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NINE TENETS ON THE NATURE OF VALUE

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ABSTRACT

The Lean Construction (LC) community commonly agrees upon that the goal of projects is to deliver value. However, value as a concept is an ambiguous one. Not surprisingly, a commonly agreed upon definition of value has not yet been found. We find the lack of such as definition to be problematic, as it makes any high-level discussion of value challenging.

Reviewing the LC literature, limited effort in regards to tackling the fundamental nature and base definition of value is found. This paper aims to provide this through presenting nine tenets on the nature of value. It starts out by providing an overview of selected definitions found to be pertinent to value in the context of construction projects, notably from within economics, marketing and those that are employed within the LC community. Thereafter, nine tenets pertinent to the concept of value and the reasoning behind them are presented. Finally, we discuss several value related concept, such as waste, in relation to the presented tenets.

KEYWORDS

Lean Construction, Value, Theory

INTRODUCTION

The Lean Construction (LC) community commonly agrees upon that the goal of projects is to deliver value (Emmitt, Sander and Christoffersen, 2005). However, value as a concept is an ambiguous one (Salvatierra-Garrido, Pasquire and Miron, 2012). Not surprisingly, a commonly agreed definition of value has not yet been found (Thyssen et al., 2010). According to the authors' experience from previous IGLC conferences, the lack of such a definition leads to everyone having their own mental models of what value is. Consequently, higher level discussions on the subject of value are difficult. It is for example a challenge to discuss how to maximize value if it is not first agreed upon what value is.

Reviewing the LC literature, limited effort in regards to tackling the fundamental nature and base definition of value is found. The most thorough approach to the subject – Salvatierra-Garrido et al. (2010) – identify five main features of value in the literature. Notably, no comprehensive definition of value is presented. Equally, little effort is made to clear up problematic areas such as the subjective-objective

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dichotomy. Furthermore, their value features are not bolstered by in-depth discussion, and are mainly substantiated by citing literature. Accordingly, the literature review leading up to this paper revealed that some of the overall "truths" about value that are being purported seem to have the entered the LC literature by authors quoting non-academic sources. Emmitt et al. (2005) is perhaps the most frequently used source for value being subjective. This paper, however, only base this on a presentation at an LCI conference (Christoffersen, 2003, cited in Emmitt et al., 2005). In the context of value within Lean Construction this is, in the eyes of the authors, problematic.

This paper sets out by defining what value is on a fundamental level. This is done by stating nine tenets on the nature of value. The tenets presented in this paper are based heavily on Holbrook (1998), whose value typology is widely recognized (Sánchez-Fernández and Iniesta-Bonillo, 2007). Less recognized, but in our opinion, more important, is Holbrook's base definition of value and it's nature.

The paper starts out by providing an overview of the most relevant definitions of value, including the one outlined by Holbrook. Following this, nine tenets on the nature of value and the reasoning behind them are presented. Thereafter, we show how these can be combined into a coherent definition of value. Finally, we discuss the implications of the tenets for the understanding of value.

THEORETICAL FRAMEWORK

DIFFERENT VALUE DEFINITIONS

The concept of value exists in a plethora of different fields (Khalifa, 2004). Here, we review some definitions pertinent to value in the context of construction projects, notably from within economics, marketing and those employed within the LC community. Before considering different definitions of value, it is important to differentiate *value* from *values.* In contrast to the concept of values (plural), value (singular) is the outcome of an evaluative judgment (Holbrook, 1998). These two concepts are often confused (Sánchez-Fernández and Iniesta-Bonillo, 2007).

Value is a central concept within the field of economics. Economists traditionally refer value to utility or marginal utility when considering value and consumer behaviour (Bowman and Ambrosini, 2000). According to this, consumers spend their income to maximizing the satisfaction they obtain from products. Furthermore, total utility denotes the satisfaction gained from being in possession of a commodity, whilst marginal utility refers to the satisfaction that someone receive from getting one extra unit of a good, or the satisfaction lost by giving away one unit. Rooke et al. (2010) argue that these concepts are useful for studying the distribution of scarce resources, but of limited use to production science.

