Making and taking information

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Abstract
Information behavior theory covers different aspects of the totality of information-related human behavior rather unevenly. The transitions or trading zones between different types of information activities have remained perhaps especially under-theorized. This article interrogates and expands a conceptual apparatus of information making and information taking as a pair of substantial concepts for explaining, in part, the mobility of information in terms of doing that unfolds as a process of becoming rather than of being, and in part, what is happening when information comes into being and when something is taken up for use as information. Besides providing an apparatus to describe the nexus of information provision and acquisition, a closer consideration of the parallel doings opens opportunities to enrich the inquiry of the conditions and practice of information seeking, appropriation, discovery, and retrieval as modes taking, and learning and information use as its posterities.

1 | INTRODUCTION

Considering the principal consensus on that information behavior (IB) covers the “totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use” (Wilson, 2000), the attention of information science research to the individual parts of that totality has been unevenly distributed (Case & Given, 2016). Much of earlier empirical research and many of the popular theories (Robinson, 2009) alike focus on information seeking whereas other areas, perhaps, in particular, information use (Savolainen, 2009), have remained both under-theorized and under-researched. In parallel, there has been a comparable, relative dearth of theorizing and models that would account for junctures between behaviors that account for the manipulation of information, for instance, by creation, organizing and managing, and its use. Earlier studies refer to “information creation and use” and how they are dynamically related to each other (Huuskonen, 2014) but seldom theorize this nexus in detail. This and other junctures are subsumed in some models that describe spaces and places (Chatman, 1991; Fisher & Naumer, 2006; Jaeger & Burnett, 2010), topologies or circumstances, and backdrops of information activities and practices (Allen et al., 2011; Huizing & Cavanagh, 2011). Also the linear and non-linear process (Cole, 1997; Foster, 2006; Kuhlthau, 1993; Tabak & Willson, 2012), life-cycle (Hernon, 1994; Taylor, 1982; Worrall et al., 2012), and traveling (Blandford & Attfield, 2010) based theories, models and metaphors of IB incorporate transitions (Wilson, 1999) but often without explicating them or their premises in detail. The same applies to life transitions in IB research (Willson, 2019). Earlier research has elaborated our understanding of information, to quote Bates, “in the social texture of people’s lives.” Still, closer scrutiny of “the red thread of information” (Bates, 1999, p. 1048, see also Hartel, 2020) that goes through it, and more specifically, how particular doings are linked together in this thread, have tended to remain outside of its specific scope.
As a step toward a more comprehensive understanding of IB through theorizing of the transitions or trading zones between different types of information activities, this article aims to delve into the particularly under-theorized nexus of information provision and acquisition. It sets to outline concepts for explicating how the emergence, creation, and supply of information tie up to the circumstances and doings when it is put into action. Cutting across junctures between information activities is crucial for our capability to both theoretically and empirically, to quote Bates again, “follow the information” (Bates, 1999, p. 1048) in the texture of how people act and behave with and in relation to the information. To this end, this article interrogates and expands a conceptual apparatus first outlined in an earlier text (Huvila, 2018a) that draws on systems thinking (Checkland, 2000) and the concept of the continuum (McKemmish, 2016) to theorize information provision, and uptake in terms of making and taking, and to inquire in theory and practice into what influences takeability and makeability of information in this nexus. For the sake of conceptual clarity, it is relevant to remark that this article addresses information behavior as a field of research with an interest in the totality of informational undertakings performed by different types of agents whether human or non-human. In the following these undertakings are referred to as actions, interactions, activities, or practices depending on their level of granularity and how they are best described in a given situation, and if specifically stated, according to a specific theoretical perspective.

2 | TRACING TRANSITIONS

Even if the intersections of information activities (i.e., where one information activity is linked to another one) and perhaps particularly the specific juncture between information provision and acquisition has remained comparatively under-theorized beyond the often unarticulated assumption of continuous information flows (cf. Day, 2000), they are not completely absent from the earlier literature. Practice theory and, for instance, activity theory incorporate conceptualizations of the intersections of, respectively, practices and activities. They both postulate how doings are linked to each other, in activity theory, through shared and overlapping objects (Engeström, 2009), and in practice-oriented theorizing, for instance, through negotiation and sequencing of practices (Hui, 2016). However, even if they provide useful concepts to explicate informational undertakings (i.e., activities and practices) and how they are linked to each other, they do not necessarily describe in satisfactory detail what negotiation or sharing does for information and what characterizes the particular types of activities or practices that pertain to specific junctures, for instance, between creating and using information.

