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CASE STUDY

# The role of art in smart cities research and making

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**Abstract**

This article promotes the role and importance of art in the research and making of smart cities. To elucidate the potential of using relational artworks for a more vibrant interaction in the city as well as various visuals in knowledge production and/or implications of overlooking them, a case study of Milton Keynes is presented in the article. Visual comparisons and analysis contributed to making the argument clearer by reflecting on the situation on the ground. Qualitative methods have been used for data collection and analysis, which included interviews, document analysis and on-field observations. The findings were presented under three main sections: Innovation in knowledge production, vocabulary and design, and art in Milton Keynes and Milton Keynes in art. The themes are used to clearly discuss the need for innovative methods in knowledge production and cities making while explaining the benefits of integrating art with science. By reflecting on the benefits of accommodating the need for effective communication, higher engagement and fulfilling experience in research and design of cities, the powers of visual and relational art are unpacked throughout the article. Thus, the role of art is introduced to be beyond that of decoration to help facilitate cities development and production.

**KEYWORDS**

city design, governance, planning and policy, smart cities, smart cities standards

## 1 | INTRODUCTION

The inherent need for discovery and interaction drives people to explore new places and think of works of art; out of curiosity, there is an innate drive to gather the information that partly determines what we enjoy doing when we do it [1]. On the other hand, the paper examines the ways of thinking and art in Milton Keynes, revealing a common pattern of misunderstanding that emphasises the separation between smartness, art, and architecture. This paper examines the connection between art and smart, while discovering where the related understanding of the role and importance of art lies and whether it is perceived as separate from the building of smart city environments.

### 1.1 | Motivation

The social aspect is one of the most ignored when it comes to smart cities agenda and the claims around offering a better

lived experience are proven to be ambiguous, hard to measure and often compromised to focus on function and control of the city [2]. Art helps in many ways, such as provoking interest, stimulating senses and curiosity, motivating people, boosting quality of lived experience, communicating effectively, making impressions of the city as well as the impact on the social aspect visible instead of hidden and hard to gauge. Thus, the study offers a deeper perspective on the relations and intersections between Smart, art, and the nature of humans as needed value-based practice in smart cities logic.

The roles that art can play include strengthening areas of communication, influence, and meaning in the range of lived experiences in research and making of smart cities, giving more attention and focus to the resident as a human being, form the basis for arguments around the significance of life-enhancing details and the spirit of place that make architecture play an active and essential role daily. Art-based methods also help enrich the potential and significance of creative use visuals as part of the language and communication of different ideas in

science, turning the question around the difference between art and science to what kind of difference art can make to science, specifically in the context of making atmospheres in smart cities. The connection between atmosphere-making, art and architecture has been asserted in architectural and literacy works of modern architects like Juhani Pallasmaa, Steven Holl and Peter Zumthor, who emphasised the close relationship between neuroscience, art and architecture. Art is known to have a powerful impact and natural connection to humans, their wellbeing and essential needs for quality and varied experiences [1].

The paper begins by promoting art-based methodologies in research on smart cities while clarifying how the process of research can be affected by elements of the study, such as how interviews are conducted and emphasising the use of visuals not only to generate outcomes that build a more substantial validity but also, to provide engagement and liberty for the participants. Then, the paper presents the relation between vocabulary and design, concentrating on the impact recognised as a limitation in designing the human experience or engaging atmosphere in cities. Finally, the case study is discussed through comparisons with other cities and approaches concerning art, showing how they reflect how their atmosphere shows more appreciation and consideration of the lived experience, atmosphere, and placemaking.

## 1.2 | Integrated art based approaches

The significance of bringing art closer to science in general and cities making in specific is demonstrated by the suggestion to integrate art-based methods for example, by using art provocations in interviews, visual comparisons and investigation of people's impressions and insights through visual arts. The focused observations on interactions with art in the city reveals hidden aspects of the lived experience and quality of its design, especially given the impact of compromising the social aspect for emphasis on growth and function in smart cities' agendas. The struggle of using ambiguous notions and words only to communicate change and intended experience in the world of research and making of cities is clarified through reflections on the general dissatisfaction expressed by professionals working in the field as well as the outcome produced as observed on the ground. Visuals were recommended as a good way to enrich current ways of communication clarifying the reasons behind supported by other research works. Moreover, visual comparison were clearly used to unpack the difference between various interactions and the power of having relational artworks instead of monotonous abstract works in the city's environment as the level of engagement, type and quality of experience is notably affected.

The validity of the findings was secured though different ways. Statements of valuable experts in smart cities making and development collected through the interviews analysis were supported not only by their long experience in the field but also the ongoing debates referring to peer reviewed material. These were also used to validate the conclusions of the

observations done through field work. The collected data have been analysed and summarised in visual comparisons with other practice elsewhere while reflecting on the different outcome that it produced. Additionally, art-works and visuals helped in reflecting upon the visible connection, attachment and level of engagement expressed in visual art, observed interactions with elements on the ground and compared to its originally intended use or imagined impact on people by providing visual material from the city's archive or scholarly material.

