomische Intention	4
Gemeinwohlorientierung	4
Zugang zu fremden Ressourcen	3
Vermittlung via Plattform/Internet	3
Datengenerierung	3
Zeitliche Struktur der Nutzung	2
Kapazität(sauslastung)	2
Kompensation/Entgelt	2
Rivalität/Ausschließbarkeit/Privatheit	2

Appendix 2 – Details of the 2nd questioning

Translated statements:

1. „Sharing precludes a transfer of ownership."
    agree: do not agree: not sure: (explanation:)

2. „Crowd-concepts do not belong to sharing."
    agree: do not agree: not sure: (explanation:)

3. „Sharing takes place only between consumers."
    agree: do not agree: not sure: (explanation:)

4. „Sharing requires the participation of a professional company."
    agree: do not agree: not sure: (explanation:)

5. „Non-durable goods (e. g. food) can be shared."
    agree: do not agree: not sure: (explanation:)

6. „Sharing exclusively implies a sequential use of goods."
    agree: do not agree: not sure: (explanation:)

7. „Sharing exclusively implies a simultaneous use of goods."
    agree: do not agree: not sure: (explanation:)

8. „Immaterial/intangible goods can be shared."
    agree: do not agree: not sure: (explanation:)

9. „Data can be shared."
    agree: do not agree: not sure: (explanation:)

10. „Services can be shared."
    agree: do not agree: not sure: (explanation:)

Original statements in German:

1. „Sharing schließt einen Eigentumsübergang der geteilten Güter aus."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

2. „*Crowd*-Konzepte gehören nicht zum Sharing."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

3. „Sharing vollzieht sich ausschließlich zwischen Konsumenten und schließt somit die Beteiligung von Unternehmen aus."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

4. „Sharing erfordert die Beteiligung mindestens eines Unternehmens."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

5. „Auch Verbrauchsgüter (z. B. Nahrungsmittel) können geshared werden."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

6. „Sharing stellt ausschließlich die zeitlich aufeinander folgende Nutzung geteilter Güter dar."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

7. „Sharing stellt ausschließlich die zeitgleiche Nutzung geteilter Güter dar."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

8. „Immaterielle Güter können geshared werden."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

9. „Daten können geshared werden."
   stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

10. „Dienstleistungen (synonym: »Services«) können geshared werden."
    stimme zu: stimme nicht zu: nicht sicher: (Begründung:)

Translated questioning:

In the following, we would like to open the second topic field on the sharing economy, which should take 5–10 minutes to process, with the research questions you consider relevant. You are welcome to refer back to your answers from the last survey round, which you will find at the very bottom of this e-mail.

- Please specify your affiliation to a scientific discipline (e.g. communication science, marketing) or a specific research direction (e.g. corporate governance, sustainability). Multiple entries are allowed (but not mandatory!)

- Mention research aspects of the sharing economy to which you attach great relevance for the named scientific discipline or research direction. Formulate – preferably in direct speech – one (or more) research question(s) which in your opinion should form the core of sharing research.

Original questioning in German:

Im Folgenden möchten wir mit den aus Ihrer Sicht relevanten Forschungsfragen das zweite Themenfeld zur *Sharing Economy* eröffnen, dessen Bearbeitung 5–10 Minuten beanspruchen sollte. Dabei können Sie gerne auf Ihre Antworten aus der letzten Befragungsrunde zurückgreifen, die Sie ganz unten an diese Mail angefügt wiederfinden.

- Bitte spezifizieren Sie Ihre Zugehörigkeit zu einer Wissenschaftsdisziplin (z. B. Kommunikationswissenschaft, Marketing) bzw. einer spezifischen Forschungsrichtung (z. B. Corporate Governance, Nachhaltigkeit). Auch mehrfache Nennungen sind erlaubt (aber nicht zwingend erforderlich!)

- Nennen Sie für die benannte Wissenschaftsdisziplin oder Forschungsrichtung Forschungsaspekte der *Sharing Economy,* denen Sie große Relevanz beimessen. Formulieren Sie hierzu – möglichst in direkter Rede – eine (oder mehrere) Forschungsfrage(n), die aus Ihrer Sicht den Kern der *Sharing*-Forschung bilden sollte(n).

