

Engineering Conferences International

ECI Digital Archives

Nature-Inspired Engineering

Proceedings

9-8-2019

Trade-offs in Computer-aided Biomimetics

Ruben Kruiper

Julian J.F.V. Vincent

Jessica Chen-Burger

Ioannis Konstas

Rupert C. Soar

See next page for additional authors

Follow this and additional works at: https://dc.engconfintl.org/nature_inspired

 Part of the [Engineering Commons](#)

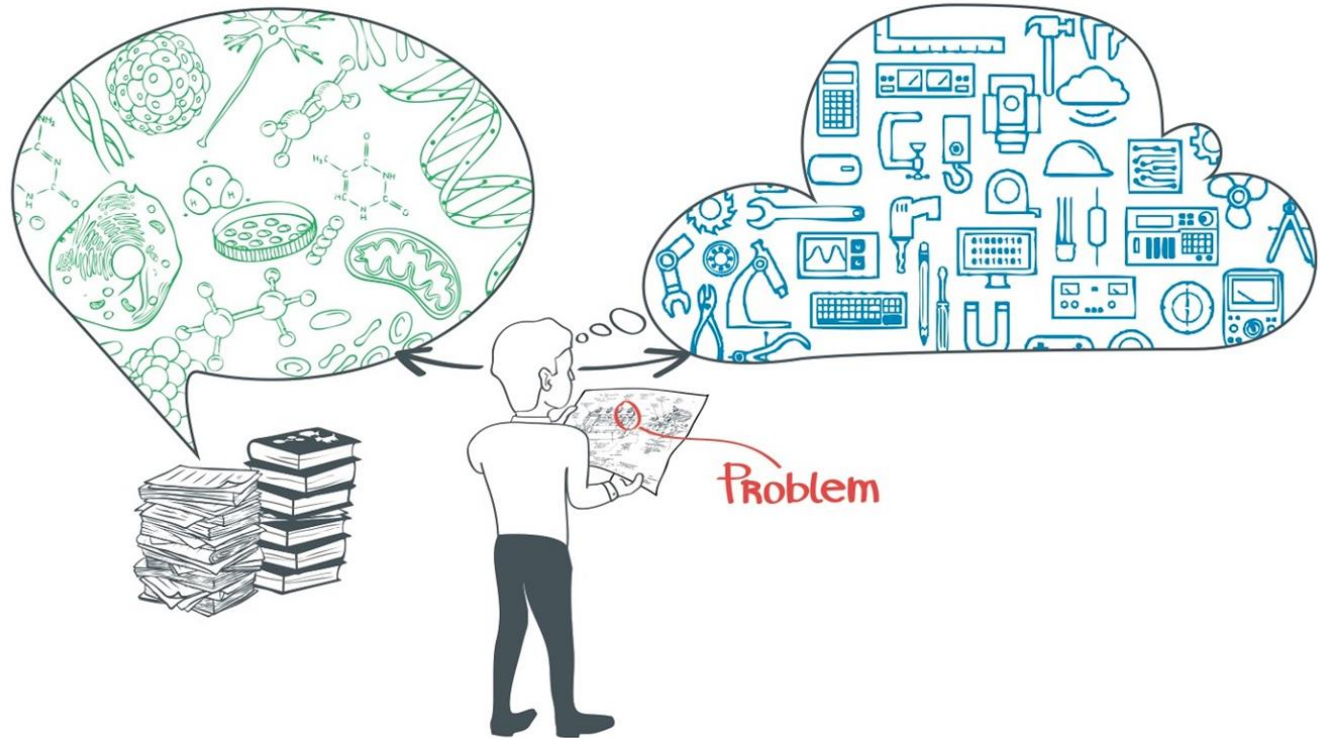
Authors

Ruben Kruiper, Julian J.F.V. Vincent, Jessica Chen-Burger, Ioannis Konstas, Rupert C. Soar, and Marc P.Y. Desmulliez

