Relevance of the spatial triad theory in (re) designing and planning of academic library spaces

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Abstract: Henri Lefebvre (1991), spatial triad of interconnected 'moments' in the production of space and applies it to library spaces. His conceptualization of space portrays it as a 'social product' and that human experiences are socially produced within the spaces that they occupy. He argues that space consists of three elements i.e. spatial practice (perceived space), representations of space (conceived space) and representational spaces (lived space). Perceived-conceived-lived spaces have a dialectical relationship with one another and therefore call for proper analysis by the library managers who are planning on new spaces or on remodelling the existing spaces. These three elements will be operationalized as representations of space (library space attributes) influences different spatial practices (user perception, preferences and behavior) and representational space (user experience, satisfaction and factors affecting use) within library spaces. They constitute the analytical basis for designing and planning spaces for all types of libraries. This article constitutes the theoretical position regarding the three spatial triad elements and their implications on library spaces.

Keywords: Spatial triad, library space, space attributes, academic libraries, library designs.

1. Introduction

This paper is a part of the investigation of the use of the Makerere University Library spaces by the users that is carried out as a doctoral research project. It presents the theoretical underpinnings chosen for the exploration of the research problem. The theory of Henri Lefebvre has been chosen as a conceptual framework to design the study. The aim of this paper is to introduce the main

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concepts of the theoretical approach to the "social production of space" and to explain how these or related concepts were applied to examine library spaces in previous research.

Henri Lefebvre (1901-1991) was a French Marxist philosopher, who has published about 72 books (Elden, 2004, p. 4 as cited in (Fuchs, 2018) on different topics. One of the most important publications was the "La production de l'espace" literally translated as "The production of space". *The Production of Space* is Lefebvre's most known and widely read work; it was first published in French in 1974 and reprinted in 1991. Space according to Lefebvre is socially constructed. He has stated "that humans not only produce social relations and use-values, but in doing so also produce social space. In more general terms, extending beyond social space to all physical spaces, one can say that "each living body *is* space and *has* its space: it produces itself in space and it also produces that space" ((Lefebvre, 1991, p. 170). This implies that there is a relationship between the people, space and their actions because social space is a reality that people live in and which they experience. "Space is at once result and cause, product and producer" (p.142). Social space is "always, and simultaneously, both a *field of action* […] and a *basis of action*" (p. 191). Lefebvre characterizes social space as a triad represented by three elements: "spatial practices" (perceived space), representations of space (conceived space) and representational spaces (lived space). He states that there is a dialectical relationship between how people perceive, conceive and live in space. This paper first outlines the elements of Lefebvre's spatial triad and their applicability to library spaces; it then explores its relevancy in (re)designing and planning library spaces.

2. Operationalizing the spatial triad to library spaces

The spatial triad is viewed differently by different authors. Considering the scope of this article and its relation to library spaces, the authors approach to Lefebvre's elements is based on the approach presented by library space researchers (Leckie, Given, & Buschman, 2010).

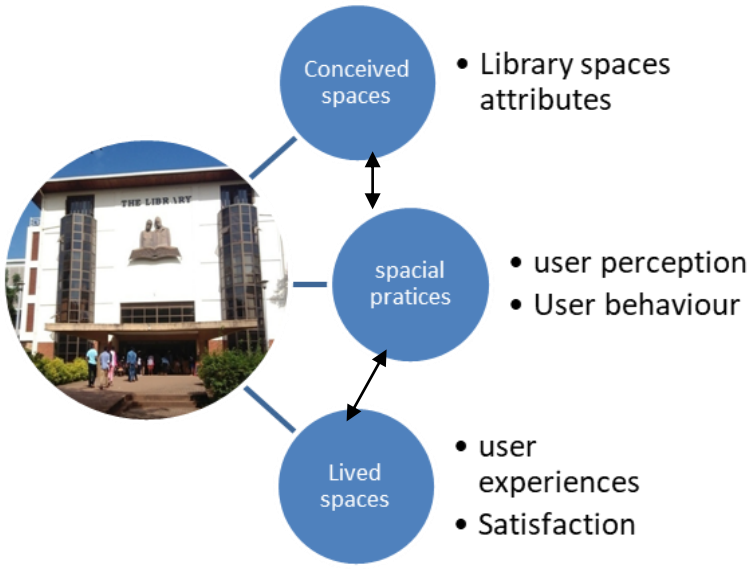
Representations of space (conceived space) are "rational approved ideas of space for property development purposes, these are different spaces as conceived by architects, planners, engineers and artists who design the spaces according to what is perceived and lived by the occupants"(Leckie et al., 2010). Lefebvre (1991) argues that this is the principal space that influences all the other spaces. It is here that space is manipulated to meet certain needs and requirements, this space is mainly designed according to the assumptions of the technical team i.e. it is considered to be an organized space designed with appropriate functionality ("overall purpose"), usability and physical feel of product intended for specific users. However, chances are that the designs were conceived years ago and by the time of construction, what was considered prior

is not applicable to the current users. Thus, considering the different space ideas as conceived is a basis that can be used to determine the overall purpose and functionality of different spaces. A representation of space is operationalized as library space attributes.