## 2 | METHODS

Using an art-based case study approach combining direct field observations and semi-structured interviews that have been conducted with interviewees who witnessed, lived, and worked as multidisciplinary professionals known to be the 'experts' in projects of smart city making and development, especially in the case study. The analysis of 22 multi-disciplinary interviews with various experts in Milton Keynes making and development comes as significant to reflect on the implied understanding and adopted position towards art as separate from cities making. Whereas the interviews have been conducted as part of the Smart Cities in the Making: Learning from Milton Keynes project funded by the Economic and Social Research Council (ESRC) [3], the project did not discuss the importance of quality works of art to the making of cities despite the clear lack of interactive, emotional or relational art in the case study of Milton Keynes. Although a unit of analysis, can involve more than one case, known as multiple case design. Multiple or comparative case designs produce more convincing results because they are derived from a set of cases, making the overall design perceived as more vital or robust than single-case designs [4]. In rare, unique, or extreme cases, the research design direction will be plausible by definition [4, 5]. Known for its prestige as a smart city, Milton Keynes is discovered as an extreme case of using art namely stimulating the sense of sight. Severing those elements of the city that could be of paramount importance in improving people's lives, this paper is clarifying their significance in many ways, exploring, delivering, and evoking a captivating atmosphere. The case study shows the effective use of artworks. However, like nature, these elements could be perceived or have superficial contact. The qualities that this work attempted to track while examining the real potential of smart cities were mainly explorative around the lived experience, assessing the focus on making cities for people. Examining this potential can lead to rethinking the way smart cities are handling human needs by employing design which can explore and address many questions, such as:

- Are the experiences offered diverse? Are they focused on the sense of sight or various senses?
- Are they engaging (not so easy, not too complicated [opposite to boring experiences])?
- Do they provide a sense of identity and placeness?
- Are they designed for the night as well as the day?

- Is there an efficient use of city elements to impact well-being, is the focus on connectedness, not contact only?
- Does it foster interaction? Does it aim for a quality atmosphere and engagement; for example, art to be used as means of communication, not decoration?

The work that has been done in the field work is presented and analysed using visual means of comparing certain ways of designing and making the built environment. This results in a deeper communication and clarification of the matters presented while introducing them under three main areas to discuss. These include the need for innovative approaches to producing knowledge, issues and limitations caused by using words only as well as the impression and atmosphere that a city's environment evokes as explored in artworks availability and quality. References were made to helpful documents analysis that assisted the comparison and reflection on lacking or sometimes contradicting positions, especially as it provided visual representations and/or insights presented in complementing texts.

## 3 | RESULTS

### 3.1 | Innovation in knowledge production

Using visuals in this study helped to provide a rich and complete picture and a solid foundation to engage in the necessary debate on the current ways of constructing smart cities.

In terms of research process, the intersections of different areas; technology, urban strategy and environment generate different contexts and queries to the discussion; however, they were not intended to be explored separately in one context and not the other. The emphasis on utilising visuals and imagery in research stems from the need to facilitate better communication of the meaning of enquiries and exchange of ideas and understandings with others including those interviewed, especially given their role and solid experience in the field or the focus area of the research. Visuals were considered better in capturing the existing relations and connections of thoughts, expertise, and ways of practice in the minds of professionals involved in activities across various related practice areas such as design, research, history, construction and governance. This is also because words were believed not enough to motivate interviewees to express their understandings and try to facilitate communication over considerations concerning the human experience and how it is shaped and prioritised. Visuals work better because they are quicker and more reliable than words when expressing meanings around the daily experience. Also, it is significant to capture 'complex, non-linear and dynamic entities' and analysing the impact on customers' journeys or experiences of people in general. They are considered necessary to change nowadays [6]. Thus, the effect of using visuals could also be used to stimulate the interviewee's thinking and make them more open to expressing their understanding. Their satisfaction about how the interview is conducted, means they are more likely to be willing to fully engage in further

discussions or activities if needed. Employing innovation to produce a higher quality of knowledge informs the process of future development and inspires smart cities construction and agendas that are politically or economically motivated.

It is beneficial to make participants felt free to express themselves as they reflected on the artworks and images shown to them for example. In turn, this reduces bias (seeking approval from the researcher) and boosted validity The aim and focus of using such engaging methods during the study is to provide an enjoyable experience that inspires them to actively participate, help and contribute to the development of the study not only the interview. This could be in the form of securing resources, answering more questions, or scheduling meetings for another conversation. It is easier to identify main points of the discussion, and communicate controversial points by using art or visuals, while asking for an open-minded engagement as the interviewees are informed there is no right or wrong answer and to be reassured that the visuals used are only provocations. This reduced defensiveness and conformity, which helped to have deeper conversations and questions that developed the research.

On choosing the right visual images for the job, Whelan [6] asserts there are many, not one. Therefore, using visuals as part of the interviews including various images, charts, clipart and artistic works, including paintings, is expected to provide provocations to which the interviewees as are being exposed in a concrete visual language, as shown in Figure 1 [6].