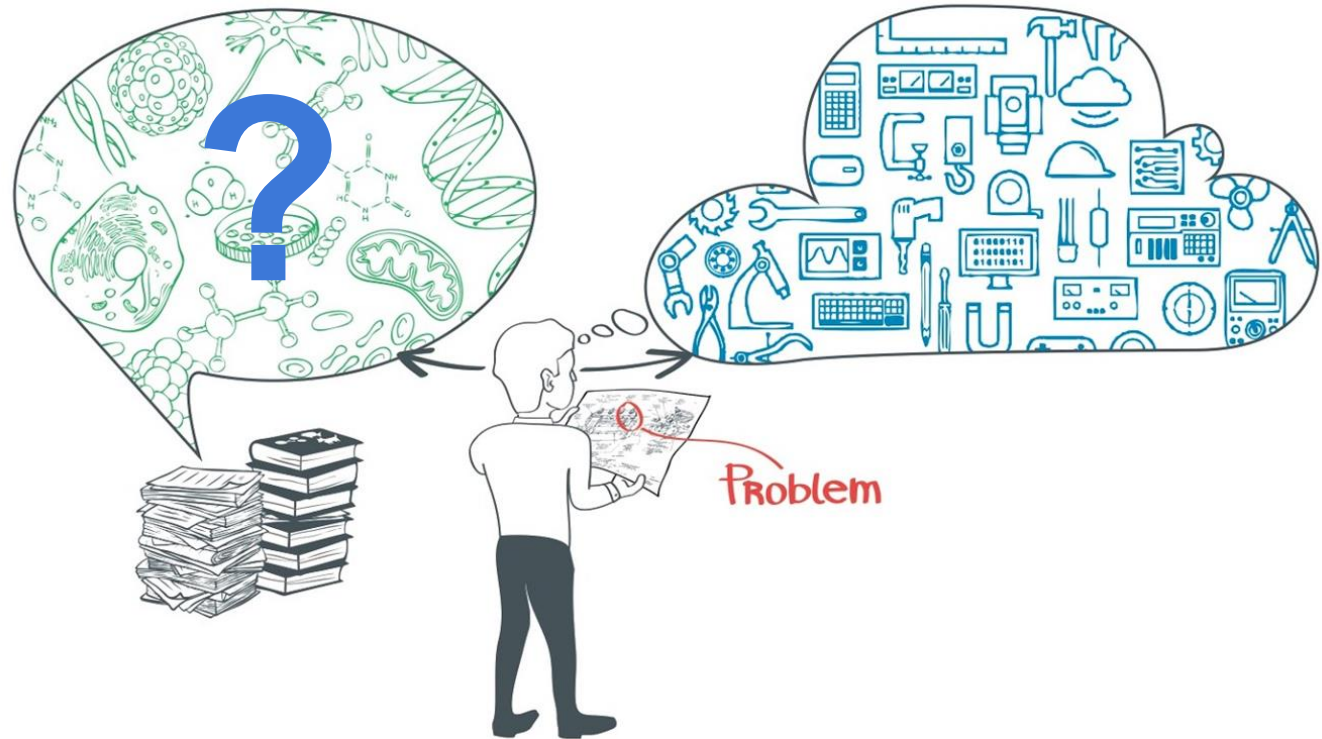
Trade-offs for Computer-Aided Biomimetics

