



จุดบรรจบของกระบวนการคิดเชิงออกแบบ พุทธธรรม และ นวัตกรรมสังคม เส้นทางสู่ความมั่งคั่งของมนุษย์ ในมิติประสาทวิทยา

The intersection of design thinking, Buddha-dhamma and social innovation as informed by Neuroscience, the way forward to human flourishing

สุธาสนิ แสงขำ¹, อภิชัย พันธเสน²

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บทคัดย่อ

การศึกษานี้ศึกษาความเชื่อมโยงระหว่างคำสอนทางพุทธศาสนา กระบวนการคิดเชิงออกแบบ และนวัตกรรมทางสังคม โดยให้ความสำคัญที่คุณค่าร่วมของศาสตร์ทั้งสาม คือ ความเข้าใจและใส่ใจในความรู้สึกของบุคคลอื่น การศึกษาสำรวจความสัมพันธ์ของความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่นจากมิติด้านประสาทวิทยา ที่มีต่อพฤติกรรมสนับสนุนสังคม ความไว้วางใจทางสังคม และสุขภาวะหรือความเป็นอยู่ที่ดีของมนุษย์ วัตถุประสงค์ในการศึกษาเพื่อนำไปสู่ข้อเสนอและความสำคัญของการพัฒนาสมรรถนะในการเข้าใจและใส่ใจในความรู้สึกของบุคคลอื่นของพลเมืองโลก เพื่อรับมือกับปัญหาและเคสท้าทายซึ่งมนุษย์ต้องเผชิญอยู่ในปัจจุบันซึ่งจะช่วยส่งเสริมความเจริญงอกงามของมนุษย์ การศึกษานี้ใช้วิธีวิจัยเชิงคุณภาพครอบคลุมการวิเคราะห์แก่นสาระ การสังเคราะห์และการตีความอภิमानผล การศึกษาแสดงให้เห็นว่า ความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่นเป็นพื้นฐานและคุณค่าร่วมกันของพุทธธรรม กระบวนการคิดเชิงออกแบบ และนวัตกรรมสังคม ซึ่งความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่นเป็นปรากฏการณ์และกระบวนการซึ่งสามารถสังเกตและมีหลักฐานเชิงประจักษ์ผ่านเทคนิคการสร้างภาพทางการแพทย์ คือ ภาพวินิจฉัยระบบประสาท ซึ่งแสดงให้เห็นความเชื่อมโยงของ ความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่น ฐานพฤติกรรมสนับสนุนสังคมซึ่งส่งผลให้เกิด ความไว้วางใจทางสังคมและความเจริญงอกงามของมนุษย์ การศึกษาชี้ให้เห็นว่าการปลูกฝังและพัฒนาสมรรถนะ ความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่น ผ่านเมตตาภาวนาตามหลักพุทธธรรม

¹ นักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาผู้นำทางสังคม ธุรกิจ และการเมือง, วิทยาลัยผู้นำและนวัตกรรมสังคมมหาวิทยาลัยรังสิต (ผู้ประพันธ์บรรณกิจ)

² ศาสตราจารย์, ดร., อาจารย์ที่ปรึกษา, วิทยาลัยผู้นำและนวัตกรรมสังคม มหาวิทยาลัยรังสิต



กระบวนการคิดเชิงออกแบบ หรือกระบวนการสร้างสรรค์นวัตกรรมทางสังคมด้วย
จิตวิทยา เศรษฐศาสตร์ หรือปัญหาซึ่งเป็นตัวกระตุ้น สามารถนำไปสู่การสร้างพลังที่เป็นหนึ่ง
เดียวกันของพลเมืองโลกเพื่อจัดการกับความท้าทายเร่งด่วนที่มนุษยชาติกำลังเผชิญ
ร่วมกัน เช่น การเปลี่ยนแปลงสภาพภูมิอากาศ ความยากจน และการแบ่งแยกข้ามทาง
การเมืองอย่างรุนแรง โดยสรุป การศึกษานี้แสดงหลักฐานเชิงประจักษ์ให้เห็นว่าการ
พัฒนาความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่นของพลเมืองโลกผ่าน
แนวทางต่างๆมีแนวโน้มในการเพิ่มประสิทธิภาพและประสิทธิผลในการแก้ไขปัญหา
เร่งด่วนและส่งเสริมสุขภาวะของมนุษย์ การศึกษาแสดงให้เห็นความสำคัญของ
ความเห็นอกเห็นใจและความใส่ใจในความรู้สึกของผู้อื่นและศักยภาพของการพัฒนา
มิติตดงกล่าวซึ่งสามารถส่งผลกระทบเชิงบวกต่อสังคม

นอกจากนี้การวิจัยในอนาคตควรมุ่งเน้นไปที่การนำเสนอสมรรถนะความเห็นอก
เห็นใจและความใส่ใจในความรู้สึกของผู้อื่นไปใช้ และประสิทธิผลของวิธีการปลูกฝัง
และพัฒนาสมรรถนะความเห็นอกเห็นใจด้วยวิธีการต่างๆ ในการส่งเสริมพฤติกรรม
สนับสนุนสังคมและก่อให้เกิดความไว้วางใจทางสังคม

คำสำคัญ: เมตตาภาวนา, กระบวนการคิดเชิงออกแบบ, นวัตกรรมสังคม,
ประสาทวิทยา, พฤติกรรมสนับสนุนสังคม, ความเจริญงอกงามของมนุษย์

Abstract

This study examines the connection between Buddhist teachings, design thinking, and social innovation, with an emphasis on the shared value of empathy. It investigates empathy from a neuroscientific standpoint and its relationship with prosocial behavior, social trust, and human well-being. The ultimate objective is to suggest that global citizens develop empathy to address urgent issues and promote human flourishing. The research employed a combination of meta-synthesis, thematic analysis, and meta-interpretation. The findings revealed that empathy is the common ground between Buddhist teachings, design thinking, and social innovation. Empathy can be observed through neuroimaging, and there is a link between empathy and prosocial behavior that results in social trust and human flourishing. The study suggests that cultivating empathy through Buddhist loving-kindness compassion meditation, design thinking, or social innovation processes with prompts can create a united force among global citizens to tackle the pressing challenges facing humanity, such as climate change, poverty, and political polarization. In



conclusion, this study provides evidence that developing empathy in global citizens through various means is a promising approach to addressing urgent issues and promoting human flourishing. It emphasizes the importance of empathy in different fields and its potential impact on society. Future research should concentrate on the implementation and effectiveness of various empathy cultivation methods in promoting prosocial behavior and fostering social trust.