### 3.2 | Vocabulary and design

The need for a more comprehensive and facilitating vocabulary has been expressed by many scholars reflecting on challenges that communication raises in the design process, Facilitating
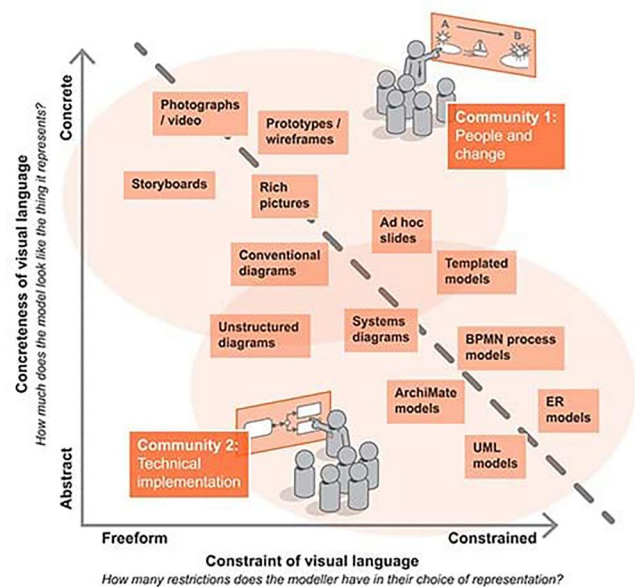


**FIGURE 1** The 'visualisation continuum' diagram on choosing visuals efficiently [6].

better communication is not only important to achieving predefined goals of the visionary smart city or project; it is essential to get a profound understanding of the experience and visuality of the city or urban spaces as the inhibitor perceives or interacts with them. However, studies on the city require not only critical tools and more accurate critical vocabulary but also multiple theoretics and methodologies [7] and different approaches to discussing urban aesthetics (see also ref. [8]). The literature confirms a lack of proper vocabulary and a need for more research works to fill gaps in the literature on smart cities, especially in terms of urban complexity and imagination (see more in refs. [2, 9]). In addition to inheriting a fixed position that merely criticises design through a lens that focuses on the way, urban design is used as a tool of the system, capitalism or consumerism, hypnotising, and depoliticising the public. Interviews conducted and analysed revealed three main findings [7]. Firstly, criticising the inefficiency of the notion of 'Smart' is a shared view among those involved in making smart cities. The inconvenience seems to be brought by the difficulty in defining and measuring what is meant by the term. Using the correct labels or phrases is helpful because it raises the efficiency of teamwork, as the long experience of an interviewed academic, a research director and a retired strategic consultant revealed. The same understanding and appreciation for the role labels can play in teamwork occurs in discussions on software development. In the Gem of all Mechanisms podcast, Runciman explained that labels are fundamentally helpful in reducing ambiguity and increasing the certainty that 'we are not misled into thinking we are doing something as opposed to something else' [10].

The second point is the association with high tech, which leads to rationalities focused on efficient services and devices in the city, such as robots and autonomous vehicles. Affects as elements contribute to the atmosphere of the city. Pure functional or practical uses are not proven to have the same impact as other aspects closely related to the socio-spatial, lived experience, and well-being but are either disconnected or undefined. These elements that are often perceived as what smart is, as shown in Figure 2, are essential to functional services, but they are only a small part of what a smart city means or, rather a better experience in the city could be like, as they become the old new after some time.

Another finding is the limitation that is discovered to be partially caused by the spoken language with which discussing, planning, and delivering design is normally conducted. Whereas these tasks faced abstract and undefined marketing terms of 'Smart', there are words in other languages used to communicate complex messages or ideas, often revealing a feeling or a whole atmosphere of the space as experienced. Examples of such terms can be noticed when discussing the terms like 'Gemütlichkeit' in German language and 'Hygge' in Danish, which is described as an atmosphere of blissful pleasure and often noted not to be translated to one word in other languages like 'cosiness' in the English language for example. Also, the Arabic language is well known for the nuance and differences between alternatives it offers that may not simply translate into one word in other languages. The word 'عمران; Umran', which



**FIGURE 2** Delivery robots in Milton Keynes, taken by the researcher.

is often translated to 'Urbanisation', is used to convey a multimodal meaning of what the country is built upon and whose condition is improved. This includes means of agriculture, industry, commerce, the large number of people, and the success of businesses and urbanisation. This includes planning and designing a city or community, which is different from using the word 'تحضر; Tahadur', which is also translated to urbanisation in English, but it is specifically used when describing a human settlement or transition to living in a city [11]. Hence, translation is not always enough since there is a certain layer or level of meaning in one language that cannot be put into the words of the other. Therefore, having a variety of languages or being aware of terms that can be borrowed to communicate increases the ability to comprehend the world more and in different degrees and ways. Similarly, this ability is also missing when enough time is not given to learn, use and consider the effects and effects in designs before planners and designers rush to produce iconic charcoal hand sketches or even the computer-filtered images that are used mainly to promote a product on a surface to a client. The lack of these important conceptions, connections and capabilities of art became more apparent during the interviews analysed in this study as smart cites making was the main theme but on the other hand artworks were not considered. Observations and visual comparisons show that the quality of art used in Milton Keynes environment is passive, very similar all over the city and opposite to relational art shown in images in Figure 3, was not relational but barely used for passive observation. Relational art on the other hand focuses on presenting spaces for people and interactions with surroundings, making the urban more alive. The implication of overlooking the relational art concepts similar to what is

presented in pictures is that they were considered irrelative to the notion of Smart or the envisioned future of the aspirant smart city, research, experience and the developments of Milton Keynes.

As shown in Figure 3, the structure was commissioned by Region Languedoc Roussillon. It combined different technologies sustaining a decorative surface of the self-supporting structure that is lightweight and ultra-thin to function as a typical blend of urban and pavilion development, providing additional outdoor space for socialising and interaction.