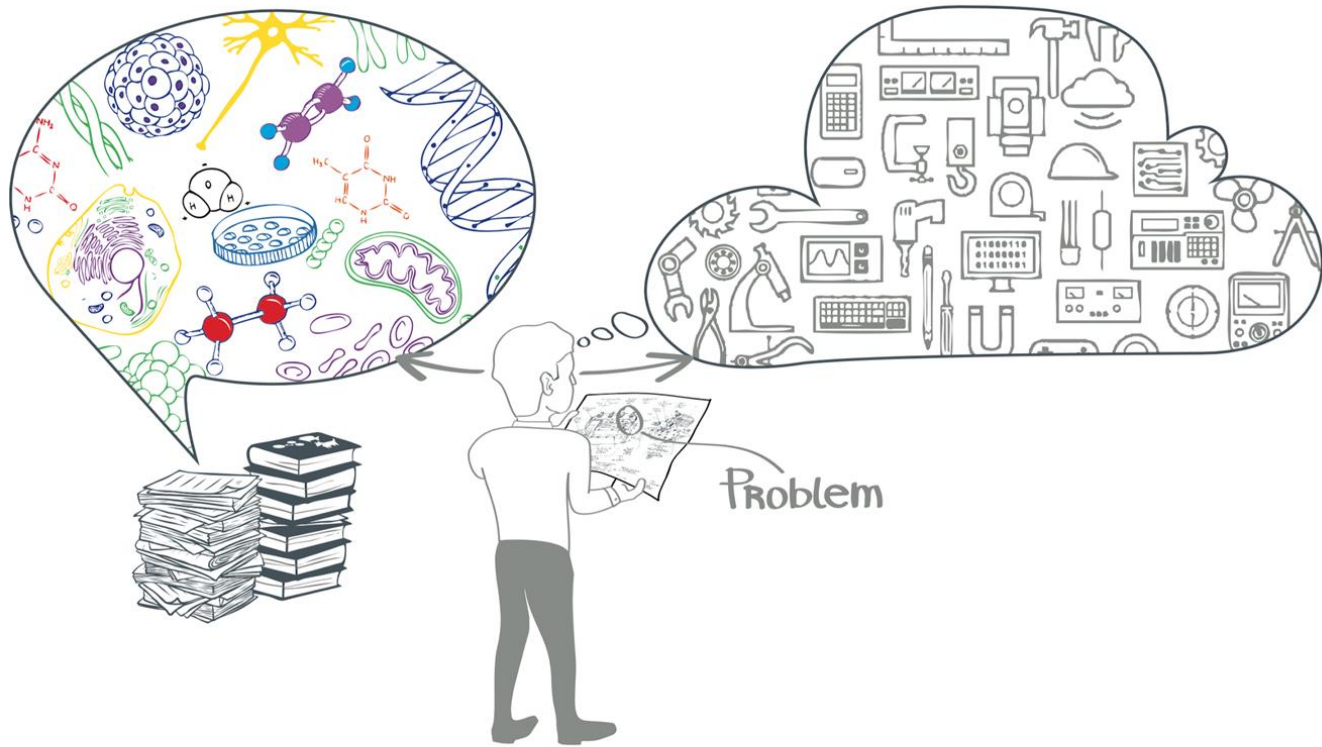


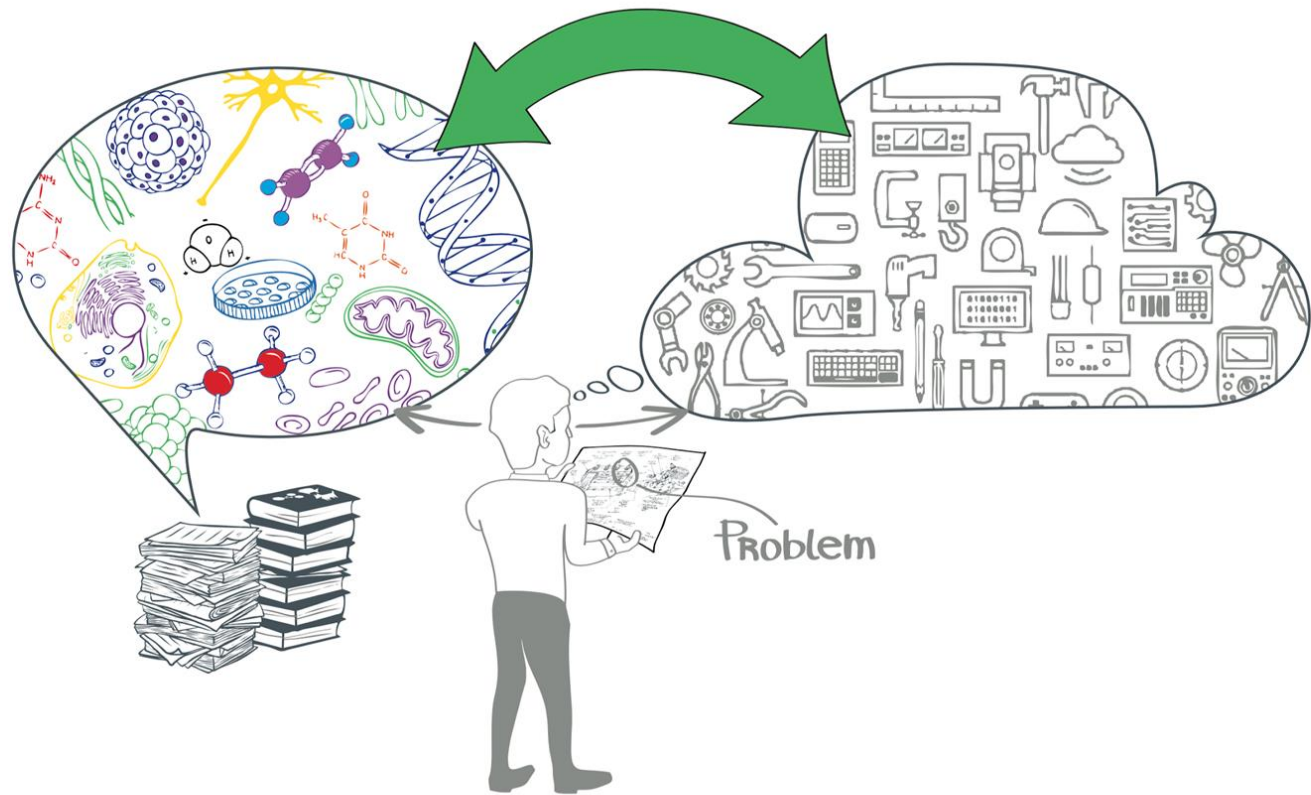
- Hardly ever trained as biologists
- Incorporate more specific properties
- Increase biodiversity of analogies



