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What is This?
Reconceptualizing Resources: A Critique of Service-Dominant Logic

Norah Campbell¹, Aidan O’Driscoll², and Michael Saren³

Abstract
This article examines the interactive relationship between intangible, human capabilities (operant resources) and tangible, physical assets (operand resources) in an era of global interconnectedness. It does so within the context of service-dominant logic and the challenge of sustainability in a world of resource scarcity. Introducing object-oriented philosophy as an alternative framework, this paper challenges ideas about the superiority of certain kinds of resources while confronting a pervasive culture of demateriality in marketing and contemporary post-industrial theory – the idea that “stuff” does not count. The article offers a parsimonious model of a more holistic conceptualization of resources. It demonstrates the complex entanglement of operant and operand resources, finding that this entanglement is a precondition to marketing-related issues of natural resource selection, globalization, sustainability, and distributive justice.

Keywords
marketing theory, demateriality, operand resources, entanglement, macromarketing, service-dominant logic

Resources, Marketing, and Society
The need for a holistic conceptualization of resources has moved beyond a strategic challenge for the firm to the most globally important issue facing humanity today. Determining resource allocations and setting out parameters for resource use have demanded global inter-governmental and non-governmental forms of organization (Kilbourne 2010). In the field of marketing, service-dominant (S-D) logic has been positioned as a “revised theory of economics and society” (Vargo and Lusch 2008a, p. 30). It makes an important contribution with multiple foundational propositions that speak about resources across different types of actors and sites. In this article, we will argue that service-dominant logic is an enframing act. By this we mean that service-dominant logic is a way of framing the world, which, like all logics, chooses what to include and what to exclude from its frame of investigation and theory (Butler 2009). We do not argue that service-dominant logic is “right” or “wrong,” rather we are interested in how it enframes the world, exploring what it omits, downplays, or marginalizes within this frame.

The article begins by arguing that all conceptions of resources in marketing history have delineated between material, “raw” resources and immaterial, dynamic resources. Such a distinction is an established typology in resource-based thinking (Day 1994; Sanchez and Heene 1997; Wernerfelt 1995). Resources are made up of assets – tangible, inert entities with the potential to be exploited to advantage (e.g., a quarry) and with capabilities which are more intangible, cerebral, skills that activate and direct the assets (for example, the ability of a management to run the quarry profitably). In this framework of resources–assets–capabilities, the dynamic, proactive role of capabilities catalyzes the fixed, tangible assets. This framework is further refined in the service-dominant logic, which enlists terminology from mathematics to describe this divide, and introduces from the mathematics discipline the terms “operand” and “operant” to describe resources. In mathematics, operands are regarded as passive objects that are manipulated, while operators are specific actions that act upon these objects. Thus, in the statement $5 + 3$, 5 and 3 are operands, while $+$ is an operant. In the work on service-dominant logic, operants are conceived as hierarchically superior and are extensively theorized (e.g. Madhavaram and Hunt 2008), while the operand is wholly taken-for-granted and under-investigated. This essay seeks to re-instate the importance of the operand resource, and to demonstrate that, far from a hierarchical, separable concept, the mutual entanglement of the two types is the fundamental basis of any potential theory of resources. More importantly, the enmeshment of operant and operand resources becomes more urgent as a theory of resources moves beyond a firm-level concern, and is necessary to address issues of globalization, natural resource

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selection, sustainability, and distributive justice (see Hornborg 2001).

The remainder of this article is in two parts. In the first, we critique the concept of resources in marketing theory, paying special attention to the fundamental propositions of service-dominant logic. In the second part, we propose an alternative framework that will contribute to a more inclusive and holistic theory of resources. This framework is based on a more expanded concept of resources derived from critical cybernetics, object-oriented philosophy and posthuman ecology.

**Resource Theory in Marketing**

**Operant and Operand Resources**

The terms “operant” and “operand” conceive resources as composing two fundamentally dichotomous types (Constantin and Lusch 1994, p. 143-153). Operand resources (for example, raw materials and land) are those that wait until an act is performed on them to produce an effect. Operant resources (e.g., technologies, knowledge, skill) are those employed to act on operand resources. A goods-centered logic recognizes the primary importance of operand resources and, indeed, the history of humanity has largely been concerned with acting on the land, plant life, animal life, and minerals (Vargo and Lusch 2004a, p. 2; Vargo and Morgan 2005). In contrast, “[t]he relative role of operant resources began to shift in the late twentieth century as humans began to realize that skills and knowledge were the most important types of resources” (Vargo and Lusch 2004a, p. 2). In this distinction between operant and operand, one type of resource (skills, knowledge, human ingenuity) is perceived as possessing agency over another, which is passive and reactive.

This conceptual separation between operant and operand follows a longer line of similar distinctions that stretch beyond marketing theory. In fact, such a way of thinking is so deeply rooted in western thought that it is easy to think of it as entirely natural. It is a mindset much older than management theory; its roots are in Greek philosophy. Plato saw material embodiment as a distraction to true knowledge, and this thinking reached its zenith during the Enlightenment through Descartes’ privileging of mental life over physical matter (Dobscha and Ozanne 2000; Jackson 1983; Plato 1997). Turkle (2011) argues that we are inheritors of a style of philosophy in the West that values formal, abstract, object-less thinking as the standard, canonical way of knowing the world. Such a style is implicit in the way we describe the contemporary era of the West, one that has been variously called the “Information Age,” the “post-industrial era,” and “the knowledge society.” What unites these terms is a shared belief that wealth and value creation are based not on material things, but on the accumulation and timely use of immaterial flows, skills, and information. It is a way of thinking that endorses the pre-eminence of the immaterial and disembodied (mind, skill, mental life) over the material and embodied (brute matter, physicality). In this Information Age, we tend to celebrate a culture of demateriality, where the non-material world is viewed as more important, more fundamental, than the material; where information, global financial services, electronic capabilities, virtuality, and the post-industrial knowledge economy are privileged terms in contemporary western society (Hayles 1999).

As a counterpoint to this tendency, we introduce object-oriented philosophy (OOP), which places stuff at the center of all philosophy. Inspired variously by Heidegger’s theory of tool-being, the displacement of the human proposed by the actor-network theory of Latour, as well as the sensual phenomenology of Merleau-Ponty, OOP comprises a metaphysical investigation into stuff, or objects. In the whole history of both continental and analytic philosophy, it claims, the primary interest has lain not in objects, but in human access to them. This is known as the cult of correlationism (Meillassoux 2008). Correlationism is the tendency for theories of the universe to hold the view that “being exists only as a correlate between mind and world. If things exist, they do so only for us.” The human-world relation is the philosophically privileged one” (Bogost 2012, p. 12). Correlationism is when something makes intuitive sense for us; however, object-oriented philosophy argues that while such a view might be expedient – indeed it might be the only possible thing we humans can hope to do, it is not philosophically rigorous. This is because it does not account for the 99.999% of interactions in the universe, which, we presume, comprise object-to-object interactions. Graham Harman, the forerunning philosopher of the movement, elaborates and extends Merleau-Ponty’s famous dictum – that objects look at me just as I look at objects – to another, important level: objects look at each other (Harman 2005, p. 67).