To this end, the earlier IB literature features pertinent work that engages specifically with the question of how information travels and how it links to human activity and explicates germane factors and circumstances that condition the successful transfer of information. This work includes contextual and processual theories of information activities that explicate the spatiotemporal underpinnings of information provision and its relation to information use. Moreover, a large number of factors from effects (Nahl & Bilal, 2007; Savolainen, 2015) and personality (Heinström, 2010) to materiality (Huvila, 2016; Veinot & Pierce, 2019) and embodiment (Bates, 2018) have been identified to condition both information provision and acquisition. Together with theories that inquire into practices, underpinnings, and conditions of successful information and information seeking, for example, information literacy (Lloyd, 2017), relevance (Saracevic, 2016), information credibility (Rieh & Danielson, 2007), and information science theories of genres (Andersen, 2015), they elucidate the prerequisites of what factors—such as adequate information literacy, relevant and credible information, and compatible genres—link information creation and use together and separate them.

Besides, even if they are fairly rare, some IB theories and models explicitly theorize the nexus of information provision and acquisition. Ingwersen and Järvelin’s (2005) integrated information seeking and retrieval framework accounts for different actors’ interplay with information objects, information technologies and interfaces provides a conceptualization of information production and consumption in terms of authoring and accessing of information objects. The model describes further how human indexers and designers of indexing algorithms enrich existing information objects by generating either directly or indirectly knowledge representations. Further, Ingwersen and Järvelin account for the role of selectors who are responsible for making information objects available and accessible, and information seekers that are looking for information to index or select it, or use it for other purposes.

Document theory provides a comparable conceptualization of how documents are outcomes of documentation and authorship, and how and on what conditions, they lend themselves to use in different contexts and for different purposes (Lund, 2009). Document research has underlined the participatory nature of documents and what they convey as a social undertaking between document creators and their readers. The maker of a document determines its content but the understanding and implications are constructed either together with its readers (Brown & Duguid, 1996), or according to some, the meaning of a text is constructed by the audience alone.
(Fish, 1980). As Fish (1980) argues, an interpreter is not a decoder but a maker of a text. Document studies have similarly emphasized the active role of the keepers of documents (Sanches & Day, 2020) and the documents themselves (Brown & Duguid, 1996) in the process.

The records continuum (McKemmish, 2016) and its extension information continuum (in Upward, 2000) are the third example of theorizing that elucidates the information provision-use nexus. They build on Giddens' (1984) notion of structuration and provide a framework that describes records and information management processes according to four dimensions of how records and information are created, captured as evidence or information, organized, and pluralized in a wider societal context (Upward, 2000). Its focus on the shifts records undergo has parallels with the work of Willson (2019) who reviews and inquires into the IB-related implications of how people experience transitions, for example, when moving to a new country, becoming mothers, and as in her own study, acquiring a faculty position after completing a PhD. The information continuum model, which is largely a parallel framework to records continuum for describing information (management) practices, has not gained similar prominence even if a handful of studies have applied it to investigate information practices in different settings (Frings-Hessami et al., 2019; Schauder et al., 2005; Upward & Stillman, 2006). The primary focus of continuum models is, however, on records and information objects (Upward & Stillman, 2006) and continuity of record-keeping practices (Atherton, 1985) rather than to describe the full spectrum of information or records behaviors.

Buchanan expands continuum theorizing by building on her empirical work in the context of the archeological curation of museum collections. Referring to the continuum thinking of Upward (2005) and colleagues, she describes the continuum from archeological information production in terms of a discontinuum or “a set of connected but uncoordinated major activities that contribute to a goal but are carried out by actors with distinct professional concerns” (Buchanan, 2016, p. 5). Information is passed from an actor to another through a series of handoffs that make information work possible but at the same time, as Buchanan underlines, are best characterized as a discontinuum rather than its opposite. The discontinuum stems from information workers’ efforts to meet professional expectations and goals that do not match with those of other communities. A handoff is necessary for communities to be able to communicate with each other but at the same time, their presence explains why information continues to be uninteroperable. Buchanan notes further that the underpinnings of the discontinuum are occupational (or social) rather than technical. The lack of agreement between different actors that are working with information collections means that each community adds new incompatible rather than incremental layers to the documentation (Buchanan, 2016).

Even if the earlier theorizing provides a rich palette of perspectives to the intersection of information creation and use, they have limitations that call for further conceptual elaboration. Partly, they show strong investment in particular modalities of information like documents or formal records. Partly, they are premised by specific perspectives to information processes such as management, or seeking and retrieval. To address this relative gap in earlier theorizing, this article proceeds to interrogate the concepts of making and taking as umbrella concepts to describe diverse modalities of information creation and use, and an apparatus to explicate their intersection.

