NEW PERSPECTIVES TOWARDS SOCIAL ACCEPTABILITY OF EARTH-CONSTRUCTED BUILDINGS

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ABSTRACT

Efforts in the preservation of earth built heritage and the promotion of contemporary earth construction by members of the UNESCO-Chair in *Architectures de Terre cultures Constructives et Développement durable*, have overcome many challenges associated with the appropriateness of earth as a building material the last two decades. However, negative perceptions remain one of the biggest challenges to date. The Earth Unit has established itself within a South African tertiary institution to address all aspects of earth architecture through teaching, training, and research. A technical and design based approach is driven by many institutions in the promotion of earth construction as a discipline. Although this is one of the best ways to deal with misconceptions and reservations, a direct approach from a social scientific and philosophical stance is equally essential to understand and address negative attitudes associated with raw earth as a building material in contemporary built environments. The latter approach can help to develop a planning strategy for new projects in settlements and cities. This article will identify "Orphic" ideas, attitudes and phenomena, synonymous with "ecologically-sensitive" approaches. Orphic attitudes will be opposed to "Promethean" attitudes that spread via the historical domination of Christianity, science, technology, capitalism, whose attitudinal underpinnings have provided an ideological impetus for ecologically problematic actions. The dominance of the Promethean has resulted in steadily growing ecological crises. Furthermore, upward social mobility and migration patterns, which arguably have arisen from the global spread of Promethean systems, influence the values of city dwellers. These values affect their attitudes and behaviour towards the natural landscape and the built environment. The key impacts of these considerations help to reveal the bigger picture often blurred while strategizing promotion efforts in favour of private and public contemporary earth-constructed buildings.

Keywords: earth construction, behaviour, Promethean, Orphic, ACID
Word count: 5855

1. BACKGROUND

The work and activities of the Earth Unit at the Department of Architecture at the University of the Free State in South Africa, during the past 23 years, involved training students in architecture as well as small groups of builders, and students in quantity surveying and construction management (Figure 1 & 2). This challenge to formalised building practice started in 1996 with an introduction and integration of earth building techniques into the curriculum presented by the Earth Unit. The Earth Unit aims to promote the use of contemporary earth construction while adding to the heritage of traditional and vernacular architecture in the central parts of South Africa. Small-scale buildings (Figures 3 & 4) are used to experiment and demonstrate the contemporary application of earth in a developing country. It became clear that issues around raw earth as a building material were not limited to the technical performance of the material, but also the perceptions, attitudes, and values of the public. Accordingly, there will not be a large focus in this article on the technical performance aspects of raw earth, such as its durability or compressive strength, as a building material, but rather on some attitudinal factors relevant when thinking about earth constructed buildings and their design.

Figures 1 & 2 Student activities for the construction of an experimental house for a single mother as part of the B. Arch. – degree curriculum)

Over time, members of the Earth Unit realised the increasing need for research on the cultural values of earth construction (Guillaud, 2010: 17). Since little was known about the acceptability of traditional earth construction in South Africa, the Earth Unit looked for funding to do a major research project on this topic. This article aims to highlight the insights from a social scientific stance, combined with a philosophical perspective on the global phenomenon of rejecting traditional building techniques and materials. Note that despite the recent references to South and Southern Africa, the research conducted for this article revealed general themes and issues (arising from a broad interdisciplinary context) that we, the authors, contend are important to consider as part of the global phenomenon just mentioned. What is taken into consideration throughout this article is applicable in the South African context, but not limited to it, and we deliberately take a more generalised thematic approach to identify hitherto missing contextual information about values and attitudes. The following section will highlight the limited contribution of past studies in the acceptability of traditional earth construction in southern Africa.

Figures 3 & 4. On-site stabilised earth block production of a demonstration building project constructed in a residential area of Bloemfontein, South Africa (2016)

2. RESEARCH IN THE ACCEPTABILITY OF TRADITIONAL EARTH CONSTRUCTION

2.1 Limitation of past studies on attitudes and building materiality

The low acceptability of earth-constructed walls are well known, but few answers to the factors and questions that influence these attitudes are known (Bosman, 2015). Some clear principles and models that illustrate aspects from a social science viewpoint should be mentioned to have a better understanding of these factors. Architecture students are seldom exposed to scientific research methods during their training. Architects seldom use qualitative and quantitative research in architecture as comparative methodologies to establish end-users' attitudes of the acceptability of building materials. Architecture students should be exposed to a curriculum promoting contemporary earth construction. This will instil a better understanding of the viewpoints towards traditional earth construction. In this curriculum, the Earth Unit focuses on the importance of addressing issues of acceptability through a promotional approach to contemporary earth–constructed building.