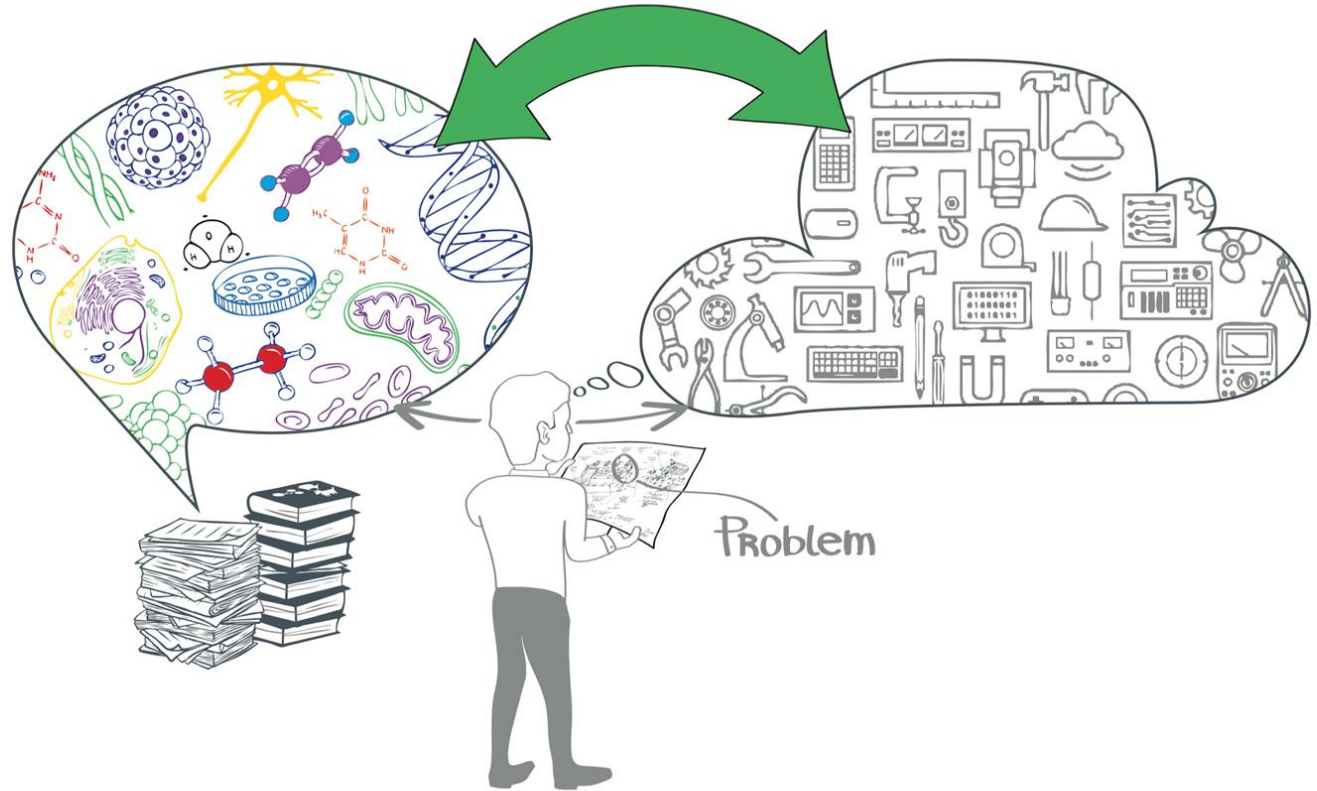
- **Hardly ever trained as biologists**
- Incorporate more specific properties
- Increase biodiversity of analogies