To briefly summarise: all philosophy in the continental or analytic traditions can be described as “Philosophies of Access” to the world. They “assume that the human-world gap is the privileged site of all rigorous philosophy” (Harman 2011, p. 136). Thus, the human-world correlate becomes the basis of all philosophical thought. While the stated aim of object-oriented philosophy is “to put object-object relations on exactly the same footing as subject-object relations” (Harman 2011, p. 140), it is only very recently that elaborations of this philosophy have appeared in other disciplines (e.g., Harman, 2012). Here, we seek to argue that an object-oriented philosophy could have important implications for any holistic theory of resources. Throughout, we will indicate where our argument follows an object-oriented philosophy, presenting when relevant the kernels of its philosophical project.

Our argument begins by analyzing operant resources, the key component of service-dominant logic. Similar to its predecessor terms of dynamic capabilities and immaterial competencies, operant resources are described in marketing literature using the terms “human,” “sophisticated,” “cultural,” “strategic,” “active,” “dynamic,” “agentic,” “immaterial,” “specialized,” “intelligent,” “relational,” “primary,” and “infinite.” In fact, the words used to describe operant resources are directly linked with our notions of progress and achievement in contemporary society. On the other hand, operand, or material resources, are characterized in the literature by less...

Service-dominant logic views the relationship between these two types of resources as hierarchical and one-way. Operant resources will take these sluggish, raw, inherently secondary materials, and act on them to whisk them into something valuable. Following Barad (2007), we argue that every act of observation makes a “cut” in what is otherwise an indissolubly entangled natural-cultural universe. Every new way of observation cuts open new logics, but in doing so also restricts or undermines others, determining not just what is known, but what can be known. Service-dominant logic makes its own cut in the universe that elevates the operant to a position of hierarchical superiority, with the consequence that the mutual interrelationship between the two types of resource will be under-valued, and underdeveloped as a result.

We thus begin with the assertion that stuff is ignored and belittled in contemporary marketing thought, an observation that object-oriented has made about its own field too. In philosophy, the problem concerning stuff is that we tend to both undermine and over-mine it (Harman 2011). To explain this by using our own context, service-dominant logic undermines operant resources claiming that they are not fundamental and primary parts of service provision. In overmining them, service-dominant logic elevates them to constructions of human genius, “within the temple of human cultural production” (Bogost 2012, p. 6). Thus operant resources are regarded as nothing in their own right; it is only when we describe them as effects on human consciousness that they become important (Harman 2012, p. 7, pp. 112-113). In other words, interest has lain not in stuff, but in our human relation to it or, better put, human access to it. Service-dominant logic is mired in a correlationist and simple picture of humans doing things in the world to inanimate objects to make immaterial effects happen.

The Logic of the Operant: Action versus Inertia

Service-dominant logic views physical, tangible resources as inert. Operant resources are those “resources which require action to create benefit” (Vargo and Lusch 2008b, p. 31, emphasis added). The principal way of distinguishing between both types of resources has been to characterize one as active and one as passive. If resources were not regarded as separate, we could broaden a theory of resources to encompass those crucial scenarios where operant resources require the opposite of action in order to create or maintain value. That is, there are times when operant resources must remain unacted upon or unused/underused in order to maintain their intrinsic value. There are two ways in which value has been used in service-dominant logic, encapsulated in the phrases “value-in-use” and “value-in-context.” Let us briefly consider both.

In service-dominant logic, value-in-use means that something is assessed according to the use a consumer has for it. “Value,” Vargo and Lusch argue, “is perceived and determined by the consumer on the basis of ‘value-in-use’” (Vargo and Lusch 2006a, p. 11). However, certain resources clearly must remain unused or underused, in order to retain long-term viability as resources — forests, sea beds, and topsoil are all resources which need to be unused or underused in order to preserve their value. Tourism markets often promote resources — deserted beaches, unspoiled countryside, uninhabited ruins — working on the principle of value-in-underuse. Importantly, it is not just in the area of environmental sustainability where the concept of value-in-underuse is an important corollary to value-in-use. Brand management implicitly leverages the concept of value-in-underuse. Brands are often valuable for the very fact that they are underused — that is, when their use is confined to small communities, enabling them to maintain their cultural capital, exclusivity or authenticity (Holt 2005; Muñiz and O’Guinn 2001; Schouten and McAlexander 1995). Service-dominant logic’s theory of value-in-use, as a way of conceptualizing and assessing the worth of resources, might be expanded usefully to incorporate this alternative source of value.

The concept of value-in-use has recently been refined to value-in-context (e.g. Chandler and Vargo 2011). Here, value is conceived as something that is collectively co-created by multiple actors. For example, in service-dominant logic an operant resource like brand value is one which is “externally-based and dynamically determined in the context; that is, they are resources that cannot be owned or controlled by a single actor” (Chandler and Vargo 2011, p. 38). Such a conception implies a co-operative, collective, contextual mode of creating value. This is certainly true in the case of affective value — when value lies in the general sentiment of a networked group of actors. However, it elides the more important issue of economic value. In this example, consumers might co-derive affective, cognitive and social value in creating the brand, but the economic value that accrues as a result belongs, entirely, to the brand’s shareholders. (see Zwick, Bonsu, and Darmody 2008, 2013). This issue is related to the difference in the concept of value in economics between the economic theory of value based on the subjective evaluation of utility (see Menger, 1871[1950]), which service-dominant logic appears to reflect, as opposed to the now little-used objective theory of value in economics based on the value of labor inputs, originally developed by Ricardo (1817).

This line of inquiry is further illuminated when the concept of value creation is addressed. In the discipline of marketing, the role of customers in the value creation process is now explicitly recognized, articulated through compelling concepts such as cocreation, coproduction, and prosumerism (Holbrook 1999; Kotler 1986; Laczniak and Santos 2011; Prahalad 2004; Prahalad and Ramaswamy 2000). Service-dominant logic has rightly incorporated the integral role of the customer into its theory of value creation. Research on co-created value has been
fundamental to marketing theory; it remedies the inaccurate description of production as a solely value-creating activity, and of consumption as a uniquely value-depleting one. This was a revolutionary change in marketing philosophy, and it transformed marketing by shifting a balance of power from production towards consumption, recognizing the ways in which consumers and consumption are both productive and value-adding. It allowed marketing scholars to explore new vistas of research into consumption as a value-creating activity, the range of which is most recently articulated by the Consumer Culture Theory (CCT) movement within consumer research (Arnould and Thompson 2005). In his typology of consumer value, Holbrook (1999) distinguishes between active and reactive value. Value is active when it entails physical or mental manipulation of an object, i.e. where something done by a consumer to a product. In contrast to service-dominant logic, Holbrook shows that reactive value is created when things are done by a product to the consumer. Holbrook’s typology shows that the consumer is not always operant or proactive in value creation; objects can also act on consumers to create value.

While recognizing the role of consumption in the value creation process, it must not be viewed solely as a value-creating activity. Importantly, consumption also remains a value-depleting activity. New ways to model this concept of how activities can be both value-adding and value-depleting are required for a broadened theory of resources to advance.