### 3 Making and Taking Information

The concept of referring to the liminal space between information coming into being and taken into use in terms of making and taking was introduced in two recent texts (Huvila, 2018a, 2020b) as a part of an ecological model of archeological information work. The model and the two concepts stemmed from an attempt to find ways to describe earlier observed discontinuities of information flows in archeological work (Huvila, 2006a, 2006b) and the apparent significance of taking the perspective of both “users and providers” (Huvila, 2006a, p. 166) of information when attempting to solve the hurdles of managing archeological information. Instead of functioning as a process, or forming a discontinuum (cf. Buchanan, 2016), the empirical work suggested that archeologists’ work with information could be best described in terms of a continuum of making and taking information (Huvila, 2018a). Much of foundational archeological information is made during fieldwork by documenting discovered features, finds, and interpretations by producing maps, plans, and drawings, taking photographs, samples and measurements, filling out forms and collecting finds, and subsequently writing a report. Even if all the work is done with a certain conception of users and use in mind, the idea tends to be vague and unspecific, and when a user eventually takes the information it is seldom ready to use. Similar to the records continuum (McKemmish, 2016), certain documents are passed on rather than using them directly, users do regularly need to do a lot of work to edit and adapt the information to turn it useful and usable for their purposes (Huvila, 2018a). While the earlier work (Huvila, 2018a) outlines some implications of framing the nexus of information provision and acquisition in terms of making and taking, they remain fairly
imprecise. In the following, the present article reiterates their premises by proceeding first to interrogate the notions of information making and information taking and their relation to associated IB concepts. From there, the discussion proceeds to inquire into the broader implications of the conceptual apparatus for IB research.

3.1 Information making

As a term, information making turns attention to how information is brought about. It emphasizes the mundane acts of doing rather than on creativity and creation of something unique (cf. information creation), or goal-oriented and formal production and manufacturing (cf. e.g., information production). Making differs also from information design. It does not necessarily entail a similar degree of planning that is ascribed to the design of information (Jacobson, 1999). The difference from information design understood as the design of the structure and presentation of information is even more obvious (Mazur, 2001; Zacklad, 2019).

Earlier information science literature has made sporadic references to information making. The most consistent use of the term can be undoubtedly found in the context of the recent work (Melo & Nichols, 2020) on making and maker spaces. Making is also a key construct in Dervin’s influential sense-making methodology that like making in general, emphasizes doing and frames information as a verb instead of a thing (Dervin, 2003). Dervin refers also explicitly to information making as an information activity in parallel to information-seeking and -using (Dervin, 2003). She adds, when discussing sense-making as a potential theoretical basis for information design, that information making unfolds as an act of information design when “whatever it is that humans make informationally of their worlds, they are always involved in acts of design” (Dervin, 1999, p. 41).

Beyond earlier information science literature, the rationale of referring to information making can be constrained based on how “making” is theorized in broader social and cultural studies literature. Especially design research and fields like science and technology studies have engaged heavily in developing a conceptual understanding of generative activities in terms of making rather than production or creation. Theoretical and evidence-based accounts of making a build on conceptual affinities with fabrication, craft, and workmanship (Loh et al., 2016; Lehmann, 2012 in discussion, e.g., with Pye, 1995; Sennett, 2008). Ingold (2013) posits that people think through making as much as they make through thinking and similarly to Adamson (2007), suggests studying making in action (Ingold, 2010). Instead of trying to learn as much as possible about the world, it would be more helpful to learn how to respond to it generatively and to set up an alternative relationship, called correspondence, with the world (Ingold, 2013).

In parallel to having been applied to discuss the fabrication of various digital and on-digital artifacts, especially anthropologists have used the concept of making to refer to the formation of knowledge in terms of knowledge-making (Felt et al., 2017; Marchand, 2010a). Marchand describes knowledge-making as an ongoing dialogical process “shared between people and with the world” (Marchand, 2010a, p. S3 cf. Buckland, 1991). Rather than suggesting that knowledge can be transmitted, knowledge-making foregrounds “processes and durational qualities of knowledge formation” and the “knowledge as a dialogical and constructive engagement between people, and between people, things, and environment” (Marchand, 2010b, p. xii). A major point of emphasis in knowledge-making literature is also the entangled nature of knowing and making of representations and inscriptions of what is known (Keller, 2009 also Ingold, 2013).

Even if a deeper cross-pollination of knowledge-making and IB research could undoubtedly be useful, from an information science perspective, it makes sense to follow the practice of earlier IB research (see also Lanzara & Patriotta, 2001) to distinguish information processing from the ontological world- (Goodman, 1978) and sense-making (cf. Weick, 1990). A practical way of doing this is to make a distinction between information making and knowledge-making. In contrast, a key insight from knowledge-making and making literature as a whole that can be fruitfully mobilized in describing information formation and provision relates to how making puts emphasis on actions and how information is accomplished in practice rather than accountable to creativity, design, or the procedures and patterns of production. Making can also help to cover a broader array of undertakings related to making information happen through assuming liabilities and privileges (Huvila, 2012), managing, organizing, authoring, or sometimes, by sharing it (out). Consider, for example, the typical difficulties of deciding authorship in collaborative multimodal work. From making perspective, everyone involved in conveying a videogame or film can be dubbed as different types of information makers even if they all would hardly qualify as developers, creators, or producers. Making does not rule out specific methods, creativity, production-like conditions, or design in how information comes into being but perhaps comes with an advantage that it does not privilege or presume specific circumstances, structures, or infrastructures. In prosaic everyday-life situations, it lets quotidian fabrication unfold as mundane as it often is.
3.2 Information taking