2.2 Recent research project in South Africa on attitudes and building materiality

From 2006-2009 the Earth Unit conducted the first significant traditional earth-constructed housing research funded by SANPAD (South Africa-Netherlands Research Programme on Alternatives in Development) through a household survey (n=1790) regarding the perceptions and attitudes toward earth construction. Multiple qualitative

and quantitative responses both for and against the use of adobe were recorded (Bosman, 2015: 81). For this study, correlation and regression analyses were used to test for the characteristics (significant variables) that influence the acceptability of earth-constructed houses.

The findings showed that respondents regard traditional earth building materials as inferior (Bosman, 2015: 105-135). Negative attitudes to the structural performance of unbaked earth materials regarding stability in wet conditions were linked. Maintenance was indicated as a factor to be considered. Additional limited studies confirmed the low acceptability of traditional earth constructed walls. Regression analysis could not confirm that personal and household characteristics are associated with the housing, context and acceptability characteristics. Correlation analyses confirmed that specific housing characteristics (essential services such as water-born toilets connected to sewerage systems, running water and electricity) influence the acceptability of traditional earth constructed houses. Correlation analyses confirmed that context characteristics (location and area types) influence the acceptability of traditional earth constructed houses. Furthermore, the data and literature confirmed that the building culture (available material and building skills) and upward social mobility together with state-funded houses (with essential services) influence the acceptability of traditional earth constructed housing.

The current literature on the factors that influence societal views on building material is still limited (Stevenson, 2006). Factors associated with the acceptability of traditional earth construction (Ngowi, 1997a; Hadjri, Osman, Baiche & Chifunda, 2007) are not only limited to context characteristics but also are influenced by building culture and upward social mobility in combination with the presence of state-funded houses. The following sections provide the background to insights on social issues that are considered drivers in the global phenomenon of the low acceptability of earth-constructed buildings in developing countries, followed by a broadly philosophical, ecological, and historical perspective on some relevant aspects of western civilisation.

3. SOCIOLOGICAL INSIGHTS CONNECTED TO THE ACCEPTABILITY OF BUILDING MATERIAL IN DEVELOPING COUNTRIES

Rapoport (1977: 40) stated that the normative value filters people use to look at life influence all thinking. People's world-views are influenced by their parents, their upbringing and their culture, all of which work to influence these filters. Through globalisation, western civilisation has increasingly influenced how the developing world sees the rest of the world. These filters used to look at life and the world holds differences in culture, background and values. Furthermore, these values are fluid and change over time (McCarthy, 2017: 40).

3.1 Values, class and social mobility in developing countries

It is essential to consider contemporary representations of health, status, social ethics and mobility when interpreting social change (Carocci, 2011: 370). Furthermore, if the negative perceptions of traditional building material are investigated the influence of upward social mobility should be considered. The phenomenon of upward social mobility influences the status of acceptable house building material. The status associated with more expensive building material, such as fibre cement roof tiles, in combination with face-brick walls, can be perceived as the building material choice of homeowners that show financial progress or success in life. Inequality should be considered during this process. Inequality, which accompanies social differentiation, is a growing global field of research (Krige, 2015: 104). This research holds the continued debate around the conceptions of class (Crankshaw, 2005; Schlemmer, 2005; Alexander, Ceruti, Motseke, Phadi, & Wale, 2013; Melber, 2013) that are contrasted by neo-Marxist and neo-Weberian class stances. The Marxian approach based on production, results in ownership and different classes, while the Weberian approach is based on consumption and class (Nijman, 2006: 759). These approaches have shaped research on how middle-class members legitimise newfound wealth and social mobility (Seekings, 2009; Southall, 2004) in developing countries. Social mobility patterns, driven by the overall structure of the economy (Lannelli & Paterson, 2006: 540) and consumer behaviour (Hamdi, 1985), influence personal and community perceptions.

3.2 Migration, social capital and attitudes of low-income households

Phenomena such as migration, between rural and urban areas in developing countries when investigating social mobility, should also be considered. Migration, as a "total social fact" (Rotariu & Mezei, 1999: 5; Sandu, 2010: 35), changes and shapes rural communities and the social mobility trajectories (Alexandru, 2012) of communities. Parson (1949: 435) refers to these communities as "rurban" villages, where living standards and lifestyles have changed so much that these previous rural socio-geographic spaces resemble those in urban areas.