The Infinity and Intangibility of the Operant

Operant resources are conceived in service-dominant logic as intangible and infinite. They are often conceived as competencies or processes that differ from operand resources because they are “dynamic” and “infinite” rather than “static” and “finite” (Vargo and Lusch 2006a, p. 8). This view brings many advantages. As service-dominant logic in its various contributions has shown, this more closely reflects consumer experience (Holbrook and Hirschman 1982). Further, it focuses attention on marketing’s processes and performances, rather than the physical outputs of commodities (Pine and Gilmore 1999). It permits strategic and analytical inquiry into the dynamic aspects of marketing as opposed to the static models of equilibria, matrices and exchange (Normann and Ramirez 1993).

However, by conceiving operant resources as dynamic and infinite, we neglect to see that for every immaterial competence, for every numerious skill and dynamic operand resource to come into existence, a huge architecture of material formations must already be in place. For every email that is sent, for every market intelligence system that is created, for every email that is sent, for every operand resource. He argues that “mobilities and moorings” characterize the contemporary era of the West (Urry 2005, p. 125). In fact, the greater the increase in mobility in society, the greater the immobility that is needed. Thus, the so-far most powerful and ubiquitous form of mobility – the airplane – needs the largest and most extensive immobility – the airport city – a vast, static, material construction employing tens of thousands of workers in hundreds of occupations. “Overall”, writes Urry, “it is these moorings that enable movement” (Urry 2005, p. 126, emphasis added). We can discern this mobility and mooring in marketing practice in every respect. For example, the phenomenon of e-commerce has come about only with the concomitant rise in the global shipping industry and the physical transportation of goods. In the year 2000, for example, the carrying capacity of the world’s merchant ships was estimated at 553 million gross registered tons, compared to 227 million in 1970 (Edgeeton 2006, pp. 73-74). The advent of an information-dominant economy heralded the end of the paper-based office, but estimates suggest that computerization actually produces an eightfold increase in paper use (e.g. Thackara 2005).

The era of service dominance does not generate infinite capacity or, for that matter, less materiality. On the contrary, we argue that dynamic competency is premised on a concomitant rise in material, finite capacity. Service-based economies are grounded on the production and consumption of significant amounts of material goods, as much if not more than a goods-dominant era. Global resource extraction along all major material groups – fossil fuels, metals, industrial minerals, and biomass – increased by over one third between 1980 and 2002 (Behrens et al. 2007). Further, service is founded on vast amounts of material goods, embodied in people, nature, technologies, appliances, and material infrastructures. While service-dominance is often proposed as a more sustainable market logic, identified as a transition that has occurred over the past 50 years (Vargo and Lusch, 2004a, p. 2, 2006a, p. 20, see also Aitken et al. 2006; Lusch and Webster 2011; Vargo and Lusch 2008b), this shift has in fact coincided with unprecedented rises in material consumption. A century ago, 161 million metric tons of materials flowed through the U.S. economy, excluding fuel and food; in 2006 the figure was well over 7.3 billion metric tons, an equivalent of nearly 25 tons of raw materials per person per year (Geiser 2002; Matos 2009). Thus, at present, the “service” of service-dominant logic is too all-embracing to be able to give meaningful insight into the extent of its dependence on materiality (Stauss 2005). Some services are highly materially intensive, while some are not. What is important, we argue, is that the shift towards service dominance has coincided with the exponential rise in consumer material consumption. This is because the practice of a service-dominant logic better articulates value propositions and facilitates “the efficient alignment of production and consumption through its resource integration role” (Ballantyne and Varey 2006, p. 345) with the attendant rapid response between consumer demand and its supply (Lusch, Vargo, and O’Brien 2007, p. 10; Vargo and Lusch 2004a, p. 13). Efficient alignment of production and consumption might decrease waste at the level of production, but it increases the levels, choice, and quality of resources at the level of consumption.
The Materiality of Information

In current conceptualizations of resources, information is seen as something invisible, immaterial and disembodied; as something that can exist independent of any sort of material in which to embed it. For instance, Vargo and Lusch argue that the operant resources that dominate service economies center on “the knowledge and skills about information and the exchange of pure, unembedded knowledge” (Vargo and Lusch 2006a, p. 17). “What is changing today”, they state, “is not the sudden emergence of service, but, rather, the increasing ability to separate, transport, and exchange information, apart from embodiment in goods and people” (Vargo and Lusch 2008a, p. 4, emphasis added).

Information is such a common term and used with such ease that we should have no difficulty in defining what it means. Even though the term has been in use in the English language since the fifteenth century (Terranova 2004), it only began to assume an important place in the social life and the political economy of the West in the second half of the twentieth century. It is interesting to explain why this has happened. During the 1940s and 1950s a new paradigm of knowledge – cybernetics – swept the world. Initially circulating around the ideas of mathematician Norbert Wiener (1961[1948]), cybernetics was a radical attempt to universalize theories of information and communication across all organic and inorganic entities. Cybernetics was the first discipline to use the term “information” as the fundamental component of any system. What united bodies, whether they were organic or technological, was their ability to process information. Information was thus valorized as the most important property of any system; materiality began to be seen as an inconsequential subordinate (Bateson 1987[1972]; Hayles 1999; Heims 1993). Cybernetics was a trans-disciplinary movement that abstracted information from its material base and, in its advancement of the project of Artificial Intelligence, argued that that cognition, or “the mind”, was separate to the material from which it arose. This is extremely important, because it is the founding assumption of many claims about information today, especially in accounts of disembodied or unbundled information. The notion that information, or knowledge, is unembedded, implies that the body (materiality) is merely brute matter, while the mind or mental life is seen as transportable, omnipresent, and separate from embedded things.

Following an object-oriented philosophy we argue that all information is not just material, but highly contingent on the material stratum that contains it – that is, the nature of information is always dependent on the material in which it is embedded. An important lesson is drawn from object-oriented philosophy: we deal only with objects, “since sheer formless sense data are never encountered” (Harman 2005, p. 48). In other words, it is impossible to think of any exchange that is purely informational. Further, the context in which information is gathered and transmitted actively shapes the information itself; it changes what the information is. For example, a university’s digital library might give the appearance of “direct” access to pure, unembedded information, but to think this way forgets the “publishers, editors, referees, authors, the computer and infrastructure designers, cataloguers and library collections managers, right down to the students making their way through college by shelving and unshelving books . . . ” (Brown and Duguid 2002, pp. 5-6). Theorizing such processes as “the exchange of pure, unembedded knowledge” and “pure information” (Lusch, Vargo and O’Brien 2007, p. 10; Vargo and Lusch 2006a, p. 17) runs counter to the central thesis that we propose: the type and quality of the operant resource is dependent on the type and quality of its material architecture and substrate.

A general “object turn” has been evolving in the natural and the social sciences, most recently under the banners of posthuman ethics, new media theory, feminist technology studies, the philosophy of craft, scientific materialism, artificial life science, actor-network theory, practice theory, and sociomateriality studies. All of course derive from much older attempts to transcend, subvert, and complicate the material-immaterial divide. Each emphatically acknowledges that information is not an un-embedded, free-floating, invisible thing. To take one example, research in artificial life science – the discipline that must think most closely about information – now acknowledges that the information/intelligence of an entity cannot be removed from its material stratum; to do so changes the fundamental nature of the information/intelligence itself (Bonabeau and Théraulaz 2000; Penrose 1989). The embodiment in the operant resource is thus vital to a developing theory of resource integration, because all knowledge is embodied in material life and nothing can exist without some sort of body – carbon-based or silicon-based – to support it.