In contrast to information making, it is possible to identify only a handful of earlier texts that specifically refer to “information taking.” Kim and colleagues write about information taking as a collective term for activities that include, for instance, “information attending/seeking” (Kim et al., 2011, p. 182) whereas Sayyad Abdi (2017) uses the pair of terms information giving and information taking to refer to sharing-out and sharing-in information. Considering these examples and dictionary definitions of “taking,” it is apparent that information taking does (and could) refer to a broad range of activities including laying or getting hold of information, extracting, confiscating, deriving, abstracting, copying, choosing, stealing, bringing, receiving, studying, and beyond. Closest to this and how information taking will be discussed later in this text comes Bates’ brief reference to “taking in” that “may include actual physical acquisition” of a thing “or be limited to informationally absorbing the object in some way” (Bates, 2007).

However, apart from pairing it with information making, there are several reasons why information taking could be a useful concept for explicating the facets of IB that pertain to the uptake of information. Even if information taking—that people pick information for use—is well-documented in earlier IB research, there is no coherent concept to describe it in concise terms. Much of the earlier research on seeking, searching, and selection (in terms of retrieval and relevance judgments) covers a part of what might be conceptualized as information taking. The notion of information discovery (Wilson, 2021; Proper & Bruza, 1999, most often used in accidental information discovery, e.g., Erdelez, 1997) encompasses in broader terms “passive” and unanticipated encounters with information (Erdelez & Makri, 2020) that go beyond formal or informal seeking and acquisition. Further, the concept of situational appropriation addresses situations when already known information is seized into a new use, that is, where the discovery or serendipitous encounter happens with a novel situation instead of new information (Huvila, 2019b; Huvila et al., 2015; Julien & Michels, 2004). Besides, information use is sometimes utilized to refer to acquiring and handling rather than merely consuming, employing, exploiting, and refining information and creating (Suorsa & Huotari, 2014) or absorbing (Vasconcelos et al., 2018) knowledge. However, what seems to be lacking is a concept that would cover the uptake of known, unknown, readily available, and obtainable information in use. At the same time, in comparison to information experience as “the way in which people experience or derive meaning from [and] engage with information and their lived worlds as they go about their daily life and work” (Bruce et al., 2014, p. 6), the analytical focus of information taking is in the part of the experience that pertains to how it is made one’s own rather than put into action by understanding, learning, or, for instance, making sense.

This totality of activities that in a practical sense relate to how people (or machines) take information for various purposes and uses by different means could be fruitfully referred to as information taking. When used in this sense, taking would cover both active and passive uptake and experience, or as Ingold (2017) puts it, the spectrum from volitional doing to undergoing it. In comparison to terms such as information acquisition (Savolainen, 2016) or information discovery (Wilson, 2021), taking has the potential to encompass a broader variety of modalities of how information comes into use beyond mere discovery from seeking, non-seeking (Manheim, 2014) and even “not-seeking” (Huvila, 2019b) to actual uptake and eventual transformations that make it ready for use. Instead of trying to define where browsing, searching, or passive seeking starts and ends, they can all be conceptualized as interlinked facets or modes of information taking. In this sense information taking can also be seen as a part of the broader information experience (Gorichanaz, 2019b) of becoming informed (Tkach, 2017) together with, rather than by, information. Similar to how there are different approaches to making information, information can be obviously taken in multiple different ways. Information taking can encompass active seeking or searching, passive encountering, sharing in (i.e., receiving, Talja & Hansen, 2006), or appropriating earlier known in use in a particular situation (Huvila, 2015), and for instance, reading, consulting, and studying that all have different connotations and practical implications (Buccellati, 2017, p. 209–210). As a comparable umbrella concept to information making, information taking does not self-evidently replace or degrade related concepts but comes rather with an opportunity to increase conceptual clarity by providing a term to refer to the totality of activities, practices, and behaviors between information and its use.

4 DISCUSSION

4.1 Reconceptualizing the nexus of provision and acquisition in terms of making and taking

Apart from proposing the concepts—making and taking—to denote the parallel constellations or totalities of activities of bringing about (information making) and taking up information (information taking), a central rationale of pairing up information making and taking in
a single framework is to propose a conceptual apparatus for interrogating the nexus of information provision and uptake. With making and taking IB research can avoid the essentializing information. People are not finding information that somehow just is there but by thinking about their actions in terms of taking that they are always plugging into very specific information that is a result of a particular, ongoing process of making. The same applies to making. Information creation, organization, and management are facets of making that provide ingredients for people to take stuff as information rather than processes that produce directly usable or even useful results.