Spatial practices (perceived space) focus on the physical, mental and social spaces. These are three following elements: 1) development of physical spaces; 2) how these spaces are perceived by the occupant community; 3) people's behavior shaped by routines of daily life of community members within those spaces ((Leckie et al., 2010, p. 227). Spaces are produced gradually as the communities occupy the conceived spaces and start defining them through their perception and activities. The daily activities of the occupants are reflected by how they perceive the space and also how the perceptions shape people's behaviour. In perceived spaces, we look at how the conceived spaces are perceived and explore how they influence perception and behaviour of the community members who use and live in them.

Representational spaces (lived spaces) describe how space is experienced by the inhabitants or users as a result of the conceived and perceived spaces (Lefebvre 1991). In this level, "culture, experiences, and memories" play an important role in the cognitive work of interpretation, understanding and reasoning. It is about the "feeling of satisfaction got by owning, displaying and using a product" this satisfaction will always force them to come back (Norman, 2004, p. 48). This factor is used to determine user experiences and satisfaction of the different library spaces.

Lefebvre (1991), further explains that these three elements (perceived-conceived-lived) have a dialectical relationship with one another. Conceived spaces are the core spaces where planners, architects, engineers and artists have an impression of what spaces should be and then develop those physical spaces to be used by the users. How the spaces are built (conceived) will influence how users perceive them, their behaviour and the activities to engage (Perceived) as well as users experiences (lived); in turn, the user perception and behaviour influences the impressions and designs of the conceived spaces. In this article, Lefebvre's spatial triad is used to explore how conceived spaces (library space attributes) influences different perceived spatial practices (user perception, preferences and behaviour) and lived representational space (user experience and satisfaction) in library spaces.



The diagram shows that any library is constructed as a social space by interplay of the conceived representations of space such as library physical space attributes; perceived spatial practices like user perceptions, behaviour, and space preferences; and lived representational space such as user experience, and satisfaction. In any library, space is designed and constructed or built by engineers, architects, and artists who in their mutual discussions (sometimes including representatives of future users) come up with space attributes and requirements that they think can meet the needs of the intended users. This notion indicates that physical spaces with specific attributes such as design and layout, 'air movement/ventilation', 'air quality', lighting, temperatures, space congestion, furnishing and 'visual comfort' etc. (Cha & Kim, 2015). These attributes reflect the existing notion of the potential users' behaviour and requirements for space, but also influence the perceived spatial practices as well as the lived experiences. For instance, "positive perception helps users to use space more effectively, while negative one will require efforts to accommodate to the environment or transform it to make it more acceptable."

3. Applicability of Lefebvre Spatial Triad in library spaces

The academic library "as place" holds a central role on campus as the heart of the academic experience which facilitates formal and informal learning. Library spaces are the most used within universities because of the geographical location advantage that it has over the other spaces (Cunningham & Tabur, 2012). Users spend long hours within these spaces implying that the use of

physical space is crucial in supporting the learning needs of users (Applegate, 2009; Bryant, Matthews, & Walton, 2009; Suarez, 2007). Expansion of library spaces to accommodate the increasing demand are evident worldwide. Such expansions mean that some spaces are heavily used while others are underutilized (DeClercq & Cranz, 2014). Although Lefebvre refers to urban space, his ideas can be applied to library buildings as well, the triad is relevant for initial construction or as post-occupancy evaluation (POE) of space to determine the relevancy of the space to the users, as well as design and plan spaces that can contribute to library usage. Just as place is defined by "its functionality and community" (Pomerantz & Marchionini, 2007), so is a library as place defined by those who access it, live and experience it – its users.

Lefebvre (1991), emphasizes that spaces are not merely physical containers but a product that manifests when humans interact, relate and use the space. In other words he urges that although there are physical spaces, their functionality is defined by how humans conceive, perceive and live in them. The library as place usually consists of the physical space where users converge and display their experiences and behaviour while using the space (Cocciolo, 2010). Literature shows that poorly designed buildings do not attract users (Kuntz, Petrovic, & Ginocchio, 2012), whereas, well thought buildings attract and retain users as revealed by Shill and Tonner (2004). As Academic libraries continue to redefine their role in supporting teaching, learning and research in the digital environment, they need to leverage their strength to increase the quality of the space, its organization and to create innovative flexible, responsive and convenient spaces that meet the needs of their users (Li, 2006; Majal, 2017). As Library planners, engineers, architects, artists as well as librarians develop space initiatives, they should focus on 1) (re)designing spaces considering user requirements and needs 2) as well as choose the right attributes.

