Philosophical Uses of Software Archive

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Outline

Introduction

Why should software archive matter to philosophy?

The answer to this question could be found in historical philosophy of science.

Historical philosophy of science

One of the trends in 20th-century philosophy of science is "historical philosophy of science" (*épistémologie historique*).

Some authors

- Philosophy of mathematics: Léon Brunschvicg (1869-1944), Jean Cavaillès (1903-1944), Albert Lautman (1908-1944):
- Philosophy of physics: Gaston Bachelard (1884-1962);
- Philosophy of medicine: George Canguilhem (1904-1995).

Main theses

Two main theses:

1. *science* helps to know what *thinking* is;
2. *history of science* shows how thinking may *evolve*.

1. Science and thinking

Science helps to know what thinking is

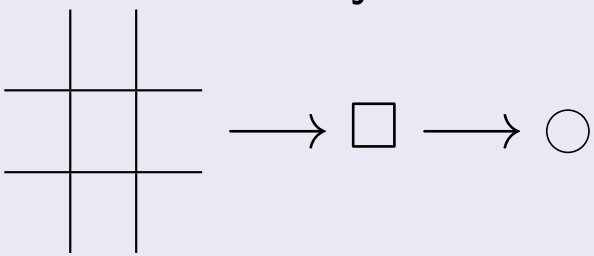
> *Je ne cherche pas à définir les Mathématiques, mais, au moyen des Mathématiques, à savoir ce que cela veut dire que connaître, penser ; c'est au fond, très modestement repris, le problème que posait Kant. La connaissance mathématique est centrale pour savoir ce qu'est la connaissance.*

J. Cavaillès, "La Pensée mathématique", 1939.

2. History of science and evolution of thinking

History of science shows how thinking may evolve

Canguilhem: the continuous move from fibrillar theory to cellular theory:



("La théorie cellulaire", 1952)

Application to philosophy of programming

The two same theses apply to philosophy of computer science:

1. *source codes* show what is the *rational planning of actions*;
2. *software archive* shows how the rational planning of actions may *evolve*.

1. Source codes

Source codes show what is the rational planning of actions.

Séminaire Codes Sources, Paris

(org.: Emmanuel Chailloux, Raphaël Fournier-S'niehotta, Baptiste Mélès, Lionel Tabourier)

- Philosophical, historical, semiological, philological, sociological, literary etc. reading and discussion of various source codes:
  - technical choices;
  - stylistic and linguistic choices;
  - purposes and uses;
  - etc.
- 40 sessions since 2015.

2. Software archive

Software archive shows how the the rational planning of actions may evolve.

Matthew Wilcox' Linux semaphore patch, 2008

Semaphores are no longer performance-critical, so a generic C implementation is better for maintainability, debuggability and extensibility.

- 7679 architecture-specific deletions in files `semaphore.c` and `semaphore.h`: a (very small) loss in technical performance;
- 314 generic insertions: a significant gain for programmer's purposes: "maintainability, debuggability and extensibility".

Conclusion

Why should software archive matter to philosophy?

Because it shows what is the *nature* and *evolution* of programming, i.e thinking and speaking about rational action.

References

- Jean Cavaillès, "La Pensée mathématique", Compte rendu de la séance du 4 février 1939, *Bulletin de la Société française de philosophie*, t. XL, 1946, p. 34.
- Georges Canguilhem, "La théorie cellulaire", in *La Connaissance de la vie*, Paris, Hachette, 1952.
- Séminaire Codes Sources, `https://codesource.hypotheses.org/`.
- Matthew Wilcox' semaphore patch: `https://archive.softwareheritage.org/browse/revision/64ac24e738823161693bf791f87adc802cf529ff/?origin_url=git://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git&snapshot=fc7706e4c177714475a4886831486ad0979983ea#`