The theory-guided inquiry that led to these two notions (Huvila, 2018a) was underpinned by an ecological perspective to information work that draws from systems thinking (Checkland, 2000), infrastructure studies (Edwards et al., 2009), Gibson’s (1977, 1979) ecological approach, and knowledge organization theorizing on warrants and hospitality (Beghtol, 2002). Instead of framing uptake of pre-existing information as utilization or use, the proposed approach outlines the correspondence of taking and making through Pickering’s (1995) notion of “dance of agency” as a situated act of appropriation, which is reciprocal and has “equally essential but essentially different influence of human actors, information and the material things” (Huvila, 2020b, p. 15). Further, “[i]t allows actors to use information in different situations in hand and make it useful from their premises now and here. Individuals and collective actors use technologies to produce, change and access information, the situations take place in the different types of material, spatial and temporal premises, and are supported by informational and non-informational infrastructures that, for their part, are influencing and influenced by the actions of the involved actors.” (Huvila, 2018a, p. 135–136). In practice, information taking is intricately conditioned and tightly intertwined in how it has been made and vice versa to an extent that it is not meant to explic- cate information taking without considering its making or making without how it is anticipated to be taken and eventually taken in practice.

In addition to outlining a model of individuals or groups engaging in information making and taking, the original text from 2018 proposes a parallel model where the two are conceptualized as systemic undertakings, that is, making and taking are enacted within systems rather than being carried out by individuals or groups. Systems can correspond with multiple other systems by engaging in taking information that is in the making either in parallel or as codified in documents or other information carriers (Huvila, 2018a). While systems thinking provides a fruitful approach to position making and taking in relation to each other and the social reality, there is nothing inherently systemic in making or taking itself. Similar to how IB research has been referring to information practices, activities, actions, and interactions, it is possible to envisage information-taking practices (cf. Activity Theory), information-taking actions, and interactions with parallel undertakings relating to information taking. Information taking and making can also without much controversy be framed as aspects or dimensions of information work whether it is understood as a primary work of information workers or an informational second-order activity associated with various types of professional, non-professional, and leisurely undertakings (Dalmic & Huvila, 2020).

Similar to how making and taking can be framed from different metatheoretical perspectives, I would be inclined to argue that taking and making leave room for similar diversity in relation to the information concept. It does not entail a user model that prescribes actions (cf. Kornberger et al., 2019, p. 293–295). Even if the two terms would lend to treat information as a thing, the conceptual pair opens up for discussing both information-things and information that is treated as such. Making and taking does not exclude that anything can be informative or informational but that not necessarily all things are information. They can similarly be used to refer to material or non-material construction of things and non-things that convey meaning without necessarily demanding that information per se would need to be a thing. It entails only that the focus is on information as made and taken without ruling out it being that in a holistic (Polkinghorne & Given, 2021) sense that traverses cognitive, anthropological, and biological frames of reference both online and offline (cf. Resmini & Rosati, 2011).

However, even if making and taking would remain open for parallel conceptualizations of doings and information, there are certain aspects in the conceptual pair and in the apparatus of engaging with information provision and acquisition in terms of making and taking that entail specific theoretical commitments. First, in comparison to such parallel conceptualizations as sharing, seeking, using, and experiencing, and making and taking emphasize the significance of the generative aspects and effort—or as for Warner (2010), semiotic labor—in the correspondences mobility of information. Rather than as a conduit (Day, 2000), making and taking suggests that the mobility of information unfolds as a flow of formative correspondences (Mousavi Baygi et al., 2021) as a part of the broader sphere of IB rather than as mere handoffs. Second, instead of assuming making and taking as vague metaphors (cf. Savolainen, 2021; Yu, 2012), I am inclined to stress that they can be used to describe high-level informational undertakings in substantial rather than
merely abstract or metaphorical terms. In this respect even if there is still reason to be cautious about their metaphorical connotations (Turner, 2019), if taken as substantial concepts, it is especially crucial to consider what qualifies as making and taking and what using the two terms implies in practice. In the following, the present article proceeds to inquire into four such questions to understand and expound the implications of adopting making and taking as a conceptual apparatus for IB research.

4.2 Bridging a gap

A compelling reason to inquire into information making and information taking in parallel are that the conceptual pair provide means to frame a field of inquiry between information creation and information seeking and use. In contrast to tracing information in the context of human behavior, the pair of concepts emphasize things done with and for information, and understanding the world through and with (as for Ingold, 2017) it. In the study of archeological information work, they turn attention from specific genres of information and information practices of documenting, seeking, and managing information to the interplay of documenters, document-making, what information is made findable and what ends up in use. Only a comprehensive grasp of intermingling as a whole can help to understand the distance between often highly formalized field documentation and the qualitative nature of archeological knowledge. Making and taking turn the transition itself to the focus of the inquiry and can help to escape the tendency of life-change-related IB research criticized by Willson (2019) to zoom in at a single point of time before, during, or after the leap.