We thus come to a critical realization; the operant (knowledge, skills, mental life, information) is only available within and through the operand (material life), and the type and quality of operand is dependent on the type and quality of operant resource in which it is embedded. Service dominant logic’s fundamental proposition – that value derives from the service that goods render – is something we do not dispute. However, service-dominant logic is an enframing act that places material stuff as a secondary effect, and privileges the primacy of a dematerialized service. In contrast, we argue that while value derives from the service that goods render, that service is always materially embodied, thus materiality actually precedes service. Furthermore, the nature of this material embodiment of the operand resource will consequently determine the nature of the service that it provides. The operand therefore sets the possibilities and the limits of the operand. Any theory of service must account for the bodies that perform service work, the material objects used to deliver it, and the material that it generates, three areas on which we elaborate.

Resources beyond Human Service

Scholars writing about resources today justifiably celebrate the key role human agency plays in catalyzing static assets. Some have made specific calls to understand more deeply this nature of human agency, and to address whether non-human, non-
living entities can also be said to be “resource integrators” (e.g. Haase and Kleinaltenkamp 2011; Kleinaltenkamp et al. 2012). Resource integration has become a key term in service-dominant logic. We argue that this is an enframing of resources that sets out humans alone as agentic, while non-human entities are excluded from the frame. Resource integration, as it is currently conceived, is haunted by the ghost of correlationism; it conceives of resource integrators as primarily human (e.g. Vargo and Lusch 2012, p. 195), reflecting again the long-held assumption that the transcendent human “is the source of all significance in the universe” (Harman 2005, p. 66). Where resources are not human, they are only important as an expression of human consciousness. In this section, we turn our attention to the nature of agency and advocate for the agency of non-human, non-living resources by drafting in a number of concepts from object-oriented philosophy.

First, as we intimated in the introduction, the central figuring of the human actor in resource integration is a problematic starting point for any comprehensive philosophy of service if we are to acknowledge that the overwhelming majority of agentic interactions in the world are object-to-object, stuff-to-stuff interactions. Humans do not have access to fish-to-ocean, planet-to-planet, hammer-to-nail interactions simply because they are not fish, oceans, planets or hammers. Indeed, even in a world where humans assume full agency, as in the case of information technology, at an important level it both exceeds and supersedes human agency. In other words, technology increasingly tracks and intervenes in human behavior to the extent that it is increasingly impossible to reasonably allocate where passive object ends and human agency begins. Consider, for example, the case of automobile. In the future, cars will be modeled on a “drive by wire” paradigm, in effect turning the car into a moving computer. Automobile companies today invest in eye-tracking software that will monitor driver fatigue, bringing the car to a halt when the driver is deemed to have reached a certain threshold of tiredness. In other words, human agency is hybridized more and more with large-scale technological systems.

Second, actor-network theory (ANT) has shown that agency can be understood more accurately as something that arises in spaces between humans and objects (Latour 1993). In other words, agency is not something a priori and essential, but relational, and can only develop within a relation. Such an observation explicitly contradicts service-dominant logic, which argues that “[t]heir role as distribution mechanisms for service provision… goods may be instrumental in relationships, but they are not parties to the relationship; inanimate items of exchange cannot have relationships” (Lusch, Vargo, and O’Brien 2007; Vargo and Lusch 2004a, p. 10). However, an actor-network approach argues that nothing can exist – animate or inanimate – without it having some sort of relationship to something else; nothing precedes a relationship (Haraway 2008, pp. 17-19; Holbrook 2006, p. 212). Relationships “are the smallest possible patterns for analysis”, an observation that is “extremely prosaic, relentlessly mundane, and exactly how worlds come into being” (Haraway 2008, p. 26).

Third, non-human objects are generally unaccounted for and disregarded by service-dominant logic. However, this is a type of truth about objects that is instrumental. So, for example, clocks can efficiently tell the time; this is an instrumental truth. But the invention of the clock did not just tell the time; it had a profound effect on how humans order the world, presenting to the imagination new ways of explaining inner subjectivity as well as outer cosmic reality. As Lewis Mumford in his groundbreaking *Technics and Civilization* (1934) showed, the introduction of an object as innocuous as the clock has a profound affect on human consciousness. People began to view the universe as a giant clock and to conceive of the three essential systems within which mankind exists – the cosmos, the state, and the body – as clock mechanisms. Service-dominant logic assumes an instrumental truth about stuff (as a mechanism for “service provision”). We re-state, following an object-oriented philosophy, that this constitutes a narrowing of stuff to an anthropological truth (i.e., it is a truth as it appears to human beings), and an instrumental truth (i.e. a truth aimed at getting things done, or making things work) (Harman 2002; Heidegger 1954 [1977], p. 10). Another mode of truth about stuff is that it reciprocally creates reality with human actors – to the extent that it is quite difficult to say where agency ends and passive materiality begins, if such a demarcation ever existed. Agency is, in effect, co-constitutive.

Fourth, for service-dominant logic, the relationship between operand and operand is currently conceptualized as a one-way street, where the operand works on the operand. Operand resources are seen as “neutral stuff;” the operand acts on them (Constantin and Lusch 1994). As we have already demonstrated, in such a conceptualization a line is drawn between operand as inert and non-agentic, and operand as dynamic and agentic: “Over the last fifty years, resources have come to be viewed not only as stuff but also as intangible and dynamic functions of human ingenuity and appraisal, and thus not static or fixed” (Vargo and Lusch 2006a, p. 7). Or, as Ballantyne and Varey (2006, p. 344) remark, “things…cannot have an embedded value. Things only have value insofar as they serve needs.” Such stances are emblematic of a dichotomization of the world in service-dominant logic, where one side of the relationship is agentic, cerebral, and alive, and the other a dead resistance. Stuff, therefore, becomes intangible and dynamic only as a consequence of human creativity and evaluation. This, however, is only one conception of the human’s relationship towards the natural world. While it correctly theorizes that humans “work on” operand resources, operand resources also “work on” humans in many ways. While service-dominant logic views the relationship between operand and operand as unidirectional, we argue that – far from a unidirectional hierarchy – the relationship is a two-way street. Just as man changes nature, nature changes man. The world of the operand has a symbiotic, reciprocal relation to the human; the operand acts on the operand as much as the reverse is the case. The philosopher Pierre Bonviem encapsulated this mutual co-constitution well in the aphorism “Created creates Creator” (Bonviem 1935, in Berthon, Mac Hulbert, and Pitt 2005, p. 110). This
aphorism explains how the operand actively works on the operant, shaping its possibilities and limiting its actions. Thus, no operand resource is simply “neutral stuff;” operand resources are as ingenious as “human ingenuity”.

The science of biomimicry is a case in point. Biomimicry recognizes that the operand resources of the world have a material embeddedness developed over 3.8 billion years, and often provide more sustainable design and engineering solutions than human ingenuity has thus far devised, whether it is the self-cleaning properties of lotus leaves, the self-assembly of seashells or the shape of a whale fin (Benyus 2002). The unidirectional conception of man, applying his abilities to the non-human resource does not account for two important theoretical challenges presented by the non-human resource. First, many such resource are inimitable; second, their value is embedded in their material structure; third, humans’ imaginations and ability are formed within and through the properties presented by the operand.

