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EMPATHY WITH PLACE: UNDERSTANDING THE CONCEPT AND APPLICATION OF AN ARTISTIC RESEARCH APPROACH USING AI-BASED TOOLS

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Empathy – the projection of a subjective state into an object using one's imagination, so that the object appears to be infused with this state – can be experienced not only on an interpersonal level but also with animals, machines, ecosystems and places. The importance of empathy in design and other place-related practices is currently acknowledged by researchers and designers. The aim of this research was to develop a theory-grounded artistic research approach using Artificial Intelligence (AI) based tools in order to stimulate connection with a place and induce empathy with the place. The first section of the article presents a literature analysis and systematisation in connection with place, empathy, and human-place relationships. Selected theoretical landscape models are analysed in order to reveal the theoretical premises for human-place relationships involving empathy. The second section includes the presentation of the proposed methodology for artistic research, the application of the methodology in two historical localities for recreation (Panemune and Kulautuva) situated in and around the city of Kaunas (Lithuania), and an assessment of the results using an approach based on self-reflection and autoethnography. The research proves that it is possible to develop artworks using AI-based tools to create a connection between human beings, places and artificial intelligence. The creation of the artworks induced biophilic and topophilic reactions to the places chosen by the creators, as well as the experience of the genius loci and empathy with the places in which the artistic research was carried out.

***Key words*: empathy, place, artistic research, artificial intelligence.**

INTRODUCTION

This research is centred on two concepts – place and empathy – and their possible interconnections, as well as how these interconnections can be employed using hybrid science-art practice (Heras *et al*., 2021) for more meaningful and sustainable interactions of humans with a particular place. Place can be defined as a space that has meaning. Empathy in this research is approached as the projection of a subjective state into an object using one's imagination, so that the object appears to be infused with this state. The main research question of this study is: can an artistic research approach using Artificial Intelligence (AI) based tools stimulate the connection with a place and induce empathy with that place?

The importance of empathy in design (Mediastika, 2016), conservation (Sobel, 1996) and sustainability in general (Brown *et al*., 2019) is acknowledged by numerous researchers, who have raised questions regarding how it can be induced, stimulated and integrated into design and other place-related practices. According to Sliwinska (2019), in order "to design places of spiritual quality and depth, designers need to reconnect themselves to the nature of place in order to create a sense of belonging prior to presenting a design solution". Sliwinska (2019) proposes artistic practices for connection with places. Brown *et al*. (2019) distinguish the generative method in empathy research, which is action-oriented and collaborative, and

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aims to co-produce empathy-based strategies for positive change. Goralnik *et al*. (2017) speak of imagination encouraged through inquiry into arts and humanities, which might facilitate an effective understanding of social-ecological systems. Bearing in mind the importance of art in the process of giving and deriving meanings in the context of place, as distinguished by Tuan (1977), this research employs the method of artistic research.

The arts-based research or hybrid science-art practice (Heras *et al*., 2021) in this research also combines the autoethnographic (Ownby, 2013) method. According to Heras *et al*. (2021), numerous methods, practices, and experiences have recently emerged in the interface between arts and science, and the contribution of such hybrid approaches to sustainability research have started to be noticed with their unique methods, emphasis on trans-disciplinarity and stimulus to move towards societal transformations. As Heras *et al*. (2021) state, there are different assets of art-science practices, which include: embracing more than cognitive aspects of knowledge; changing relationships to nature; providing alternative explorative means for approaching reality; expanding the understanding of qualitative experience; embracing trans-disciplinarity, expanding conventional epistemologies towards practical, embodied, and emotional domains; and the generation of meanings. Therefore, all these aspects of hybrid approaches were found to be significant in the evaluation of this research outcome. Furthermore, the autoethnographic method, which can be referred to as an autobiographical genre of writing and research according to Ownby (2013), was also found beneficial to follow.

In that regard, this paper combines art (defined as the quality, production, expression, or realm, according to aesthetic principles, of what is beautiful, appealing, or of more than ordinary significance (Tromble, 2020)) and conventional research practices, such as a literature review, elaboration of a theoretical model and formulation of a system of criteria for verification of the research hypothesis. Therefore, it focuses on the theoretical conceptualisation of empathy with place, and the development and application of an artistic research approach using AI-based tools aimed at inducing empathy with the chosen places in the artwork creators.

The first section of the article presents a literature analysis and systematisation in connection with the place and human-place relationships. Then, the second section explains the artistic research approach based on empathy with place using AI-based tools. This section also includes the methodology of artistic research, the application of the methodology in two localities situated in and around the city of Kaunas (Lithuania), and the assessment of the results from the point of view of empathy with place using self-reflection and autoethnography (Ownby, 2013). In the course of this research, the authors primarily focused on artist-place interaction and the emergence and strengthening of empathy with the chosen places in the artwork creators during the artistic activities. Therefore, the investigation regarding the interaction between society and the artworks created in the artistic research process is envisioned as the future research direction.

THEORY

Place and empathy

It is common to distinguish between the concepts of space and place, maintaining that the concept of space is more abstract and generic, and the concept of place is more particular and laden with meanings. According to Tuan (1977), the difference between space and place is determined by the meaning that people give to a particular area. Thus, space can be described as a location which has no social connections for a human being, meanwhile, place is a location that can be described as a "location created by human experiences" (Selten and van der Zandt, 2012). This research deals with the concept of place – a space that has meaning. It is evident that the concept of place involves dimensions that are intangible and beyond visible. Moreover, Tuan (1977) notes that meanings can be given to a location or derived from it not only through direct personal experience through senses, but also in an indirect way through the mediation of symbols and arts. This notion is fundamental in this research, as it deals with the process and outcomes of artistic research and involves the notion of symbol.

