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Clearing the Fog: Demystifying Value and Values in Lean Construction

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Abstract

Research Question: In the context of Lean Construction, how can the concepts of 'value' and 'values' be distinctly defined and differentiated?

Purpose: The concept of value is a cornerstone in Lean Construction, yet its understanding is often muddled among scholars and practitioners, partially due to the conflation of 'value' (singular) with 'values' (plural). These two terms, while interconnected, represent distinct concepts. This paper seeks to demystify and differentiate between 'value' and 'values,' clarifying their individual meanings and interrelationship. The paper aims to establish a clear, shared understanding of these fundamental concepts within the Lean Construction community through detailed explanations and practical illustrations.

Research Design: Conceptual research

Findings: The research clearly distinguishes between 'values' and 'value'. Values encompass beliefs about what is important in life and how one should behave, while value is the outcome of an evaluative judgment of an object's worth. How someone judges the value of an object is dependent on their values, knowledge, and the context they find themselves in.

Limitations While pertinent to the realm of projects and corporate contexts, the paper does not deeply explore values and values within these settings. Rather, it chooses to elucidate these concepts at the personal level to make them more understandable.

Implications: This paper highlights the need for precise use of 'value' and 'values' in research and practice. Clear differentiation of these terms is key to avoiding confusion and ensuring effective decision-making and communication in construction projects. The paper advocates for careful terminology use to improve project outcomes and academic clarity.

Value for practitioners: The introduced and explained terminology in this paper will aid in articulating the desired value in projects.

Keywords: Lean construction, value, values, terminology

Paper type: Full paper

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Introduction

The concept of 'value' is pivotal in Lean Construction (LC), frequently emerging as a focal point in scholarly discussions and industry practices. This prominence is evidenced by the fact that nearly one-third of all papers presented at the Annual Conference of the International Group for Lean Construction (IGLC) feature 'value' in their titles or abstracts (IGLC.Net, n.d.) Despite its prevalence, a clear and unified understanding of 'value' within the LC community remains elusive. Over the years, several scholars have aimed to crystallize this concept (e.g., Salvatierra-Garrido, Pasquire, and Thorpe 2010; Drevland and Svalestuen 2013; Drevland and Lohne 2015; Khalife and Hamzeh 2019), yet a consensus is still to be reached.

Complicating this scenario is the concept of 'values.' Often misconstrued as merely the plural form of 'value,' 'values' represent a distinct, albeit related, concept (Sánchez-Fernández and Iniesta-Bonillo 2007). Whereas 'value' (singular) concerns the worth of an object, 'values' (plural) are fundamental beliefs about what is important in life. This distinction, while addressed in some LC literature (e.g., Drevland and Lohne 2015; Khalife and Hamzeh 2019; Schöttle et al. 2020), remains muddled, as evidenced by ongoing confusion observed at recent IGLC conferences.

Previous discussions within the LC field have often treated 'values' superficially, merely contrasting the term with 'value' without delving into its complexities. This paper seeks to bridge this gap by providing a comprehensive and nuanced distinction between 'value' and 'values.' Our methodology does not encompass an extensive literature review; instead, this conceptual paper focuses on critically examining key sources to elucidate these concepts. Our goal is to clear the fog ambiguity surrounding 'value' and 'values,' thereby enhancing their understanding and practical application within the LC community. We endeavor not just to differentiate between the two concepts, but also to explore each in detail, shedding light on their individual and collective significance in the context of Lean Construction.

The paper begins by delving into the concept of values, explaining them as beliefs about what is significant in life and guiding behavior. We then turn to 'value,' discussing how it arises from evaluative judgments and the various factors influencing these assessments, including the crucial role of values. Following this, we provide a succinct summary of terms related to 'value' and 'values' discussed in the paper. In conclusion, we call for more rigorous and precise use of these terms in both academic research and practical application within the LC field, emphasizing the importance of clear and accurate terminology in advancing our understanding and practice in this area.

Values

In the introduction, we emphasized the distinction between 'values' (plural) and 'value' (singular), a distinction that is generally accurate but requires further clarification. The term 'values' implies a plurality, but what is its singular form? This is elucidated in Rokeach's seminal work, 'The Nature of Human Values' (1973), which differentiates between *the* value of an object and *a* value a person has. However, individuals never have only a single value; thus, these are seldom referred to in the singular. To prevent confusion, this paper will use the term 'human value' when discussing individual values in the singular.