These changes are possible through the accumulation of wealth, exposure to Western ideas, ideals and lifestyles (Alexandru, 2012: 141). These changes build new mind-sets and influence personal and social issues within different cultural contexts. Furthermore, global issues on the natural and human-made landscapes should be considered. The building industry is one of the most energy-consuming role players influencing the environment. Furthermore, environmental sociology has become more diverse and fragmented, while innovative theoretical works tend to have a limited audience and quantitative research tends to be confined to problems that lend themselves to large data sets and statistical precision (Buttel, 1987: 484). The research of Hinds and Sparks (2008), however, shows that attitudes are linked to behaviour, where the behaviour of people interacting with land and landscape, reflects direct

engagement in land management and indirect usage through recreation. Attitudes and behaviour are relevant because the world-view of people (values) affects the natural landscape (ecology).

4. ECOLOGY AND WESTERN CIVILIZATION

In a well-known essay titled "The Historical Roots of our Ecological Crisis" (1967), Lyn White (1967) made an observation that links to the one made by Hinds and Sparks (2008), who mentioned that attitudes are linked to behaviour. Forty years earlier White pointed out that what "people do about their ecology depends on what they think about themselves" concerning with the things around them (White, 1967: 11). In his essay, White focuses on some of the ideological influences that science, technology, and Christianity have had historically. He identified those "shapers of discourse" as instrumental in steering collective human action toward ecologically problematic ends. White did not suggest that science, technology, and Christianity must, by default, promote and propel ecologically problematic attitudes and behaviours. He saw that St Francis of Assisi, for example, stood out as an excellent advocate of ecologically sensitive ideas and actions: "Francis tried to depose man from his monarchy over creation and set up a democracy of all God's creatures". Similarly, it is what people do with science and technology that determines whether the outcomes are ecologically beneficial, neutral, or deleterious.

St Francis is, however, an exception to the rule in Christianity as it "unfolded" historically and spread to the point where it would influence what would become a globally-influential culture that, through globalisation, has effected the development of many people's "filters" mentioned in section 3 (above). White points out that Christianity "is the most anthropocentric religion the world has seen", and as this religion expanded globally since the reign of Constantine, it promoted "the idea of man's limitless rule of creation" (1967: 17). This idea - that "man" has a divine mandate over the natural world – is a component of a prevailing attitude that has demonstrably pervaded human activity for most of Western history. This notion drove the dominant pragmatic and utilitarian sciences and technologies that have empowered "advanced" competitive consumer-capitalist industrial democratic dominion, or ACID for short (acronym adapted from Kvaloy, see Hoyer & Naess, 2012: 48). The argument is that ACID, in this extreme form, is "Promethean" in a sense delineated by Hadot in The Veil of Isis (2008): "the Promethean attitude is inspired by audacity, boundless curiosity, the will to power, and the search for utility" and it "penetrates the secrets of nature… through violence" (2008: 91-98). Capitalism is perhaps the most unpardonable of the Promethean shapers of discourse, driven by an inherent "grow-or-die" mechanism. Joel Kovel (2002: 41) explains:

"[C]apital is quantitative in its core, and imposes the regime of quantity upon the world: this is a 'necessity' for capital. But capital is equivalently intolerant of necessity; it constantly seeks to go beyond the limits that it … has imposed, and so can neither rest nor find equilibrium: it is irredeemably self-contradictory. Every quantitative increase becomes a new boundary, which is immediately transformed into a new barrier. The boundary/barrier ensemble then becomes the site of new value and the potential for new capital formation, which then becomes another boundary/barrier, and so forth and on into infinity… Small wonder that the society formed based on producing for the sake of capital before all else is restlessly dynamic, that it introduces new forms of wealth, and continually makes the past forms obsolete, that it is obsessed with change and acquisition – and that it is a disaster for ecologies".

Christianity, science, technology and capitalism are among the most influential shapers of discourse in recorded history (Pittaway, 2017), and nobody in the "globalised world" can escape their impact. It is in this context that one can conceptualise resistance to building with earthen materials and living in earthen structures. Earthen materials and structures are, from an extreme Promethean perspective, substances and buildings that pre-Christian, pre-technological, pre-scientific, and pre-capitalist human beings lived in. These are not the buildings associated with "civilised" humankind. Civilised humankind lives in large brick houses boasting truckloads of cement, steel, plastic, and other products of the techno-scientific capitalist industry that has shaped the world physically and ideologically. The irony is that "civilised", Promethean humankind has succeeded in underwriting the ecological stability necessary for its survival, a consequence that hardly seems fitting for a so-called civilised global society.

