

Unlocking the Soul: AI and Neuroscience Insights into Spirituality

Helga Martins¹, Joana Romeiro², Sílvia Caldeira³

This paper explores the intersection between artificial intelligence, neuroscience, and spirituality. To begin, let's explore the roots of the word "spirituality". Etymologically, it derives from the Latin word *spiritus*, which means "soul, courage, vigor, breath, or life force" (Lepherd, 2015). This origin reflects the profound and intrinsic connection between spirituality and our very essence of being.

Spirituality is not confined to a single definition (Koenig, 2012). Instead, it represents an individual experience that is both complex and universal (Weathers et al., 2016). Spirituality is wrapped with terms associated with meaning in life, connection and transcendence experience (Murgia et al., 2020; Weathers et al., 2016).

One of the most widely accepted definitions of spirituality comes from Best et al. (2020), who describes spirituality as a dynamic dimension of human life that relates to the way persons (individual and community) live and experience life, express and/or seek meaning, purpose

¹ Helga Martins, Pos-doctoral Fellow at Integral Human Development Program, PhD, RN, Universidade Católica Portuguesa, Doctoral School (CADOS). Faculty of Health Sciences and Nursing, Centre for Interdisciplinary Research in Health, Lisbon, Portugal. Instituto Politécnico de Beja, Escola Superior de Saúde. R. Dr. José Correia Maltez, 7800-111 Beja, Portugal. ORCID: <https://orcid.org/0000-0001-5804-7934> E-mail: hmartins@ucp.pt.

² Joana Romeiro, Pos-doctoral Fellow at Integral Human Development Program, PhD, MSc, RN, Universidade Católica Portuguesa, Doctoral School (CADOS). Faculty of Health Sciences and Nursing, Centre for Interdisciplinary Research in Health, Lisbon, Portugal. ORCID: <https://orcid.org/0000-0001-8867-2183>. E-mail: jromeiro@ucp.pt.

³ Sílvia Caldeira, PhD, MSc, RN, Associate Professor, Universidade Católica Portuguesa, Faculty of Health Sciences and Nursing, Centre for Interdisciplinary Research in Health, Lisbon, Portugal. ORCID: <https://orcid.org/0000-0002-9804-2297>. E-mail: scaldeira@ucp.pt.

and transcendence, and the way they connect to the moment, to self, to others, to nature, to what is significant and/or the sacred. In addition, to further understand spirituality, it is helpful to explore its various dimensions.

These dimensions of spirituality are categorized into intrapersonal, interpersonal, and transpersonal aspects, as described by Fombuena et al. (2016). The intrapersonal spirituality focuses on the internal aspects of the Being. It involves self-reflection, personal growth, and the inner journey of discovering one's values, beliefs, and purpose. Intrapersonal spirituality is about the connection we have with our own inner self, leading to greater self-awareness and inner peace (Fombuena et al., 2016). The interpersonal spirituality emphasizes the connections we foster with those around us—family, friends, and the broader community (Fombuena et al., 2016). At last, the transpersonal spirituality involves a connection to something greater than oneself, whether it is a higher power such as a Deity, Nature, or Cosmos (Fombuena et al., 2016). It addresses the quest for ultimate meaning and the desire to connect with the transcendent or the divine (Fombuena et al., 2016).

Over the past two decades, there has been a concerted effort within healthcare to include the spiritual dimension in clinical practice to foster a holistic approach (Puchalski, et al., 2014). Currently, there are studies that confirm that spirituality plays a relevant role in health outcomes, particularly in coping with adversity, having a impact on fostering positive emotions, addressing depression, suicide, anxiety, psychotic disorder/schizophrenia, bipolar disorder, substance abuse, personality traits and social problems (Koenig, 2012).

Despite notable advancements in healthcare, exploring spirituality as a fundamental human dimension still requires further investigation and understanding in some particular aspects (Martins et al., 2017; Romeiro et al., 2018).