Space Planning and Design (SPD) begins at the consultations level with the clients as a way of getting to know their requirements and specifications, in incidences where clients are not consulted, architects, planners and artists predict the attributes with the assumption that the intended users will prefer and use the spaces in particular ways (Cha & Kim, 2015). Different guidelines are consulted by the planners to determine the space requirements, for example in Uganda, the universities and other tertiaries act (2005) provides guidelines for space provisions. Although these guidelines are in most cases followed the by the architects, there are multiple attributes that have not been considered in these guidelines that are important for SPD, for example, attributes such as functionality, accessibility and location, sustainability, safety and security, flexibility, lighting, acoustics, comfort and image (Cha & Kim, 2015; Kent &Myrick, 2003; McDonald, 2007).

Academic libraries are central spaces mandated to support teaching, learning and research. They are usually located in strategic places that are accessible

easier than other spaces such as classes, labs or social spaces (Cunningham & Tabur, 2012). This gives the library as physical space a geographical advantage of access and linkage - basic characteristics that would attract more users to the library because it is inviting, accessible and promotes independence (McDonald, 2007). The concepts of access and linkage typically consist of location, zones, collection and information, and network. All these areas should be easily accessible and proper linkages provided between the different spaces with signage, floor maps, passwords and access codes as long as the legal requirements are followed (Majal, 2017).

Academic library designs should ease access for users with disabilities and learning differences using the library space. A study conducted at Loughborough University by Burn, Cunningham, Waller, Walton, and Walton (2016), revealed that users were involved in wide variety of activities within its refurbished library spaces. Other ethnographic studies such as those by Tanackovic, Lacović, and Gašo (2014); Childs, Matthews, and Walton (2013); Cocciolo (2010); Yoo-Lee, Heon Lee, and Velez (2013); Bryant, Matthews, and Walton (2009) provide useful insights about libraries as important spaces that are appreciated by users for the fact that they provide a linkage between quiet reading spaces, collaborative spaces, virtual spaces, communal and social spaces. From these studies, many of these users "view the library as the 'centre' of their day" and therefore most of them will visit the library during their stay within the institutions (Foster & Gibbons, 2007), p.52).

There are many reasons as to why users' visit the library instead of remaining in the comfort of their home, and one such reason is the choice for "a social space and social activity" that libraries offer (Burn et al., 2016; Cunningham & Tabur, 2012), this is the flexibility of the library spaces that users look out for. A multisite observational study of space and place revealed that users' valued the library for its communal academic atmosphere which provided a quiet reading area as well as a convenient collaborative setting for engaging with peers through group work (May & Swabey, 2015). The choice of space requirement is dictated by the user needs, however, these spaces should be characterized by "seating configuration, furniture and furnishing, flexibility, adaptability, equipment and ambience" (Choy & Goh, 2016, p. 17).

Seating should be configured to support different user activities within the library space and according to the different user needs in order to achieve optimal use. Technological requirements such as projectors, computers cameras, printers and whiteboards should align with the seating arrangement (Choy & Goh, 2016). On the other hand, furniture and furnishing complement the beauty of the library and attract more users into the spaces, just as seating arrangement is dictated by the user' needs, furniture should as well be provided according to the needs in each space and should be flexible and easily adaptable by the users. The implication of these attributes for the library emphasizes the fact that users'

have different needs and these can be met using different choices outside the library challenging academic libraries to create convenient and ambient spaces which could attract more users as well as retain those already utilizing the spaces(Choy & Goh, 2016).

The role of libraries has evolved from that of "accumulator" to that of service provider aiding users' to retrieve information and offer instructions (Bennet, 2009) and to that of a "facilitator" in a leaner – centred environment (Nitecki, 2011). The role of libraries as facilitators has affected the design of both virtual and physical spaces which are more social and collaborative in nature. Although these spaces are designed with the users in mind, users' have portrayed different behaviour, while using these spaces, for instance, studies by Paretta and Catalano (2013), revealed that users' not only visited the library for academic purposes but rather they engaged in non-academic activities such as accessing social media, meeting friends etc. In another study, collaborative rooms were more visited than the virtual spaces (Cocciolo, 2010). This implies that libraries are no longer visited only for quiet reading but also for other purposes that can only be revealed through ethnographic studies to find out what and how users' are using the spaces.