The other central concept – empathy – raises definition and interpretation challenges when seen in the context of place. According to Harrelson (2020), it is "an everyday phenomenon but a definitional enigma". Harelson (2020) defines empathy as the phenomenon of interpersonal understanding. According to Tam (2013), empathy can be generally defined as the understanding and sharing of another person's emotional experience. However, contemporary research literature demonstrates that empathy is possible not only with non-human beings, for example, animals (Sobel, 1996; Tam, 2013), but also with ecosystems and nature in general (Tam, 2013; Brown *et al*., 2019), as well as with inanimate objects (Misselhorn, 2009). According to Goralnik *et al*. (2017), empathy is an ethically relevant quality that applies to human-nature relationships. As Tam (2013) states, empathy towards non-human beings can be induced, for example, participants in an experiment who had taken the perspective of a suffering whale demonstrated stronger compassion toward whales in general and an intention to protect them.

Moreover, Tam (2013) proposed the concept of dispositional empathy with nature, which refers to the dispositional tendency of people to understand and share the emotional experience of the natural world. According to Brown *et al*. (2019), empathy with nature is a person's capacity to share the emotional experience of the natural world. Brown *et al*. (2019) and Tam (2013) distinguish the cognitive and affective (emotional) components of empathy. According to Tam (2013), these components are inseparably interrelated. Emotional empathy relates to experiencing others' emotional responses; the cognitive component refers to the capacity to understand others' emotions (Brown *et al*., 2019). When dealing with empathy with ecosystems or inanimate objects, the imagination component of empathy becomes very important. According to the definition of empathy presented in the Merriam-Webster dictionary (2022a), it can be defined as "the imaginative projection of

a subjective state into an object so that the object appears to be infused with it". According to Misselhorn (2009), the imagination must somehow be involved in the emergence of empathy with inanimate objects. The cultural context and value systems play an important role in the presence of empathy with nature as well. Tam (2013) states that individuals who consider nature to be sentient have stronger dispositional empathy with nature; and anthropomorphism is associated with dispositional empathy with nature as well. According to Opotow (1996), the degree to which non-human animate and inanimate aspects of the natural world are included in the scope of justice has varied considerably over time, and between cultures and traditions. For example, many traditional cultures used to see plants as living and vibrant beings. Indigenous cultures used to recognise plants as active agents and intelligent beings (Kopnina, 2018). Contemporary ecocentric environmental ethics approaches, such as the deep ecology movement, recognise intrinsic value in the natural world, including plants, animals and non-biotic elements such as mountains and rivers. For example, the founder of the deep ecology movement, Naes, encouraged people "to think like a mountain" (Brown *et al*., 2019).

Empathy with nature is considered as relevant for conservation and ecologically responsible attitudes and behaviours (Tam, 2013; Beery *et al*., 2015; Goralnik *et al*., 2017; Brown *et al*., 2019). Sobel (1996) expressed the idea that empathy plays a primary role in conservation: "we must begin in empathy, by becoming the animals before we can save them". Brown *et al*. (2019) extend this viewpoint and argue that there is a relationship between empathy and sustainability. They also maintain that empathy is emplaced in space and time, and that the "relationship between empathy and sustainability is mediated by place and identity". Such an implication is essential for this research, as it demonstrates that an empathetic relationship with a place, which may contain natural as well as anthropogenic components, may lead to the sustainable treatment of that place. Furthermore, sustainable treatment of a place may involve not only nature conservation, but social, economic and cultural dimensions as well; thus, it is possible to hypothesise that design efforts stemming out of an empathetic relationship with a place would lead to more sustainable outcomes. In general, the connection between design and empathy is not a new topic, and it goes back to the 1990s (Leonard and Rayport, 1997), although empathic design and planning are usually considered as human-centred (Mattelmäki *et al*., 2014; Mediastika, 2016; Biloria, 2021). However, Van der Ryn (2013) presents an interpretation of empathic design involving empathy both for natural and human communities.

Models and concepts related to empathy with place

In order to better understand empathy with place, it is essential to analyse the components and dimensions of a place and the approaches towards human-place interactions. For example, according to Brown *et al*. (2019), all action situations are comprised of a biophysical context, attributes of the community and institutions. For the understanding of place, it is helpful to analyse existing theoretical models that include different dimensions: the people-landscape interaction model by Tress and Tress (2001), the Identerra Model (Roca and Roca, 2007, Oliveira *et al*., 2010, Roca, 2012) and Seamon's (2014) concept of place as a synergistic relationality and organised complexity. The Identerra model uses the concepts of spatial fixes and spatial flows to characterise a geographical area and states that territorial identities depend on the landscape and lifestyle-related features of the area. Landscape in this model consists of spatial fixes, defined as the sum of the permanently and temporarily rooted and anchored elements of natural heritage, population, economic heritage, and cultural heritage in a geographical area. Lifestyles here are the spatial flows of use and management of the spatial fixes. Lifestyles include activities, relations and meanings within territorial and functional networks and systems that determine the functioning of nature, society, the economy, and culture. The model distinguishes two aspects of territorial identity – objective and subjective. The objective aspects are visible and non-visible, material and non-material fixes and flows that are recordable and verifiable through data and/or images. The subjective territorial identity involves spatial fixes and flows that are reflected in the knowledge, attitudes and practice of the actors in environmental, social, economic and cultural change. Subjective identity can be lived and pretended according to this model thus, it can be analysed using two primary sets of spatial fixes and flows: those that are practised/experienced (in real life) and those that are claimed/sought (in mind) and can be assessed by means of participatory studies based on the collection of primary data and images. The Identerra Model allows integration of the deskwork and participatory research approaches and methods (Roca and Roca, 2007, Oliveira *et al*., 2010, Roca, 2012). It is evident that the Identerra Model includes both tangible and intangible aspects of place. The intangible dimension is also characteristic of the people-landscape interaction model by Tress and Tress (2001). Tress and Tress (2001) distinguished five dimensions of the transdisciplinary landscape concept: landscape as a spatial entity, landscape as a mental entity, landscape as a temporal dimension, landscape as a nexus of nature and culture, and landscape as a complex system. Landscape as a mental entity is related to the concept of a noosphere. The Merriam-Webster dictionary (2022b) defines the noosphere as the "sphere of human consciousness and mental activity, especially in regard to its influence on the biosphere and in relation to evolution". Tress and Tress (2001) see the noosphere as the third dimension of the landscape, equally as important as the biosphere and geosphere. To them, the noosphere is the mental space of people, structured by perception and adaptation. By means of the noosphere, human beings are able to perceive and influence the physical-material reality of the geosphere and biosphere. Both motivations and actions result from the noosphere.