Regarding spirituality and neuroscience, we can identify several major milestones that have shaped our understanding. It all started in the 1960s-1970s with the electroencephalography studies to examine brainwave patterns associated with meditation and other altered states of consciousness. Researchers observed distinct brainwave patterns, such as increased alpha and theta waves, when individuals meditate. Next, in the 1980s Neurotheology gained greater significance due to the amazing work conducted by the neuroscientist Andrew Newberg who explored the relationship between neural processes and spiritual experiences. The pioneering work in this area aimed to understand

how spiritual experiences might correlate with specific brain activity and structures. From 1990s to nowadays, improvements in neuroimaging technologies, including Functional magnetic resonance imaging and Positron emission tomography, have been delved and refined. These techniques enable researchers to track real-time brain activity and pinpoint brain regions associated with spiritual experiences.

As we continue to explore spirituality and neuroscience, we come across a number of well-known scholars who have significantly advanced the discipline. For instance, David Lewis-Williams is indeed famous for his work on the neuropsychological aspects of prehistoric art, particularly in his influential book “The Mind in the Cave: Consciousness and the Origins of Art”. David Lewis-Williams was the first researcher to unveil a neuropsychological explanation. Also, António Damásio, a contemporary neuroscientist, has made significant contributions to our understanding of consciousness and the neural mechanisms underlying subjective experience. His work, includes books like “Descartes’ Error” and “The Feeling of What Happens”, also the book “Self Comes to Mind: Constructing the Conscious Brain” (Damásio, 2010) which investigates the role of emotions and feelings as integral to our cognitive processes and sense of self. For instance, António Damásio’s work provides a highlight of the emergence of a conscious mind where the assimilation and reaction to “environmental images” occurs through a set of “internal images”, in the process of regulating the “self”, its needs, and its affections. Simultaneously, the evolution of consciousness enables the improvement and complexity of memory, language, and the ability to communicate (Damásio, 2010). Damásio’s contemporary ideas, not only describes the conscious and non-conscious aspects of mental processes that ultimately lie at the foundations of the regulation of the “self”, but, in a broader context, his ideas also relate to “sociocultural homeostasis” (Damásio, 2010, p.330). The “self” finds its balance from social interactions and in the cultural mechanisms developed towards creating a sense of groups and individual wellbeing.

While Lewis-Williams focuses on the historical and psychological aspects of early art, Damásio provides a broader framework for understanding consciousness and emotional experience from a modern neuroscientific perspective. Both researchers contribute to our understanding of the mind, though from different angles: one through the lens of ancient art and altered states, and the other through contemporary neuroscience and cognitive theory.

At first glance, spirituality and AI might not appear related, but this emerging field holds great potential for expansion nonetheless. This raises many profound questions. For example, is AI leading us towards reducing human existence to a series of algorithms? Is AI capable of predicting the complexities of our human needs with precision? Can AI offer meaningful responses that genuinely alleviate human suffering?

Above all, we must mention the advantages and potential. For instance, AI and spirituality offer a unique convergence where science and inner experience meet. In addition, AI's ability to analyze vast data and recognize patterns could help identify states associated with spiritual experiences, offering insights into meditation, mindfulness, and human consciousness. In addition, AI makes it possible to develop algorithms that capture the essence of spiritual experiences. Furthermore, AI should complement, not replace, human decision-making, enhancing diagnostics, treatment options, and holistic care.

Delving deeper into the topic of suffering, Steeves and Khan (1986) argued that meaning plays a crucial role in shaping how individuals perceive suffering and cope with it, reinforcing the significance of "The Meaning Theory", which is connected to Logotherapy, also known as the "Psychotherapy of the Meaning of Life" (Moreira, 2011). In this context, a key question arises: how can AI grasp and integrate the evolving complexity of human thought, particularly the abstract, metaphorical, spiritual, and transcendent dimensions of human existence?

Spirituality is deeply subjective and personal, and these two traits highlight the challenge in research and in merging AI specificities. AI and Neuroscience may unlock the possibility of understanding spirituality in patients in the healthcare setting. These new technologies open up a new set of opportunities to give a more concrete understanding of the spiritual realm. There is a deep need to unlock the soul and gain a more comprehensive understanding of spirituality, with the help of AI and neuroscience. However, AI and Neuroscience brings us challenges in particular regarding misrepresentation in the decoding of spirituality since it is a subjective and personal piece of the individual. Furthermore, ethical dilemmas emerge when addressing matters of spiritual belief, which is a private matter of the individuals.