More relevant definitions of value can be found in the marketing literature. In a seminal paper by Zeithaml (1988), an exploratory study amongst consumers revealed four different understandings of value: *(1) Value is low price, (2) value is whatever I want in a product, (3) value is the quality I get for the price that I pay, (4) value is what I get for what I give.*

The two last definitions differ in that (4) considers all get and give components, while (3) only considers monetary cost and the direct quality of the product. Thus, this definition ignores other *give* components, such as the time and emotional costs required in acquiring the product, and *get* components, such as experience.

According to Zeithaml each of these definitions have their counterpart in trade or academic literature. She argues that all of them can be in one overall definition: *"Perceived value is the consumer's overall assessment of the utility of a product based on the perception what is received and what is given."*

Kelly (2004), analysing value management in construction projects, states that the most common definition of value in literature express value as the relationship between cost and benefit – essentially the same as expressed in definition (4).

The original Lean definition of value is generally considered to be that of Womack and Jones (1996), stating that *"value can only be determined by the ultimate customer. And it is only meaningful when expressed in terms of a specific product (a good or service, and often both at once) which meets the customer's need at a specific price at a specific time."* The first parts of the statement, addressing the question of value only being determined by the ultimate customer, concerns the subjectivity of value and who's value we should seek to maximize. The last part on the other hand, express the temporal dependence of value judgement. Ignoring these, what we then are left with is value being determined by the "*the customer's need at a specific price*". I.e. value is a function of the customer's fulfilment of his needs (how it benefits him or what he gets) and what he has to pay to get those needs fulfilled. If price is interpreted to include more than just monetary cost (e.g. time cost), then Womack and Jones definition corresponds to Zeithaml's fourth definition; *(4) value is what I get for what I give.*

Few of the value related papers presented through the IGLC include what we perceive to be any clear base definition of value. In about half of these, value is used as a term without it being properly introduced or defined. These typically use the concept of value is for introducing some kind of method or tool. Also, several having no definition of value address value generation. In the IGLC community, value generation theory from the TFV model (Koskela, 2000) can be seen as a starting point of the research on value, and research is widely influenced by this (Salvatierra-Garrido, Pasquire and Miron, 2012). However, Koskela mainly considerers the importance of delivering value from production systems and how they should be managed in order to do so (Drevland and Svalestuen, 2013). With regards to what value is per se, Koskela simply defines it as fulfilling the customers' requirements.

Some authors have employed definitions other fields such as marketing (e.g. Lima, Formoso and Echeveste, 2008) and economy (e.g. Andersen, Bølviken, Dammerud and Skinnarland, 2008). However, little of this has gained traction with the community at large. Of the papers that actually has anything that could be considered a clear base definition of value, the majority defines value in some way that could be said to correspond to Zeithaml's second definition of value; '*value is whatever I want in a product.*' E.g. Orrechia and Howell (1999) state that *"'What the client wants' defines value"*.

The propensity to regard value as only concerning need fulfilment is also clearly evident in papers that refer back to Womack and Jones' definition, but only using part of it, most notably ignoring the price element (E.g. Whelton and Ballard, 2003). Another sign of this tendency can be seen in papers that employ the term 'value for money' when including the cost aspect of value (e.g. Bertelsen and Koskela, 2002; Orrechia and Howell, 1999). In these papers, 'value for money' is typically equated to benefit per dollar.

It is worth noting that economist consider 'value for money' the colloquial term for what they refer to as consumer surplus (Bowman and Ambrosini, 2000). Such analysts define the term consumer surplus as the gap between total monetary value and price, where total monetary value is the price the customer is willing to pay for the product based on his valuation of what he is getting. In other words, it does not denote what get you per dollar, but what you get above and beyond the balance point of give being equal to get.

Holbrook's (1998) definition of value differs from the ones presented so far. He defines consumer value *as "an interactive relativistic preference experience"*. According to our understanding of Holbrook, *interactive* refers to the value stemming from the *experience* of the subject interacting with the product or service in question. Furthermore, he states that *"such consumer value refers to evaluation of some object by some subject"*. Consumer value is thus not inherent in the product, but resides in the consumption experience. The *preference* part of the definition entails it involving a preference judgment between two or more options. Finally, *relativistic* relates to three elements. Value is *comparative* – involving preferences among objects; *personal* – varying across people; and *situational* – specific to the context.