Various authors have offered different definitions of values (e.g., Hofstede 1985; Rokeach 1973; S. H. Schwartz and Bilsky 1987). While these definitions vary in wording, they are conceptually similar (S. H. Schwartz and Bilsky 1987). This paper primarily adopts Rokeach's (1973) conceptual framework, which we find superior in understanding the distinction and relationship between 'value' and 'values'.

The consensus in the literature is that values represent concepts or beliefs about what is important in life (Hofstede 1985; Rokeach 1973; S. H. Schwartz and Bilsky 1987). These values encompass both desired end states in life and the means by which one should behave to achieve them, leading to the categorization of values into ends-values and means-values.

Rokeach (1973) clearly distinguishes between these types of values, labeling them as terminal and instrumental. Terminal values refer to the ultimate goals or end-states that individuals strive to attain. Rokeach categorizes these into two groups: social values, which are societal-level aspirations like 'world peace' and 'equality', and personal values, which are individual aspirations such as 'a comfortable life' and 'happiness'. On the other hand, instrumental values guide behavior, with examples including qualities like 'honesty', 'responsibility', and 'politeness'."

According to Rokeach (1973), human values are largely stable throughout an individual's life, with their primary formation occurring in childhood. Initially, values are imparted and assimilated in isolation, without consideration of their interrelation, and are perceived in a definitive and absolute manner. However, as individuals mature, they often encounter situations where these values may conflict. For instance, when deciding whether to lie out of loyalty to a friend or uphold honesty, one is forced to rank these internalized values.

Once established, these values become part of a structured system where each value is ranked in relation to others based on its perceived importance, forming a value system. This system arranges values in a hierarchical order. For example, consider the fundamental human values of 'self-preservation' and 'protecting others'. In a scenario like being in a burning building, the decision to either evacuate oneself immediately or help others escape is influenced by an individual's prioritization of these values.

Rokeach (1973) notes that a person typically possesses a relatively small set of core values. While the hierarchy of these values may vary among individuals and cultures, many fundamental human values are universally shared, as evidenced by research from Rokeach (1973), Schwartz (2017), and Schwartz & Bilsky (1987). To categorize and understand these values, several authors have developed standardized frameworks, such as Rokeach's Value Survey (1973) and Schwartz's Theory of Basic Values (S. H. Schwartz 2012)

Although Schwartz's Theory of Basic Values is more widely recognized and utilized in contemporary research, it operates at a higher level of abstraction, employing more abstract concepts like hedonism and achievement. In contrast, Rokeach's framework uses more direct and tangible terms, such as happiness and social recognition. We have primarily drawn upon Rokeach's Value Survey for our examples for this paper. This decision is driven by the survey's more concrete and relatable nature, making it better suited for pedagogical purposes.

Organisational values

In this section, our focus has primarily been on human values pertaining to individuals. However, in the realm of construction projects, interactions are rarely with isolated individuals. Even in the case of single-family homes, multiple family members are involved, each with their own set of values. This notion brings us to the concept of organizational values, which are parallel to human values but at the organizational level.

Liedtka (1991) describes organizational values as guiding principles and beliefs that are perceived collectively by members of an organization. These values mirror human values but are applied to the organizational context. However, the formation and perception of organizational values are not as straightforward as Liedtka's definition might imply. Zhang et al. (2008) highlight that leadership often establishes corporate values, potentially leading to a disconnect between the values espoused by the organization and those held by its employees.

While a thorough exploration of organizational values falls outside the scope of this paper, acknowledging their existence and significance is crucial for a comprehensive understanding of the concept of values in construction projects. It's also important to note that, akin to human values, there are frameworks designed to map values at the organizational level. One notable example is the Competing Values Framework by Cameron and Quinn (2011).

Value

Revisiting the earlier distinction, 'value' (singular) pertains to the worth attributed to an object. To fully grasp this concept, it's essential to understand the process by which an object's value is determined. This section explores the subject in detail. However, before we dwell further on that matter, it is important to note that 'value' is not a monolithic concept; it varies across different fields and contexts.

