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science as philosophy is a metaphor that can elucidate the position of cognitive science in the historical perspective of consciousness research. The methods of cognitive science and philosophy are different: philosophical texts are interpreted by a human, who is a carrier of consciousness. In contrast, computer programs operate on (initially) unconscious substance, and cognitive science is aimed at a production model. But this metaphor is fruitful because it allows the enrichment of current research directions in cognitive science with a great number of classical philosophical ideas. Dreyfus and Dreyfus follow Heidegger's dictum about the end of philosophy and "return to hacker's reality."[27] This leaves no space for the development of philosophy, much less for its development by means of cognitive science. However, an inversion of Heidegger's thesis about cybernetics as a substitution for philosophy leads to a fruitful metaphor. With such an interpretation we can avoid the exciting question, Can computers think? and ask a more productive question: How can philosophical concepts be interpreted with a computer?

Notes

Many citations in this article are the result of my translation from Russian to English. German citations may differ from published English translations, and my citations from English sources may be paraphrases of the original texts. I hope, however, that meanings have not shifted during such double translation. For certain citations and for the spelling of some terms, I have referred to *The New Encyclopædia Britannica* (Chicago: Encyclopædia Britannica, 1988).

1. Martin Heidegger, "Nur noch ein Gott kann uns retten: *Spiegel*-Gespräch mit Martin Heidegger am 23. September, 1966," *Der Spiegel*, May 31, 1976, "Only a God Can Save Us: *Der Spiegel* Interview with Martin Heidegger," in *The Heidegger Controversy: A Critical Reader*, ed. Richard Wolin (Cambridge, Mass.: MIT Press, 1993).

2. Hubert L. and Stuart E. Dreyfus, *Mind Over Machine* (New York: Free Press, 1986), 4.

3. Immanuel Kant, "Preface to the Second Edition," *Critique of Pure Reason*, trans. Kemp Smith (1787; New York: St. Martin's, 1965), 28.

4. My use of the word *consciousness* stems from Husserl's term *Bewußtsein* and the corresponding Russian term *soznaniye*, which mean general thinking abilities that could in principle be grasped. This does not stress self-awareness features, although it has some relation (but a very limited one) to them.

5. Alfred Schütz and Thomas Luckman, *The Structures of the Life-World*, trans. Richard M. Zaner and H. Tristram Engelhardt, Jr. (Evanston, Ill.: Northwestern University Press, 1973).

6. "Philosophical Schools and Doctrines: Phenomenology," in *The New Encyclopædia Britannica*, 15th ed., vol. 25 (Chicago: Encyclopædia Britannica, 1988), 626.

7. Edmund Husserl, "Pariser Vorträge," in *Husserliana* 1 (The Hague: Nijhoff, 1962) 1: 3–39, *The Paris Lectures* (The Hague: Nijhoff, 1975).

8. John R. Searle, "The Nature of Intentional States," in *Intentionality: An Essay in the Philosophy of Mind* (Cambridge: Cambridge University Press, 1983), 1–29.

9. *The New Encyclopædia Britannica*, 627.

10. Edmund Husserl, "Amsterdam Reports: Phenomenological Psychology," in *Husserliana* 9. This text is an important source for Husserl's thoughts about the possible interpretations of phenomenology. These thoughts can be applied to computer phenomenology in particular.

11. Husserl, "Amsterdam Reports."

12. Edmund Husserl, *The Idea of Phenomenology: Lectures for an Introduction to Phenomenology*, trans. William A. Alston and George Nakhnikian (The Hague: Nijhoff, 1964).

13. Edmund Husserl, *Husserliana* 10: 119.

14. Hubert L. Dreyfus, *What Computers Can't Do* (New York: Harper, 1972; rev. ed. 1979).

15. An analogy to this distinction can be found in Jaspers's assessment of Heidegger's *Dasein-analytik*. Despite his use of phenomenological concepts in psychiatry (his *Psychopathology*) and despite his position on Cartesian mechanistic ideas (evidently similar to Heidegger's views), he has a distinctly negative assessment of usefulness of Heidegger's ontology for psychiatry.

16. Husserl, "Amsterdam Reports."

17. Terry Winograd, "Towards a Procedural Understanding of Semantics," *Revue Internationale de Philosophie* 30 (1976): 260–303.

18. Terry Winograd and Fernando Florès, *Understanding Computers and Cognition* (Norwood, N.J.: Ablex, 1986), 55.

19. Ludwig Wittgenstein, *Zettel*, trans. G.E.M. Anscombe, ed. G.E.M. Anscombe and G. H. von Wright (Oxford: Blackwell, 1967).

20. Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, trans. C. K. Ogden and F. P. Ramsey, ed. C. K. Ogden (1922; London: Kegan Paul, 1933), 4.024.

21. Norman Malcolm, "Moore and Wittgenstein on the Sense of 'I Know,'" in *Thought and Knowledge* (Ithaca, N.Y.: Cornell University Press, 1977), 170–198.

22. Marvin Minsky, "A Framework for Representing Knowledge," in *The Psychology of Computer Vision*, ed. Patrick Henry Winston (New York: McGraw-Hill, 1975).

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23. Minsky, 212, 218.

24. Minsky, 259.

25. Husserl, "Pariser Vorträge."

26. Gregor Kiczales, Jim des Rivières, and Daniel G. Bobrow, The Art of the Metaobject Protocol (Cambridge, Mass.: MIT Press, 1991).

27. Dreyfus and Dreyfus, epilogue.