Holbrook's definition covers several aspects lacking in the others. It has, however, some shortcomings that, in our opinion, prevent it from being a solid definition of value in the context of construction projects. Firstly, it is not particularly intuitive. The expression *"an interactive relativistic preference experience*" is rather obtuse, not helped by the fact that semantic elements can be said to be overlapping. 'Relativistic', for instance, includes a comparative element which equally can be found in the term 'preferential. Also, in the sense that sense that Holbrook uses it, 'an interactive experience' is somewhat of a tautology. *Interactive* signals something that one would actively partake in. In colloquial terms, most people would probably not consider sitting passively in a cinema watching a movie an *interactive* experience. However, according to how Holbrook defines the term, it is.

Overall, we consider the most the most significant weakness to be the omission of anything concerning the get and give aspects of value. This is to some degree covered in the topology part of Holbrooks work, but even there is barely touched upon. This has, in fact, been has been criticised by other authors (Sánchez-Fernández and Iniesta-Bonillo, 2007) .

Nonetheless, the following analysis leans heavily on the insight presented by Holbrook. The reason for this lies in its completeness, that is, its openness to the complexity of the notion. Rather than repeating Holbrook then, we envisage to deepen the analysis and strengthen the conceptual framework by identifying nine tenets through which the concept of value can be understood.

NINE TENETS

Value is a complex term. To mitigate some of the complexity, we examine different aspects of the nature of value on an atomic level expressed through nine tenets.

The word *value* has several meanings in the English language. The first tenet scopes the base meaning of the term and defines value at the most fundamental level. As such, is should considered an axiomatic statement upon which all of the other tenets are contingent. I.e. the other tenets are nonsensical if the first tenet is false.

T-1. Value is the result of an evaluative judgment

Values are different from value. However, values are important in the evaluative judgment. According to Schwartz and Bilsky (1987), there are five features common to most of the definitions of values found in literature, which they sum in a definition of values being *" (a) concepts or beliefs (b) about desirable states or outcomes (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events and (e) are ordered by relative importance."* Thus, values will guide any value judgment:

T-2. Value is guided by values

An example of values in this sense could be "conserving the planet". This could lead to making greener choices for a building. However, such judgments require knowledge, both of the context and of the product or service being evaluated. In the case of greener choices, knowledge that global warming and such is a problem, and knowledge about how buildings contribute to this in general and specific knowledge about the solutions being considered. Said more succinctly, evaluation is based on knowledge (Lewis, 1946), leading us to the third tenet:

T-3. Value is dependent on knowledge

The values shaping this judgment belongs to someone or some entity. Holbrook (1998) refers to value being "personal". However, we feel that this term is inappropriate when considering value for an organizational entity like a company. Therefore the fourth tenet is given as:

T-4. Value is particular

An evaluative judgment is never performed in a vacuum. In the human psyche, value is intrinsically tied to decision-making (Kahneman and Tversky, 2000). How the concept of value is used in different fields highlight this. Anthropologists, for instance, typically use it as a means to understanding why do people choose to act as they do (Graeber, 2002), and for marketers it is a tool to understand and influence consumer purchase decisions. Such observations entail that value always concern choice, and comparing two or more alternatives to each other, leading to the fifth tenet of value, namely.

T-5. Value is comparative

What forms the basis of this comparison is debated. Various authors have offered different views on the subject. In the literature review leading up to this paper we found that, outside of the LC community, researchers generally agreed upon that both get- and give-components form a part of the value judgment. We would argue that if one accepts value as the result of evaluative judgement upon which decisions are made, then value is nonsensical unless *give*-components are included. This is expressed in the sixth tenet as:

T-6. Value can be decomposed into a set of get and give components.

How get- and give-components are evaluated, however, is contested. Sánchez-Fernández and Iniesta-Bonillo (2007), cataloguing the different approaches to perceived value in the marketing literature, distinguish value as a one-dimensional and a multi-dimensional construct. A multi-dimensional value construct means that *"value is an aggregate concept formed of several components",* while a one-dimensional value construct is a singular assessment. I.e. for the latter there may be

several factors considered in the value judgment. Value is in this case, however, not the sum of its parts as the former suggests.

Based on this distinction, we would argue that value should be viewed as a one-dimensional construct. Value being a sum of its parts entails that each part could be evaluated separately and without consideration to the others. This would only make sense if value could be said to be linear. A notion that has been contradicted by Kahneman and Tversky (2000) in their seminal work leading up to Prospect theory. Thus, we formulate the eight tenet as:

T-7. Value is not summative.