In parallel with providing concepts to approach the making-taking gap simultaneously from both sides and traverse through it, information making and taking also open up for dealing with discrepancy (Karinos, 2018; Lau, 2013) between real-world information “processes” and the explicit and implicit ideals of the typical process, life-cycle, and continuum models. Like the long tradition of IB research shows, interacting with information is messy and situational almost beyond imagination (Greyson et al., 2012) and how linear models of knowledge creation, diffusion, and use have been found unsatisfactory to represent knowledge practices (Downey & Zuiderent-Jerak, 2017). Through making an analytical distinction between making and taking, it is also possible to avoid the assumption that all information would be information for everyone. With only a slight exaggeration, all information making results in uninformative noise—but much, if not all of the noise, can still be useful as information (cf. Cunningham & Curtis, 2020) in another situation if it is taken there as such. At the same time, to avoid essentializing the distinction and keeping it empathetically analytical, it is worth underlining that making and taking always come together. Making entails taking and vice versa—creating a document often involves information seeking and information seeking is frequently coupled with taking (i.e., making) at least mental notes. Making is also generally influenced by assumptions of how the produced information could be used—for example, what is the assumed audience of a book—and taking by assumptions of the aims and actions of the information maker—for instance, how a patient interprets physician’s fleeting remark of the benefits of pursuing a healthier lifestyle.

By distancing itself from assumptions of linearity and symmetricity, making and taking provide means to explicate and understand the mobility of documents and other (potential) carriers of information without essentializing their informativeness. When information is made (as also e.g., Buchanan (2016) suggests), it happens within and from the premises that are specific to the expectations of the information maker. There is a lot of evidence of how the available information in different contexts follows its makers’ assumptions of what is useful and appropriate—examples cover archeological field reports and confusing public health information alike (Bui et al., 2018; Huvila, 2019c). When it is taken—often appropriated rather than directly utilized—the taking takes place within another set of premises and expectations. This is hardly news for anyone familiar with the long line of IB research relating to how indexers and information searchers conceptualize and describe documents from vastly different perspectives (Bates, 1986). Also the technologies used to produce, change and access information vary, similarly to infrastructural and material, spatial, and temporal premises of making and taking. Whenever makers and takers are aware of each other the act can be conveniently described as a handoff (cf. Buchanan, 2016) or information sharing (especially as information creation and sharing are not always clearly distinguished, Gorichanaz, 2019a) but in many cases, there is no real connection. Often information makers can at the best only try to imagine how it will be taken, understood, and utilized by others. Imagine, for instance, an author like Augustine writing (making) his Confessions around 400 AD in the Roman Empire and yourself reading (taking) it wherever you live in the 2020s. This can be equally apparent in contexts like the reuse of research data (Faniel et al., 2013) but equally pertinent to such everyday-life milieus as personal healthcare (Dalmer, 2018; Kazmer et al., 2014) and professional work (Bechky, 2003) where the gap between experts and non-experts can be colossal. In such situations, making does not
unfold as a hand-off but rather as two types of practices, activities, or processes with some tangency, or perhaps only having indirect implications to each other. In others, for instance in humanities research where new information is based on reading and interpreting earlier sources, not only making might involve a lot of taking but also the two are intricately intertwined to an extent that making and taking can be distinguished from each other in an analytical sense but not as much by demarcating mundane observable actions. The same applies to personal notetaking while listening to a lecture that clearly is an exercise of taking (oral) information through making written notes, that is, information. Further, the perspective of making and taking opens for an inquiry on what happens to and with information in the diverse trading zones (Galison, 1997) between different communities, how informational boundary objects (Huvila et al., 2017) are created and used, how boundary work (Gieryn, 1999) is enacted, and how, for instance, knowledge is absorbed (Vasconcelos et al., 2018) and resituated through various means (Morgan, 2014) in different situations.

Independent of its potential benefits, the framing of the mobility of information in terms of making and taking might appear as an anti-thesis of thinking in terms of processes, continuums, or discontinuums. However, their difference might be less irreconcilable as it might seem and be first and foremost that of perspective. From a management or curation point of view, the presence of handoffs is an apparent sign of a discontinuum and a failure to ensure a standardized and proper flow of interoperable information. Conversely, continuum thinking emphasizes the role of gap bridging in record-keeping (Upward, 2005), personal information management (Huvila et al., 2014) and, for instance, in archeological curation (Buchanan, 2019) processes and attention to the means to minimize the need and extent of explicit handoffs. However, even if the mobility of information is framed in terms of processes or continuums, it is doubtful if information ever flows from one actor to another without any need to exert at least a minimal effort to bridge gaps between the different participants of these chains, that is, those who according to making and taking are the makers and takers of the seemingly itinerant but in reality, ever-changing information. Therefore, even if the laborious handoffs and successful but complex and arduous chains of makings and takings should be celebrated as signs of the resilience of information work and the presence of a (relative) continuum, it is also fair to flag them as flagrant examples of junctures where a lot of informational labor is required, and an intervention of an information professional or a useful information system could make a significant difference.

