Two topics ahead membrane computing

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Two topics

$1°$ new causes and origins of uncertainty with a regard on membrane computing

$2°$ western polyphony musical scores as a predecessor of an exact (as mathematical) approach to concurrency and parallelism in computer science; looking for (mutual) inspiration.

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- ▶ (massively) parallel Monte Carlo randomization (cf. A. Obtułowicz's papers in LNCS Volumes 2597, 6501) versus interactive randomization via oracles, cf. S. Arora and B. Barak's book (relationships to be established).

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Research proposal: searching for nonclassical probabilistic P systems simulating quantum massive parallelism.

Second topic

Ad 2°. Western polyphony from Middle Ages, through
J. S. Bach's (implied) polyphony, to G. Ligeti's sound-mass
music contains an exact (as mathematical) approach to
concurrency and parallelism appearing in performance
according to musical scores for many voices.

Musical score

Writing a musical score for many simultaneously appearing voices resembles writing a program (e.g. in NESTL) which respects simultaneously working processors, where e.g. the restrictions for sharing an access to central memory could correspond to counterpoint rules of polyphony.

Suggestion

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- ▶ Ligeti's sound-mass music could serve as a metaphor for quantum massive parallelism,
- ▶ randomized spiking neural P systems (respecting the timing of spikes by counting time by beats in the bars) could be mathematical models for this metaphor.