In the following sections, changing attitudes, salient beliefs and behaviour are discussed. It will be followed by a section that explains the phenomenon of the resistance to change from a philosophical viewpoint, before the discussion and conclusion sections.

5. CHANGING ATTITUDES, SALIENT BELIEFS AND BEHAVIOUR

It is necessary to know the relative importance of the attitudinal (individual) and normative (social) factors as determinants of intentions. Figure 5 shows the factors that influence behaviour, according to Ajzen and Fishbein (1980: 6). For some intentions, attitude (individual considerations) may be more important than the normative (social) considerations, while for other intentions, normative considerations may predominate. Often, both factors are critical determinants of intentions. Besides, the relative weights of the attitudinal and normative factors may vary from one person to another (Ajzen & Fishbein, 1980: 6).

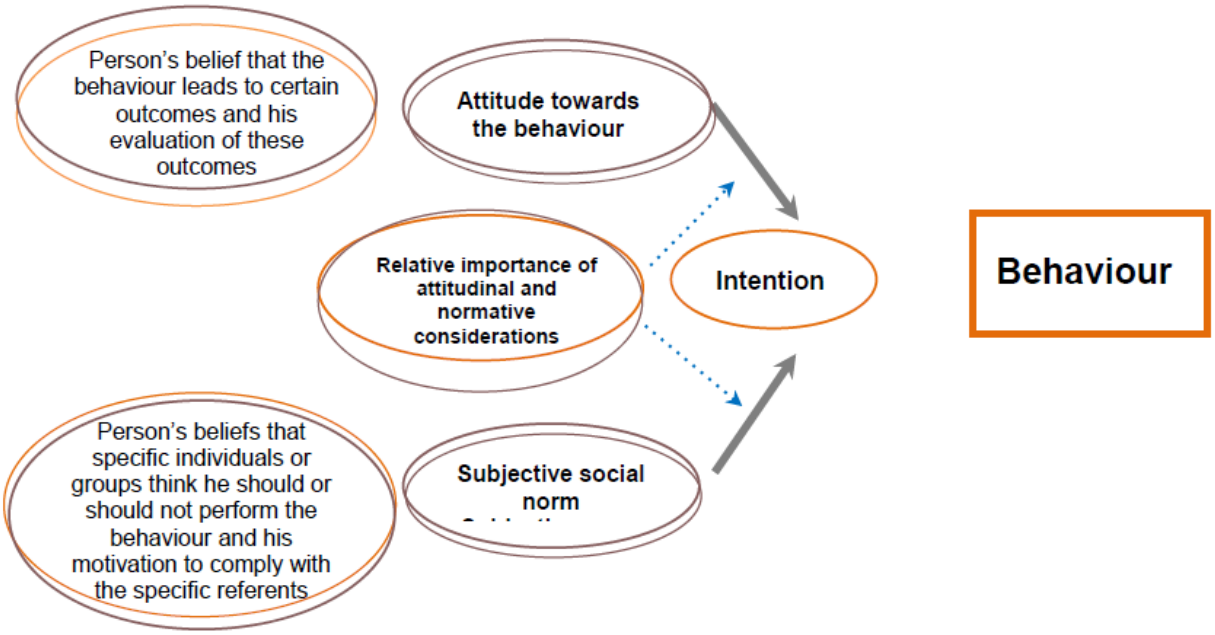

Figure 5 Factors determining a person's behaviour (Ajzen & Fishbein, 1980: 5)

According to Ajzen and Fishbein (1980: 62-64), beliefs underlying and constituting a person's attitudes and subjective norms are viewed to help ~~to~~ determine intentions and behaviour (Figure 5). Its association with various qualities, characteristics and attributes form beliefs about an object. Although a person may hold a large number of beliefs about any given object, it appears he or she can attend only to a small part of beliefs at any given time. Salient beliefs (uppermost in people's minds) may change, be weakened, strengthened or replaced by new beliefs. These changed beliefs can result in changed behaviour in a capitalistic society.