Keywords: Loving kindness compassion, Design thinking, Social innovation, Neuroscience, Pro social behavior, Human flourishing

1. Introduction

The world we live in today is characterized by increased speed of disruption, competition, and complexity (Schwab, 2017). We are confronted with a range of global challenges that threaten our planet and its inhabitants, such as resource depletion (Rockström et al., 2009), climate change (IPCC, 2021), and the potential for global conflict (Huntington, 1996). This is further compounded by a clash of civilizations that is growing more pronounced, as we strive to find common ground on topics ranging from politics, economics, and society. The developments we create and the globalization we promote have both positive and negative impacts on ourselves, society, and nature, which is our foundation.

Global Risk Report 2023 compiled by the World Economic Forum (WEF) provides an overview of global risk trends and their potential impacts on five broad categories: environmental, economic, technological, geopolitical, and societal concerns. These include “cost-of-living crisis” ranked as the most severe global risk over the next two years, “Biodiversity loss and ecosystem collapse”, “Goeconomic confrontation” and “Erosion of social cohesion and societal polarization”, alongside two new entrants to the top rankings: “Widespread cybercrime and cyber insecurity” and “Large-scale involuntary migration”. The report states that “we stand on the edge of a low-growth and low-cooperation era, tougher trade-offs risk eroding climate



action, human development and future resilience.” (“Global Risks Report 2023 | World Economic Forum”) (“Global Risks Report 2023 | World Economic Forum”) Following the COVID-19 pandemic and war in Ukraine, we face the continued economic downturn, inflation, natural disaster, extreme weather change that lead to flood and drought directly impact the middle class income cost of living while severely impacting the marginal group life quality and survival. We are witnessing the debt distress on a global scale which will continue into the decade. The repercussions of this era of low growth and investment will be felt by vulnerable populations across the world, causing poverty, hunger and political instability. Governments are presented with a difficult balancing act between mitigating cost-of-living crises while avoiding inflationary consequences amidst rising debt servicing costs. Geopolitical divisions will lead to an increase in economic warfare and heighten the possibility of conflicts that involve multiple aspects. Economic strategies are being used both defensively, to create independence from other nations, and offensively, to keep others from rising. This weaponization of economics amplifies security problems caused by reliance on trade, finance, and technology between international economies, leading to a cycle of distrust and separation. Military spending is increasing, and technologies are becoming more accessible to different groups which could result in a global arms race. Without proper control mechanisms in place, this situation could cause destructive escalation of accidental or intentional conflicts across many domains. The deployment of technology and industrial policies is expected to increase over the next decade, bringing advancements in artificial intelligence (AI), quantum computing and biotechnology. Nevertheless, this technological progression carries with it a range of risks from widening misinformation to direct threats against critical infrastructure. It brings along the gap between those nations that can afford these technologies and those that cannot thus further exacerbate inequality. Cybersecurity will be a constant concern due to the increasing intertwining of technology with societal functioning, with attempts to disrupt essential resources and services



becoming more frequent. The Global Risk Report highlights the crucial importance of recognizing global interconnectedness, as events in one part of the world have a significant impact on others far away. To tackle these systemic challenges effectively, we need more collective action than ever before from governments, civil society organizations, businesses, and other stakeholders at all levels. Local communities and individuals must also play a part in any solution for lasting success globally, allowing us to flourish once again.

To address complex and interconnected problems, we need a delicate and intertwined approach capable of harmonizing human forces positively in times of low trust and cooperation. We require a joint force that transcends disciplinary boundaries, as opposed to the interstate conflicts we face. Now is the time to establish and locate the intersection of knowledge and wisdom to overcome risks that could potentially lead to the destruction of ourselves; the human race and our root; the nature.

The intersection of Buddhist, design thinking, and social innovation presents a promising opportunity for interdisciplinary collaboration to tackle pressing issues. This study aims to explore the shared values among these three realms, with a specific focus on identifying common values which holds the potential to foster social innovation and promote human flourishing. Drawing on empirical evidence from neuroscience, the study will examine the brain behind empathy, the relationship between empathy, prosocial behavior, social trust, and human flourishing. Additionally, the study will explore how empathy has been translated into the design of products, services, and policies that promote human well-being. Ultimately, the study will propose the cultivation of empathy via educational institutions, governments, and interstate organizations in Buddhist teachings, design thinking, and social innovation, and any additional realm sharing the value of empathy. By equipping global citizens with the necessary characteristics, it will shape our new reality and achieve continued human flourishing, this training has the potential to combat severe global risks in an era marked by low trust and cooperation we are facing.



