Logics of restricted resources and their main methodological consequence

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This survey is intended to substantiate the following methodological consequence:

Logic of person during real and/or creative activity is determined by his/her main value and by resource restrictions first of all of this main value.

There are the following main classes of constructive logics. We point out the main resource used by realizations given by each such class.

1) The intuitionistic logic. Resources are finite but unrestricted. Pure mathematical constructions. They are supported by descriptive reasoning giving no construction but proving their correctness. Results of experiments with Agda program systems show that ignoring the fact that in each complex intuitionistic proof there are large descriptive parts leads to very ineffective desisions. An extension of the intuitionistic logic by descriptivization operator (to forget a construction) is considered.

2) Gurevich information retrieval and information access logic as subsystem of intuitionistic. Pure information processing would be described by intuitionistic logic but only if we neglect aspects of practical complexity. Big systems demand simpler logic.

3) Linear logics. Logics of money. They are infected by overcomplexity in more aspects than Agda and the intuitionistic one and they demand their Gurevich.

4) Affine logics. More general class than linear. Logics of real physical resources and of barter. Ghosts of overcomplexity are even more nasty here than for linear but there is a feeling they can be exorcised if we discriminate problems of composing from given resources and of exchange of resources into different simple logical systems. Tjey contradict to the intuitionistic.

5) Nilpotent logics. Logics of restricted time. Time is completely another resource: we spend it even we do nothing. There is very efficient algorithms of proof searching. They were applied to construct flowcharts and to test data type transformations during transformations of programs (e. g. during taking their differentials). They contradict to linear, affine and intuitionistic.

6) Reversive logics. Computations they spend nothing but time and are invertible. More simple than affine and more complex than nilpotent. Closely connected with group theory and program algebras. They contradict to all earlier classes.

7) Different category logics. They vary from intuitionistic to affine and reversive. Categories are a good tool to describe and study classes of constructive logics and connections between different classes.

8) Twitter logics. Logics of stupidity when a person cannot join together different pieces of information given to him/her. They have very simple decision and proof search algorithms and naturally arose as subsystems of nilpotent, Gurevich or affine logics and sometimes can ignore their mutual contradictions..