The negative side of social capital is the negative impact on values, class and upward social mobility (as discussed in section 3.1), which is also a component of a westernised capitalistic society. Both the contact person (who helped to secure the new job) and the new entrant, experience a slower improvement in living standards over time (Mitra, 2008: 261-262). Architects should consider the "life-worlds" (Schütz, Van Breda & Natanson, 1982) of migrants, and investigate the way people understand and live in the social world (Alexandru, 2012; Schüts & Luckman, 1989) if they want to address social or low-income housing. The built environment paves the way for political change since migration patterns influence cities. From the extensive history, urbanisation led to political change (Steÿn & Viviers, 2000: 271) and the scope of the work of architects is furthermore influenced by migration and urbanisation, linking to economic growth.

In southern Africa, Hadjri et al. (2007: 147) reported that urban residents in Zambia associate earth constructed buildings with poverty and low socio-cultural status. Poor developing countries have governments that cannot afford to house their people (Turner, 1988). The building of community settlements should be encouraged despite the performance of the state. Ngowi (1997a; 1997b; 1997c; 2001) conducted essential studies on efforts to upgrade the use of traditional earth construction techniques in rural areas of Botswana. However, the decline in vernacular building practices is not new.

According to Oliver (2003: 236), the desire to participate in a global economy – which, it must be added, developed in the Promethean context identified in Section 4 (above) – often leads to some people in developing countries feeling embarrassed about their vernacular traditions. Smaller communities, for example, the Masai and San in Africa, and peoples from Oceania and Indonesia, cash in on tourists' needs to stay in a simulated dwelling (Oliver, 2003: 241), which helps to overcome local embarrassment. These needs contribute to an anthropological and cultural way to support and conserve the identities of smaller groups in bigger communities (Wessels & Bosman, 2014). The conserved identities of vernacular settlements can be targeted to address salient beliefs to create positive attitudes that affect positive behaviour towards traditional earth-constructed buildings. This would constitute something of a counter-strike to the Promethean characteristic touched upon earlier.

6 PHILOSOPHICAL INSIGHT IN THE RESISTANCE TO CHANGE: PROMETHEAN AND ORPHIC ATTITUDES OF HUMANITY

Is it possible to suggest that the dominant shapers of the discourse identified earlier, have for several centuries, directed many salient beliefs of many people? Democracy has ostensibly played its part in allowing the voices of 'the people" to be heard. However, contemporary political structures are reminiscent of the "Great" Christian chain of being in the sense that a formidable hierarchical structure still separates the vast majority of humankind from affecting real change in their own lives. Unsurprisingly, bureaucratic constraints exist to prevent people from

exercising autonomy in a manner that does not conform to the Promethean status quo – consider the increasingly rare desire to build with earthen materials and the paralysing paperwork process that one must go through to have plans passed for ”alternative structures” (Bosman, 2015).

The contemporary philosophers Alain Badiou and Slavoj Žižek have used the phrases “humanity as it has been historically constituted” and “the established model of humanity”. Concerning these phrases, it is worth noting, first, that humanity as it has been historically constituted, and the established model of humanity, are Promethean, and that ACID is the contemporary manifestation of historically constituted humanity. Second, that historically constituted humanity and the established model thereof, is not the realm of philosophy:

“Each time that philosophy confines itself to humanity as it has been historically constituted and defined, it diminishes itself, and in the end, suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating the established model of humanity” (Badiou & Žižek, 2009: 11).

Instead, they identify the role of philosophy as, partly, the thinking of the transformation of life. Philosophical transformation is also a key theme explored by Pierre Hadot (1995: 257) in his well-known text, “Philosophy as a way of life”. He depicts the transformation in a manner that is away from the historical constraints of the Promethean, and toward a platform of a different kind.

One might perhaps call the other platform an Orphic platform. Hadot (2008: 91-98) says the following: “Orpheus… penetrates the secrets of nature not through violence but … melody, rhythm, and harmony”; and “the Orphic attitude… is inspired by respect in the face of mystery and disinterestedness”. One tends to have to go quite far out of her or his way to find manifestations of Orphic attitudes, but they do exist (Pittaway, 2017). Life in a “modern” built environment does little to promote the Orphic attitude because the structure came into being based partly on the assumption that nature is a standing reserve of endless resources to be harnessed by “advanced” human beings as they see fit (Heidegger 1977: 19-20). Earth-constructed buildings, however, are symbols for an awareness of interconnection with nature – for example, the members of older cultures (i.e. our more distant ancestors) built with earthen materials, and, as Hartmann (1998: 154) points out, they saw themselves as “part of the world”, and believed that it was their “destiny to cooperate with the rest of creation”. Setreng (2012:105) provides an example of how older cultures’ worldviews further translate into physical action with the natural environment. He asks one to consider “a Sherpa house in Nepalese Himalaya”:

“It always appears ‘unfinished’, a creation that never reached its ‘destined geometrical perfection’. But, from the traditional Sherpa point of view, the beauty and, intimately connected with that, the utility of the house may only be discovered if you settle down for a couple of generations, build such a house yourself, take responsibility for its daily care, live with the house instead of being its architect, repair it when (the frequent) need arises, add to it or subtract from it...”