2. Objectives

1. To examine Buddhist teachings, design thinking, and social innovation with a specific focus on the common value of empathy.
2. To investigate empathy from a neuroscientific perspective and its relationship with prosocial behavior, social trust, and human flourishing
3. To propose the cultivation of empathy in global citizens

3. Methods

The intersection of Design Thinking, Buddhadharma, and Social Innovation presents a unique opportunity to address pressing societal issues through interdisciplinary collaboration. With a focus on the concept of empathy, this study aims to explore the common values shared among these three realms and how they can be applied to foster social innovation and human flourishing. To achieve this, a qualitative research methodology that allows for the identification of themes and patterns across multiple data sources is necessary. Thematic Analysis and Meta-synthesis and Meta-interpretation are methodologies that will be employed in this paper.

Thematic Analysis is a widely used qualitative research methodology that involves identifying and analyzing patterns within data. It is an iterative process that involves a systematic approach to data analysis, allowing for the identification of common themes and patterns across multiple sources of data (Braun & Clarke, 2006). The process typically involves the following six stages: (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing a final report (Braun & Clarke, 2006). Thematic Analysis allows for the identification of themes and patterns within a dataset, enabling researchers to explore and gain a deeper understanding of the phenomena being studied. This approach will be particularly useful in identifying common values across the fields of Design Thinking, Buddha-dhamma, and Social Innovation, as well as examining how empathy can be applied in the design of products, services, and



policies that promote human well-being. The study will utilize an inductive approach to coding and labeling themes and categories for the analysis. In the context of this study, Thematic Analysis will be used to identify common values shared among Buddhist teachings, design thinking, and social innovation regarding the concept of empathy.

Meta-synthesis is a qualitative research methodology that involves the synthesis of qualitative research findings across multiple studies. It is a systematic approach to reviewing and synthesizing findings from multiple qualitative studies to develop a new understanding of a particular topic (Noblit & Hare, 1988). The process typically involves the following six stages: (1) formulating a research question, (2) conducting a systematic search, (3) selecting relevant studies, (4) appraising the quality of the studies, (5) synthesizing the findings, and (6) presenting the findings (Britten et al., 2002). Meta-synthesis, on the other hand, is a methodology that enables the synthesis of findings from multiple studies to develop a new and more comprehensive understanding of a phenomenon. This approach will be particularly useful in the study of the intersection of Design Thinking, Buddha-dhamma, and Social Innovation as it will allow for the integration of findings from multiple sources of data, such as academic literature, news articles, and expert opinions. The study will utilize a systematic approach to search and retrieval of relevant literature, followed by a meta-narrative synthesis approach to analyze and synthesize findings across multiple studies. In the context of this study, Meta-synthesis will be used to examine the empirical evidence from neuroscience on the relationship between empathy, prosocial behavior, social trust, and human flourishing. By synthesizing findings from multiple qualitative studies, this methodology will provide a comprehensive understanding of the current state of research in this area. This will enable the identification of common themes and patterns across these studies and provide valuable insights into how empathy can be used to foster social innovation and human flourishing.

Meta-interpretation is a research methodology that is used in qualitative research to provide a deep understanding of the various perspectives and



interpretations of a phenomenon across different studies. It involves an analysis and synthesis of the interpretations, meanings, and themes of multiple qualitative studies. Meta-interpretation allows for the development of a new interpretation or perspective on a particular phenomenon that integrates and extends the existing knowledge base. In the study of the intersection of Design Thinking, Buddha-dhamma, and Social Innovation, meta-interpretation will be used to provide a comprehensive understanding of the various interpretations and meanings of empathy as a shared value among these realms. This methodology will involve analyzing and synthesizing the findings and interpretations from multiple qualitative studies that explore the concept of empathy in the context of Design Thinking, Buddha-dhamma, and Social Innovation. By utilizing meta-interpretation, this study will provide a nuanced and comprehensive understanding of empathy as a shared value across different realms, enabling researchers to identify patterns and common themes in the interpretation of empathy across these fields. This, in turn, will enable the development of new insights and perspectives on how empathy can be utilized to foster social innovation and human flourishing, and how institutions can train global citizens to cultivate empathy as a core value.

In conclusion, the combination of Meta-synthesis, Thematic Analysis, and Meta-interpretation can significantly benefit the study of the intersection of Design thinking, Buddha-dhamma and social innovation as informed by Neuroscience. Each methodology has its unique strengths, and when used together, they can provide a comprehensive and detailed understanding of complex phenomena. Thematic Analysis is useful for identifying patterns and themes within a dataset, allowing for the identification of common values across the three fields and examining how empathy can be applied to design products, services, and policies that promote human well-being. Meta-synthesis is helpful in synthesizing findings from multiple studies, providing a comprehensive understanding of the current state of research and identifying common themes and patterns across studies. Meta-interpretation can help in interpreting and synthesizing findings from different disciplines, allowing for a broader and more



nuanced understanding of the topic. By utilizing these methodologies together, this study can provide insights into the potential for interdisciplinary collaboration to address pressing societal issues and promote human flourishing. Ultimately, the findings from this study can help inform the training of global citizens to possess empathy as a core value, contributing to a more harmonious and cooperative world.

4. Results

The examination of the intersection of Buddhist teachings, design thinking, and social innovation focuses on the common value of empathy. In recent years, there has been a significant increase in research related to Buddhist teachings and practices. According to a study published in the Journal of Global Buddhism, the number of academic publications on Buddhism has increased significantly over the past few decades. In the United States alone, the number of academic publications on Buddhism has increased from 168 in 1970 to 3,048 in 2010 (Prebish & Tanaka, 2013). Furthermore, according to a report by the Pew Research Center, the number of Americans who identify as Buddhist has grown from 0.7% in 2007 to 1.2% in 2014 (Pew Research Center, 2015). This increase in popularity can be attributed to several factors, including the rise of mindfulness meditation practices, the influence of prominent Western Buddhist teachers such as Thich Nhat Hanh and the Dalai Lama, and the growing interest in Buddhism as a philosophy and way of life that can offer a sense of meaning and purpose. As the interest in Buddhism continues to grow, so does the scientific study of its effects on the human mind and body. Researchers have conducted numerous studies on the benefits of mindfulness meditation, which is a central practice in Buddhism. These studies have shown that mindfulness meditation can help reduce stress and anxiety, improve mood, increase focus and attention, and even enhance immune function and lower inflammation in the body (Davidson et al., 2003; Tang et al., 2015). The result of the convergence of traditional Buddhist teachings with modern scientific and philosophical thought began in the late