Table 4 provides an overview of the research topics of the participants and disciplines. This gives an impression of the diversity of sharing research at the Faculty of Economics and Media at Ilmenau University of Technology. A complete overview of research topics and questions collected can be requested from the authors by e-mail (pil-wm@tu-ilmenau.de).

disciplin/department	research topics
Marketing	• *What drives customer **value**, **loyalty** and **satisfaction**?* • *How can **customer misconduct** be prevented?* • *How are **roles** of supplier and customer changing?* • *Which factors influence **customer participation**?*
Management and Organization	• *How can actors be **motivated** to share?* • *How can **misconduct** be prevented?* • *How can **cooperation gains** be devided up?*
Sustainable Production and Logistics Management	• *Which **product types** can be shared?* • *Is sharing **sustainable**?* • *How can **capacities** be better utilized?*
Accounting and Managerial Control	• *What are institutional **characteristics** of providers?* • *What are critical **factors for success**?* • *What are the **influences** of market participants?*
Economics	• *How does sharing change **intensity of competition**?* • *Are markets **dominated** by a certain platform?* • *Which strategies are **anti-competitive**?*
Information Systems Engineering/ Knowledge Management	• *Which **information/communication technologies** are suitable for sharing?* • *How can sharing platforms be **designed** effectively?* • *How high is the **digitization potential**?* • *How can **user data** be exploited?* • *How can **data security/transparency** be guaranteed?*
Communication Science	• *Which **user groups** can be reached (how)?* • *Which **communication strategies** are effective?* • *Which **platforms** can increase the benefits?* • *How do **political actors** frame the discourse?* • *Does **mass media** influence the sharing economy?*
Law	• *What **regulatory framework** is required?* • *Which **property rights** are relevant?* • *What **liability issues** need to be clarified?*

Table 4: Research topics and questions

Appendix 3 – Details of the 3rd questioning

Translated questioning:

After we have moved the definition of sharing into the foreground in the first two rounds, we now want to make an **attempt at typologizing** different **forms of sharing**. For this we need information on important **differentiation/distinguishing criteria and their specifications**. To illustrate what we would like you to do, here are some more **examples of differentiation/distinguishing criteria** from **another area**, service research: The following table illustrates which criteria can be used to classify services:

criterion	specifications		
external factor	customer's object		customer her-/himself
customer participation	active	passive	none
number of customers	individual		collective
…	…		…

You are welcome to send us an analogous table with criteria and their specifications for the topic of sharing. Of course, dashes with the criteria and – behind a colon or in brackets – the respective specifications would be sufficient as well.

Original questioning in German:

Nachdem wir in den ersten beiden Runden die Definition des Begriffs Sharing in den Vordergrund gerückt haben, wollen wir nun einen **Typisierung**sversuch **verschiedener Sharingformen** unternehmen. Hierzu benötigen wir Auskünfte zu wichtigen **Differenzierungs-/Systematisierungskriterien und deren Ausprägungen.** Zur Veranschaulichung, was wir gerne von Ihnen hätten, erneut **Beispiele für Differenzierungs-/Systematisierungskriterien** aus **einem anderen Bereich**, der Dienstleistungsforschung: Die folgende Tabelle verdeutlicht anhand von Dienstleistungen, welche Kriterien zu ihrer Typisierung genutzt werden können:

Kriterium	Ausprägung		
Externer Faktor	Objekt des Kunden		Kunde selbst
Beteiligung des Kunden	Aktiv	passiv	gar nicht
Anzahl Kunden	individuell		kollektiv
…	…		…

Gerne können Sie uns für den Themenkomplex *Sharing* eine analoge Tabelle mit Kriterien und deren Ausprägungen zuschicken. Selbstverständlich reichen aber auch Spiegelstriche mit den Kriterien und – hinter einem Doppelpunkt oder in Klammern – die jeweiligen Ausprägungen.

Complete list of typology criteria (translated):

typology criterion	frequency of mention
compensation/payment	9
parties/actors	7
wear of object	4
materiality of object	4
rivalry	4
excludability	3
temporality of use	3
frequency of use	3
automatization	3
intensity of interaction	3
9 further mentions	*2 at a time*
15 further mentions	*1 at a time*

Complete list of typology criteria (original):

Typologisierungskriterium	Häufigkeit
Vergütungs-/Entgeltform	9
Akteurskonstellation	7
Objektverschleiß	4
Stofflichkeit des Objekts	4
Rivalität im Konsum	4
Ausschließbarkeit	3
Zeitliche Nutzung	3
Häufigkeit der Nutzung	3
Automatisierungsgrad	3
Intensität des sozialen Austauschs	3
9 weitere Nennungen	*jeweils 2 mal*
15 weitere Nennungen	*jeweils 1 mal*

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