All three observations attest to the fact that we need to think about the nature of agency, rather than the human theorist’s approach to it (Bogost 2012). Importantly, non-human/non-living agency is different from human agency (a type of agency we call “simple agency”), and in most cases it is inimitable. The enframing effects of service-dominant logic center the human agent as the privileged and unique determinant of action and value, demoting the status of stuff as not innately useful or beneficial. If the non-human world is not considered important enough to have a relationship with, or does not possess sufficient parity to enter into a relationship with the human world, then ethical and ecological dilemmas arise. We will explore these in due course. Thought of this way, a more holistic theory of resources must call for changes in humanist epistemology, that is, how we investigate and describe the world, and also in humanist ontology, that is, how we understand what constitutes life and objecthood. Co-constitutive agency, relational agency and object-to-object agency are introduced here to blur the line of “simple agency” that is result of privileging operand, human resources.

Resources and Ex-resources

A central premise in current theories of resources in service-dominant logic is that resources do not exist until people have found a use or purpose for them, serious undermining of what they are (Harman 2012). Service-dominant logic’s inspiration for this premise is the work of economist Erich Zimmermann, who, in an influential book called World Resources and Industries (1951), discussed the role of resources in the coming post-industrial age. Zimmermann argued, contrary to popular opinion at the time, that resources were not fixed, permanent, knowable realities or quantities in the world; rather they only came to be resources when people’s culture, technology, and other conditions summoned them into being:

MAN’S resources, to an overwhelming extent, are not natural resources. It is true that nature provides the opportunity for MAN to display his skill and apply his ever-expanding knowledge. But nature offers freely only an infinitesimal fraction of her treasure; she not only withholds the rest, but also seems to place immeasurable obstacles in the way of resources-seeking and resource-creating MAN. “The bulk of MAN’S resources are the result of human ingenuity aided by slowly, patiently, painfully acquired knowledge and experience” (Zimmermann 1951, p. 7, emphasis in original, see figure 1).

Citing Zimmermann, Vargo and Lusch (2006a, p. 7) state that “[e]verything is neutral (or perhaps even a resistance) until humankind learns what to do with it”, and that “[r]esource is a term of appraisal . . . It reflects human judgment as to want-satisfying capacity, utility.” Thus resources seem not to exist until people have found a use or purpose for them. However, we argue that any holistic theory of resources must account for the cases where humans no longer find a use or purpose for them. In Zimmermann’s work, we can see a partial recognition of the existence of resources that are no longer effective within the system – a phenomenon he terms the ex-resource: “Thus with the advent of modern iron and steel processes, thousands of ore deposits became uneconomical, ceased to be resources, and reverted back to whence they had come – neutral stuff.’ One might be tempted to speak of ex-resources” (Zimmermann 1951, p. 13).

This conceptualization of resources as a means to a given end encourages a narrowly linear mentality towards the material economy. When iron ore for example, ceases to be of human economic importance, its status is relegated to an “ex-resource.” However, “ex-resources” are by no means “neutral stuff.” On the one hand, if we consider something an “ex-resource,” we are in danger of eschewing the responsibility we have for its stewardship after its value-in-use has been depleted. On the other hand, some “ex-resources” are extremely hazardous. This importantly includes the current status of those resources in the world that no actor values (including carbon, but also a host of carcinogenic, toxic and radioactive waste types). According to Hornborg (2001), the global service economy needs input of raw material, land, energy, labor and fuel that is far greater than the value of its output. This excess waste, disorder or “entropy” must be disposed of, but the system cannot absorb it like the natural bio-system deals with physical waste by transforming it into energy or biomass. This asymmetric input-output in the service economy makes it imperative to include a whole complex of externalized unresources in the search to advance a holistic theory of resources in contemporary society.

Discussion: Towards a Holistic Theory of Resources

Resource management and allocation constitute the largest challenges facing humankind today. The study of resources in marketing has tended to concentrate on the firm, its assets, and their management. Further, its enquiry continues to focus on human, intangible, operand-type resources and assets to the exclusion of non-human, physical, operand-type ones. However, as a service-dominant view of the firm broadens to take account of issues of society, ecology and international
governance, so this approach reveals serious shortcomings. We contend that conventional thinking about resources as it is framed in service-dominant logic needs to be revised to build a more holistic and interdependent concept of what constitutes resource. This is important because service-dominant logic theory is no longer positioned narrowly as an organizational strategy; rather it has been propounded as a theory for society itself (Lusch and Webster 2011; Vargo and Lusch 2004a, 2004b, 2006a, 2008a). Its fundamental propositions tell only part of a story about society; one that we attempt to supplement with an alternative, object-oriented perspective. Figure 2 sets out a parsimonious model, where the left column accounts for the current contribution of resource theory thinking; the central column indicates aspects of resources that are under-theorized or not theorized as yet. The right column seeks to integrate the previous two and propose ideas for a holistic theory of resources.

From Operant and Operand to Co-evolving Interdependencies

It is paramount to view resources – whether tangible or intangible, operant or operand – not separately, but in a web of inextricable entanglement (Orlikowski 2007). Scholars have comprehensively developed theory on both the nature and operation of operant resources (Arnould 2008; Constantin and Lusch 1994; Hunt and Madhavaram 2006; Madhavaram and Hunt 2008; Vargo and Lusch 2004a). However, no work in service-dominant logic addresses the need for a theory of operand resources. The privileging of the operant resource leads to an underestimation of the operand resource and to a lessened ability to comprehend their interconnection. A theory that elevates operand resources to the same status as operant resources would conceptually foreground materiality, serving as a reminder of the physical embeddedness, immediacy and our dependence on the material world around us. Since they characterize operant resources in the service-dominant logic literature as intangible and infinite, we therefore must assume the corollary is that Vargo and Lusch consider operand resources to be tangible and finite. The infinity and intangibility of the operand resource poses great challenges in its entanglement with the finiteness and materiality of the operant resource. To illustrate: governments all over the world have in the past two decades have set out resource security (water, oil, land, gas, mineral) as a primary strategic objective (Klare 2002). In the past decade the world has witnessed a "landgrab" where rich countries purchase massive amounts of land in poorer countries in order to farm their own crops, grow biofuels and displace their own people in the event of an ecological disaster (Borger 2008; MacKenzie 2008). Internationally, the trend of land grabs has resulted in the effective redrawing of the global map, as governments and private corporations acquire some 80 million hectares (an area larger than France) since 2001 (see Figure 3). Service-dominant logic argues that the relative role of operant resources began to shift in the late twentieth century as humans began to realize that skills and knowledge were the most important types of resources. However, the phenomenon of land grab shows the opposite – the increasing, not decreasing, importance of material resources in the 21st century. Far from being confined to a side issue, land grab highlights that material resources form the future security of governments and private corporations. Service might be infinite, but materiality is not. A theory of immaterial service cannot account for the acute competition for operand resources, often among competing stakeholders.
We have made the case that the direction of value between these two types of resources is conceived in service-dominant logic as a one-way street, where value arises from the work that the operant does on the operand. However, there are many instances when the operand works on the operant. As an example, we turned our attention to the new science of biomimicry, where the physical properties of bacteria, animals, plant species and minerals are not regarded as raw, operand material to be worked on. Rather, many organizations have found a new perspective helpful, one that recognizes that these physical properties of living and non-living things are the result of millions, even billions of years of evolutionary processes. The Biomimicry Institute, based in Missoula, Montana, works with organizations to show how operand resources – mineral, animal, and plant – over 3.8 billion years of trial and error, have often already devised solutions to a great number of human problems. For instance, while many detergents are used to clean buildings, the leaf of a lotus plant has already developed a solution to keeping clean. Its surface is designed in a special way so that dirt rests just above it. When it rains, the dirt washes away. In these instances, is not so much the case that humans “work on” operand resources, as service-dominant logic proposes, but rather operand resources “working on” the human – providing inspiration, advice and direction towards sustainable design solutions previously unimagined by humans, be they managers or consumers. By viewing them not in a unidirectional hierarchy, but rather as co-evolving interdependents, organizations could re-visit operand resources in a new light, not merely as static stuff, but as intelligent entities whose properties are not always “worked on,” but rather obeyed by, humans. Object-oriented philosophy refers to this as the “imperative” nature of objects; objects summon us into existing in a certain way, and we respond to those imperatives in ways that are mostly unconscious and physical, rather than cerebral and knowing (Harman 2005; Lingis 1998).