19th century when Buddhism came to the attention of Western scholars and thinkers. As Buddhism spread from Asia to the West, it encountered new cultural and intellectual contexts led to the reinterpretation of Buddhist teachings in light of contemporary scientific and philosophical understandings. For example, the development of neuroscience and psychology provided new insights into the workings of the mind, leading to the exploration of mindfulness meditation as a tool for emotional regulation and stress reduction. It is a contemporary approach to Buddhist teachings and practices that have been adapted to fit into modern lifestyles and cultures. According to Harvey (2013), modern Buddhism is "an attempt to bridge traditional Buddhism with contemporary Western thought and practice." It incorporates the core principles of Buddhism, such as mindfulness, compassion, and wisdom, into everyday life and activities. According to McMahan (2008), modern Buddhism is "an ongoing cultural translation of the classical traditions of Buddhism into contemporary Western idioms and values." It involves the reinterpretation of traditional Buddhist teachings and practices to make them relevant and applicable to modern societies. This process of translation and adaptation involves a dialogue between the Buddhist tradition and modern science realm.

In this study, we will explore the definition and significance of a small part of the vast body of Buddhist teachings, namely the four "divine abidings" (brahmavihara) with specific interests in the first two teachings - loving-kindness (metta) and compassion (karuna), (Buswell & Lopez Jr., 2013 along with the six virtues conducive to communal life (Sārāṇīya-dhamma), and the four bases of social solidarity (saṅgaha-vatthu). All of which possess one common theme – metta both as spiritual quality and the translation into living practice. The source selected for the examination is an authoritative and contemporary source; Buddha-dhamma, composed by Somdet Phra Buddhaghosacariya (P.A. Payutto), a highly respected scholar recognized for his contributions to peace education and sustainable development. He was awarded the UNESCO Prize for Peace Education in 1994, the title of Tipitaka Archaraya from Nava Nalanda Institute in 1995, and "The Most Eminent Scholar" as a guru of Theravada Buddhism by The



World Buddhist University in 2005. Additionally, he was appointed as a research fellow and visiting scholar at Harvard University's Divinity Faculty, University of Pennsylvania, and Swarthmore College. Then, we will explore how modern science interprets the concepts of *Mettā* and *Karuṇā* as empathy and compassion and their contribution to individual and social flourishing.

Buddha-dhamma stated "the Buddha gave great importance to social happiness... happiness has many aspects one of which is happiness on a social level we need to also look at those principles pertaining to a more active engagement in society we can begin by asking the question when someone feels kindness and wishes to make others happy or feels compassion and wishes for others to be freed from suffering what is the most fundamental expression of this wholesome mind states? this is connected to a related question what quality did the Buddha most often speak about in relation to householders?..."

"...Both in respect to the monastic community and to the lay community, the basic foundation for social happiness rests with the same group of spiritual qualities: lovingkindness (*mettā*), compassion (*karuṇā*), sympathetic joy (*muditā*), and equanimity (*upekkhā*) – the four divine abidings (*brahmavihāra*). In the context of lay society, the four divine abidings are expressed as principles of practical application in the teaching of the four bases of social solidarity (*sangaha-vatthu*) while the six virtues conducive to communal life (*sārāṇīya-dhamma*), which are applied directly for sustaining the stability of the monastic community. This is a teaching for practical application. For example, one accesses the internal spiritual virtue of lovingkindness and expresses it outwardly in daily life..."



Table 1 Buddhist teaching for social happiness

Brahmavihāra	Sārāṇīya-dhamma	Saṅgaha-vatthu
Mettā / Maitrī: loving-kindness)	Mettā-kāyakamma: Physical acts of lovingkindness, acting out of mutual consideration and cooperation	Dāna: Generosity giving with lovingkindness, consideration and well-wishing, giving with appreciative joy, offer assistance, giving with compassion, offer support and encouragement.
Karuṇā: compassion	Mettā-vacīkamma: Verbal acts of lovingkindness, speaking out of kindness and well-wishing	Piṇḍā-vācā: Kindly speech A. One speaks kind, polite, and courteous words, speech with lovingkindness
Muditā: sympathetic joy	Mettā-manokamma: Thinking of others with lovingkindness, maintaining thoughts of well-wishing and concern for others; remaining in good spirits	Atthacariyā: Acts of service: A. One helps others and provides support, by wishing them well. These are acts of service with lovingkindness.



Brahmavihāra	Sārāṇiya-dhamma	Saṅgaha-vatthu
Upekkhā: equanimity	Sādhāraṇabhogī The sharing of gains, sharing one's material gains, say of requisites or food, with others so that everyone can partake of them, eating or consuming things as public, common goods, for the benefit of all	Samānattatā: Even and equal treatment: fair and just treatment of others, non favouritism, non-discrimination, refraining from disparaging or exploiting others, just behaviour, integrating oneself and living in harmony with others
	Sīla-sāmaññatā / Vinaya Keeping equal moral standards, keeping equal standards in light of the formal rules of conduct (Vinaya); refraining from making oneself objectionable or disagreeable to one's community	
	Diṭṭhi-sāmaññatā: Being endowed with right views along with one's companions	



