

The Achilles point of general AI: The *symbol learning* problem



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Artificial General Intelligence

- GOFAI:
 - There are symbols
 - we **just** have to ground them
 - symbol grounding problem

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From Compressive Sampling to the ‘Symbol Learning Problem’

Lőrincz 2009

A different view

Constraints

➤ from neuro

➤ from math

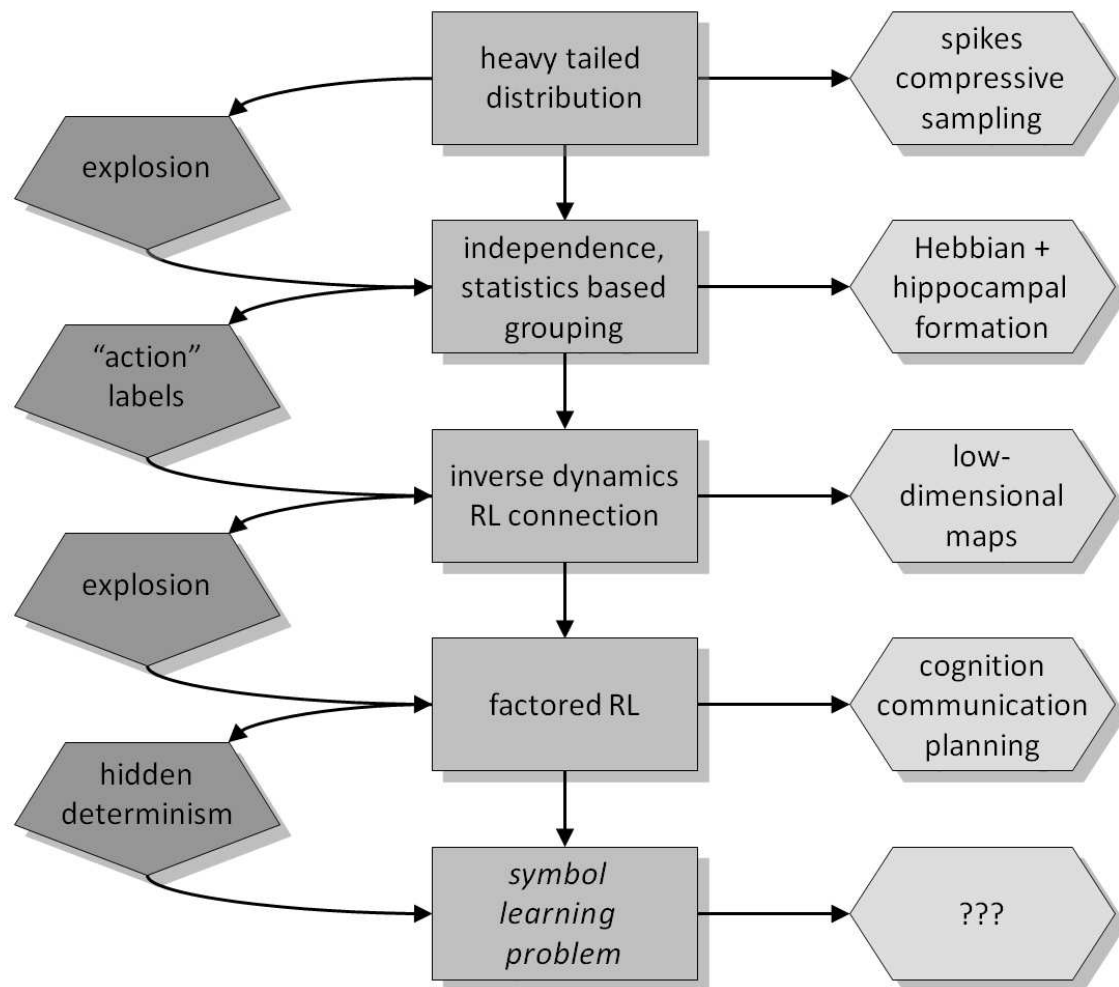
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Artificial General Intelligence

- GOF AI:
 - There are symbols
 - we **just** have to ground them
 - symbol grounding problem – exponentially hard
- Conjecture for AGI:
symbol learning = graph partitioning

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- **Whether the low entropy variables can be learned in polynomial time.**

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- **The main concern**
 - if there are low entropy variables (symbols) such that
 - the transition probabilities (weights of the graph) between the low entropy variables determine
 - the transition probabilities between the high entropy manifestations or not **and**
- **Whether the low entropy variables can be learned in polynomial time.**
- **Recent mathematical advances claim**
 - even for extreme graphs
 - symbol learning should be possible in polynomial time

Symbol learning

Recent mathematical advances claim

- even for extreme graphs
- symbol learning should be possible in polynomial time

AGI (even) for extreme graphs:

- **Symbol learning** → separation of structure and noise
- Separation of structure and noise in extreme graphs
→ Terrence Tao

References

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Thanks for your attention



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