As Seamon (2014) states, the concept of place can be envisioned as a synergistic relationality and organised complexity, which involves six place processes: interaction, identity, release, realisation, creation and intensification. Place interaction refers to regular actions, behaviours, situations, and events occurring in a place. Place identity relates to the process whereby people associate themselves with a place and take that place as a significant part of their

identity. Place release involves unexpected encounters and events in a place. According to Seamon (2014), "through unexpected experiences and surprises happening in the place, people are "released" more deeply into themselves". Place realisation refers to the tangible presence of a place – its particular physical environment together with human activities and meanings of the place that evoke a distinctive place ambience and character. Creating a place involves "concerned people responsible for a specific place drawing on their commitment to and empathetic knowledge of the place to envision and make creative shifts in policy, planning, and design to strengthen place interaction, identity, release, and realisation" (Seamon, 2014). Place intensification refers to the power of policy, design, and implementation to revitalise and strengthen a particular place. Seamon's (2014) approach demonstrates the role of creation and creativity in the development of a place.

All of the models analysed include intangible and subjective dimensions, where meanings, imagination and empathy can be attributed. According to Brown *et al*. (2019), the processes of generating meaning, emotional attachment and embodied engagement occur in particular environments. Symbols in particular, which can be identified in the environment, can facilitate and provide intermediate information units that allow mediation between individual and collective realms of psychology. A definition and explanation of the symbol used in the research is provided by the American Psychological Association (APA, 2022a): "symbol – any object, figure, or image that represents something else. A written or spoken word can be regarded as a particular kind of symbol. In literature and art, symbols are generally suggestive rather than explicit in their meaning. Carl Jung maintained that the symbols of religion, mythology, and art throw special light on the collective unconscious." Furthermore, according to Petrušonis (2010), the knowledge of a wider cultural context and cultural archetypes can help identify particular symbols in landscape architecture ensembles. As he states, undifferentiated perception of the whole during the evaluation act activates the decoding of visual language based on pre-reflexive perception; it is a process analogous to a riddle. In such conditions, the value of the object is revealed to the appraiser, not through a "logical" but through an "aesthetic" understanding.

The theoretical models analysed in this research make it possible to conceptualise and position empathy with a place. Below, several concepts are distinguished that are related to empathy with a place, and they can be used to explain and understand this phenomenon better. These concepts include biophilia, topophilia, and the spirit of the place or genius loci.

The biophilia hypothesis was developed in 1984 by Wilson, a biologist, naturalist and writer. According to this hypothesis, humans, throughout their evolution and history, were constantly surrounded by nature and were in constant contact with biodiversity, and thus evolved in such a way that permanent connectedness with nature became very important for healthy human physical and psychological development (Kellert and Wilson, 1993; Browning *et al*., 2014; Samalavičius, 2020). The biophilia hypothesis states that human beings have the innate genetically based inclination to affiliate with nature; consequently, the biological diversity, the diversity of relations to nature, and the diversity of landscape types are important for healthy human physical and psychological development (Ode *et al*., 2008; Beery *et al*., 2015). The biophilia hypothesis can be one of the explicators of empathy with animals and other non-human living organisms and with nature in general. Biophilia can be one of the components of empathetic involvement with a place, as contact with nature usually occurs in a specific location, although it mainly involves the biological and partially geological components of the place.

Biophilia is attributed to the category of biological environment preference theories (Ode *et al*., 2008); thus, it lacks a cultural component. According to Roca (2012), subjective territorial identity is related to topophilia – the affective bond between people and place, or setting, or affective human ties with the material environment (Tuan, 1990; Beery *et al*., 2015). The topophilia theory is attributed to the category of mixed environment preference theories (Ode *et al*., 2008), as it involves the natural and cultural components of a place – the biosphere, geosphere and noosphere according to Tress and Tress's (2001) model. Topophilia clearly involves the built environment, cultural continuity and heritage. According to Beery *et al*. (2015), topophilia allows for a hybridised explanation of human affiliation with the non-human world that includes both cultural learning and innate genetically based origins. According to Roca (2012), the sense of topophilia changes with the (dis)integration of places and regions in the context of a globalised economy and culture. Topophilia is presumed to be a vivid and personal experience involving the synesthetic tendency (commingling of sensory stimuli and the memory of place), environmental familiarity, cognitive challenge, and ecodiversity (Ogunseitan, 2005). These characteristics of topophilia, experienced as place-based human affiliation with non-human nature (Beery *et al*., 2015), are very favourable for the emergence and fostering of empathy with a place. Moreover, topophilia allows the posthuman dimension of exploration of empathy with a place as it goes beyond empathising with nature and allows consideration of the continuum between humans, nature, and technology (Harrison, 2013). For example, in the topophilia concept, architecture would not be necessarily seen as the opposite to nature.

The genius loci, or spirit of a place, is a relevant concept that involves human experiences, as well as the intangible dimension and its nexus with the tangible world (Vecco, 2019; Petrušonis, 2018a), and it can be defined as the symbolic potential and the mythical-symbolic essence (Petrušonis, 2018b) of a place. According to Sliwinska (2019), designers who want to heighten people's awareness of a place through their design must discover and explore the spirit of the place. Vecco (2019) proposed a three-fold process: rethink, protect and transmit the place and its spirit. According to her, this "threefold movement is not linear, and to be successful, it needs to be circular and incremental". Capturing and exploring this symbolic potential can play an important role in one's empathy with a place in the personal experience of any person regardless their profession. Therefore, symbols in the perception of the genius loci can

play a meditative role between individuals and collectivities.