When examining library spaces, quiet study rooms offer a unique environment to users, and it was observed that most of them maintained a silent policy while using these spaces and, therefore, didn't require constant monitoring by library staff (Tanackovic, Lacovic & Gaso, 2013). However, it has been found out that users tolerate some kind of ambience, background noise during their library visits which is a drastic shift from how users' behaved in libraries earlier, hence, calling for user studies into behavioural activities within different spaces (Bedwell & Banks, 2013; Bryant, Matthews & Walton, 2009). For that reason, other studies have recommended different spaces coupled by special furniture, design and equipment for different users to align with the behaviour that users exposed (Cunningham & Tabur, 2012; Foster & Gibbons, 2007). Such studies reveal that there is still a lot to be learnt about user behaviour inside library spaces, so as to streamline the role these spaces play in the life of the user.

Given the focal role of libraries in supporting teaching, learning and research, it is worth paying attention to the behaviour that users' display while using the library spaces in order to understand the relationship between the usage patterns with in the different spaces. Systematic results from conducting a user study could be used for designing library spaces that are responsive to the needs displayed by the users' (Campbell & Shlechter, 1979). Recent developments in studying the aspects of space and its use suggest that academic libraries should consider the changing use of space and its relationship to the 'spatial theory' (Antell & Engel, 2006; Bailin & Grafstein, 2002; Black & Roberts, 2006; Freeman, 2005; Long & Ehrmann, 2005; Shill & Tonner, 2004).

In the past, libraries were perceived as a physical place to access print books, journals and consult with reference librarians (Ladhari & Morales, 2008). With the advent of ICTs, the role of libraries has changed from being merely offering print materials to providing electronic content, communal and social places. Although library users' don't regard the print collection as important, they still come to the library building to access digital content and also use the different spaces provided (Beard & Bawden, 2012). This shift has called for redesigning and modelling of library spaces to support the needs of users' at every level. Despite the creation of these spaces, there is little known about how these spaces enhance perceptions and usage of academic libraries especially in developing countries. This prompted the researcher to investigate users' perceptions in the library spaces.

Perception of the users about different spaces as well as library services and facilities has affected library service delivery, in most cases this occurs because users often do not recognize the services developed without consultation (Connaway & Faniel, 2014). The forces reshaping users perceptions should be dealt with by librarians in order to reveal the factors that enable users identify with some spaces (Norman, 2004). A library should embed the library spaces into the changing user needs and requirements as a way of attaining desirable spaces that will be well perceived by the users (Kent & Myrick, 2003). Libraries are under competition from other information sources available online, which may not require users to visit physical space; this factor has influenced user behavior which has affected the way they perceive the library in general. This development therefore requires libraries to transform from providing traditional services and spaces to providing learning spaces that promote collaboration as well as individualized spaces (Cunningham & Tabur, 2012).

It is important to emphasize that libraries should shape, transform and provide spaces that meet the changing needs of the users. Users have different skills to march with the high literacy levels in the twenty-first century such as creativity, critical thinking, problem solving, and innovation which was not the case in the previous century (Bilandzic & Foth, 2013). These knowledge and skills require services and spaces that will nurture innovation and learning (Li, 2006). Users have choices and therefore expect that libraries integrate services, facilities and spaces that meet their needs. Academic libraries scholars have outlined the relevance of providing user-centred spaces and how this initiative has been well received by the users (Pomerantz and Marchionni, 2007; Shill and Tonner, 2004; Sinclair, 2007; Weise, 2004), how they facilitate social learning among library users (Bilandzic & Foth, 2013).

Academic libraries have ceased being places for only reading but have other activities that may not be academic related such as meetings and social activities(Aabø, Audunson, & Vårheim, 2010). The degree of interaction among different users is rated highly (Harrop & Turpin, 2013), although others still

express the need for quiet reading. They indicated that they have sense of personal control to decide what to do, where and how (Beckers & Van Der Voordt, 2016). Users want libraries to provide different spaces so that they can explore between the physical, digital, or social spaces (Björneborn, 2008).

4. Conclusion

In an era of overwhelming technological changes, academic libraries face numerous challenges demanding that they provide user-centered services and systems within the workflows of the users (Connaway & Faniel, 2014). Before the invention of the internet, academic libraries built systems, and services with the assumption that users will adapt which isn't the case in the digital environment where academic libraries build systems and services around the users' expectations and habits (ibid). The disparity between demand and supply of space mainly occurs because of the service development, in which librarians assume the role of users and design services according to their experiences with the assumption that users would fit within library workflows (ibid). Without a clear understanding of user needs and requirements, one size fits all concept may not be applicable to library users. Unlike other spaces within campus, libraries serve diverse user with different perspectives about what a library should be, thus, details on spatial choices are emphasized while designing and planning spaces without limiting any group of users at any single site (Agglegate, 2009; Bryant, Matthews & Walton, 2009; Head, 2016). What Lefebvre encouraged in the spatial triad was to develop knowledge about the space as not just physical container but as product of social interactions between different groups involved in its design and use through a social process. In seeking to (re)design or plan library spaces, planners should take a crucial role of developing representational spaces that will have a positive influence on perception and the everyday life of the occupants.

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