The painting shown in Figure 4 represents a watercolour collage, including representatives of respected families, the Rastatt in the late nineteenth century; Engelberger, Diggler, Voller, Ununhofer, and Isinge. The collage is an artistic combination of Josef Himmel painted the background and installed photography of the groups of people illustrating societies and social clubs in which city notables gathered to play, compose and discuss music proliferated in the German Empire.

Losing the critical tools and vocabulary to better inform policymaking and the construction of smart cities by putting less emphasis on the virtual qualities of the city affects the whole process of smart city construction as it is not informed on the ontology of the better city described as 'Smart' nor the nature of the needed progress. The intertwining relation between the tangible and intangible elements of constructions or the human nature and culture and structures used as shelter seems clearer in older historical structures and inhibitors. For a design to be 'Smart', it should also be understood and qualified by how accommodating it is to those influenced by it.

For instance, direct observation of Beduins life in Jordan helped to learn that they were able to utilise their local materials and resources to make homes that met the demands of



**FIGURE 3** 'Pleated inflation' located outside a hospitality school in Argeles-Sur-Mer, France [12].



**FIGURE 4** Gesellschaft Gemüthlichkeit (1887) by Josef Himmel (1869–1941) in The Rastatt City Museum in the Vogelsche Haus in Rastatt, Germany (*Das Stadtmuseum Rastatt in Vogelschen Haus*), photo after museum-digital: Deutschland website.

their lifestyle and environment. Their structures and tents worked with the nature of their environment, needs and values instead of overlooking them or rubbing against them with a mere focus on the tools themselves. The social Beduin life bound by social conduct, honour and hospitality is an inseparable part of the successful experience of taking the huge tent as a house. For example, setting and wrapping the tent had to be easy for Beduins, who were rather mobile, and that was not a problem due to the large number of people helping each other. Women were gathering for knitting while singing or telling stories that became part of the Jordanian heritage. Also, the rearrangement of the inner sections of the tents was relatively easy to meet the varied demands of the people. This is mainly because of their nature being famous for their pride in their traditions and hospitality, as much as they cherished the simplest pleasures of life and the beauty of their natural surroundings. Their stories and poetry inspire this affinity for nature.

Nevertheless, technology can be a facilitator and an important tool for achieving this. Discussions with experts confirm that they are more motivated to perceive electric vehicles, robots and clean and efficient transportation as means of advancing the city or urban development but not the aim nor the substitute for what a smart city is. Developing state-of-the-art tools to enhance the ability to assess urban environments is another example of how technology is proven helpful if coupled as tools with the necessary awareness of the significance of spatial analysis. The spatial analysis offers a similar logic to another rather needed approach in smart city making, as stated by one of the interviewees, 'to deliver the right thing instead of rushing to sell something'. An example of such supportive tools is the Urban Network Analysis (UNA) Toolbox for ArcGIS developed by City Form Lab at the Massachusetts Institute of Technology (MIT). The City Form Lab which is concerned with developing software tools and research on urban planning, mobility and design with developing at MIT. The toolbox is created to help automate calculations of indices that are impossible to do manually, providing an easier integration with other types of data and a better definition of spatial problems of city design [13]. The benefits that this offers include addressing important questions around liveability, the effect of the form of the city on economic performance and equal access to resources, as well as the two-way relation between shaping a city and the human by providing insights on proximity, traffic patterns and the value of land in different areas of the city with maximise human interaction and reduce friction. The tool is intended for professionals, including urban planning, architecture, geography, and spatial analysis, interested in studying the spatial configurations of cities and the associated, including the social, economic, and environmental. It is suitable for detailed small-scale network analyses of dense urban areas as well as for large-scale, scattered regional networks and can be used to calculate five types of graph analysis metrics on spatial networks: 'Reach; Gravity; Betweenness; Closeness; and Straightness. Redundancy. Redundancy Tools additionally calculate the Redundancy Index, Redundant Paths, and the Wayfinding Index'. The

UNA tools include three important features Geometry analogy, network elements including nodes and edges and buildings, as well as building characteristics like the densest, most densely populated, or most important, which can be identified to have a relatively stronger influence on the results of the analysis: resulting in more accurate and reliable results for any of the specific measures.

## 3.3 | Art in Milton Keynes and Milton Keynes in art

Scholars such as Ellard (2015) built on the work of Canadian psychologist Daniel Berlyne between 1960 and 1971, arguing that the inherent need for discovery and interaction drives people to explore new places and think of works of art; motivated by curiosity, there is an innate drive to gather the information that determines, in part, what we enjoy doing when we do it [1]. On the other hand, exploring the ways of thinking and types of art in Milton Keynes show a general approach to city-making that shows the separation between Smart, art, and architecture. This way of thinking seems to stem from a more general understanding of the role and meaning of art and whether it is separate from science. This has also been discussed in the works of Pallasmaa Steven Holl and Peter Zumthor (see refs. [14–18]), clarifying the connections between neuroscience, art and architecture. The shared areas of communication, influence and meaning about the human being form the basis for arguments around the significance of 'life-enhancing details' and the spirit of place that make architecture play an active and essential role daily. The case study shows the effective use of artworks. However, similar to nature, these elements offer superficial contact. This was noticed on the field, but its impact and role were clearer to notice over the long period, at different times of the day and the year, which reports the level of connectedness it provides to be low. In Goethe's view, life-enhancing works of art are original works of art with the capacity to evoke reactions to other senses than sight, like that of touch, is life-enhancing. Examples of such elements are shown in Figure 5 [10]. Works of art in central Milton Keynes, for example, seem to be there mainly for the eye's pleasure and sometimes without enough interpretation to communicate the meaning, sensation or interactive impact of that work, as shown in Figure 6.