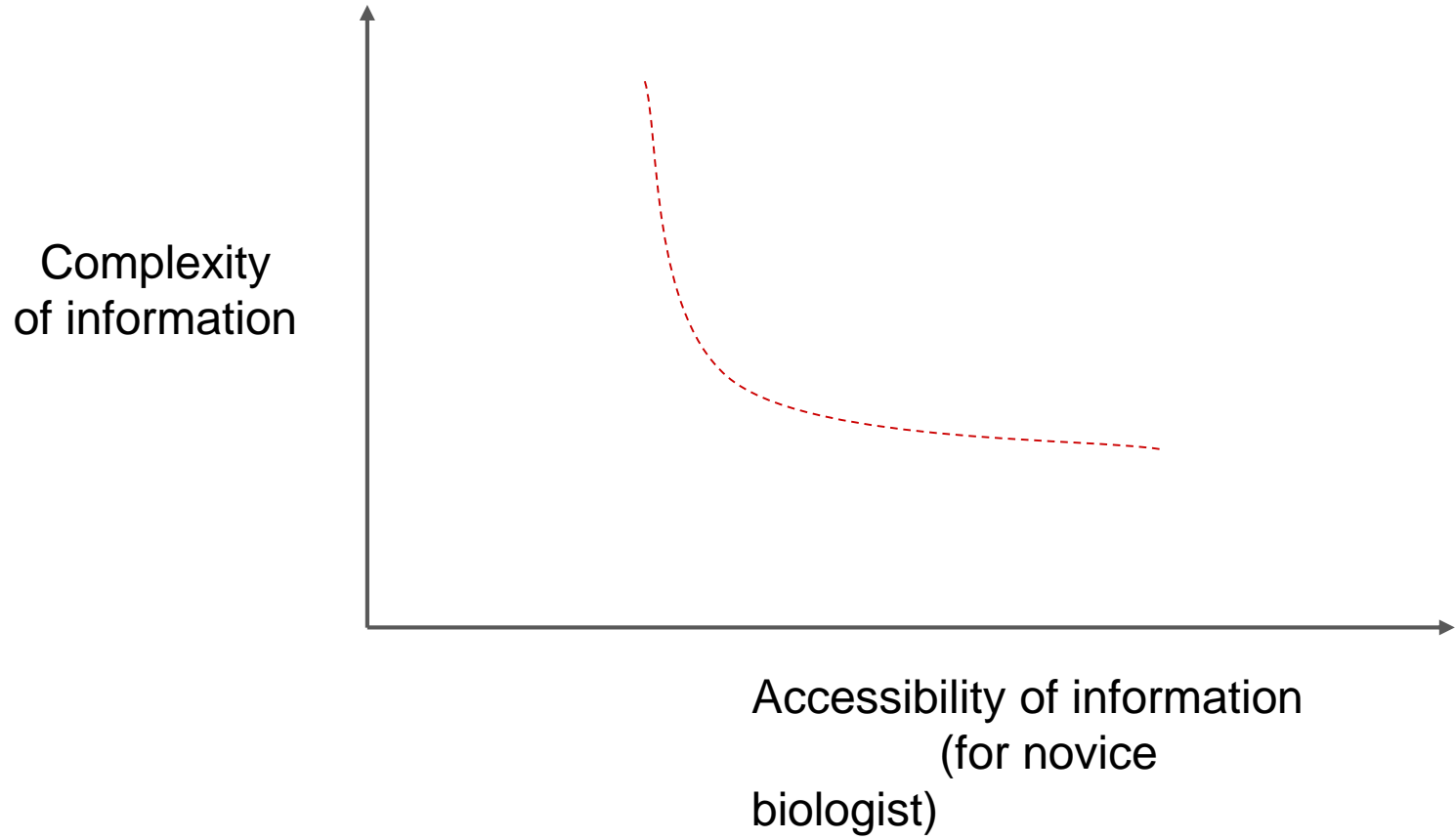




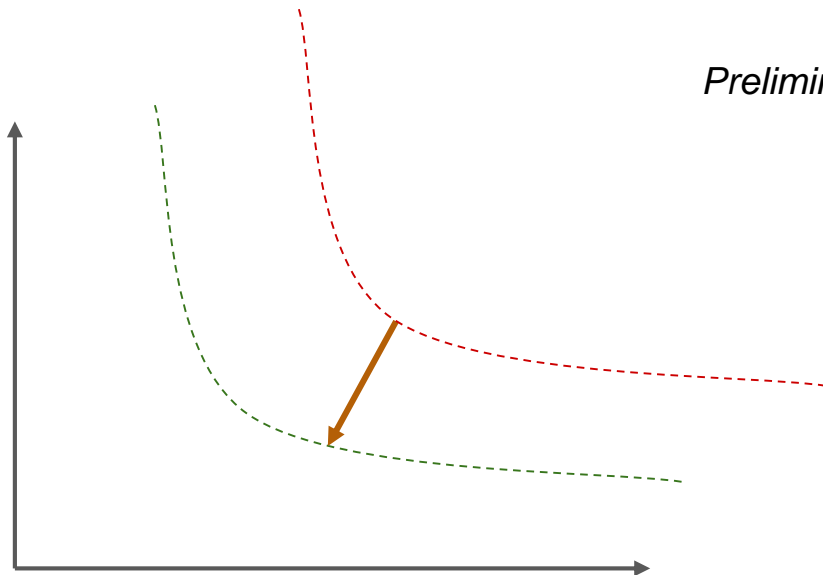


Trade-offs