Mettā, a Pali term, embodies a range of qualities including benevolence, loving-kindness, friendliness, amity, good will, and an active interest in others. It is regarded as the first of the four sublime states (Brahmaviharas) and one of the ten pāramīs in the Theravāda school of Buddhism. The cultivation of benevolence through mettā bhāvanā is a popular form of Buddhist meditation and is a part of the four immeasurables in Brahmavihara. Metta is then followed with compassion which means the wish to help the others out of sufferings. It is evident that Mettā is imminent in Buddhist teachings especially for the development of individual and social happiness or flourishing. It is used as the object of meditation in Metta bhavana, which promotes conciliation (sārāṇīya dhamma) for fraternal living that engenders love, respect, welfare, non-conflict, concord, and unity. The English version of Buddha-dhamma, along with the Princeton dictionary of Buddhism, translates Mettā as loving kindness. The practice of Metta leads to external actions in social interactions and is translated into loving kindness thoughts, speech, and actions, as seen in Sārāṇīya-dhamma and Saṅgaha-vatthu. karuṇā, on the other hands being referred to and defined as, "compassion," or "empathy"; as appear in the Princeton dictionary of Buddhism. It is described as the wish that others be free from suffering, As three of the forty topics of meditation (P. KAMMATTHĀNA), loving kindness, compassion and empathetic joy are used for the cultivation of tranquillity (ŚAMATHA). They are capable of producing the first three of the four stages of meditative absorption (DHYĀNA).

In the realm of modern science Mettā karuṇā have been well adopted in the psychology, science of happiness yield studies which attest the Buddha-dhamma teaching in multifaceted empirical data. We shall start the journey to explore metta as loving kindness and karuna as compassion in the light of modern science here. Harvey (2012), posits that "Metta is a mode of empathic resonance, in which one's own feelings of kindness and care are extended outwards towards others" Compassion (karuna) is the emotion in which one feels overwhelmed by the suffering of others and the desire arises to do something

about it, for their sake. Scientific research by Lutz et al. (2008) has also explored the relationship between loving kindness compassion meditation and empathy brain area. The study was conducted using fMRI to assess brain activity in novice and expert meditation practitioners while they generated a loving-kindness-compassion meditation state. Emotional and neutral sounds were presented during the meditation and comparison periods to assess affective reactivity. Participants were asked to practice loving-kindness-compassion meditation, during which they were instructed to generate feelings of loving-kindness towards themselves and others. The study found that during meditation, experienced meditators showed increased activity in brain regions associated with empathy and emotional regulation, including the insula and the anterior cingulate cortex. During meditation, activation in insula was greater during presentation of negative sounds than positive or neutral sounds in expert than it was in novice meditators. The strength of activation in insula was also associated with self-reported intensity of the meditation for both groups. These results support the role of the limbic circuitry in emotion sharing. The comparison between meditation vs. rest states between experts and novices also showed increased activation in amygdala, right temporo-parietal junction (TPJ), and right posterior superior temporal sulcus (pSTS) in response to stimuli. These brain regions are involved in emotional processing and regulation, as well as in the ability to understand and share the feelings of others. The study informs that meditation practices such as loving-kindness-compassion could cultivate empathy brain and impact emotional intelligence.

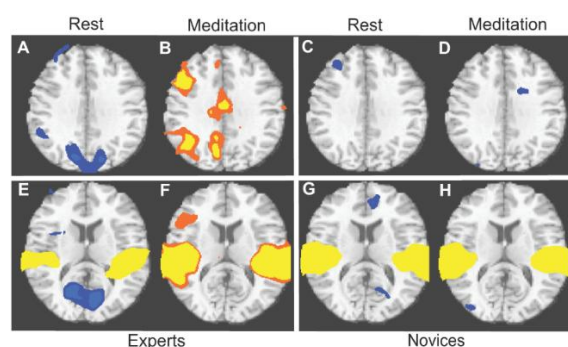


Figure 1 Directionality of the brain activation.

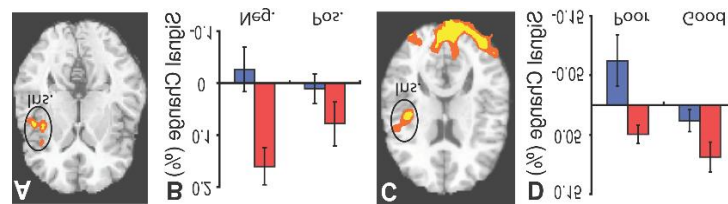


Figure 2 Meditation modulates right insula response to emotional sounds.

Fulton (2012) conducted a study to investigate the links among mindful awareness, mindful compassion, empathy, and anxiety in 131 Master's level counseling students. In this study, quantitative analysis was employed, and the results revealed that mindful compassion had a substantial effect on affective empathy, cognitive empathy, and anxiety. This impact was greater than that explained by mindful awareness alone. Notably, mindful compassion had the most significant influence on affective empathy. Siegel and Germer (2012) suggest that while previous meditation research has mainly focused on techniques such as focused attention on the breath or open awareness mindfulness, there is now a growing interest in compassion meditation practices such as metta and karuna. This interest is coming from both clinicians and scientists, as evidenced by the increasing attention being given to compassion meditation in research.

Bibeau, M. et al (2015) discussed if compassion meditation could contribute to the development of psychotherapists' empathy. The article discussed the impact of loving-kindness and compassion meditation on the development of psychotherapists' empathy. It reviews the scientific literature on these meditative practices and their potential impact on empathy-related variables such as positive regard, prosocial behavior, and affective empathy. Studies have shown that loving-kindness and compassion meditation can change the brain in areas associated with positive emotions and empathy. Furthermore, these meditative practices can reduce negative effects associated with empathy for pain, thereby reducing the risk. Overall, the article suggests that loving-kindness and compassion meditation can be useful tools for



psychotherapists to improve their capacity for empathy, and that further research is warranted in this area.