Another factor is that the medium of these elements derives from their design, is basic and not showing enough concern for the visitor experience, which is noticed in the location of these works and the positioning of the seats or other elements around them, as shown in Figure 7.

The domination of the visual in modern contemporary works lacks poetic and embodied meanings and produces mere graphics instead of an architecture of a lifestyle and culture [15]. This affects the level of impact or difference that this type of thinking produces, making artworks in the city inefficient, unengaging, and incapable of producing emotional attachment with the resident. This weakens the sense of ownership and
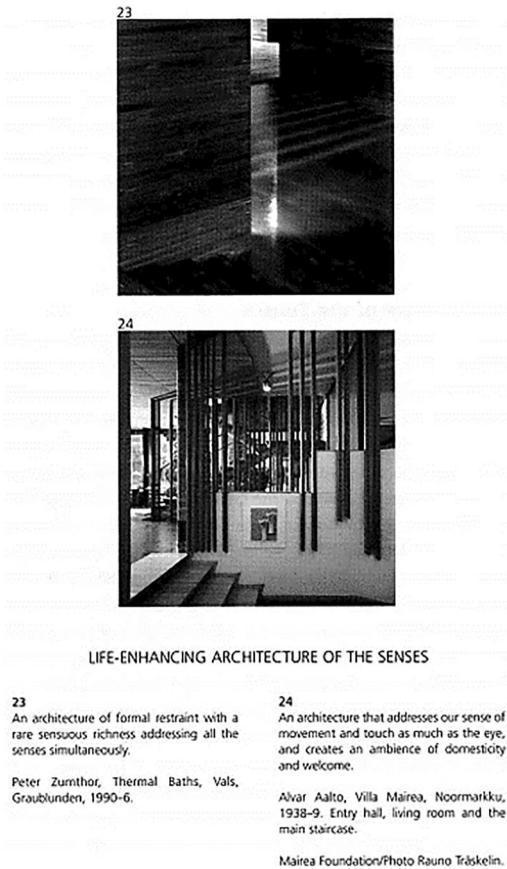
LIFE-ENHANCING ARCHITECTURE OF THE SENSES

**23**
An architecture of formal restraint with a rare sensuous richness addressing all the senses simultaneously.

Peter Zumthor, Thermal Baths, Vals, Graublunden, 1990–6.

**24**
An architecture that addresses our sense of movement and touch as much as the eye, and creates an ambience of domesticity and welcome.

Alvar Aalto, Villa Mairea, Noormarkku, 1938–9. Entry hall, living room and the main staircase.

Mairea Foundation/Photo Rauno Träskelin.

**FIGURE 5** Life-enhancing details of architecture [14].



**FIGURE 6** Sample of artworks in one of the most active spots in Milton Keynes (MK). *Source*: (a) MK Menhir by Sam Jacob Studio [19]; (b) Chromochochere by David Batchelor taken by the researcher.



**FIGURE 7** Positioning of seats in an open area, Milton Keynes central area, taken by the researcher.

impression of the city. Pallasmaa described the embodied image as '*a spatial, materialised, and multi-sensory lived experience*', calling for a revival of the multi-sensory image in a way that allows vision to meet with the other senses to evoke the design process, tools of representation and built environment [15]. Therefore, the main pattern of thinking noticed is preoccupation with the pleasure of the eye and often wilful neglect of other senses to the extent that this stance has become naturalised in the modern architectural design practice, leaving human beings unsatisfied, detached and unengaged by imbalanced experiences that focus namely on one sense.

The difference between the place as a house as a physical building or unit of accommodation and home as a shelter where one belongs is similar to cities without the capacity to communicate and provide a place of comfort, protection, and memories will be easier to leave for another and not considered a place of belonging.

Meaningful architecture encloses the occupant's memory and emotions by utilising metaphors and archetypes of the poetic image, which are meaningful sensory and intellectual constantly orienting thoughts and emotions in an interplay between memory and desire. This quality can communicate on a deeper level as they create emotions and perceptions and also due to the capability of grasping the meaning of a complex entity or '*formless*' artwork before moving to its details in human beings. *Archetypes* are defined as certain types of
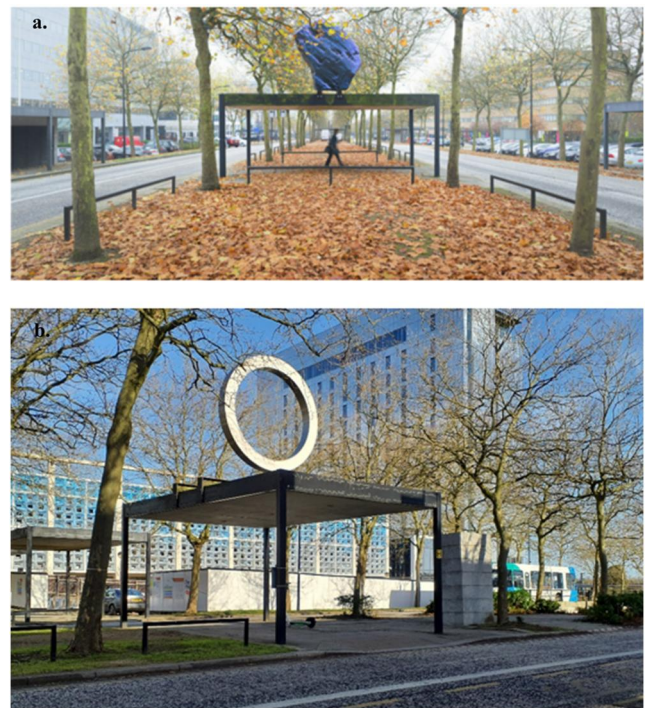
patterns and emotions that evoke certain associations and meanings. Metaphor connects to the unconscious through '*multi-modal visual, auditory and kinaesthetic inputs*'. Architectural metaphors are realised and felt unconsciously, not rationally, as they create a context and experience by connecting to the cultural, historical and primordial grounds of existence of human beings such as '*the ageless experiences of safety, shelter, comfort and pleasure … stored in our genetic constitution and unconsciousness*'. The architectural image creates opportunities and invites the inhibitor as it frames, articulates, gives significance, connects and separates through its elements which invite action or a movement involving interaction or a meeting between the human body and the element shaping the meaning of the experience [15].