The literature offers numerous definitions of value, typically conceptualized as the balance between what one receives (benefit) and what one sacrifices (cost) (Drevland, Lohne, and Klakegg 2018). Within these broad parameters, specific value concepts emerge. For instance, 'market value' in economics refers to the price of a good or service in the open market, representing an objective and measurable form of value. This value concept contrasts sharply with the concept of value in lean construction.

In the realm of Lean Construction, the concept of value primarily revolves around customer value (Drevland, Lohne, and Klakegg 2018). This perspective extends the traditional notion of the customer to include all stakeholders in a project, thereby transforming it into a broader concept of stakeholder value. The diverse array of stakeholders in a construction project brings with it a variety of perceptions about what is valuable, making value a highly subjective concept. Drevland and Tillmann (2018) emphasize that value is not a one-size-fits-all notion; what is valuable to one stakeholder may not hold the same significance for another. This subjectivity underscores the fact that value in Lean Construction cannot be objectively measured but is instead the result of an evaluative judgment.

Evaluative judgment, as we use the term in this context, aligns with its definition in psychology and neuroscience. It is a crucial aspect of human cognition, enabling individuals to assess their preference level for a stimulus, essentially gauging their liking or disliking

(Clemente et al. 2021). This cognitive process is instrumental in helping people compare options, make decisions, and set priorities.

When making evaluative judgments, people draw on various processes and sources of information (Musch and Klauer 2003). In the following, we will expand upon how the value of an object is determined through an evaluative judgment. This explanation is anchored in and built upon our previous research. In Drevland et al. (2018), we defined value on a fundamental level by developing nine tenets on the nature of value. Together, these tenets yield a more comprehensive definition of value than found elsewhere (Drevland et al. 2018; Walker et al. 2023).

For a detailed analysis of how our definition of value contrasts with and complements other definitions in Lean Construction and related fields, we refer readers to our earlier work (Drevland et al. 2018). In this previous work, we offered an extensive definition of value, incorporating all nine tenets. While this paper encompasses all aspects of that definition and its underlying principles, we present here a more concise version for ease of understanding:

Value is the outcome of an evaluative judgment concerning the balance between the benefits gained from an object and the sacrifices required to acquire and use it.

To visually represent this definition, Figure 1 depicts the three primary components of value:

- The Value Object: The item or concept being evaluated.
- The Value Subject: The individual or entity for whom the value is relevant.
- The Value Judgment: The process through which the value is assessed.

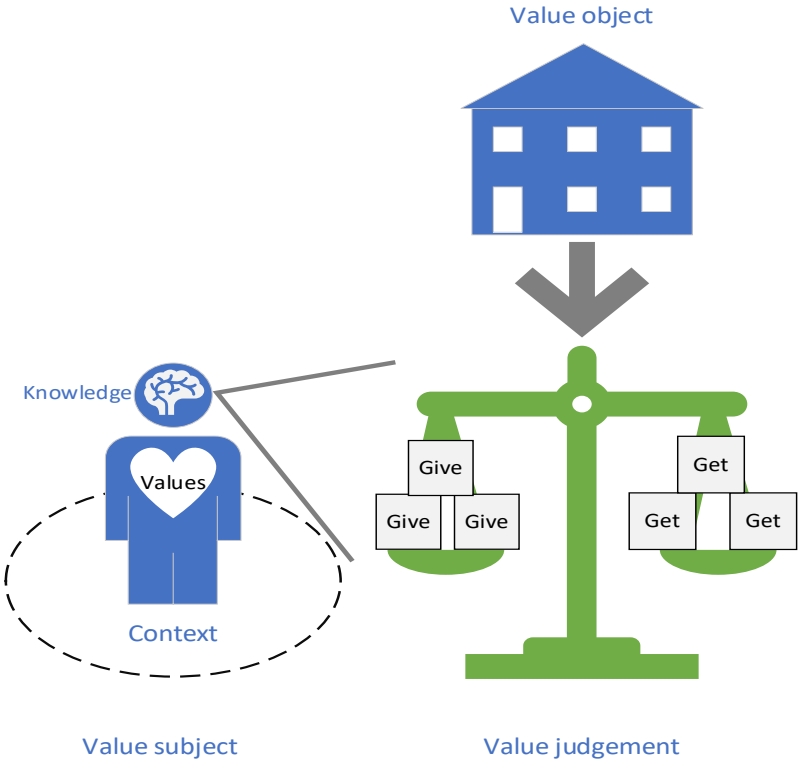

Figure 1 Graphical definition of value

In the subsequent sections, we delve deeper into each of these components, exploring their roles and interconnections in the context of value assessment.