A meta-analysis by Kirby et al. (2017) examined the effects of compassion-based interventions, including Metta meditation, on empathy and related outcomes. The analysis included 28 studies with a total of 3,110 participants. The results showed that practicing compassion-based interventions led to significant increases in both cognitive and empathic concern, which are important components of empathy. Cognitive empathy involves understanding the perspective of others, while empathic concern involves feeling and responding to the emotions of others. The meta-analysis suggested that Metta meditation and other compassion-based interventions may help to overcome barriers that prevent individuals from experiencing empathy towards others.

Emma M. Seppälä discusses that the brain is shaped by our activities. "Regularly practicing loving-kindness Meditation activates and strengthens areas of the brain responsible for empathy and emotional intelligence." ("18 Science-Backed Reasons to Try Loving-Kindness Meditation") The benefits of loving-kindness meditation, a form of meditation that focuses on developing feelings of kindness, goodwill, and warmth towards others. The benefits of this meditation range from increased positive emotions and decreased negative emotions, to relief from physical and mental illnesses, and improved emotional intelligence. The practice also activates and strengthens areas of the brain responsible for empathy and emotional intelligence. Furthermore, it has been found to increase social connection, decrease bias towards others, and even have a positive impact on self-love. This meditation has both immediate and long-lasting effects, making it an effective coping strategy.

Based on the landscape of the modern science study we can safely conclude that Buddhist Metta -loving kindness and Karuna compassion Buddha-dhamma are closely related, correlate, and intersect with empathy, sharing partial aspect which involves the ability to understand and share the feelings of others. While loving kindness, compassion, and empathy are distinct constructs, they share several key aspects that make them powerful tools for promoting



well-being and fostering positive social interactions. All three constructs involve an orientation towards others, as opposed to a self-centered perspective, and require a degree of mindfulness and awareness to cultivate. Loving kindness involves cultivating positive feelings of warmth, kindness, and goodwill towards oneself and others. It can lead to increased feelings of positive affect, social connectedness, and reduced negative emotions such as anger and anxiety. Compassion involves a deep concern for the suffering of oneself and others and a desire to alleviate that suffering. It can lead to increased prosocial behavior, greater social connectedness, and reduced negative emotions such as shame and guilt. Empathy involves the ability to understand and share the feelings of others. It can lead to increased social connectedness, better communication, and improved relationships. These constructs also share common neural networks and cognitive processes. For example, all three involve activation of the insula, anterior cingulate cortex, and ventromedial prefrontal cortex. They also rely on the ability to engage in perspective-taking and mentalizing, or the ability to understand the thoughts and feelings of others. Overall, the cultivation of loving kindness, compassion, and empathy can have numerous benefits for both individuals and society as a whole. By promoting greater social connectedness, reducing negative emotions, and improving communication and relationships, these constructs can help create a more positive and compassionate world.

The conclusion that Metta loving kindness and Karuna compassion correlate and intersect with empathy is particularly relevant in the world of design thinking, where empathy serves as the starting point and springboard for the design process. In this context, it is meaningful to explore the definition, critical role of empathy in design thinking, its process and how it contributes to social innovation. The role of empathy in design thinking and social innovation is intertwined and crucial. According to the Stanford Design School, empathy is the process of understanding people's emotions, needs, and experiences to inform design solutions (Brown, 2008). IDEO views empathy as the foundation of human-centered design that creates solutions meeting users' needs (IDEO, n.d.). Empathy is used at the beginning of the design process to gain insights into



users' experiences and identify their pain points (Brown, 2008), allowing designers to develop a deeper understanding of users' needs and design more effective solutions. Empathy involves understanding and valuing the emotional and physical needs of others. It allows us to gain a deeper understanding of how people perceive, comprehend, and interact with their surroundings. By considering the contexts in which people live, we can better understand how their lives are affected. Empathic research goes beyond simply what people say and seeks to uncover their underlying motivations and thoughts. It is a subjective process that focuses on understanding rather than just facts. To gain the right insights through empathy, you have several options. These include observing real users and asking questions to understand their motivations; conducting photo or video studies in natural environments; having users keep personal photo or video journals; interviewing users with open-ended questions; engaging with extreme users to understand the full scope of problems; using analogous empathy to draw parallels with other fields; sharing inspiring stories within the team; bodystorming to gain first-hand experience; using empathy maps and customer journey maps to understand users' perspectives; and creating personas to accurately represent users (Interaction Design Foundation, n.d.). Empathy is critical to social innovation as it helps designers create solutions that are more sustainable, equitable, and effective by understanding the needs of those they are designing for.

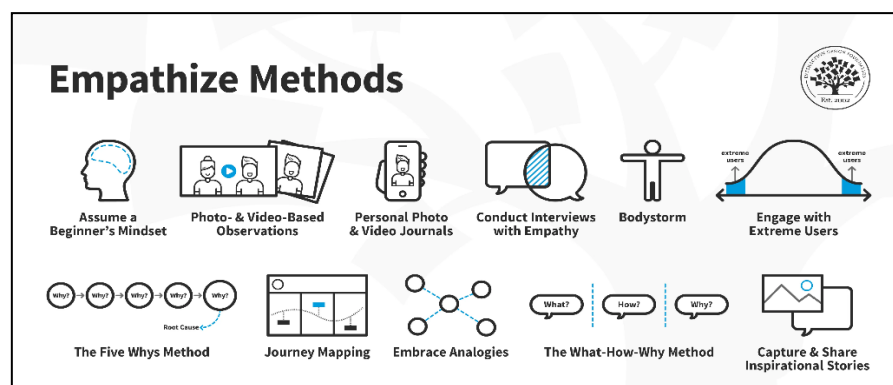


Figure 3 Empathize method, Interaction Design Foundation, n.d.