Vecco (2020) distinguishes three different layers of genius loci as a meta-concept, where each layer brings a dimension of significance: the visible and tangible material layer; the invisible experience of the place created in the human mind; and the underlying processes of human and natural activity with all interrelations between them. These dimensions form a set of phenomena that can explain the intrinsic and extrinsic nature of genius loci (Vecco, 2020). A graphical theoretical model of genius loci was constructed by the authors based on the dimensions distinguished by Vecco (2020) (Figure 1). This model demonstrates the role of symbols in the perception of genius loci and their mediative role between individual and collective psychology realms.

of biophilia and topophilia. The collective dimension was linked with the underlying processes of human and natural activity, with all interactions between them (Vecco, 2020) and the subtler components of genius loci. The ideas of environmental ethics, especially the Deep Ecology current of thought initiated by Naes, also propose the approach of connecting individual-collective dimensions. Næss (1973) proposed the rejection of the man-in-environment image in favour of the relational, total-field image. Such an approach also focuses on the possibility of identifying the human ego with nature; thus, by identifying with nature, human beings can enlarge the boundaries of their Self beyond their skin and developing a larger ecological self. Self-realisation is thus the realisation of a wider ecological Self (Brennan and Lo, 2022).

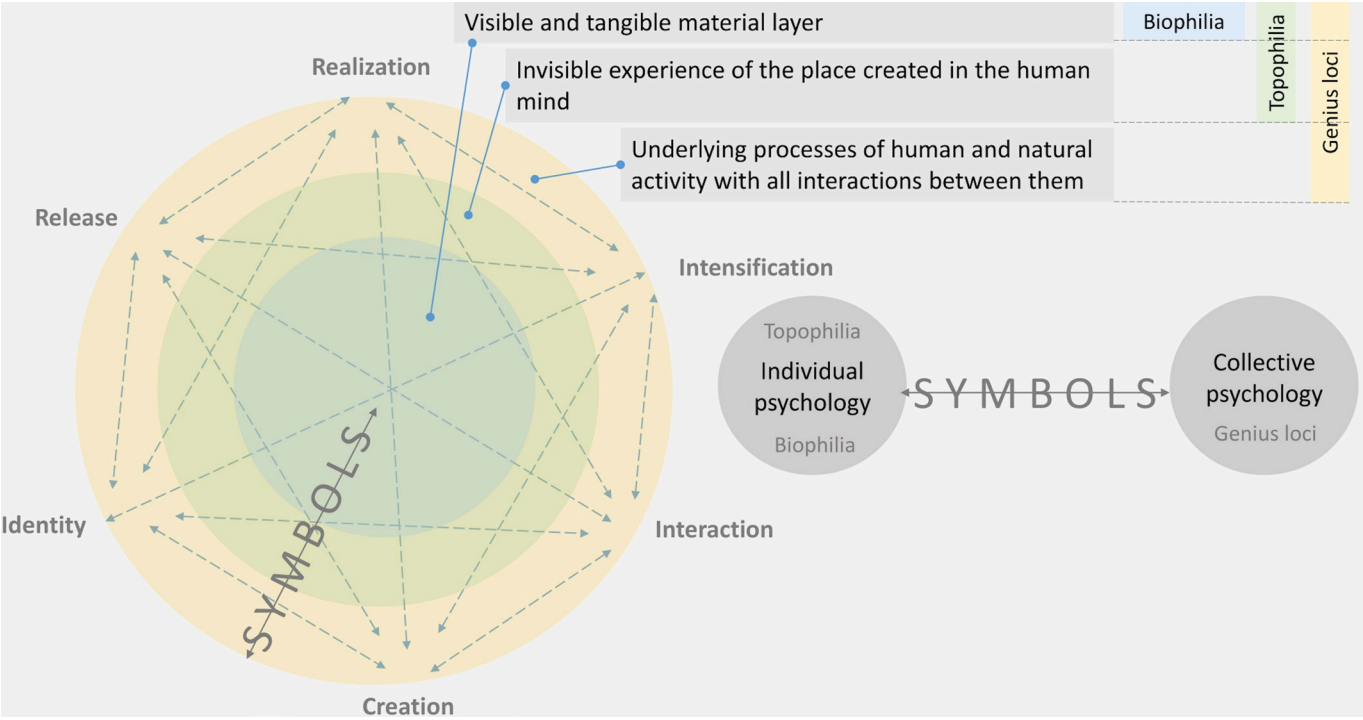

Figure 1. The theoretical model of genius loci drawn by the authors based on the dimensions distinguished by Vecco (2020), and the linkages and dynamics among the six place processes distinguished by Seamon (2014) demonstrate the role of symbols in the mediation between the realms of individual and collective psychology in the perception of place
(Source: Authors, 2022)

According to the American Psychological Association (APA, 2022b), "individual psychology underlines the uniqueness of individual development; however, individuals cannot be considered isolated from the wider social, cultural and ecological context". Collective psychology, according to the definition provided by American Psychological Association (APA, 2022c), is "the mental and emotional states and processes characteristic of individuals when aggregated in such groups as audiences, crowds, mobs, and social movements". However, deeper levels of collective human interconnectedness can be identified according to certain schools of psychology, for example, the collective unconscious in the Jungian school.

In the above-presented theoretical model, individual psychology was linked with the visual and tangible dimension of place, as well as with the experience of place in the human mind and consequently with the concepts

ARTISTIC RESEARCH APPROACH TOWARDS EMPATHY WITH PLACE USING AI-BASED TOOLS

In literature, new terms and concepts are currently emerging to identify mixed types of knowledge related with science-art practices, such as aesthetic understanding (Petrušonis, 2010), knowing through art (Johnson, 2010), and feelthink (Tromble, 2020). Tromble (2020) uses the term "feelthink" to name the shifting relationships of perception, emotion, thought, and action activated by artists working with interspecies communication (Tromble, 2020). This term can be applicable to this particular artistic research as well. The model of five levels of aesthetic perception presented by Dekay (2012) includes such phenomena as visual perception of form, present moment sensual experience, and knowledge and understanding in the process of aesthetic perception. Housen (1983) distinguishes intuition and interpretation in this process as well. Thus, artistic perception and creation

cannot be limited by spatiality and scientific knowledge. According to Heras *et al*. (2021), the notion of research through art emphasises the process of knowing as inquiry, in contrast with knowledge, which is a body of propositional statements. As such, art experiences constitute forms of knowing that include more-than-rational aspects such as creativity, imagination, emotions, motivations and values (Heras *et al*., 2021). Therefore, application of the artistic research approach to empathy towards a place can give valuable information regarding the perception of the place.