The value object

The concept of a 'value object' is pivotal in understanding the determination of value. This term, inspired by Rokeach's (1973) perspective that objects inherently possess value, specifically refers to the entity under evaluation in a value judgment context. A value object can range from tangible entities like buildings to intangible ones like services or processes. For our discussion, we conceptualize the value object broadly within the scope of a construction project, encompassing both the final facility and the integral design and construction processes.

Crucially, the essence of value lies in the balance between gains and sacrifices associated with the value object. Assessing the value of a value object thus requires carefully considering both the costs or sacrifices involved in its acquisition and operation, and the benefits or advantages it offers.

When assessing a value object, various cost and benefit elements come into play, influencing this balance. Authors have referd to these elements using different terms. Drevland et al. (2018) refer to them as 'get-and-give factors', while Kliniotou (2004) calls them 'value drivers.' In this paper, we use the term 'value factors' to encompass these elements. A more detailed exploration of value factors will follow, but it is essential first to delve into the value judgment process itself, particularly focusing on how the characteristics of the 'value subject' – the individual or entity for whom the value is relevant – influence this evaluative process.

The value subject

In our exploration of value, it is critical to acknowledge that the value attributed to an object is inherently subjective (Drevland and Tillmann 2018). This subjectivity means that the value judgment is always relative to a specific individual or entity, which we call the 'value subject'. The value subject plays a central role in assessing an object's value. Three primary attributes of the value subject significantly influence the value judgment: their context, values, and knowledge (Drevland et al. 2018). As illustrated in Figure 1, these attributes can be metaphorically represented as the value subject's 'heel' (context), 'heart' (values), and 'head' (knowledge), each playing a distinct yet interconnected role in shaping their perception and judgment of value.

Heel – The Contextual Grounding of the Value Subject

The context in which a value subject is situated greatly influences what they consider valuable. This context can be likened to where one's feet are metaphorically planted. For instance, a person living in a region with high-quality tap water may not perceive bottled water as particularly valuable. However, if the same person were stranded in a desert and dying of thirst, their evaluation of the value of a bottle of water would drastically change.

Context includes the current needs and goals of the value subject. Drevland (2021) cites an example from a hospital project in San Francisco's Mission District. A demographic shift in the neighborhood led the client to alter the services provided by the hospital, necessitating a different physical infrastructure. This change in context led to a change in what the client perceived as valuable.

Heart – The Influence of Values

As we've discussed earlier, values represent general beliefs about what is important in life. For instance, consider the human value of 'protecting the environment.' An individual who holds this value will typically favor environmentally friendly products and, all other factors being equal, assign a higher value to a green building. However, in reality, all other factors are rarely equal. For example, constructing a greener building might also mean higher costs.

This scenario can lead to a conflict of values for someone purchasing a home. The value of 'protecting the environment' might clash with other values like 'having a comfortable life' and 'taking care of one's family.' The decision to opt for a less expensive, non-green home or a pricier green home will depend on the individual's value system and the internal ranking of these values. Therefore, the value judgment of an object or a situation is deeply influenced by the personal values of the value subject.

Head – The Role of Knowledge in Value Judgment

The process of judging an object's value relies heavily on the knowledge one possesses (Drevland et al. 2018). This knowledge encompasses not just the value object itself but also its context, alternatives, and other relevant factors. However, it's crucial to recognize that one's knowledge can be incomplete or flawed, potentially leading to a skewed perception of value. A pertinent example is the history of sustainable initiatives like biofuels, which were once deemed valuable but later recognized as not as sustainable as initially thought (Antwi-Bediako et al. 2019).

Drevland et al. (2018) differentiate between perceived value – the value as judged based on one's current knowledge – and true value, an idealized notion of value that would be perceived with perfect knowledge. While the concept of true value is theoretical and unattainable, as we can never fully know an object's true value, it serves an important role in our understanding.

In certain fields, such as marketing, the perceived value is paramount, influencing customers' buying decisions. However, in construction projects, particularly those adopting newer, value-centric models, the aim extends beyond merely delivering what was initially perceived as valuable. The goal is to maximize the value for the customer at project completion, striving towards the ideal of true value, even though it remains an abstract concept (Drevland 2021).