Exploring the old documentation, as seen in Figure 8, shows that there was a level of interaction with art in Milton Keynes, and it was expected to be actively engaged with and encountered in peoples' way, which suggests that the progress

was that of little to no appreciation or preservation for the logic behind and capacity of the offered experience. The sample sketch drawing found to describe 'Restful Squares', as shown in Figure 8, shows the commercial building from afar, trees, sculptures, and people walking or sitting on their benches [20]. A comparison between the visual representation and Figures 9-11 show that different mediums and experiences intended to be of a different quality than the current situation, which has been affected by the relation between surroundings and art.

Also, not only that most of the artworks in Milton Keynes and or their installation are not interactive. Therefore, the typical archetype is that of no unique metaphor to the city, but also the condition of some of the artefacts made them hardly noticed sometimes and or affected by the surroundings planned around them such as uncontrolled grazing, local sellers or car parking as shown in Figures 9-12. This confirms that the interest in art is mainly as an object to be used to be looked at merely, which is a logic that is far from practices of 'relational aesthetics' that invite for more 'open social interaction' and rather relate to the human needs and nature while enhancing the daily life of residents or performance of the city [21]. The experience and level of interaction were notably affected as a disappointment by abstract and vandalised work with a low level of detail and communication. This was easy to notice not only in peoples' reactions and attitudes to these works provided but also in no to too little time spent, which can only be justified by not being engaged enough shown in Figure 13. It is opposed to other works of art where people's eyes, steps, and body language discover and explore while enjoying little by little as they revolve around a sculpture without expressing boredom, as shown in Figure 14 (see also ref. [12]). The tendency to select the type of visuals noticed in contemporary works of art, architecture and planning, including the American city style adopted in the case study, is often justified with the



**FIGURE 8** Drawing by Helmut Jacoby of a public square March 1970 [20].



**FIGURE 9** Different stages of approaching the light pyramid ending with disappointment; one of Milton Keynes's attractions, taken by the researcher.



**FIGURE 10** Different forms of experience disruption, vandalism and inconvenience, taken by the researcher.



**FIGURE 11** A sculpture hidden by surroundings, The Centre: MK, taken by the researcher.
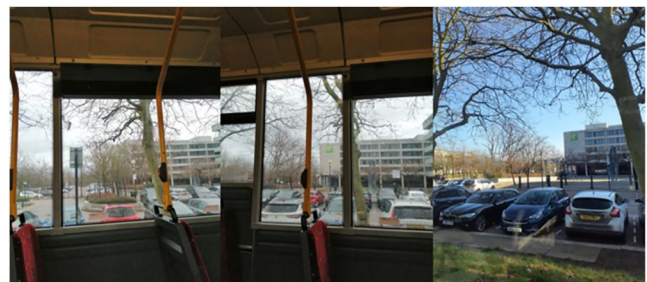


**FIGURE 12** The space between sculpture, Milton Keynes central area, taken by the researcher.

**FIGURE 13** People not interacting with artworks or leaving very shortly after, Milton Keynes, taken by the researcher.



**FIGURE 14** The permanent informal amphitheatre in France [12].



**FIGURE 15** Interactive activities in Milton Keynes, taken by the researcher.



**FIGURE 16** The cave; one of the artistic works meant for reflection on urban life, no path or stepping to access easily and experience, taken by the researcher.
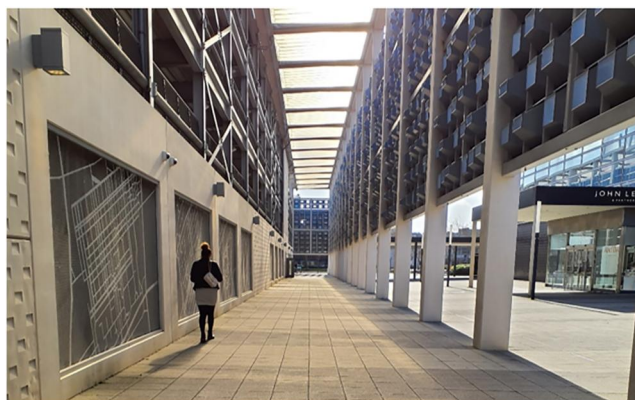


**FIGURE 17** Maps of Milton Keynes, the centre MK, taken by the researcher.

motto 'less is more'. However, the concept is misused to justify trendy style that results in a detrimental effect on human well-being that comes from less balance for senses other than the sense of sight and lack of a vital effort to acknowledge and meet the inherent needs of the human in general. The higher level of engagement makes the body recognise, experience, and assimilate another view or meaning of the world, that is, the power of communicative encounters in art, nature and architecture (see refs. [14–18]). The level of interaction, the density of people and the time spent were all higher elsewhere in Milton Keynes, however not with so much available on the city scale, where people could experience doing something interactive, as shown in Figure 15.