Research process and outcomes

The artistic research in Kaunas (Lithuania) was conducted in autumn 2021. However, the exhibitions took place in February 2022. The places which were the main locations of the research were the historic suburb of Kaunas Panemune and the historical recreational town of Kulautuva, located in the zone of influence of Kaunas. Both places used to be small settlements; however, they became resorts and had the most crucial part in their history around the interwar period in the 20th century. According to the Encyclopaedia of Lithuania and the world (2022), a tuberculosis sanatorium was opened in Kulautuva in 1931, and a tuberculosis sanatorium that specifically served for children started to operate in Panemune in 1933 (Migonyte, 2002). Furthermore, due to their connection with pine forests, water elements and nature, these districts became prominent because of their salutogenic features. Therefore, both of these locations have distinct characteristics which create the spirit of the place and have an impact on the way people experience them. In that regard, they were found notable as places to conduct artistic research on empathy with place. Furthermore, due to the strong community they have, these places are excellent models for investigating community involvement.

The first steps involved site visits and a literature review based on the history of the locations and historically significant events and objects. The historical analysis involved the search and collection of available archival material: historical photographs, drawings, and newspapers that could be used in the creative process. Therefore, it was possible for the authors to analyse the sensation of these places in the present day and understand their historical transformations. However, it is definitely not obligatory for every visitor to a place to research its archives. Archive searches have been proposed as one of the sources for the material for interpretation in artistic research. A rational approach as the chief source and test of knowledge (Blanshard, 2020) is important in gaining knowledge about the components of a place, and about the evolution and history of a locality. In the process of artistic research, the rationalist approach can be helpful in collecting historical material, and in selecting the most culturally, socially, and ecologically valuable artefacts for interpretation. However, artistic research in general, and this particular research, are not limited by reason, but include intuition, emotions, and the feelthink approach identified by Tromble (2020). The main research question asked was whether it is possible to integrate human experience with machine learning and empathy with a place and the spirit of that place, which can only be felt while at the location. In that regard, the site visits did not only help collect the materials needed, but at the same time, they provided experience of the place.

Furthermore, site visits made it possible to analyse the environment with regard to any symbols that may be present there. In the process of perception, one of the crucial aspects is the prior knowledge people have about the object they are observing and their general cultural grounding and experience. Therefore, the identification of symbols provides the required information for the observer, which then facilitates the process of connecting the object with prior knowledge and experience. During the site visits, both authors took photographs of the elements that caught their attention the most in the environment. These elements contained not only the general natural characteristics of the environment, but also the architectural objects and artefacts. In addition, small-scale formations – patterns – created by plants or animals were also the subject of the photographs. After collecting the material, the data was uploaded to use in the process of producing the digital art either as the background or as the style.

The second step of the research included selecting the patterns and the architectural objects or spaces from the photographs taken at the research locations. The composition of the artistic work was prepared by choosing the patterns from within a close radius around the space; therefore, the artwork can represent and reflect the proper sensation of the places. However, in the process of producing the artworks, other patterns drawn by one of the authors or retrieved from digital archives were used to add a layer of depth and artistic aspects to the pieces.

The next step in the process was to apply the AI-based tool to create the artworks. Digital art created by AI is one of the most trending art forms in the contemporary world of the digital age. However, the implementation of this approach has a long history that dates back to the 1970s (Grba, 2022). The use of AI establishes a stimulation for the artists to explore different perspectives; furthermore, it articulates new methodologies and an interdisciplinary approach to art. A technique commonly used in this process is Neural Style Transfer (NST), which gives the ability to create a stylised image by separating and combining the image in terms of its content and style (Cetinic and She, 2022).

In the overall process of creating the artworks, different algorithms and software can be used. The algorithms include the above-mentioned NST, Deep Dream, GAN, VQGAN+CLIP, and CLIP-Guided Diffusion. The algorithms applied in the generated art creation were comprehensively reviewed and discussed by Cetinic and She (2022). User-friendly AI-powered applications, such as Deep Dream Generator and Night Cafe Studio, can be used in the process of artistic research to facilitate the interaction of artists with the above-mentioned algorithms. Figure 2 demonstrates the artwork generation process and stages involving NST and VQGAN+CLIP. VQGAN+CLIP allows the generation of images from text or keywords; thus, place-related keywords or quotations can be used. Moreover, both photographs of the locality or archival material and the author's own artwork can be used either as a style or as the content of the artwork (Figure 2).

