Analogous Foundations in Cognition

Analogies can serve as a foundational mechanism of understanding by enabling meaning from known subjects to penetrate the unknown. I will consider analogies as a psychological tool in the scope of linguistics, philosophical nativism, and perception research. From these fields, theories demonstrating the significance of analogies include the conceptual metaphor, derived knowledge, and top-down processing.

Lakoff and Johnson\(^1\) introduced the idea of the conceptual metaphor, a linguistic analogy whereby one concept is spoken about terms of another. Phrases such as “time is money” are analogies not only in word, but in meaning. Such turns of phrase, Lakoff posits, both sway and display our preconceptions. Accordingly, the conceptual metaphor has two uses: 1) to emphasize relations between concepts, and 2) to extend meaning from innate concepts to others. Conceptual metaphors in language both enhance our native knowledge and direct our derived knowledge.

The philosophical position of nativism claims that humans are equipped with some finite number of precepts from which they derive all further conceptual understanding. From a nativist perspective, all knowledge is either atomic (“native”) or derived. If nativism holds true, then all non-native knowledge is necessarily derived by analogy to native knowledge. New knowledge would not add anything “new” to the mind, but rather create new connections in terms of preexisting concepts. Nativism therefore posits that preexisting, native concepts—which intrinsically possess meaning—function as analogies for understanding non-native concepts, whose meaning must be derived from some combination of native concepts.

Recent research in top-down processing also demonstrates how derived concepts, sufficiently ingrained, can serve as their own analogies. For example, in visual top-down processing, objects are processed analogously regardless of size. When shown objects in varying sizes, subjects’ late visual processing center (LOC) habituates to seeing the same object regardless of its size, while their early visual processing center shows habituation only to the exact same object but not regardless of size. By ignoring dimensions such as size in top-down processing we can consider objects as analogous regardless of these dimensions. Similarly, prototype theory in psychology holds that, in facial processing, all faces are compared with an averaged face. This prototype, formed from experience, functions as an analogy for perceiving all faces.

By facilitating flow in meaning from one concept to others, analogies can prove a powerful learning tool. Phenomena including conceptual metaphors, derived knowledge, and top-down processing show the broad spectrum of analogy’s deep role in cognition.