### From Value-in-use and Value-in-Underuse to Consuming and Conserving Resources

We propose the concept of value-in-underuse as an important supplement to value-in-use. Value-in-underuse opens the way to thinking about what we actually mean when we employ the term “use” as an activity. As Gummesson (2008) remarks, “use” might not be the best concept to describe what a consumer is doing when she is interacting with a product or service. As we have argued, all types of resources – brands, art, antiques, ecological sites, soil – often require the opposite of use in order to maintain their value.

Of course future models of resource management in the face of global climate change will be fundamentally different from previous thinking in the area. In this context, the importance of value-in-underuse cannot be ignored. Take, for example, the Arctic resources of the region of the North Pole. With its 12,000 square miles of permafrost, it sequesters methane and carbon dioxide gases. It keeps ambient temperatures low and it is the largest reflective heat surface on the planet. It acts as a habitat to some of the varied plant and animal ecosystems of Earth – one that is also the cleanest. In these ways, it acts a resource to some of the varied plant and animal ecosystems of Earth – one that is also the cleanest. In these ways, it acts a resource to some of the varied plant and animal ecosystems of Earth – one that is also the cleanest. In these ways, it acts a resource to some of the varied plant and animal ecosystems of Earth – one that is also the cleanest. In these ways, it acts a resource to some of the varied plant and animal ecosystems of Earth – one that is also the cleanest. In these ways, it acts a resource to some of the varied plant and animal ecosystems of Earth. To be specific, when sea ice is lost, the Arctic’s massive oil and gas resources could be more easily exploited; it could become an important, navigable trade route for shipping vessels; it could become a desirable tourist destination as a result of more habitable climate conditions. However, it is almost universally considered that the value-in-underuse of the Arctic far outweighs its potential value-in-use, because the latter value is both global and long-term. This notion of value-in-underuse takes more account of the intrinsic nature of the interaction and entanglement of the industrial system and the non-industrial environment (Hornborg 2001).

A corollary to value-in-use in service-dominant logic offers another fundamental proposition about resources: value is always and uniquely determined by the beneficiary (e.g. Grönroos 2006; Lusch and Vargo 2011; Vargo and Lusch 2008a). Where a beneficiary is the unique determinator of value, and value is determined by value-in-use, unethical and unsustainable practices can arise. Let us take the value placed on shark fins in Asian cuisine across the world as an exponent of this logic. Shark fin soup is a delicacy in Asian cuisine. Its beneficiaries value it variously as a source of nutrition, a status symbol and a traditional emblem of good fortune. Shark fins are the constitutive ingredient in shark fin soup, and a single shark fin fetches anywhere between $75 and $300. In contrast, the wholesale value of shark meat is much less, because this

<table>
<thead>
<tr>
<th>Current conceptualization of resources</th>
<th>Other conceptualization of resources</th>
<th>Towards a holistic theory of resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant is paramount</td>
<td>Operand is also important</td>
<td>Co-evolving interdependencies</td>
</tr>
<tr>
<td>Value-in-use</td>
<td>Value-in-underuse</td>
<td>Consuming and conserving resources</td>
</tr>
<tr>
<td>Ideas</td>
<td>Materials</td>
<td>The by-products of service</td>
</tr>
<tr>
<td>Information</td>
<td>Materiality</td>
<td>Embodied information</td>
</tr>
<tr>
<td>Inanimate nature of products</td>
<td>Animate nature of things</td>
<td>The non-human resource</td>
</tr>
<tr>
<td>Resources</td>
<td>Un-resources</td>
<td>Re-resources</td>
</tr>
</tbody>
</table>

**Figure 2.** Towards a holistic theory of resources.
resource is not as valued by its beneficiaries. But the fin trade leads to the deaths of between 26 and 73 million sharks per year, and has resulted in a 90 percent decline in the global shark population over the last three decades (Clarke et al. 2006; Clarke, Milner-Gulland, and Bjørndal 2007). Thus, the value placed on shark fin has directly led to the near global collapse of a genetic line. Where a beneficiary is the unique determiner of value, and value is defined as value-in-use, the complex interrelationship of stakeholders is not represented, and the issue of the non-perception of value is left out of the frame. Gummesson (2008) has called for more advanced thinking about stakeholders in any discussion of resources, while Lusch and Webster (2011) set out a direction for a stakeholder-unifying cocreation philosophy for marketing. In the case outlined above, shark stock must remain underused in order to preserve its long-term viability, and its beneficiaries should not uniquely and phenomenologically determine its value. With a concept such as value-in-underuse, we argue that marketing can in the future play a pivotal role in the underuse of resources.

From Ideas and Materials to the By-Products of Service

Service provision entails a large material resource substratum, but such material is seldom visible in the final manifestation of service delivery. This is an under-theorized, vital structural feature of service. We introduce the concept the by-products of service to account for this paradox of marketing management. Despite the emphasis on immaterial flows, intangible benefits, and the virtual consumption experience, at no other point in time has there been a greater pressure of demand on the materials economy. Although service depends on goods for its realization, it is often difficult for buyers, and sometimes for sellers, to recognize the material resources that are intrinsic to the realization of the service. For example, while Internet search engines offer the consumer an effortless guide through cyberspace, the efficacy and ease of this service is powered by huge energy-intensive data centers storing billions of web pages and locate information, where a 15-minute information search produces 7-10 g of carbon (Leake and Woods 2009). In the service-dominant logic literature, operant resources are described as invisible and intangible, the microprocessor often invoked as a key exemplar of service-dominant logic (e.g. Lusch and Webster 2011; Lusch, Vargo, and O’Brien 2007; Vargo and Lusch 2004a). For example, Vargo and Lusch (2004a, p. 3) contend that “Human ingenuity and skills took one of the more plentiful natural resources on Earth (silica) and embedded it with knowledge . . . in the end the microprocessor is pure idea.” However, the microprocessor example is actually a better example of how the manufacture of “pure ideas” has moorings in the material world of things. Microprocessor manufacturing is a complex task involving more than 300 separate processes. It entails not just the simple construction of a casing from silica; more than 60 acids, solvents, caustics, and gases are used to make microprocessors, some of which are the most toxic chemicals in any industry, linked to carcinogenic and reproductive illnesses (Murzerek 2003). Microchip manufacture takes place in factory-laboratories (“fabs”) of about one million square feet, and each fab deploys huge amounts of water for the purification process (Murzerek 2003). In fact, to successfully manufacture one 6-inch wafer, which yields about