In the field of social innovation, design thinking and empathy play crucial roles. These concepts may be expressed using different terminology, such as the Buddhist teachings of metta and karuna. Research in the field has demonstrated that empathy is an integral component of the social innovation process.

Tim Brown & Jocelyn Wyatt discusses Design Thinking for Social Innovation (2010) where the process took place by inspiration which identical to empathy by describing design process typically begins with the inspiration space, where a brief is constructed to provide a framework for the project team. However, simply asking people what they want through focus groups and surveys rarely yields important insights. Instead, design thinkers should observe people's actual experiences and behaviors to gain valuable clues about their unmet needs. Working with local partners and becoming embedded in people's lives through "homestays" and shadowing locals can also be beneficial. Design thinking techniques, such as ideo's Human Centered Design toolkit, can help in understanding people's aspirations.

Bennett, E. E., & McWhorter, R. R. (2019). Discusses Social Movement Learning and Social Innovation: Empathy, Agency, and the Design of Solutions to Unmet Social Needs in Advances in Developing Human Resources that the relationship between social innovation (SI) and social movement learning (SML), employ design thinking specifically empathy stage as a fundamental process for the SI movement, with implications for Human Resource Development (HRD). Social innovation is a critical factor in producing effective solutions that meet unaddressed social needs across various social movements throughout history, and has evolved into a movement in itself. Collaborative partnerships across different sectors engage in creative work that challenges societal norms and promotes innovative solutions. The article emphasizes that empathy is a crucial component of design thinking and is embedded in Social innovation. HRD professionals can leverage design thinking in corporate social responsibility projects, innovation initiatives, and social organization partnerships by cultivating empathy as a crucial skill for developing effective solutions.



According to Mulgan (2006), the importance of generating ideas by understanding needs and identifying potential solutions is crucial in social innovation process. The process involves understanding the needs of different communities and developing solutions that address those needs in an effective and sustainable way. This process involves engaging with communities to understand their needs and challenges, as well as identifying potential solutions that can help address those needs. By taking a collaborative and empathetic approach to problem-solving, social innovators can develop solutions that are more likely to be effective and sustainable over the long term. Murray, Caulier-Grice, and Mulgan (2010) develop the model of the six stages of social innovation process. The spiral starts with prompts, which is the stage where the problems is being noticed aware and realize. It's pertaining to the notice of the pain the problems the feelings the context which can be observed that it is closely related to empathy.

From these reviews, it could be drawn that Buddhist teaching, design thinking and social innovation points to empathy as the intersection and common value of the three realms as informed by neuroscience. It is the capacity to understand the feeling of the others, realizing and being aware of the situations, scenarios and context in order to derive the solutions to address the pressing problems of oneself and others.

At this stage, empathy would be investigated from a neuroscientific perspective and its relationship with prosocial behavior which leads to social trust, and human flourishing.

A study conducted by Claus Lamm, Markus Rütgen, and Isabella C. Wagner from the Social, Cognitive and Affective Neuroscience unit at the University of Vienna, titled "Imaging empathy and prosocial emotions." This study explored the associations between different types of empathy, emotion regulation, and prosocial behavior in a sample of healthy adults". The study found that both affective and cognitive empathy predicted self-reported prosocial tendencies, and that cognitive reappraisal moderated the association between affective empathy and prosocial tendencies. These findings suggest

that empathy is generally associated with prosocial behavior, but the specific nature of the association depends on individual differences in emotion regulation strategies. Affective empathy refers to the ability to feel and share the emotions of others, while cognitive empathy involves the ability to understand and take the perspective of others. This suggests that both types of empathy play a role in motivating prosocial behavior. Furthermore, the researchers found that cognitive reappraisal, a type of emotion regulation strategy that involves reinterpreting the meaning of a situation to change one's emotional response, moderated the association between affective empathy and prosocial tendencies. People who have a low or average tendency to reappraise their emotions showed a strong positive relationship between their empathy and prosocial behavior. However, this relationship was not present in individuals with a high tendency to reappraise their emotions. These findings suggest that empathy is generally associated with prosocial behavior, but the specific nature of the association depends on individual differences in emotion regulation strategies. Emotion regulation may play a crucial role in determining whether empathy leads to prosocial behavior or not, as those who are better able to regulate their emotions may be more likely to engage in prosocial behavior in response to empathic feelings.

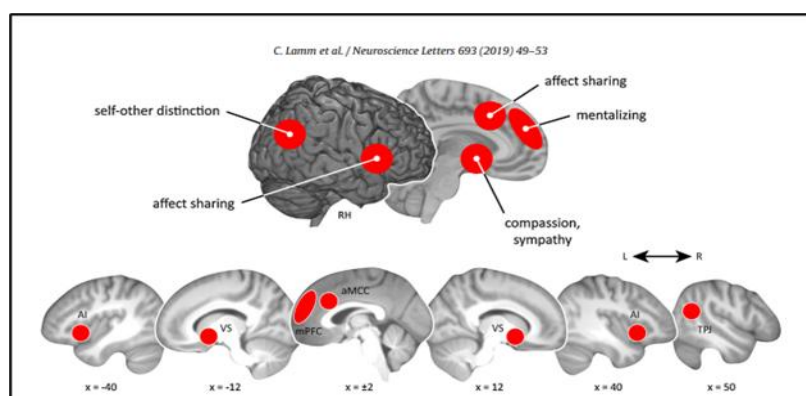


Figure 4 Schematic overview of brain regions associated with imaging empathy and prosocial emotions from Imaging empathy and prosocial emotions." This study explored the associations between different types of empathy, emotion regulation, and prosocial behavior in a sample of healthy adults 2017



The study by Lockwood, Seara-Cardoso, and Viding (n.d.) explored the associations between different empathic processes and pro-social behavior, as well as whether different types of emotion regulation strategies (e.g. cognitive reappraisal and expressive suppression) moderate these associations. The results showed that both affective and cognitive empathy predicted self-reported pro-social tendencies. Additionally, cognitive reappraisal moderated the association between affective empathy and pro-social tendencies. Specifically, there was a significant positive association between empathy and pro-social tendencies for individuals with a low or average tendency to reappraise but not for those with a high tendency to reappraise. The findings suggest that empathy is generally positively associated with pro-social behavior.