4.3 Emphasis on doing

Even if the information and information systems continuum models (Upward, 2000) have their merits and could undoubtedly inform IB and management research to a broader extent than has happened so far (cf. Huvila et al., 2014), their focus is not on elucidating what people do with the information (Lemay & Klein, 2014). Shifting attention from distinct informational undertakings to the nexus of making and taking provides an opportunity to elaborate on the understanding of making and taking of information as particular types of doings. In parallel, unlike the predominant conduit metaphor (Day, 2000), it frames information itself as being achieved and accomplished in practice rather than envisioning it as a static entity that is passed or transmitted between individuals, groups, or systems. As such it calls to question the material-non-material dichotomy. Instead of a thing, information unfolds as a social phenomenon and directs attention to activities, practices, and processes that bring about “information” and integrate information in others. Even if the information is made and taken, making and taking are not in a fundamental sense about making information that is subsequently taken but rather about two parallel but inseparable processes of making and making-ones-own, that is, taking. Besides suggesting that information is made, making aligns with the idea of what Latour argues of knowledge, that also information is constantly “in-the-making” (Latour, 1987) rather than finished and pret-à-consommer beyond the specific double-bind ( Bateson, 1972) that exists between different modes of information provision and uptake. Such an invigorated attention to doing information resonates also with Dervin’s earlier proposition of framing information as a verb and motions to turn attention from information to informing (Dervin, 2003). Consider, for instance, the informativeness and relevance of a non-fiction book. It depends on its writing but also how it is read in each specific situation. In a processual sense, a book is never complete but is constantly in the making.

In addition to considering the connotations of making and taking, the conceptualization of information making and taking as distinctive activities of creating and acquiring information opens up for a discussion of what kinds of undertakings they are. Similar to how Furner (2021, p. 131) distinguishes the acts of making as (e.g., a catalog record, photograph) and making into (e.g., specimen) a document, a similar distinction can be suggested with information. Further, on similar premises how information management and knowledge management or information and knowledge leadership (Huvila, 2014) have been distinguished from each other in analytical terms, it is reasonable to differentiate information and
knowledge-making and taking and exercises of unfolding knowledge and information as its ingredient. Moreover, it makes similar sense to distinguish information making, taking, and other information interactions (cf. Ruthven, 2019) from sense-making (as envisioned by Dervin (2003) or Weick (1990)) and meaning-making as means rather than ends.

4.4 Makeability and takeability

In parallel to providing a rudimentary conceptual apparatus to explicate the nexus of doings of information provision and acquisition, information making and information taking does also open up for inquiry what contributes to the makeability (what helps to make information happen) or takeability (what makes it to be easily taken) of information in specific situations. Earlier IB research and studies in adjacent fields provide a lot of evidence on how information making that facilitates successful information taking involves a certain degree of decontextualization or black-boxing of it (Latour, 1987; Lucas, 2019), efforts of making the information explicitly useful (Huvila et al., 2019) or fruitful, solid and modular (Morgan, 2010). For instance, a standardized form and contents of a till receipt, passport, or medical record make them easier to understand even if they at the same time hide many nuances. Somewhat paradoxically, adding to the overflow of information by providing metadata, paradata, descriptions, and certifications has also been found to be a useful approach to make it easier to take (McCullough, 2015) whereas achieving takeability through abstinence, in terms of abstraction and summarization, has proven to be far more difficult. Much similarly, in absolute terms, a plenitude of unspecific information can be much more makeable than a smaller amount of concise, well-formed, and easily comprehensible information.

Moreover, beyond what in making and taking itself contributes to the takeability and makeability of information, a parallel question is what other regulating factors could potentially be identified. An inquiry into the diverse norms and values (Trace, 2007), scripts, and computational models (Alaimo & Kallinikos, 2019) and expectations, the role of information genres (cf. Andersen, 2015; Huvila, 2019b), how information making and taking author the reality (cf. Huvila, 2019a; Shotter & Cunliffe, 2003), and, for instance, how making and taking are influenced by information needs and human and non-human agencies, opens for elucidating links between specific types and constellations of making and taking. The factors that turn information makeable for someone are not necessarily the same that turn it takeable for others. For instance, the dominant technology like smartphones that usually influences people's information making or taking in their everyday lives need not be the one that is pivotal in all of them. Sometimes such mundane social technologies as personal meetings or embodied information practices can be more prominent (Lloyd & Olsson, 2019 cf. Huvila, 2018b) even if everyday-life information activities would be otherwise largely conditioned by digital connectivity. Similarly, a particular genre of information might be critical to its takeability and makeability. As a whole, a key prerequisite of being able to link particular modes of information making and taking can be expected to be a certain degree of common ground or in a figurative sense, infra-data (Fidler & Acker, 2017) that functions in tandem in an infrastructural sense to enable a transition from information made to information taken. Some of the pertinent questions are, however, what is the impact of nature and (in)compatibilities of specific practices, activities, and processes of making and taking information, the role of particular conditions of these activities, and how the “packaging” of information in documents and information objects or embeddedness in activities and social exchange affects what is done and what can be done. In a very practical sense, the key issue is how to make and describe information in such terms that it is takeable by relevant individuals and communities.