200 chips, 20 pounds of chemicals and more than 3,200 cubic feet of gases are required. The material to produce a microchip is 630 times the mass of the final product the consumer purchases (Grossman 2006). Because most of the materials used to manufacture the microprocessor are absent from the final product (i.e. all we get is silica), it is difficult to recognize and account for the resources that are intrinsic to the realization of this service. In service-dominant logic, we are in danger of invisibilizing the material processes that lead to seemingly immaterial capabilities. Indeed, we argue, it is a structural characteristic of service that the materials which go into its realization may often be absent or backgrounded in its final or delivery.

Further, the embodied labor that goes into creating the microprocessor, or indeed a host of other resources that have high levels of operand capacity, should be accounted for in any holistic theory of resources. The hazardous, high-tech work of manufacturing printed circuit boards and semiconductor wafers in Silicon Valley is carried out mostly by immigrants, women and people of color, often on insecure and temporary work contracts (Pellow and Park 2002; Pellow, Smith, and Sonnenfeld 2006). As one commentator puts it, “In the public consciousness, high-tech is the antithesis of that old-fashioned, fossil fuel-driven industry. The news media normally discuss the new technologies as digitally clean, trafficking in information rather than goods, thriving on creativity rather than muscle, but that’s a mirage” (Cook and Thompson 2000, in Pellow and Park 2002, p. 1).

What effect does it have to say that the microprocessor is “pure idea”? We argue that it elevates the microprocessor above the world of materiality and abstracts it from its context. The specificity of origins and by-products which are not infinite, nor embedded in the finished service, is omitted. These materials are not separate to the dynamic capability that is produced through micro-processing power; they are an essential constitutive part of it. A microprocessor is not an immaterial idea produced from disembodied labor. This suggests that the notion of “pure ideas” in the context of economic behavior is itself problematic, which has profound implications for the notion of the independent existence of operand resources. By enframing value or service as something that can be extracted or removed from material things in turn backgrounds the materiality in which value creation is actually embedded. All research sites have within them the invisible hand of materiality, which should be accounted for in any subsequent theories of service.

From Information and Materiality to Embodied Information

The concept of information has become a defining way of being in the late 20th and early 21st centuries (Castells and Himanen 2002). Today, people commonly think that information is like an invisible ether that rises above the constraints of material grounding. Earlier, we traced this separation to the 1950s when cybernetics as a powerful and influential philosophical force began to emphasize the importance of information (Hayles 1999; Wiener 1961[1948]). Current thinking about resources in marketing similarly argues that information has become “unbundled” and “disembodied,” removed from material structure. A central argument of this article is that information is critically dependent on the material in which it is embedded. The material substrate that embodies the service will determine the type and quality of service offered. It is this dynamic that we wish to reflect in the concept embodied information.

First, as the examples of the airplane and the library illustrated, information is often supported by a complex material architecture, and it is the quality of this material structure that affects the resulting quality of information. Thus, the operand resource will pre-determine the type of service offered. Second, information is often embodied in other people, and trying to decouple the two affects the quality of the information. In management literature the human resource – consumers and employees alike – has over time moved from one extreme perspective where it was seen to be a purely physical asset, to the other, where the human is viewed as a purely operand resource (see Snell, Shadur, and Wright 2006). A more inclusive approach would acknowledge that operand resources – intelligence, skillfulness, and sociality – are embodied in (human) physical architecture, and changes in this physical architecture will profoundly affect the nature and quality of information. An exclusive focus on the operant dimensions of workers means that the mental skills and knowledge of the human are often conceived as disembodied resources and the separation of the human’s operand and operant natures is not a holistic account. This is reflected, for example, in Constantin and Lusch’s (1994) view of the accountant:

In the following discussions, we separate people from their skills, invested capital from working capital, and, in general, operand from operand resources… We can consider the accountant to be a physical resource – almost as if she were a machine – and her professional skills as a cultural resource that drives the human machine. In an organization of almost any size from the very large to the one- or two-person organization, this split of resources has already been made… Her skills may be used repetitively without being depleted... the human being is an “operand resource” who depreciates with age, while the skills are the “operand resource”, which appreciate with age (Constantin and Lusch 1994, pp. 146-148).

In this account, operand and operant are separated. The result is that the accountant is seen to have two tiers of value to the organization – one as a cognitive entity that can work without tiring, the other as an inconvenient body that becomes increasingly useless to the organization. This shifts the conceptualization from one extreme, viewing the human as a purely physical operand, to another extreme, where the human is conceived as a solely operand entity. If the previous era of human resource management disregarded both human cognitive and physical capabilities and needs, the current era, we argue, is in danger of failing to recognize the physical (1) needs and (2) assets of the human body while privileging its cognitive functions. The conceptualization of the human resource must include the physical presence and necessity of the whole body. Workers’ knowledge, skill and competence might be predominately framed as cognitive, but these cognitive capabilities are
inextricably embodied in physical architectures, namely technological systems, organizational processes, and also the human body. The accountant may be aging, but it is this very process that nurtures her operant worth.

From the Inanimate Nature of Products and the Animate Nature of Things to the Non-Human Resource

In current conceptualizations about resources in service-dominant logic, human beings are treated as the exclusive agents of value creation. “Human ingenuity,” “human appraisal,” “human knowledge and skills,” and “human and mental skills” are all terms that are used to describe value creation and innovation. For example, “all economic actors” are characterized as “individuals, households, firms, nations, families, and societies” (Vargo and Lusch 2008a, 3). Object-oriented philosophy teaches us that this can be described as a “philosophy of access” to the world. Such a philosophy “assumes that the human-world gap is the privileged site of all rigorous philosophy” (Harman 2011, p. 136). In other words, the human-world correlate becomes the basis of philosophical thought. With the aim of “putting object-object relations on exactly the same footing as subject-object relations” (Harman 2010, p. 140) an object-oriented service philosophy expands the list of actors who are integral to resource creation and integration, because those who turn the operand resource into service are not always human. For example, as the most important pollinators of agricultural crops, the monetary value of honeybees is estimated at $15 billion annually to the U.S. economy (US National Academy 2007). When we think of ourselves as the only things to render something serviceable, we begin at best to ignore and at worst to abuse the relationship we have with those non-human others that render “stuff” serviceable. The logic of marketing needs to expand to include these non-human others who are indispensable to service provision.