When the Value Judge Differs from the Value Subject

The previously discussed metaphor of head, heart, and heel typically assumes that the individual making the value judgment (the value judge) is the same as the one for whom the value is relevant (the value subject). However, this isn't always the case. There are instances where the value judge and the value subject are distinct entities. For example, in the context of design, a designer acts as the value judge, making decisions aimed at optimizing value for the building owner, who is the primary value subject.

Drevland et al. (2018) introduce an additional concept in this scenario: Estimated value. This term refers to the value as assessed by a secondary party (such as a designer) for the value subject (like a client). This estimation is based on the judge's knowledge, encompassing both their general understanding and their specific insights into the value subject's values and context.

The concept of estimated value is particularly significant in professional environments where decisions are often made on behalf of others. It underscores the critical need for the value judge to understand the value subject's perspective deeply. Such understanding enables the value judge to make informed and effective evaluations, thereby maximizing the value delivered to the value subject. This approach ensures that decisions are not only technically sound but also closely aligned with the value subject's needs and expectations.

The Value judgment

In this discussion, 'value judgment' is used to describe the evaluative process for determining the value of an object. Although often associated with moral evaluations or judgments about behavior, which can carry negative connotations, most dictionaries define the term more broadly. For instance, the APA Dictionary of Psychology describes a value judgment as "an assessment of individuals, objects, or events based on the observer's values rather than their objective, intrinsic characteristics" (American Psychological Association n.d.). This definition is consistent with our earlier discussion on how value is assessed, but it typically implies that the judge and the value subject are the same and extend beyond the evaluation of objects.

For the purposes of our paper, we define value judgment more specifically:

> *Value judgment: the evaluative process someone undertakes to ascertain the value of an object, whether for themselves or another party.*

As depicted in Figure 1, the value judgment involves evaluating the value factors a value object offers on both the 'get' and 'give' sides of the equation. However, this balancing act is more intricate than it may initially appear. We will explore various facets of the value judgment that add to this complexity.

Value Judgments Consider Experiences – Not Attributes or Money

A key principle in understanding value is its inherent connection to experiences (Drevland et al 2018; Holbrook 1981). Although it's common for individuals to articulate value in terms of tangible attributes or monetary terms, these are often merely symbolic representations. The true essence of value lies in the experiences derived from the object in question.

Consider the process of purchasing a home. On the surface, this transaction appears to be a straightforward exchange of money for property. However, the true essence of this decision lies in the anticipated experiences the home will provide: the comfort of a peaceful sleep, the security of a safe neighborhood, the joy of social gatherings, or the convenience of a short commute. These experiential factors, rather than the mere physical attributes of the house, are the real drivers of value.

Similarly, the considerations on the 'give' side of the equation are not just about the monetary cost. For most individuals, the significance of financial expenditure is measured in terms of its impact on their life experiences. Questions like whether they can still afford leisure activities, maintain financial security, or balance lifestyle aspirations with mortgage commitments are paramount.

Similarly to individuals, companies also base their value judgments on experiential considerations, albeit with certain nuances (Drevland et al. 2018). Firstly, just as individuals focus on the experiences their choices will bring into their lives, companies evaluate decisions based on how they will impact their operational experiences, including business processes and production activities.

Second, for companies, the role of money in value judgments is more direct and central compared to individuals. A commercial entity's primary purpose, or *raison d'être*, is often to generate financial returns for its owners or shareholders. This objective of creating wealth is a terminal value for the business, integral to its very existence and operations.

In contrast, for individuals, money typically only serves as a means to achieve other end goals or terminal values such as 'freedom', 'family security', and 'social recognition'. While financial prosperity can aid in reaching these goals, it is usually not the final objective. In contrast, financial success is essential for a company, serving as a cornerstone of its operational and strategic objectives.

The Value Judgment is Comparative

The concept of value being comparative, as outlined in our previous work, Drevland, et al. (2018), is a significant aspect of understanding the dynamics of value judgments.

This tenet, which draws upon Kahneman & Tversky's (2000) influential studies on human decision-making, emphasizes the role of comparison in determining value.