Empirical research consistently demonstrates that empathy is positively associated with prosocial behavior. Individuals with high level of empathy tend to engage in more prosocial behaviors, such as helping, sharing, and cooperating, than those who score low in empathy. Therefore, it is safe to say that there is a strong correlation between empathy and prosocial behavior.

Empathy is a key motivator for prosocial behavior, which in turn can lead to increased social trust and human flourishing (Lockwood et al., 2013). Empathy allows individuals to understand the feelings and needs of others, which can then lead to acts of kindness and generosity. When individuals engage in prosocial behavior, they create a positive impact on their communities, which can foster greater trust and connection between individuals. These positive relationships can then lead to a greater sense of social trust, which is essential for building strong and healthy communities. Prosocial behavior has also been shown to lead to greater personal well-being and flourishing, as individuals experience a sense of purpose and fulfillment when helping others (Aknin et al., 2013). In addition to fostering a sense of community and personal well-being, social trust has also been shown to be an important index for measuring national happiness. The World Happiness Report, which measures happiness levels in countries around the world, includes social trust as one of its key indicators



(Helliwell et al., 2019). Countries with higher levels of social trust tend to rank higher in overall happiness, suggesting that social trust is a crucial component of a thriving society. By promoting empathy and prosocial behavior, individuals can contribute to the creation of a society that is not only kinder and more compassionate, but also happier and more fulfilling for everyone involved. In summary, empathy is a key driver of prosocial behavior, which can lead to increased social trust and human flourishing, ultimately contributing to the creation of a healthier and more connected society.

5. Discussion and conclusion

Empathy is the intersection of Buddhist teaching, design thinking, and social innovation, and neuroscience confirms its importance in our daily lives. It is important to note that empathy is not just about understanding the feelings of others, but it also involves a deep sense of compassion and the desire to help others. In Buddhism, empathy is one of the four Brahma Viharas, or divine abodes, which are loving-kindness, compassion, sympathetic joy, and equanimity. Empathy, along with compassion, is considered the cornerstone of Buddhist ethics and is believed to be essential for cultivating inner peace and happiness. Buddhist teachings emphasize the importance of cultivating empathy through meditation and mindfulness practices to develop a deep understanding of the interconnectedness of all beings. In design thinking, empathy is a critical element in the human-centered design process. Designers seek to understand the needs and desires of the users they are designing for by putting themselves in their shoes and immersing themselves in their experiences. Empathy helps designers to identify the key pain points of users and to design solutions that meet their needs and improve their experiences. In social innovation, empathy is crucial for developing solutions that address the root causes of social problems. Social innovators seek to understand the experiences and perspectives of marginalized and disadvantaged groups, and to design interventions that empower these groups to create positive social change. Empathy is essential for building trust and relationships with these groups and for co-creating solutions



that are meaningful and effective. Neuroscience has confirmed the importance of empathy in our lives. Neuroscientists have identified specific regions of the brain that are involved in empathy, including the insula, anterior cingulate cortex, and mirror neurons. These regions are responsible for processing emotions and social cues, and for simulating the experiences of others. By activating these brain regions, empathy can lead us to take harmonized action to address the ongoing challenges that human beings are confronting. Through empathy, we can derive loving-kindness actions, generosity, creative designs, and social innovation that are severely needed in this critical time. Empathy allows us to connect with others on a deeper level and understand their perspectives, experiences, and needs, which is essential for creating meaningful solutions that can make a positive impact on individuals and communities.

In conclusion, the strong correlation between empathy and prosocial behavior is evident in empirical research. Individuals with higher levels of empathy are more likely to engage in prosocial behaviors such as helping, sharing, and cooperating. Prosocial behavior, in turn, can lead to increased social trust and human flourishing. Empathy allows individuals to understand the feelings and needs of others, which can lead to acts of kindness and generosity, creating a positive impact on communities. Positive relationships fostered by prosocial behavior can lead to a greater sense of social trust, essential for building strong and healthy communities. Additionally, prosocial behavior has been shown to promote personal well-being and happiness. The World Happiness Report recognizes social trust as a crucial component of a thriving society and includes it as a key indicator in measuring national happiness. By promoting empathy and prosocial behavior, individuals can contribute to the creation of a kinder, more compassionate, and happier society.

Empathy is a crucial quality that needs to be cultivated among global citizens to counteract the pressing challenges that humanity faces today. The cultivation could be via loving-kindness and compassion meditation practices in Buddhist practice. Design thinking with empathy as the starting point which could fostered social innovation and through the social innovation process that



pay attention to prompt and seek to empathize by understanding the experiences and perspectives of marginalized and disadvantaged groups, and to design interventions that empower these groups to create positive social change. Empathy is essential for building trust and relationships with these groups and for co-creating solutions that are meaningful and effective. Through these various realms, individuals can develop a deep sense of empathy and a desire to take positive action to counteract the pressing challenges that humanity faces today. Empathy promotes harmonious cooperation and enhances human flourishing by allowing individuals to connect with others on a deeper level and understand their perspectives, experiences, and needs. By promoting empathy and cultivating it in global citizens, we can create a kinder, more compassionate, and more resilient society that is better equipped to tackle the complex problems of the 21st century.

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