CONTRIBUTIONS

Brunswikian Themes in Grounded Cognition

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Brunswikians may find sympathetic views and proposals in the interdisciplinary research area of grounded cognition (Barsalou, 2010), also known as embodied cognition (Coello & Fischer, 2016a, b; Varela, Thompson, & Rosch, 2016) and 4E cognition (Newen, Bruin, & Gallagher, 2018). This brief note references several recent articles related to Brunswikian themes.

The importance of the environment constitutes one connection between Brunswik and grounded cognition. Within grounded cognition, the perspective of situated cognition has argued for decades that adequate understandings of cognition, affect, and action only develop from studying them coupled with physical and social environments (Aydede & Robbins, 2009; Barsalou, 2010, 2020). Consistent with cautionary notes in the Brunswikian and Gibsonian traditions, adopting a decontextualized abstractionist approach is likely to yield limited and potentially erroneous conclusions. It is essential to study cognition, affect, and action in the specific situations where they occur (also addressing important roles of embodiment and the modalities).

Barsalou (2020) proposed that the situated action cycle offers a useful framework for understanding how cognition, affect, and action mediate between the environment and behavioral outcomes. In situations central to human activity, the situated action cycle supports the pursuit of important goals and personal meaning. Repeated runs of the situated action cycle condition habits via situational memories that dominate control of future behavior (also see Barsalou, 2016a, b). Over time, situation-specific conditioning increasingly controls perception, cognition, affect, and action in similar situations.

Generalizability offers a second connection between Brunswik and grounded cognition. Both traditions question whether mechanisms established in decontextualized laboratory paradigms will generalize to real-world environments. To generalize mechanisms, it is essential to study cognition, affect, and behavior in the situations where they occur.

In the Brunswikian spirit, Barsalou (2019) explores issues associated with generalizing from idealized laboratory paradigms to real-world situations, drawing implications for the current replication crisis (also see Miller et al., 2019). Assessing real-world situations and bringing them into the laboratory increases the chances that laboratory findings will generalize. The Situated Assessment Method offers one approach for capturing the content of real-world situations (Dutriaux, Clark, Papies, Scheepers, & Barsalou, 2021). The Situated Assessment Method can also be viewed as a tool for capturing the environment's correlational structure, another shared theme with Brunswik.

Probabilism offers a third connection between Brunswik and grounded cognition. Two forms of probabilism are potentially relevant: situation probabilism and mechanism probabilism. Situation probabilism results from sampling past situational memories to control situated action in the current situation (Barsalou, 2016a, b, 2020). For each individual, a unique population of situational memories accumulates over their lifetime from runs of the situated action cycle (offering a natural account of individual differences). In the current situation, a small subset of these memories is sampled probabilistically to control cognition, affect, and action. As a consequence of activating different situational memories, differences emerge in how individuals respond to the same environmental cues, and in how the same individual responds across occasions.

Mechanism probabilism reflects the assumption that the brain does not contain a set of rigid mechanisms. Instead every mechanism is inherently probabilistic, taking infinite forms across different situations. Barsalou (2019, 2020) develops the construct of a quantum mechanism. From this perspective, the form of a mechanism established in an idealized laboratory paradigm is likely to differ from its form in real-world situations. More generally, the mechanism takes varying forms as different situations modulate its expression.

Variance in a mechanism's form offers a natural account of the replication crisis. Rather than there simply being a crisis that reflects inability to replicate the same rigid mechanism across situations, the mechanism is often taking different forms in different situations, often as a function of moderator variables in the environment (poor scientific practices no doubt contribute to variability as well). To understand a mechanism means to understand the diverse forms it takes, together with properties of the associated situations that induce them.

Predictive cues offer a fourth connection between Brunswik and grounded cognition. In grounded cognition, the construct of representation takes the form of multimodal simulation, not the amodal symbols of classic cognition (Barsalou, 1999, 2008). As people perform the situated action cycle in specific situations, memory systems capture the states of perceptual, motor, and affective systems for future predictive use. On later occasions, these memories are reenacted in a multimodal manner to simulate and represent anticipated states of the world not yet present. As Barsalou (2009) reviews, these anticipatory states offer a powerful form of predictive inference that supports diverse forms of intelligent activity (also see Barsalou, 2016a, b). Although this approach differs from predictive cues in the Brunswik Lens model, the two approaches capture complementary aspects of the prediction process with potential to be combined effectively.

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