The project's theoretical backbone

ETHICO-ONTO-EPISTEM-OLOGY

According to Barad, we can no longer see ourselves as detached from the world, because we are part of it, transforming what we see in a constant state of becoming. This idea is similar to what feminist science studies scholar Donna Haraway referred to as the 'god trick', the false notion of a neutral and detached perspective. Nobody can claim to be distant and static while experiencing and investigating the world. When we are in the world, we are suddenly faced with the presence of others and are therefore ethically responsible for responding to their needs. Barad's idea of an 'ethics of entanglement' involves being aware of and responding to ethical demands, influenced by the concept of facing the Other, as put forward by philosopher Emmanuel Levinas.

Following Karen Barad, ethics, ontology and epistemology are inseparable in our interaction with the world and the creation of knowledge. In Barad's framework, our ethical obligation extends beyond human–human relationships to acknowledge the interdependence of all beings in the universe. This means that the concept of 'otherness' is not fixed but created through the intra-actions between beings and the universe. This creates a sense of shared responsibility between all beings, not just humans.

Barad refers to this as an 'ethics of worlding', which emphasises responding to the needs and demands of the world rather than simply following a set of obligations. In this sense, ethics, being and knowing are intertwined and cannot be separated. The focus is on a relational and embodied approach to (inter)subjectivity, highlighting the importance of considering the impact of our actions on the world and its inhabitants (Geerts, 2025).

Diffraction

The study of how we come to understand and interact with the complex world around us involves multiple interdisciplinary approaches. One of these is the sociology of knowledge, which considers the relationship between symbolic forms of knowledge and objective social structures.

The communicative turn in social philosophy, influenced by Hans Herbert Kögler (1997), moved away from the two-world theory proposed by Kant, which distinguished between a subjective epistemic viewpoint and an objective empirical viewpoint. Instead, this approach focuses on the specific patterns of meaning that connect individual actions with objective social factors.

Objectivity is not about transcending all limitations and responsibilities but about embracing the limitations and specific perspectives of our embodied experiences. Reflective and reflexive practices have been important in qualitative research since the cultural turn. Pierre Bourdieu (1993) advocated the use of epis-

temic reflexivity, which acknowledges the impact of the researcher's social position on the knowledge-making process. The constructivist paradigm recognises that the object of study is closely tied to the methods used to study it, and that it is important to be aware of the values and biases that shape our understanding of the world. Reflectivity is informed by ways of knowing that are influenced by values and attitudes, which in turn shape how evidence, data and narratives are created. In the field of feminist studies, there has been a criticism of using metaphors based on sight, such as reflection, to understand knowledge production. Donna Haraway, a prominent feminist scholar, suggested using the concept of diffraction as an alternative.

Diffraction, in physics, refers to the interference of waves as they interact with obstacles. Haraway believes that diffraction can serve as a metaphor for a different kind of critical consciousness, one focused on making a difference and not just repeating old ideas. In diffractive methods, knowledge is seen as being closely connected to its sociocultural and relational context, and its definition depends on the ongoing process of knowledge production. This approach suggests a shift from simply collecting and representing data to a more interactive relationship with research subjects and the world.

According to Karen Barad (2007), diffraction patterns can be seen as the building blocks of the world, and the concept of diffraction offers a way to understand the world in terms of its variations and differences. Quantum mechanics teaches us that waves and particles can behave differently under certain conditions. In feminist philosophy, this idea of 'diffraction' has been used to describe a more open and aware way of thinking that takes differences into account. The new materialist tradition views difference as important and influential.

According to Donna Haraway (1997), diffraction offers a 'more subtle vision' than traditional scientific thinking. It allows us to better understand how differences are produced and their effects on people and the world. Haraway uses diffraction as an optical metaphor for a more critical and conscious way of seeing and thinking.

Karen Barad extends this idea by suggesting that reading and theorising about texts and philosophies can be done in a more dialogical and inclusive way, rather than using a hierarchical approach. This is what she calls 'diffractive communication'. By reading texts 'through one another', we can gain new and unexpected insights while respecting the differences between them. This approach can also blur the boundaries between disciplines and theories, leading to a more inclusive and respectful engagement with various practices.

Diffractive art hacking practices

Rosi Braidotti believes it is possible to embrace the current challenges in theories. By viewing ourselves as a collective, we can work towards practices that promote mutual understanding instead of causing harm. Karen Barad (2007) includes the role of particles and molecules in her perspective, stating that the meaning and existence of matter are intertwined. Barad's approach views differences as a constantly changing and dynamic force, lacking a fixed essence. Conflict and growth cannot be easily judged, but by embracing the interconnectedness of everything we can gain a better understanding of the world. The work of Donna Haraway (1998) emphasises the importance of embracing difficulties in order to take a closer look at reality.

Feminist hacking practices from around the world, like those in Ghana, Mexico, Indonesia and Germany, are connected through resilience in the face of power and influence (Avle & Lindtner, 2016; Lindtner et al., 2015). For feminist hackers, this means staying open-minded and avoiding quick solutions, instead continuously making connections to better understand the world. Jane Prophet and Helen Pritchard are pioneers in the study of diffractive art practices. In two instances, they have explored the relationship between art and 'agency'. In the first instance, they questioned the use of the term 'agency' in artificial life art, favouring the more relational term 'agential'. This new term destabilised the traditional subject–object binary. In the second instance, they studied the connection between media art and contemporary art practices, looking at how these practices are intertwined and emerge from patterns that are sometimes revealed through artworks.

Belsunces et al. (2017) introduced the concept of 'diffractive interfaces' as a way to research the relationship between art and education. They believe that this approach allows for dynamic interaction by experimenting with different relational patterns. The framework they propose can help to destabilise systems of representation and encourage the development of new ways of understanding the world. The intra-actions that occur in a learning setting result in a condition of preindividuation, where the focus is on the process of becoming rather than the final form.[20]

20 Scurto et al. (2021) propose a diffractive methodology for design research in the field of machine learning and material-centred interaction design. The authors suggest this method as a way to reveal the computational materiality of machine learning and the role of embodiment in the creation of machine learning prototypes. They outline five interference conditions for art-based machine learning prototypes and describe how these can expand the design and engineering practices of machine learning. Through diffractive practice, the authors propose a process of intra-active machine learning that positions materiality as the starting point for machine learning design in human–computer interaction.