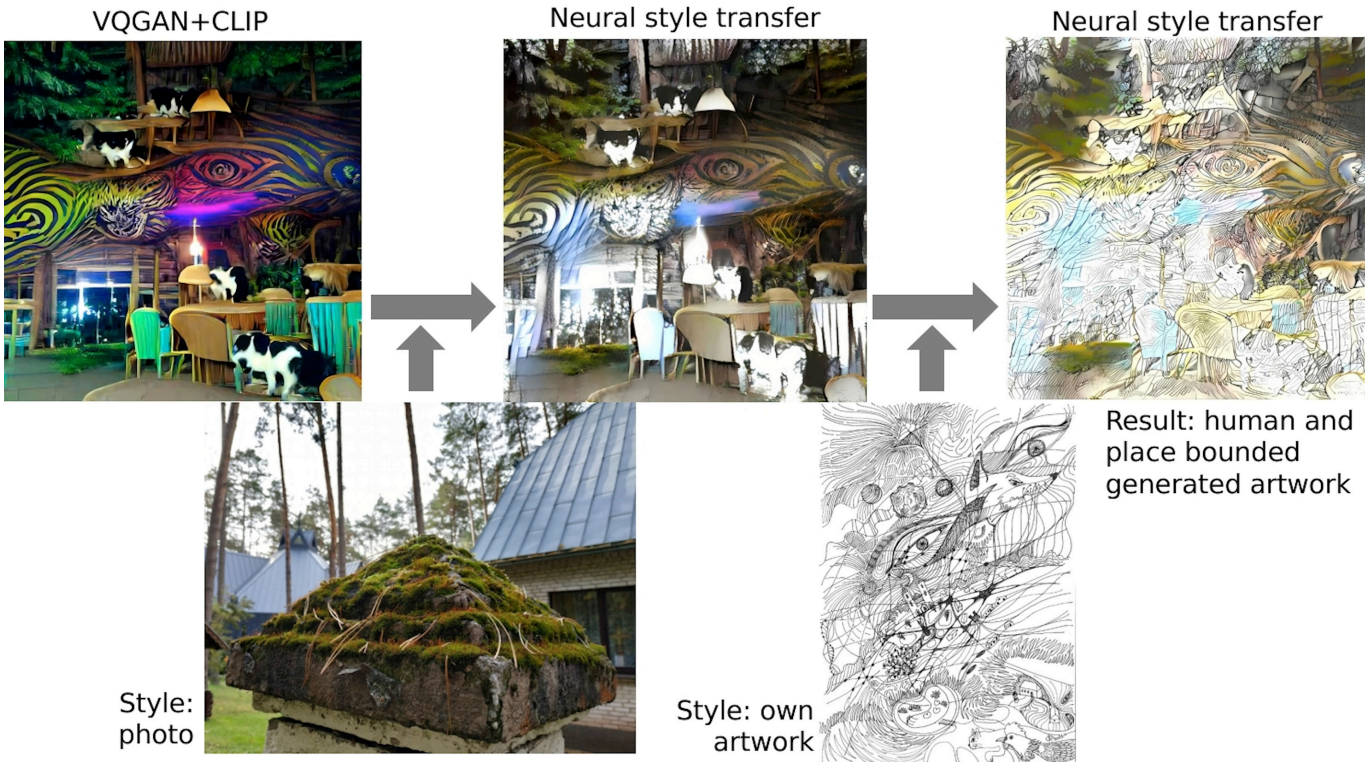

Figure 2. The generation process and stages of the artwork related to the locality of Kulautuva bearing the distinctive creative style of the author. Keywords characterising Kulautuva were applied using the VQGAN+CLIP algorithm, and photographs of the locality and the authors' own artwork were used as styles in NST. The result is original place-related generated artwork with sentimental value to its author. Artworks and photographs are by the authors. The Deep Dream Generator and Night Cafe Studio applications were used for generating the artwork.
(Source: Authors, 2022)

The last step of the process was the presentation of the artworks in exhibitions at the locations in Panemune and Kulautuva. The exhibition in Panemune was on February 26th, 2022 at a community centre, where the digital art objects were displayed on the walls of the main hall of the building (Figure 3).

On the other hand, even though the presentation of the exhibition and creative process in Kulautuva took place on February 27th, 2022 inside the hall of the leisure centre of the community, the objects were also installed in the park, which is at the centre of the settlement, in an outdoor exhibition. Therefore, the demonstration of the artwork was in a landscape context (Figure 4).

Evaluation of the outcomes of the artistic research

The dimensions for evaluating the artistic research outcomes were defined in the genius loci model presented in the theoretical section (Figure 1). Based on this model, the criteria for identifying the empathetic interaction with the place were elaborated (Figure 5). Finally, the outcomes of the artistic research were evaluated using an

Figure 3. Presentation of artworks and the creative process, and the exhibition in Panemune
(Source: Authors, 2022)

Figure 4. Exhibition in Kulautuva
(Source: Authors, 2022)

autoethnographic approach (Ownby, 2013) as a way of understanding qualitative experience (Heras *et al*., 2021) and the elaborated criteria. Figure 5 demonstrates that the hypothesis based on strengthening empathy with a place with the help of artistic interaction was confirmed. Reflections regarding the artistic research process, outcomes and benefits are presented below.

Connection with a place and identification of symbols

When people live in a particular place, occasionally, the environment can stay as a background for them rather than being the centre of their attention due to the hastiness of daily life. However, people are required to connect to a place to feel more comfortable in that environment. The environment people inhabit can be natural, urban, rural, or contain natural, rural, and urban features, but in every scenario, people are required to find a meaningful connection with it. Therefore, it is essential to establish an interaction with the environment or at least find a way to begin this relationship. According to De Botton (2006), what people search for in a work of architecture is not hugely different from what people search for in a friend. However, it can be said that it cannot be merely limited to architecture, but rather can be applied to all sorts of surroundings. Therefore, the ways in which communication with the environment can be started might have similar characteristics to starting communication with a friend, such as by spending more time with it, trying to create empathy, and focusing on and listening to it. Furthermore, identifying the symbols which help people to give meaning to a place can promote connection with it. Figure 6 presents the mind map of the places under consideration, constructed in the process of self-reflection. One of the ways which can contribute to achieving the connection is various forms of art. The artistic approach which was implemented in this research has the ability to move the focus and attention to the place, and at the same time, it can solidify the connection and induce empathy with the place.