All operand resources – those “raw” materials such as wood, oil and water – possess unique constellations of properties, materiality, embedded knowledge, adaptive processes and survival instincts which have evolved over billions of years. So, ironically, an operand resource possesses exactly those qualities as described as operand by Madhavaram and Hunt (2008, p. 76), who define “a masterfully developed operand resource [that which] (1) has a very high degree of tacit knowledge, (2) is a result of purposely planned learning systems, (3) has taken a long time to develop, (4) enables firms to consistently produce efficiently and/or effectively, valued market offerings”.

From Resources and Unresources to Re-sources

A holistic theory of resources must take seriously the concept of “unresources” or “ex-resources” (Zimmermann 1951). Following the work of Erich Zimmermann service-dominant logic argues that no resource simply exists, but rather it becomes a resource when technological and human conditions are aligned in a certain way. If this is the case, the corollary is that every resource contains potential to become an unresource. This can happen in three ways. First, resources do not possess intrinsic assets and liabilities; what is a resource for an organization or an individual at one moment in time can be an unresource the next. For example, the valley of the River Kemijoki in northern Finland has been positively affected by climate change, where milder weather offers more opportunities for food foraging and pasturing, and thus increases in meat and fur production. However in years to come, reindeer, which are the source of this food and fur, will not survive in such a habitat as it becomes prone to flooding as a result of the same climate change conditions (Keskitalo 2008). Second, what appears as a resource for one entity can emerge as an unresource for another. For example, automobility is a resource that is linked to most other industrial and service sectors of the global economy. It has provided people in many parts of the world with unprecedented access to the service of private travel. However, automobility also accounts for one third of global CO2 emissions. World car travel is expected to triple between 1990 and 2050, with the attendant increases in noise pollution, traffic congestion, and public road projects. 1.2 million people are killed globally in road crashes each year, and 20 to 50 million injured (Featherstone 2004; WHO 2004). Thus automobility, while a resource for certain parts of the world’s population, is a long-term unresource for others. The proposed shift from material ownership to service use has the potential to create a second-order sustainability that has an additive, rather than a substitutive effect on consumer decision-making. It is doubtful that models of collaborative consumption that are premised on a service-dominant logic, such as car-sharing, would remedy the matter. This is because there is every indication to believe that car-sharing will present to the consumer a service in addition to, rather than a substitute for, car ownership. In the US between 1990 and 1999, total car ownership per 1,000 people increased by 16 people; between 2000 and 2009 – the age of car-sharing – it increased by 28 (cf. Davis, Diegel, and Boundy 2012, table 3.5). Third, if a resource becomes an unresource, or ex-resource, we must acknowledge that it seldom reverts back to “neutral stuff,” and that it stewardship continues despite its unresourcefulness to humanity (see Mundt and Houston 2010). Currently conceived as an input that is employed to create market value, the concept of “resource” has an older lineage, deriving as it does from the Latin resurgere, meaning to rise again. This reminds us of the waxing and waning of resources during different times, places and stakeholders. Translating this concept, we propose the term “re-source” to emphasize that it is better to think of re-source not as a noun, but as a verb – an activity to describe historically contingent, forming and unforming relationships between materials and stakeholders.

Conclusion

“No ideas but in things.”
(William Carlos Williams 1946)

In the first part of this article, we set out a number of concerns about how service-dominant logic at present constrains a
holistic theory of resources. We discuss how a culture of demateriality – an underestimation, even a denial, of the importance of physical tangible entities – leads to the ascendency of one type of resource, the operant resource, masking the importance of the interconnections between types of resources. We point out how failure to explore fully the interrelationship between resources blindsides a consideration of value-in-underuse, and of consumption as both a value-adding and value-depleting activity. We highlight that the evolution towards a service economy means as coincided with a concomitant rise in material extraction and use, leading us to argue that service innovation often comes in addition to, rather than in substitution of, material ownership. This has profound implications for any theory of resources and planetary ecology. We do not dispute service-dominant logic’s fundamental proposition; service arises from material goods. We argue instead that without goods, no service can exist. Everything has a material substrate, and this material substrate therefore precedes service. Thus no service can arise without materiality; goods are more than support mechanisms for service – they are fundamental and prior to service; the type and quality of the materiality will determine the type and quality of the service. Drawing on a critical cybernetics, we question the assumption that information, or knowledge, is un-embedded in the sense of being independent of goods and people. Instead we argue that all resources have both material origins and consequences. Further, we argue that viewing non-human and non-living things as inert non-agentic entities – “neutral stuff” – downplays their importance and fails to account for how such resources can co-create service offerings, value and social reality. Finally we highlight the usefulness of expanding resource theory to include unresources as an important area of investigation.

In the second part of the paper, we discuss how these concerns might be mitigated by embracing a number of novel ideas about resources. The discussion presents an alternative framework that, we hope, will contribute to a more inclusive and holistic theory of resources. A table is developed across six dimensions. In the first, rather than privileging the operant resource and stressing separateness, we contend that the operant and operand are co-evolving interdependencies where either type of resource can catalyze and give value to the other in many instances. In the second, we propose the concept of value-in-underuse as an important supplement to value-in-use. This enables us to explore the tensions between value-adding and value-depleting consumption, to identify the beneficiaries of value outcomes and to shed new insight into externalities. In the third, we introduce the concept of the by-products of service. This recognizes that service provision can entail large material resource use – the “invisible hand” of materiality. The fourth dimension of the framework uses the term “embodied information” to highlight that information is often preceded by a complex material architecture. The fifth acknowledges the animate nature of non-living things, as well as stressing the importance of non-human resources, and argues that marketing theory needs to account for these non-human others and their contribution. The sixth dimension is mindful of the waxing and waning of resources during different times, places and stakeholders and suggests that it is better to think of a re-source as an activity rather than an entity, which better explains how something can become “an unresource” or an “ex-resource” over time, a dynamic that poses challenges for its stewardship.

This framework, and the ideas within it, provides a contribution to the conceptualization of resources in marketing at a time when service-dominant logic seeks to embrace wider societal, ethical and ecological challenges. We propose an agenda for further research in several areas. Operand resources are not inert lumps that form the background noise upon which the agentic human world is overlaid. A fuller theory of them is needed. The entanglement between these two types of resource and the serial and complex interrelationship highlighted in this paper require deeper study. A culture of dematerialization in resource thinking – the subordination of “stuff” – must be addressed, similar to the knowledge advanced by object-oriented philosophies. Further, service marketing will acknowledge the paradox that more service provision involves more, not fewer, goods, has important implications for services research, resources and their management. Issues of value, value-in-use, value-in-underuse, value-addition and value-depletion in a holistic theory of resources are complex. Compounded by concern about ownership, stakeholding, beneficiary outcomes, and externalities these issues become even more contentious.

Service-dominant logic, with its insights about value, value cocreation, and the consumer, has much to offer resource theory. Viewing markets, consumers, organizations, technology, society, and the planet through the lens of a holistic theory of resources explains much about marketing activity, consumption behavior, competitive modes, and human and non-human endeavor. We endorse Vargo and Lusch’s call (2008a, p. 9) for a broader service science approach that has “the potential of taking the perspective of value cocreation and exchange beyond the market by providing a systems-orientation that takes the issues out of the economic arena and re-contextualizing them.” Bringing resource thinking into a broader societal domain continues this transformative agenda. It highlights that, as well as consumers and markets, resources matter.

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