Whatever the give and get components, we would argue that they always will be tied to experiences. E.g., one could consider a buildings aesthetics as a get-component. However, this is not inherently valuable. Its benefits stems from its ability to evoke emotions and influence state of mind in occupants, visitors and others. For an individual homeowner this could be an end in and of itself, for a company this will serve some higher purpose. E.g. Rybkowski (2009) shows how pleasing buildings facilitate faster patient recovery in hospitals. Humans will pursue experiences that enhance their quality of life; organizations will pursue experiences that will enhance their objectives (whatever they might be). This gives us the eight tenet:

T-8. Value is experience based

Some of the major get- or give-components will often be expressed in monetary terms, such as investments costs, maintenance cost or rent income. Can money be said to be an experience? Not directly. It is, however, a means to very many ends. Thus, it can be considered a placeholder for experience.

An important corollary to this is that during the value judgment not only the experiences gained from interacting with the objects in question are considered, but also potentially gained or lost experiences outside of the scope of what is being evaluated. E.g. if an owner chooses to put more money into a construction project to improve some aspect of the building, he will at the same time forego the option of investing the money elsewhere with the accompanying experiences from that. What other options are available depends on the context. Corollary proof to this can be found in what Soster et el. (2014) calls the *bottom dollar effect*. For consumer purchases, the perceived monetary sacrifice is greater when available funds are low, leading to a lower satisfaction, i.e. perceived value.

Holbrook (1998) refers to this as value a being *situational.* We choose to express the ninth tenet as:

T-9. Value is context dependent.

We believe the nine tenets presented here are universal and applicable to any situation where the word *value* is understood to mean something in line with the first tenet, that is, value is the result of an evaluative judgment. Based on the tenets and the discussions around them we can arrive at the following definition of value:

> *Value is the result of an evaluative judgment. This judgment is guided by values and based on the evaluator's knowledge at hand. It is always based upon comparing two or more alternatives in a given context. This context envelops all get and give consequences for a particular party from a decision made on the basis of the value judgment. The get and give consequences are always in the form of gained or lost experiences, or expressed in monetary terms as a*

placeholder for experiences. The consequences are not summative, the value judgment is done by considering them all at once.

IMPLICATIONS FOR VALUE RELATED CONCEPTS

VALUE FOR WHOM

Value is particular. Whose particular value we should concern ourselves with in construction projects is a complex matter. Different authors have offered different opinions on the matter. E.g. Salvatierra-Garrido et al. (2012) have argued that the value for the wider society has to be considered while Drevland and Svalestuen (2013) argue that only the value for the paying client is of consequence. According to Bertelsen and Emmitt (2005) we need to consider the client as a complex system. It is beyond the scope of this paper to fully tackle this subject. However, some reflections are warranted.

The first tenet states that value is a result of an evaluative judgment. This implies that there has to be a judge (or a panel of judges acting in unison). If we go beyond considering the client as single point this becomes challenging. If no judge is formally appointed, the project manager, architect, or whoever is handling the value management process, will be in a position of *de facto* judge. We would argue this is not something anyone in such a position should do on their own volition, at least without clear guidance from the customer. Thus, on any construction project there should a clear notion of who is the supreme value judge.

PERCEPTION OF VALUE

Some authors argue that all value is perceived value, and that any concept of true value is nonsensical. This might be true if considering value through a marketing lens. The core concept of marketing is the transaction (Kotler, 1972). Arguably, this implies that the focus is on one customer making a buy-or-no-buy decision based on the value perceived at a single point in time. Thus, perception is everything.

Conversely, in construction the concern should be delivering actual value over time. The buy-or-no-buy decision is typically made long before the value to be delivered has been decided in detail. In this context, true value can be a very usable concept. To define true value we first need a definition of perceived value and define it as:

> ***Perceived value*** *– The value of something for the perceiver. How a product or service is evaluated by someone will depend on their values and the knowledge they possess*

When defining true value, the salient point in the above definition is the one based on the seventh tenet, that value is dependent on the evaluator's knowledge at hand. Logically, flawed knowledge will lead to a flawed perception of value.