Biophilic connection

The locations which were selected in this research have strong links with nature, which can be strengthened by the use of art. As stated by various researchers, nature has a restoring effect on people, which can contribute to both their physical and mental health (Ulrich, 1984; Ellard, 2015). Therefore, promoting this connection can be beneficial. Furthermore, it can consolidate the biophilic

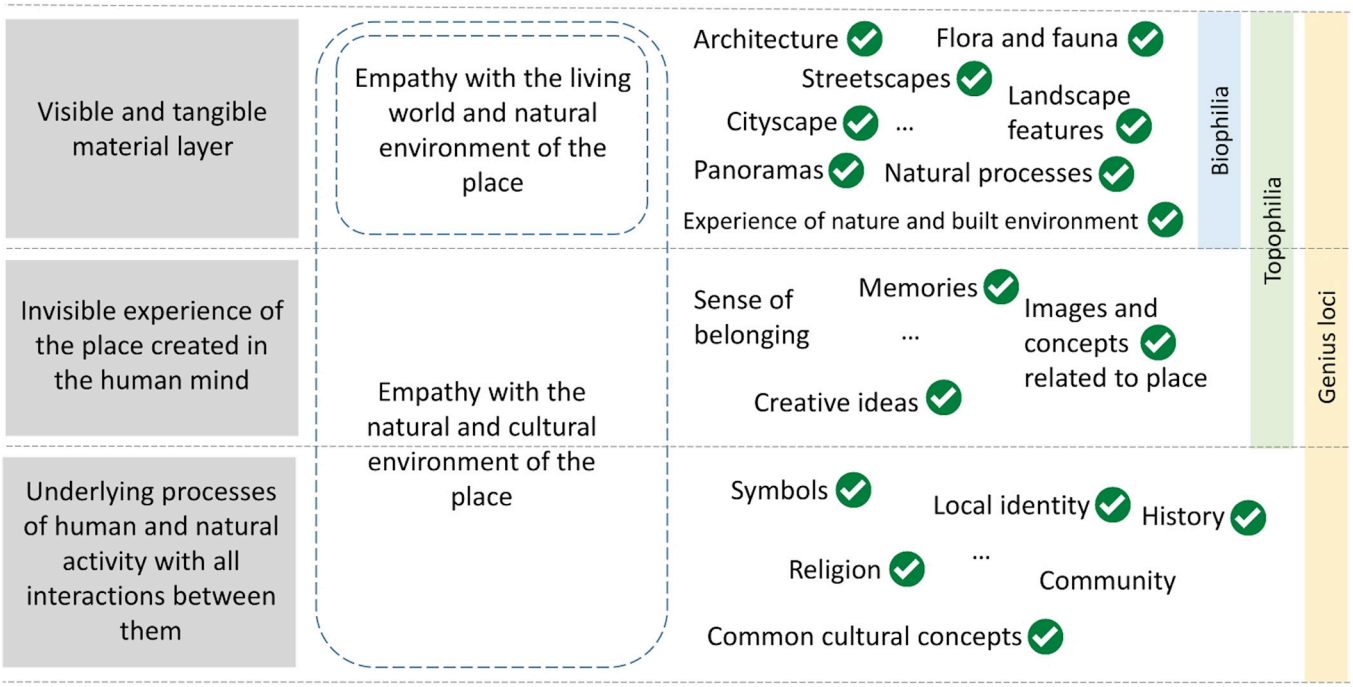

Figure 5. Structured assessment of the outcomes of the artistic research from the point of view of empathy of the artwork creators with the chosen places. The components of different layers of the places under consideration (the layers distinguished by Vecco (2020) are used) corresponding with biophilia, topophilia and genius loci are distinguished. The components identified and interpreted during the artistic research and which contribute to the formation and strengthening of empathy with the place are marked with green ticks.
(Source: Authors, 2022)