As technological and scientific advancements progress, particularly in the realm of artificial intelligence, there is a concerning tendency to go back to a biomedical reductionist view of the individual. This perspective contrasts sharply with the demands of the holistic movement,

as noted by Rogers (1992), which emphasizes the importance of considering the whole person. In addition, this reinforces the importance of acknowledging the positive impact that comes from a unitary and integral human development approach to one's health and wellbeing (Barrett, 2010; Papathanasiou et al., 2014). To conclude, Lewis-Williams brings an interesting and wise perspective since he once said, «We do not have to explain everything in order to explain something» (2002, p. 7).

References

- S. Barrett, *The integral human development approach: Implications for health and well-being*, 2010.
- M. Best et al., *An EAPC white paper on multi-disciplinary education for spiritual care in palliative care*, in *BMC Palliative Care*, XIX, 9, 2020. <https://doi.org/10.1186/s12904-019-0508-4>
- A. Damásio, *Self comes to mind: Constructing the conscious brain*, Pantheon Books, 2010.
- M. Fombuena - L. Galiana - P. Barreto - A. Oliver - A. Pascual - A. Soto-Rubio, *Spirituality in patients with advanced illness: The role of symptom control, resilience, and social network*, in *Journal of Health Psychology*, XXI (12), 2016, 2765–2774. <https://doi.org/10.1177/1359105315586213>
- D. L. Kahn - R. H. Steeves, *The experience of suffering: Conceptual clarification and theoretical definition* in *Journal of Advanced Nursing*, XI (6), 1986, 623–631. <https://doi.org/10.1111/j.1365-2648.1986.tb03379.x>
- H. G. Koenig, *Religion, spirituality, and health: The research and clinical implications*, in *ISRN Psychiatry*, 2012, Article 278730. <https://doi.org/10.5402/2012/278730>
- L. Lephherd, *Spirituality: Everyone has it, but what is it?*, in *International Journal of Nursing Practice*, XXI (5), 2015 566–574. <https://doi.org/10.1111/ijn.12285>
- D. Lewis-Williams, *The mind in the cave: Consciousness and the origins of art*. Thames & Hudson, 2002.
- H. Martins - J. Romeiro - S. Caldeira, (2017). *Spirituality in nursing: An overview of research methods*, in *Religions*, VIII (10), 2017, 226. <https://doi.org/10.3390/rel8100226>
- A. Moreira, *The meaning theory: A study of Viktor Frankl's logotherapy and its applications*, 2011.
- C. Murgia - I. Notarnicola - G. Rocco - A. Stievano, *Spirituality in nursing: A concept analysis*, in *Nursing Ethics*, XXVI (5), 2020, 1327-1343. <https://doi.org/10.1177/0969733020909534>
- A. Newberg - E. D'Aquili - V. Rause, *Why God won't go away: Brain science*

and the biology of belief, Ballantine Books, 2001.

- I. V. Papathanasiou et al., *A unitary and integral approach to human health and well-being: A review of the literature*, 2014.
- C. M. Puchalski - R. Vitillo - S. K. Hull - N. Reller, *Improving the spiritual dimension of whole person care: Reaching national and international consensus*, in *Journal of Palliative Medicine*, XVII (6), 2014, 642-656. <https://doi.org/10.1089/jpm.2014.9427>
- M. E. Rogers, *Notes on the future of nursing: A unitary perspective*, in *Nursing Science Quarterly*, V (1), 1992, 8-14.
- J. Romeiro - H. Martins - S. Pinto - S. Caldeira, *Review and characterization of Portuguese theses, dissertations, and papers about spirituality in health*, in *Religions*, IX (9), 2018, 271. <https://doi.org/10.3390/rel9090271>
- E. Weathers - G. McCarthy - A. Coffey, *Concept analysis of spirituality: An evolutionary approach*, in *Nursing Forum*, LI (2), 2016, 79-96. <https://doi.org/10.1111/nuf.12128>.