Record a hundred years of the development of the house at a frame a day and play it back at “normal cinematic speed” (Ibid):

“What will be revealed to you, is not a house in the Western sense, but an organic structure, its wall stones and roof materials will be moving about and changing, …the animal and human life around it will expand and contract, speed up and slow down, shift in kind and variety... This is a house that is decaying every day, a fact which is accepted by the people that are part of this ‘house-hold’”.

This is a glimpse of the kind of attitude that the spread of ACID has negated, and in its place has laid the cemented foundations of capitalism and consumerism. Considering the social and ecological plight humanity now finds itself in, it seems as if it could learn something from our more distant ancestors.

6. DISCUSSION

Ngowi (1997a: 289) reminds us of the traditional European societies where the master mason or master carpenter headed the construction team as architect and contractor. Limited access to the status of the master resulted in modes of exclusion and closure – another ingredient in the Promethean recipe that influences “a vast range of behaviours, along with values and manners, [...] assimilated from childhood from one’s milieu” (Carocci, 2011: 389). According to Ngowi (1997a: 289), this contrasts with the approach of non-Western societies, where construction was an activity for all members of the community group. One generation passed down building skills to the next in a manner not characterised by the dominion imperatives and hierarchical structures associated with Promethean shapers of discourse. Contemporary societies evolved the construction industry not only in the direction of specialist industrial building materials, but also in the direction of specialised roles – architect, engineer, builder, supplier, inspector, broker, buyer, and insurer and, sometimes, tenant – often in isolation from one another. In developing countries, the spread of specialised materials and roles (professions) has changed the image of traditional architecture within specific cultural contexts.

The attitudes that people have to the current homes in which they live, or aspire to live, cannot be considered in isolation from the contexts that gave rise to these attitudes. Dominion-focused Christianity, exclusively pragmatic and utilitarian science and technology, and capitalism’s focus myopic focus on endless growth, all contributed to an ideological platform from which the inhabitants of ACID think about the world and what they should do in the world. The places and spaces of ACID often imprint clear messages: grow, consume, compete, acquire, dominate and control. These Promethean priorities are not fit for a species that has grown beyond its planet’s carrying capacity

and places and spaces that promote Orphic awareness are now necessary for every urban space hitherto void of architectural symbols of sustainability and interconnection. Earthen structures designed and built in a genuinely Orphic spirit, and design projects taking into account earthen building techniques, may play a remedial role in this regard. Design approaches such as these, as well as the end products of these approaches – i.e. earthen structures – are by no means the only solutions in the process towards a more Orphic context, a context that arguably is necessary if human beings are to actualise a more sustainable dispensation. However, considering the alarming scale of the ecological crisis, a crisis arguably caused by human activity driven by Promethean attitudes, Orphic responses from every sector of society are necessary. Architects, designers, and builders can play important roles here, because they participate in the design and building of spaces in which people spend so much of their time. This is relevant everywhere – South Africa included.

7. CONCLUSION

The Earth Unit will continue to investigate new insights - all possible explanations - to understand more about the attitudes, values and behaviour surrounding traditional earth construction. The implications are that this insight can address misconceptions and the status of traditional materials to promote contemporary, well-executed earth building techniques, appropriate to the requirements of different contexts. These conditions imply a strategy that takes into consideration not only criteria or guidelines to be used to improve the acceptability of earth construction in general, but also the attitudinal contexts relevant to design and building endeavours. Firstly, this strategy can be useful to homeowners, trainers and self-help builders, who want to improve the qualities of earth constructed wall elements and construct better earth buildings. Secondly, architects, structural engineers, soil engineers, building contractors and professionals in the building industry can improve their knowledge by understanding ~~the~~ attitudes to influence the acceptability of earth-constructed buildings. Finally, dedicated national and regional policymakers will find this strategy useful when considering alternative approaches dedicated to innovative, environmentally friendly solutions. New insight into the behaviour of the communities living in traditional earth-constructed buildings is useful to formulate guidelines to overcome the acceptability challenges of the users of contemporary earth-constructed buildings, and the Promethean-Orphic dichotomy identified in this article can be helpful in this regard.

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