Diverging from objective value metrics like market value, which are quantifiable and absolute, the lean concept of value is fundamentally relative. It resists absolute quantification, emphasizing that value emerges from an evaluative process. This process involves weighing the benefits derived from an object against the sacrifices required to obtain and utilize it. The significance of this judgment lies in its comparative nature, as it gains meaning only when juxtaposed with other similar evaluations.

This comparison is not limited to direct, like-for-like assessment). It extends to a broader range of options and alternatives. For example, when someone is contemplating the purchase of a house, their evaluation is not just about comparing it with other houses for sale. They also consider it against different living scenarios, like renting an apartment or staying with their parents. This expanded view of comparison underscores that value judgments are not confined to the physical or tangible aspects of objects. Instead, they revolve around the diverse experiences each option presents.

The value judgment is holistic

As we explored in Drevland et al. (2018), value judgment is holistic; value is assessed in an integrated, comprehensive manner rather than through a fragmented approach. This holistic perspective is crucial for understanding how individuals and entities perceive and determine value.

In a piecemeal approach, each value factor would be evaluated separately, assigned a specific weight, and then aggregated to form an overall value assessment. However, this method is fundamentally flawed for a couple of reasons. Firstly, as previously discussed, it contradicts the comparative nature of value judgment. Assigning weights to value factors implies the existence of a universal measurement scale, which is incompatible with the relative and comparative essence of value assessment.

Secondly, the significance of individual value factors is not static or linear; it's dynamic and often influenced by their interaction with other factors. The importance of a particular factor can vary significantly depending on its relationship with and impact on other factors. This interplay can dramatically alter the overall perception of value, making a simple additive approach inadequate.

However, there is an exception in the context of complex projects, such as construction, where the end product has multiple dimensions and uses. In such scenarios, it is possible to some extent to evaluate the incremental or marginal value of specific features, like an additional bedroom. This consideration allows for a more nuanced understanding of value in multifaceted projects, where different elements contribute to the overall value in varying degrees.

Value factors

Having explored the intricacies of the value subject and the nature of value judgment, we now turn our attention back to the concept of value factors. These are the specific elements or considerations that individuals weigh when assessing the value of an object.

Value factors are highly contextual and vary depending on both the value object being evaluated and the value judge making the evaluation. For instance, the factors

considered in purchasing a vehicle differ markedly from those in buying a home, though there may be some common elements like financial considerations. The complete set of factors, however, is unique to each situation.

In construction projects, the complexity of value factors is magnified due to multiple stakeholders, each with their own set of priorities and interests (Drevland and Tillmann 2018). The value factors for a project owner, for example, are distinct from those of a contractor, user, or neighbor. This diversity can lead to conflicting interests; a developer might prioritize maximizing the height of a building for financial gain, but this could negatively impact the views and overall experience of the neighbors.Assuming the goal is to achieve an outcome that maximizes value for all stakeholders, it becomes imperative to thoroughly understand the specific value factors that are important to each group.

True value factors and placeholders

The essence of value, deeply rooted in experiential aspects, suggests that value factors should ideally be articulated in terms of these experiences. However, in practice, the true nature of these value factors is often overshadowed by the use of placeholders. This distinction is crucial for a comprehensive understanding of value and its implications.

People commonly express their preferences or needs through the lens of object attributes, which act as proxies or placeholders. While seemingly direct and tangible, these placeholders are not the ultimate goals. Instead, they represent the more profound experiences or outcomes that are genuinely sought. For instance, consider the example of buying a home. A prospective buyer might express a preference for a large backyard. On the surface, this seems like a straightforward desire for a specific physical feature. However, the true value factor is not the backyard's size but the range of experiences it enables. A large backyard might be valued for its potential to provide a space for gardening, a play area for children or pets, or a venue for hosting social gatherings. In this context, the 'large backyard' is a placeholder, symbolically representing various desired experiences and benefits.

Money has a unique role of money as a placeholder in the context of value (Drevland et al. 2018). Due to its inherent versatility, money represents not just a monetary figure but a spectrum of potential experiences and opportunities. For individuals, money can translate into various leisure activities, such as going to the movies, dining out, or taking vacations. Each activity offers distinct experiences and pleasures, all encapsulated within the concept of monetary value.