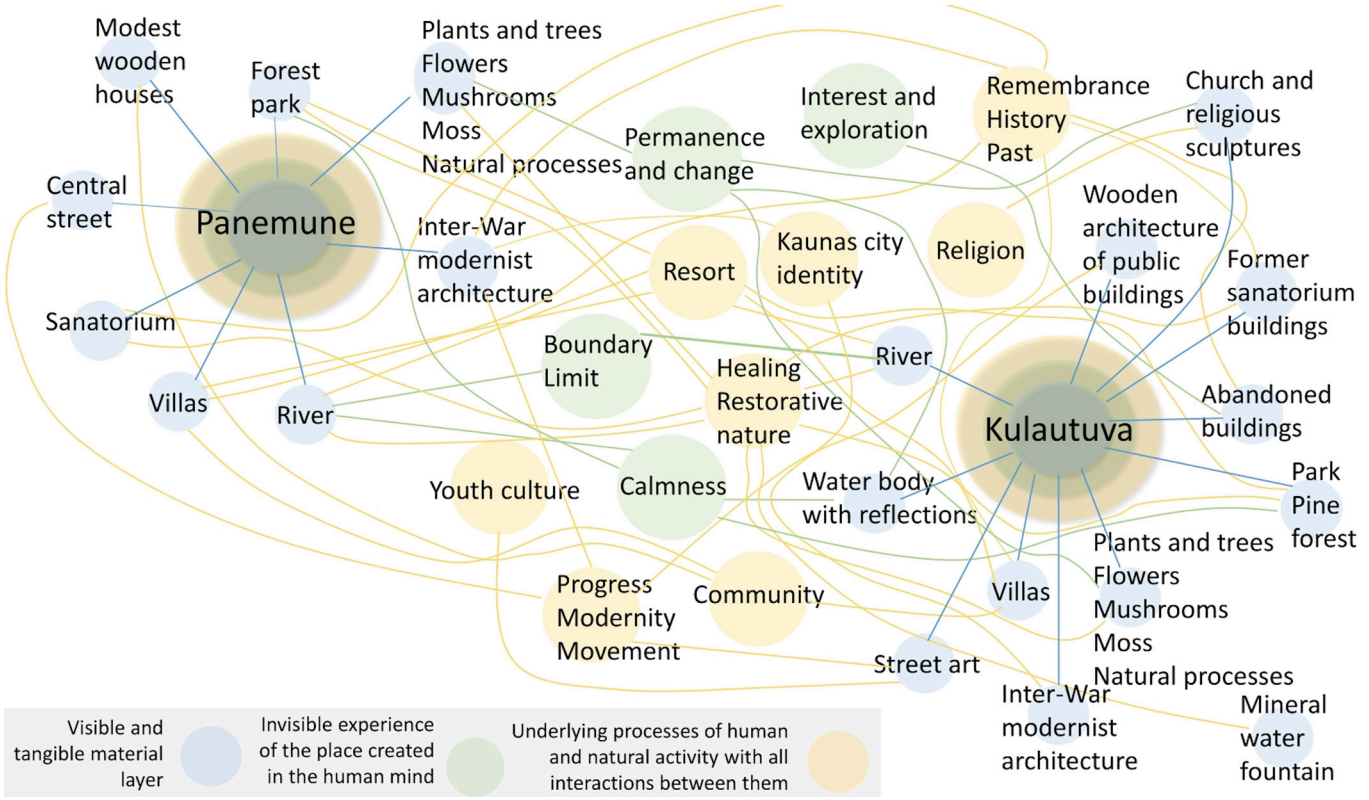

Figure 6. A mind map of different layers of the places under consideration (the layers distinguished by Vecco (2020) are used), and their tangible and intangible manifestations are compiled by the authors as a part of the reflection process. The attributes of the yellow layer can be attributed to the realm of symbols; this confirms the possibility of applying the artistic research approach presented to analysing and gaining a better understanding of the genius loci of a place.
(Source: Authors, 2022)

approach since it can encourage people to have a closer look at nature. In the course of creating the artworks, especially with NST, it was possible to collect the patterns locally, both in the natural environment and in the urban setting. The process of seeking the possible patterns and evaluating the surroundings with a different perspective can help explore the place in more detail, which would reinforce the connection. Furthermore, it can add a sentimental layer to the artwork since this would reflect the perception of a specific person.

Topophilic connection, genius loci, and interpretation

Additionally, as applied in the case of Kulautuva, the buildings or places used in the artwork can be selected from archival material and may not exist in the present. Therefore, this may need some research into archives or collections of historical documents. This process can help individuals associate themselves with a place more effectively, since it would contribute both to the topophilic approach and to understanding the genius loci. Buildings tend to reflect their distinct character on the environment, and they do help to provide a tangible connection to the past with their intangible elements. Both existing buildings and those which do not exist anymore are part of the collective memory of the inhabitants, and their relationship with the locality and the community can become the predominant image of the environment for them. Therefore, the architecture, landscape and environment can become a part of the memory of a place, and furthermore, they can help to establish new memories. In that regard, creating a solid connection with the environment, both with its present situation and its history, is crucial for societies. Indeed, engaging with art can help individuals to develop skills, which can give them the ability to express and reflect themselves in a way that can communicate with others. As stated by Eisner (2002), for social value to occur, two processes are needed. First of all, the material of memories and impressions needs to be treated with imagination; not only is recollection needed, but also "something of an invention". Second, the transformation of imagined material into some public form is needed – the contents of artistic consciousness need to be represented and made public (Eisner, 2002). The need of imagination, invention, and representation for the social value of art and can become a helpful tool in the realisation of human-place, individual-collective connections.

Connecting place, humans, and digital technology

On the other hand, one of the peculiar outcomes of this artistic research method is the fact that it adds another layer to the process, which is the impact of digital art. Digitalisation is one of the essential characteristics of the representation of art in the 21st century, and it contributes to both the physical and visual content of artworks. The transition of art into a virtual space helps to create a richer scope, but at the same time, it establishes the connection with the future. However, it might be possible to state that, due to the nature of digital art and artificial intelligence, it reveals the discussions regarding the human side of

technology and how it is connected both with emotions and places. Therefore, this research demonstrates that it is possible to create a work of art on digital platforms which connects human beings, places and artificial intelligence.

CONCLUSIONS

This research developed and applied a theory-grounded artistic research approach using AI-based tools in the historical localities of Panemune and Kulautuva to enhance connection with these places and induce empathy of the artwork creators with these places.

The theoretical grounding of the artistic research approach developed was provided by the analysis of landscape models, which have demonstrated the presence of intangible and subjective dimensions in the structure of landscapes and places, where meanings, imagination and empathy can be attributed. Furthermore, the concepts of biophilia, topophilia, and genius loci were distinguished as potentially explaining and helping people to understand empathy with a place.

The artistic research approach involved experiencing a place and interacting with it, applying artistic AI-based tools to generate artworks, and installing them in that place, accompanied by the continuous self-observation and self-reflection of the creators, which were essential for identifying biophilic and topophilic reactions to the place, as well as the experience of the genius loci and empathy. The research has confirmed the possibility of integrating the human experience of a place with AI, the spirit of the place and empathy with it. In this process human experience was integrated with AI-based tools, making it possible to create generative art forms. Art is a powerful tool on its own; it is the reflection of the ideas and the emotions of an individual. Furthermore, creating place-based art involves localized observations. Therefore, using both human experience and generative art contributed to empathy with the place for the authors, since the process of collecting data to feed the AI-tool helped to establish a connection with the place due to thorough and detailed observations. For establishing empathy, it is beneficial to spend more time in a place. Spending more time in a place not only helps one to engage with it as a space, but it also generates emotional bonds, which are further required for place attachment.

The assessment of the artistic research process and its results using self-reflection and autoethnography has demonstrated that the creation of artworks induced biophilic reactions (positive responses to the features of nature, affiliation with the nature in the locality), topophilic reactions (memories, personal images and concepts, creative ideas related to the place) to the places chosen by the artwork creators and experience of the genius loci (identifying symbols, common cultural concepts related with the place, sensing the distinctive identity of the place) of Panemune and Kulautuva. Consequently, all three layers of the genius loci of places, as distinguished by Vecco (2020), were involved in the artistic research process and outcomes. The application of an autoethnographic approach enabled the authors to conclude that they had experienced empathy with the places in which the artistic research was carried out. It can be assumed that the artworks installed in the landscape setting in the case of Kulautuva will have a continuous impact on the locality and community; therefore, the community response to the artwork-landscape connections can be a possibility for further study.

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