Recursion again

Description

In mathematics and computer programming, a recursive definition is one that defines a process in terms of itself: a branch of a tree is a branch that ends in smaller branches. Thatâ??s recursive as the definition of a branch in this case refers to a definition of a branch.

A program that draws a branching tree recursively could go on for ever, or never get past its first branch, were it not that most recursive algorithms provide a stopping condition. Stop drawing branches when they get smaller than 5 centimetres.

Recursive grammars

The linguist Noam Chomsky noted that language grammars are recursive, e.g. a sentence is made up of a noun phrase followed by a verb phrase. In turn, a noun phrase begins with an optional adjectival phrase followed by a noun phrase. The definition of a noun phrase includes â??noun phrase.â?• So it is recursive. A verb phrase has a similar recursive structure.

That simple formulation enables competent speakers of a language to construct and comprehend sentences ranging from the simple â??The red ball bounced along the pathâ?• to the more complicated â??The big red ball belonging to the little boy bounced along the concrete path in front of the neighbourâ??s house.â?• In keeping with a recursive grammar, the latter sentence contains several

nested noun phrases and verb phrases.

Itâ??s easy to see how recursion assumes special significance in theories of language and of mind, and of what it is to be human and creative. If language grammar is recursive then recursion contributes to human creativity. Thanks to recursive grammar structures, we are able instantly to invent, parse and make sense of new sentences that weâ??ve never thought of or heard before.

Though he doesnâ??t agree that thereâ??s a nexus between recursion and creativity Chomsky attests to this commonly held inference from his own theories.

> â??a number of professional linguists have repeatedly confused what I refer to here as â??the creative aspect of language useâ?? with the recursive property of generative grammars, a very different matterâ?• (xiv).

I doubt, therefore I think

Consider Hofstadter and Dennettâ??s recursively-inspired propositions that we humans are self-aware, can see ourselves, are self reflexive and self-referential, basic elements of creativity and consciousness:

> â??Thus, ironically, something which we all have in common-the fact of being self-reflecting conscious beings-leads to the rich diversity in the ways we have of internalizing evidence about all sorts of things, and in the end winds up being one of the major forces in creating distinct individualsâ?• (696).

At least, thereâ??s something about being human in the idea of recursion. As precursor to this self reflexivity, RenÃ© Descartes defined the solid foundation of his own existence in the self observation that he was capable of *doubting his existence*. Thatâ??s recursive.

> â??I never encountered any proposition so doubtful that I couldnâ??t get from it some fairly certain conclusion, even if it was only the conclusion that it contained nothing certain!â?• (13).

Hence: I doubt therefore I think; I think therefore I am.

Infinite semiosis

For some prominent thinkers, recursion also serves in unsettling certainties. Long before Chomsky, the pragmatic philosopher C.S. Peirce explored logic statements that had recursive structures. But he also wrote about meaning systems as infinitely recursive.

Peirce developed the concept of â??infinite semiosisâ?• whereby signs refer to other signs, which in turn refer to other signs ad infinitum, i.e. the paradoxical notion that signs chain together without ever seeming to alight firmly on a definitive object.

More recently, Jacques Derrida wrote about the way meaning resides in the traces left by a trail of interrelated signs, and the putative grounding of truth and meaning on an infinite chessboard or a configuration of inter-reflecting mirrors.

Derrida adopted Peirceâ??s concepts in arguing that the illusive object, the thing ultimately represented by the sign â??functions only to give rise to an *interpretant* that itself becomes a sign and so on to infinityâ?• (49).

Derrida examined in great detail and with many examples, how we depend on certainties, but paradoxically, these certainties are nothing of the kind. See posts tagged Derrida.

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Category

1. Culture

Tags

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2. grammar
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rcoyne99