In the realm of business, the role of money as a placeholder becomes even more multifaceted. Here, money signifies a range of investment opportunities, each leading to different outcomes and experiences. For a business, investing money could mean expanding operations, innovating new products, enhancing customer experiences, or entering new markets. Each of these actions, while financially driven, ultimately aims at creating specific business experiences, such as growth, market leadership, or customer satisfaction.

In recent developments, particularly with the introduction of new value-centered delivery models, we have observed a noticeable trend towards explicitly associating value factors with specific experiences, moving away from the traditional use of attribute-based placeholders. This observation, while not backed by an in-depth study from our end, is evident in various projects. For instance, a school project identified reducing bullying as a

key value factor, and a psychiatric hospital aimed to cut down the use of force by 50%. These examples reflect a more direct and clear connection between value factors and the intended experiential outcomes.

The effectiveness and appropriateness of using placeholders when describing value significantly vary depending on the context. In personal situations, such as a family deciding on a home purchase, using placeholders like 'a large backyard' is generally non-problematic. This is because the decision-makers are directly involved and their choices are closely aligned with their personal experiences and desires.

However, the scenario changes in the context of commercial and public projects. In these cases, the decision-makers are often not the direct beneficiaries or users of the project outcomes. This disconnect can lead to misunderstandings or misalignments in value delivery, as the placeholders may not accurately reflect the end-users' needs or experiences.

A pertinent example of this can be seen in the construction of St. Olav's Hospital in Trondheim, Norway. Initially, when the project team inquired about the required office sizes from the doctors, they received a wide range of responses. Recognizing the potential for misalignment, the team revisited the question, focusing on the doctors' actual needs and activities, such as patient examinations and the necessary equipment for these tasks. This shift to an experience-based inquiry allowed the designers to create office spaces that were functionally appropriate and efficiently sized, tailored to the actual requirements of the doctors rather than based on arbitrary size preferences. This example underscores the importance of aligning value factors with the real experiences and needs of the end-users, especially in complex, multi-stakeholder projects.

Classification schemes and their limitations

In the field of construction, various scholars and industry bodies have attempted to systematize the understanding of value factors through classification schemes. (Construction Industry Council 2002; Drevland and Klakegg 2017; Drevland and Svalestuen 2013; Emmitt, et al 2005; Khalife et al. 2022). These frameworks aim to categorize and clarify the elements that contribute to value. However, they are inherently limited due to the specific and contextual nature of value judgments in construction.

While these frameworks provide valuable insights and serve as useful starting points for grasping potential value factors in construction, they are inherently limited by the specific and contextual nature of value judgments within this field. The primary challenge lies in the fact that value in construction is not a one-size-fits-all concept. The unique characteristics and specific requirements of each individual project deeply influence it. For instance, while the general requirement of a built facility is to be fit for purpose, the specific experiences and functionalities desired from a building, such as a hospital, vary significantly based on the particular institution and its operational needs.

Consequently, while these classification schemes offer a foundational understanding of value factors, they should be approached with caution. They are best utilized as preliminary guides rather than definitive, all-encompassing templates. Practitioners and researchers in construction are advised to employ these frameworks as initial reference points, followed by a more nuanced and detailed analysis tailored to each project's specific context and characteristics. This project-specific approach is essential for

accurately identifying and comprehensively understanding the value factors that are truly relevant and influential for a particular construction project.

In essence, classification schemes provide a structured method to conceptualize value in construction. However, their greatest utility is realized when they are integrated with a flexible, context-sensitive analysis that fully acknowledges and accommodates the unique aspects of each construction project.

Summary of terms

In exploring value and values, we've introduced several pivotal terms for understanding these concepts. To aid in comprehension and provide a clear reference, we present Table 1, summarizing these terms and their definitions. This serves as a quick reference to the key terms used throughout our discussion, offering a clearer understanding of the complex interplay between these concepts in the context of value and values.

Table 1 Summary of terms

Term	Definition
Values / Human values / Organisation values	General beliefs about what is important in life and how one should behave.
Terminal human/organization values	Ultimate goals or end states desired by an individual or organization.
Instrumental values	Beliefs that direct the actions and behaviors of an individual or organization.
Value	The outcome of an evaluative judgment concerning the balance between the benefits gained from an object and the sacrifices required to acquire and use it.
Value subject	The entity (individual or organization) for whom the value of an object is assessed.
Value judgment	The evaluative process someone undertakes to ascertain the value of an object, whether for themselves or another party.
Value object	The item (product or service) being evaluated in a value judgment.
Value judge	The individual or group responsible for making a value judgment.
Value factor	Elements considered in the value judgment
Perceived value	The value determined by a value subject based on their understanding and knowledge.
True value	The value a value subject would determine if they had complete and perfect knowledge.
Estimated value	The value assessed for a specific value subject by another party, based on their knowledge and understanding.