Perfect information is a concept originating in game theory. McConnell (2000) defines it as "the state of knowing everything there is to know about a specific problem or decision situation." However, information and knowledge are not the same. Information is raw data. In an evaluative situation, knowledge entails understanding the consequences of that data. We therefore propose to define true value as:

True value *– The value that would be perceived if the perceiver had perfect knowledge.*

The relationship between knowledge and information is expressed by Brookes' (1980) in his fundamental equation: $K[S] + \Delta I = K[S + \Delta S]$. When information is added, a knowledge structure will change to a new modified structure. According to Bawden (2011) this equation is *"a description of the information communication process as it affects one individual's knowledge*". The effect of the information may vary according to the knowledge structure to which it is added. One consequence of this is that past experiences and corollary knowledge will greatly impact someone's ability of translating information into usable knowledge.

Maia et al. (2011) argue that it is impossible for someone to accurately predict the evaluation of someone else. This might be, since this also would entail accurately predicting the knowledge they possess. However, we would argue that someone who is sufficiently knowledgeable about someone else and their situation, might be able to give an estimate of the value of a product or service for them that is closer to the true value for them, than what they themselves perceive the value to be. Case in point, an industry practitioner will most likely be better able to gauge a buildings' fitness for purpose than a (non-professional) client. This due to being better able to translate the available information into relevant knowledge. Based on this we define estimated value:

Estimated value *– The value for someone estimated by someone else. Value is always seen from the point of view of someone, but can accurately be estimated by someone else if the estimator is sufficiently knowledgeable about the values of the subject he is estimating the value for and their context.*

WASTE

Waste is a central concept within LC, closely tied to that of value. Without a tangible concept of value, waste is even more intangible (Bertelsen and Emmitt, 2005). Womack and Jones (1996) define waste as any activity that consumes resources and creates no value. If Value=Benefit, however, any activity that produces even the slightest amount of benefit is not waste, no matter how large the monetary costs or other sacrifices required to obtain the benefit may be. Conversely if value is defined as Value = Benefit – Cost, then any activity where the cost of performing it outweighs the benefits created from it would be considered waste. This is therefore a much more sound definition of value in the context of waste.

Considering only the benefit side of value might be sufficient when considering construction. Construction activities can be considered to be more or less binary in nature, in the sense that if an activity adds value, then it is required to yield the specified end-product, no matter how much it may cost to perform it. E.g. if the building design specifies a column then that column has to be built, or the building will not be usable. Design, however, is an iterative process, where a marginally better solution always can be found (Meland, 2000 cited in Drevland and Svalestuen, 2013). The placement and design of said column will affect load bearing capacity, material usage, and flow of people in the building amongst other things. However, at some point in time the cost of finding this marginally better solution will outweigh the benefits of it. By employing a definition of Value = Benefit - Cost, doing so would be considered waste by definition.

CONCLUSION

We would argue that the nine tenets, taken together as a definition, is not only more complete than previously presented definitions, but can also be said to envelop all of them with one important caveat. This analysis thus present a much wider view of the comparative aspects of value than others do. E.g. Zeithaml (1988) describes situations where customers consider one product to be superior to the other, but choose the lesser product due to monetary restrictions. In our opinion, however, this fails to bring in the loss or gain of experiences outside of the direct scope of the product or service being considered. An implication of this is that going by the definition outlined in this paper, whatever choice is made in a decision situation, is the one that was perceived as having the highest value by the evaluator at the time the evaluative judgment was made.

At first glance, it might be difficult to see how we could claim to envelop the benefit only views of value. However, we would argue that formulations such as 'what the customer wants' is in reality a simplification. This 'want' is the result of a value judgment that necessarily also take sacrifice into account. At least if we consider 'want' outside of the context of wish lists and letters to Santa Claus; or a situation where the customer has so much time, money, or other sacrificial resources that the perceived sacrifice is negligible in the given context (i.e. a wealthy person buying Heinz brand beans over the store brand). In the context of construction projects, neither of these are really applicable. However, 'what the customer wants' could entail that even though the sacrifice is not explicitly formulated or mentioned, it lies there implicitly. I.e. what the customer wants is contingent on getting it at a price where the perceived cost is lower than the perceived benefit.

Although the above definition might be complete, it is not compact. In most situations, it is too voluminous to be practical. Therefore, it will often be better to use simplified versions, such as saying that value is what the customers wants. However, this should be with the understanding that all of the tenets described would still apply.

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