Likewise, searching for artworks in local shops and personal visits to MK Gallery provided exposure to the availability, type, and characteristics of artistic expressions representing Milton Keynes. The examples shown in Figures 16, 17, and 19 confirm the findings reported from observations from the field. Most works were photographs or sketches representing the city's major plan, showing the grid system. Very little spontaneous availability in the case study of works expressive of the city's atmosphere, emotional attachment, or memorable identity compared to other cities with a strong mental image of the city as found in paintings and postcards in Frome, for example. Examples of mentioned artworks can be seen in Figures 18–21.

Searching online for similar works revealed that even organised representations of Milton Keynes did not communicate warm sensations of belonging nor an attractive atmosphere of placeness as in the previously discussed sense of home. The Milton Keynes Project is an art project commissioned in January 2012 to reflect on life in Milton Keynes after

a discussion with the Artistic Director of Milton Keynes Festival Fringe, Jessica Rost. Data provided on the project's official website confirm that the project was mainly to defend

**FIGURE 18**    Captures of artworks about Frome, taken by the researcher.



**FIGURE 19**    Captures of exhibited works about Milton Keynes in MK Gallery: Central Milton Keynes in 1990. 1974 Middleton Hall, Shopping Building: The Centre: MK, Helmet Jacoby Prints, taken by the researcher.

the city's image and 'show a cultured side to an often-maligned place'. Other cities, however, approached art differently. For example, field observations in Oxford show that people, particularly young generations, were encouraged to communicate in free art events such as the Modern Art Oxford exhibition shown in Figure 20.

Nevertheless, the expression in the paintings presented in The Milton Keynes Project shows sophisticated artworks often using cold and dark colours and sharp lines and angles of elements of the city without expressing connectedness or affection towards them, as shown in the series of 20 paintings in Figure 21.



**FIGURE 20**    Captures of Modern Art Oxford exhibition, taken by the researcher.

However, individual paintings and personal representations and memories of some places in Milton Keynes were rare to find and often showed places that lost the affective elements that made them communicative, recognisable, and impactful on the atmosphere of the case study, such as The Point as shown in Figure 22.

In terms of artistic-architectural cooperation, Jane's Carousel present a good example of relational art and architecture which rely on direct participation to perform. The overall intention was to shape a shared experience of aesthetics or medium for communication or dialogue instead of passive observation of art, which in turn provide a free-space for people. Whereas Jane's Carousel uses art free to be interpreted and narrated by the people, different types of installation art are generally described by theorists as `social turn' including humoristic, imaginative, socially critical and political art [24].

## 4 | DISCUSSION

To move beyond the level of function to improvement of the quality of the experience offered and its impact on people, their well-being and connection to their surrounding environment, the paper reflected on the use of conventional ways of communication, offering new ways to enrich research and design of smart cities. Additionally, the need for innovative knowledge production methods was introduced at the start of the paper suggesting alternatives while explaining the motive behind using images, visual comparisons and reflection on artistic works of cities' atmosphere as part of interpreting the results. Whereas technical advancements are used to help smart cities develop and grow, the social aspect and lived experience seem rather overlooked. Therefore, it is recommended to use art-based methods, relational works of art as well as visual analysis to studying and bridge the gap between art and science, while paying more attention to the impact that art can produce as it enables higher engagement as people interact with varied types of quality works in different contexts.
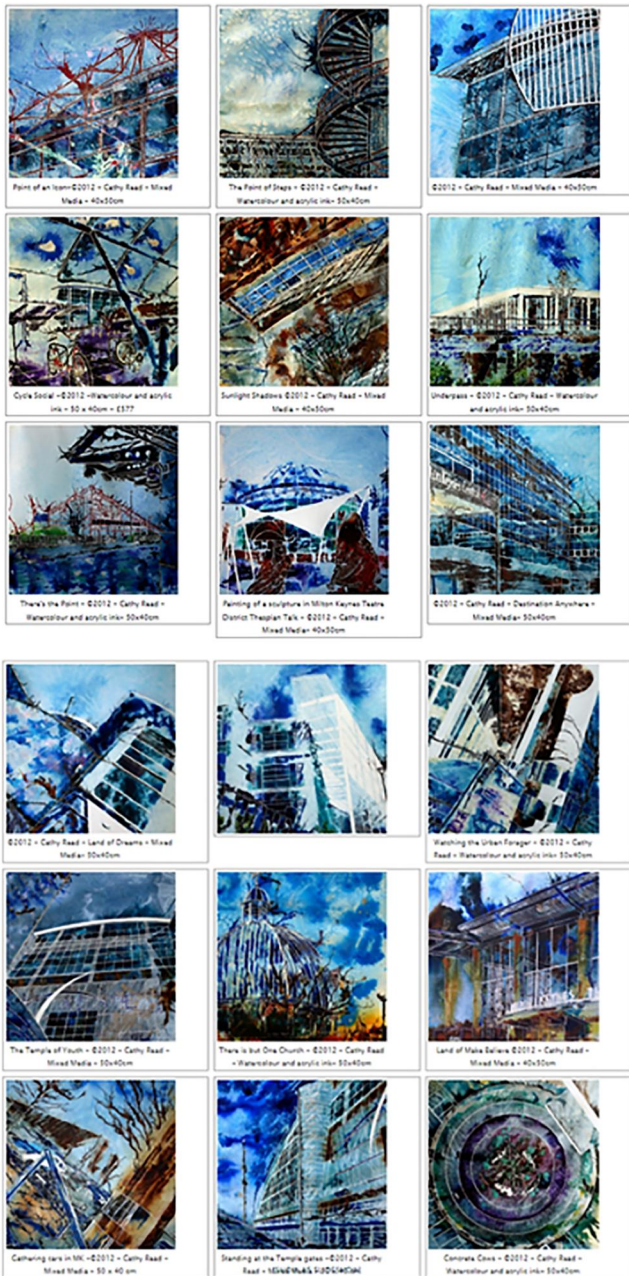
**FIGURE 21** Paintings on life in Milton Keynes [22].