4.5 Effort of making and taking

An obvious follow-up to the inquiry into the underpinnings of bringing about and taking up information is the effort of, respectively, making and taking. They both involve an open-ended form of endeavoring, with affinities to (transmedia) adaptation (Hutcheon, 2012) as theorized in the media studies literature. Similarly, in the context of information work (Hogan & Palmer, 2005) and the politics and effort of informational labor, a parallel inquiry into making and taking can contribute to elucidating their (in)compatibilities and the struggle to make them fit. Here, making a distinction between work and labor can help to be explicit about the information labor (i.e., the effort and investment) that is embedded in information taking and making as forms of information work.

Concerning labor, Warner’s (2010) work on the description, selection, and search labor—the effort and endeavor to describe, select, and search information—could undoubtedly provide insights for explicating a subset of labor-types associated with making and taking.
information. A part of the efforts of making and taking is visible but multiple aspects of it tend to remain invisible, unaccounted, and unacknowledged (Dalmer & Huvila, 2020; Star & Strauss, 1999) and devalued (Warner, 2010). The amount of mangling (Pickering, 1995) or cooking (Gitelman & Jackson, 2013) to overcome information friction (cf. data friction in Edwards, 2010) depends on the information in the making. It is similarly conceivable that certain forms of making and taking take less effort and as Warner (2010) points out by defining selection labor as a sum of description (making) and search (taking) labor—the effort of taking depends on that invested in making and vice versa. Some forms and instances of making lead to a greater required effort to take it. Consider, for instance, how participating in the event and writing a narrative description of a major annual football tournament can be helpful to convey an overview of the event but might not be the best approach to make information that is easily taken for comparing individual players’ performance across the years. If the necessary information is the narrative, it is perhaps takeable but the effort of doing so is inevitably higher than if the approach to information making would have been different.

Besides comparing the practical compatibilities making and taking, when making and taking are closely aligned and in an epistemic sense have a short epistemic distance (Huvila, 2020a), the effort can be expected to be smaller than when the two are far from each other in the epistemic sense due to, for instance, temporal, spatial, and other situational factors. Take, for instance, the Roman philosophical poetry of Lucretius from the first century BC. It can be difficult to understand not only because of the “knowledge distance” (Niu & Hedstrom, 2008) between you and him because he wrote in Latin and in dactylic hexameter but also because grasping it fully requires both knowledge of the Roman society and worldview, and of knowing how things were known for a Roman Epicurean philosopher and poet.

5 | CONCLUSIONS

Erdelez and Makri (2020) note, in IB research there is a tendency to introduce models, and later elaborate and refine them to better reflect empirical observations. In this fervor, there is a risk that by the increasing complexity of models they lose them, if not necessarily explanatorily, at least elucidatory power. Instead of steadily increasing the level of abstraction or empirical granularity, IB research could also benefit from concepts that provide a higher-level concretia (as for Rheinberger, 2017) and that expand rather than diminish the scope of the inquiry to cover doings that make the totality human information-related behavior from seeking, management, and use to making of information beyond collecting and describing. Information making and taking could be a step in this direction as a pair of substantial concepts for explaining, in part, the mobility of information in processual terms of doing and becoming rather than of being, conduits, and enumerating, and dichotomizing its material and non-material aspects, and in part, what is happening when information comes into being and when something is taken up for use as information. In this respect, perhaps the most significant conceptual reward of thinking in terms of making and taking is how it provides means to talk about different senses of information and informing—as being given, constructed, thing, and process—in one elementary apparatus.

In tandem with providing a conceptual apparatus to unpack the nexus of “information creation and use” and expanding the horizon of IB research, a closer consideration of information making opens interesting opportunities to enrich the inquiry of the conditions and practice of information seeking, appropriation, discovery and retrieval as modes of taking, and learning and information use as its posterities. Moreover, information making forms an interesting complement and parallel to earlier and ongoing research on knowledge-making if the information concept is distinguished from knowledge as its ingredient (Huvila, 2014). From this perspective, interesting questions for future information research could be, for instance, local and global information making (Beck et al., 2017) and taking, participatory information making (Iles et al., 2017) and taking, Western and non-Western information making (McNeil et al., 2017) and taking, and many others. Investigating into making and taking as the two sides of one coin—analytically distinguishable but inseparable in their essence and impossible to scrutinize or understand in isolation from each other—can help to follow the red thread of information in its simultaneous fragility, fragmentation, robustness and resilience, and to do it in advance through its becoming rather than afterward through its traces.

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