Discussion and Conclusions

This paper aimed to demystify and elucidate the concepts of value and values. We have approached these terms with precision, treating them as distinct and well-defined concepts. However, it's important to acknowledge that in everyday language, 'value' is a versatile term, often used more loosely than in academic discourse. For instance, when someone says a building feature offers great value to the owner, they typically imply that the feature enhances experiences significant to the owner's value factors, as defined in this paper.

While enforcing strict terminological precision in casual conversation is neither practical nor necessary, in academic research, clarity and specificity are crucial. Ambiguity and vague terminology in scholarly writing can lead to imprecision, undermining

the foundation for developing robust analytical tools and theoretical frameworks. Therefore, we urge researchers dealing with the concepts of value and values in their work to be mindful of the distinctions between them, and to recognize the nuances of different value-related concepts.

It is common to see papers conflating these terms or amalgamating various attributes from disparate contexts, leading to the erroneous conclusion that value is inherently multifaceted. We contend that such an approach oversimplifies and misrepresents the concept. For example, 'value' as defined in this paper and the concept of 'market value' in economics are related but fundamentally distinct. Both concepts revolve around the balance of what is given and received, yet they differ significantly in their evaluative criteria. Therefore, they should not be viewed as facets of a single concept but rather as distinct concepts sharing a common abstract foundation. This distinction is vital for advancing a clear and coherent understanding of value in academic research.

While absolute stringency in the use of terms in everyday practice may not be feasible or necessary, a certain level of precision is still crucial in professional contexts. For instance, failing to distinguish between the 'value' of a built facility and the 'values' of the project organization responsible for its design and construction can lead to significant misunderstandings and misalignments.

Such a lack of differentiation can result in a conflation of objectives, where the intrinsic worth or utility of the facility (its 'value') gets muddled with the guiding principles and beliefs of the organization (its 'values'). This conflation can obscure critical aspects of project planning and execution, leading to decisions that may not align with the intended outcomes or stakeholder expectations. It can also hinder effective communication and collaboration among project stakeholders, as each party may operate with a different understanding of what 'value' signifies in the context of the project.

This paper has primarily focused on elucidating the theoretical aspects of value and values, using personal-level examples for simplicity and clarity. We aimed to establish a foundational understanding of these concepts, rather than explore their intricate applications in complex project settings. Projects, as multifaceted sociotechnical systems, involve diverse stakeholders, each with their unique perspectives on value. Furthermore, these stakeholders are typically not monolithic entities with a uniform view of value but rather collectives of individuals with varied perceptions and priorities. This diversity adds significant complexity to discussions about value in project contexts. Similarly, the concept of values within these settings is equally complex and nuanced. We argue that a thorough understanding of these concepts at the individual level is essential before they can be effectively applied in organizational or project environments.

Moreover, there is a significant gap in empirical research concerning the practical applications of value and values in project settings. This includes a dearth of detailed investigations into the nature of value factors, the processes of value judgment, and the roles of decision-makers. Although a considerable portion of Lean Construction literature references the concept of value, there is a lack of in-depth analysis, often impeded by inconsistent use of terminology.

We contend that empirical data from projects should be analyzed within a robust theoretical framework with clearly defined terms akin to what we have presented in this paper. The prevalent haphazard and ambiguous use of value-related terms in everyday

discourse necessitates that any empirical findings from projects be scrutinized and interpreted through a lens of clarity and precision to ensure internal consistency.

While we do not claim our framework to be the definitive guide to understanding value and values, we firmly believe that research in this area must adhere to a level of terminological precision similar to what we have proposed. Without such clarity, research outcomes risk becoming ambiguous and unproductive, failing to advance our understanding in this field. Therefore, future research on value and values in Lean Construction must be grounded in well-defined and rigorously applied concepts to yield meaningful and actionable insights.

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