**FIGURE 22** The point-Milton Keynes painting [23].

For cities to prosper sustainably, innovative understanding of the significance of good quality experience in their environments is needed as well as creative approaches that bring art and science more closely. The associated benefits of such ways of thinking mainly related to powerful communicative and impactful qualities that visual and interactive works of art have on human being. Focused observations on interactions with and uses of art in the city are recommended to reflect upon its design and understanding of the role of art as well as an appreciation of people's experience as they reveal ignored aspects of its agenda. Visual comparisons help decipher the quality of different interactions and the power of providing relational artworks rather than monotonous abst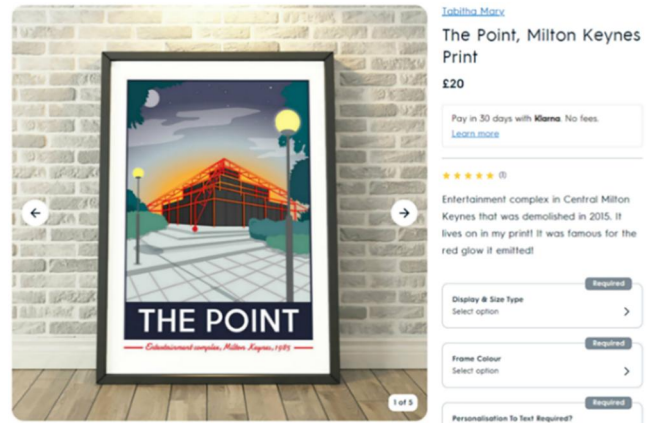ract works in cities environment where the level of engagement and the type and quality of experience are significantly affected. Hence, visual methods of analysis and expression makes it more possible to make the social aspect, cities atmosphere and identity as well as people's attachment to place more visible and possible to reflect upon and to positively impact cities design and peoples' wellbeing. Thus, it is important to bring art closer to science in general and city-making by proposing to integrate art-based methods in different ways and stages of research design and communication.

## 5 | CONCLUSION

The dominant logic in smart cities agenda and making is that of computer instrumentalist understanding that focus on using and installing technology to better control and operate the smart city. It is established that such logics use the city as a market assume that basic services are what people need while using systematic and abstract arithmetic justifications and treating residents as mere users. This also includes overlooking the significance of the city's living experience, feeling, and vibe, separating people from their living space. Also, not paying enough attention to the powerful role that art can play in research, making and developing the environment of smart cities risks lacking a sense of belonging, ownership, and motivation necessary for participation.

On the other hand, art places great emphasis on feeling the tools as a means of knowing them, as well as making cognition through communication with people using language written on a primitive level—the international human level—powerful enough to make us feel something, live something or commit by motivation. The limitation of using words only to communicate or seek knowledge or facilitate processes of change or development has proven to be lacking the depth, effectivity, emotional impact and comprehension that is found in visual and relational artworks. Such powers are important to be provided and used for the benefit of the people in cities as they are accompanied with a healthier impact on our wellbeing, which is also needed to be included and understood as part of delivering smart cities. Therefore, it is recommended

to integrate arts in a more active way to develop smart cities in different ways and areas, including research and city design, as they offer deeper understanding than older methods, which are not as effective. Establish a stronger connection between art and the city or art and science comes from its close connection to human nature and needs. This enables not only more innovative processes but also a sounder inclusion of logic that goes beyond control and functionality as found in the dominant computer logic of Smart. Hence, art is recommended not be treated as separate from science or shaping the experience of cities.

## AUTHOR CONTRIBUTIONS

The authors cited in the article are the only authors of the work. Author contributions relate to all aspects of the work including research, analysis, revision, and final presentation.

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## CONFLICT OF INTEREST STATEMENT

The author declares that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

## DATA AVAILABILITY STATEMENT

Data is available on request. Supportive data were derived from different resources clarified in the paper and might be subject to third-party restrictions.

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