Complexity
of information

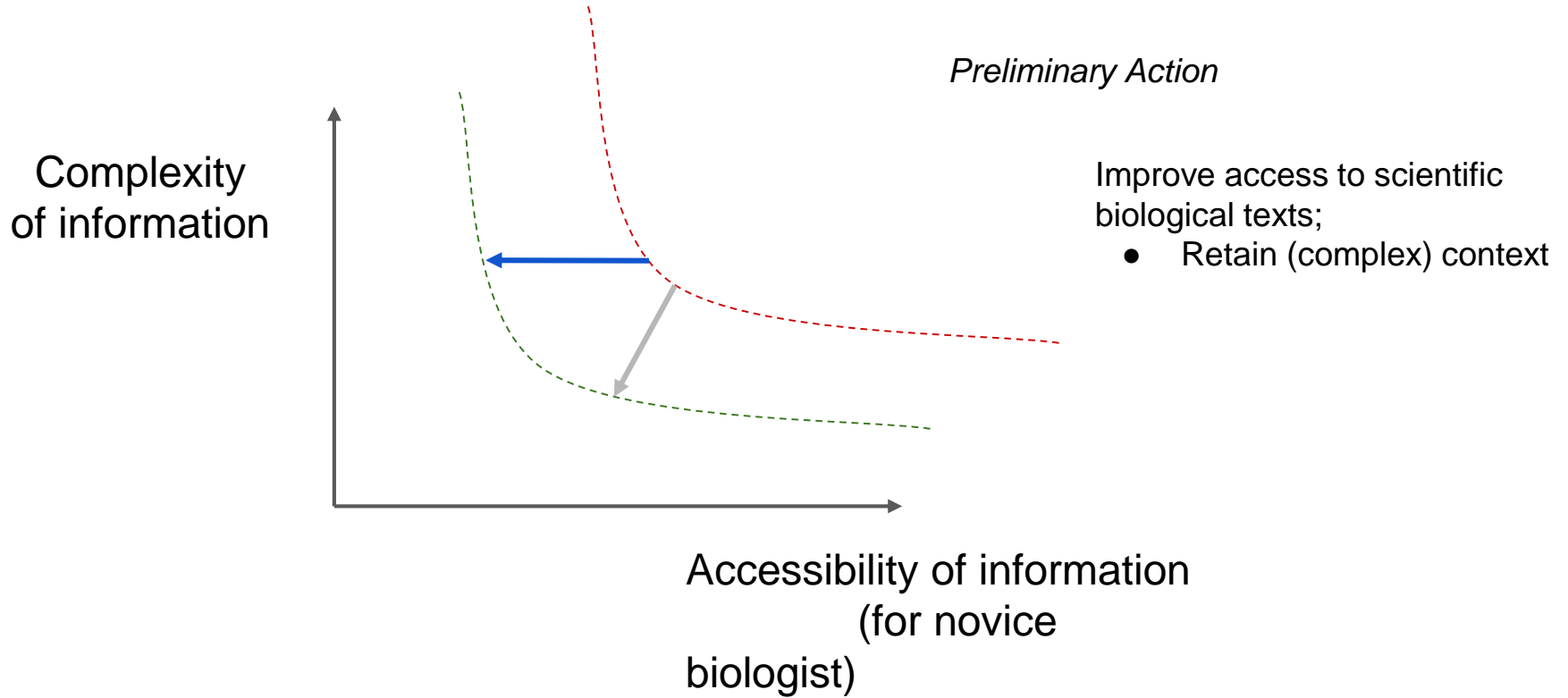


Preliminary Action

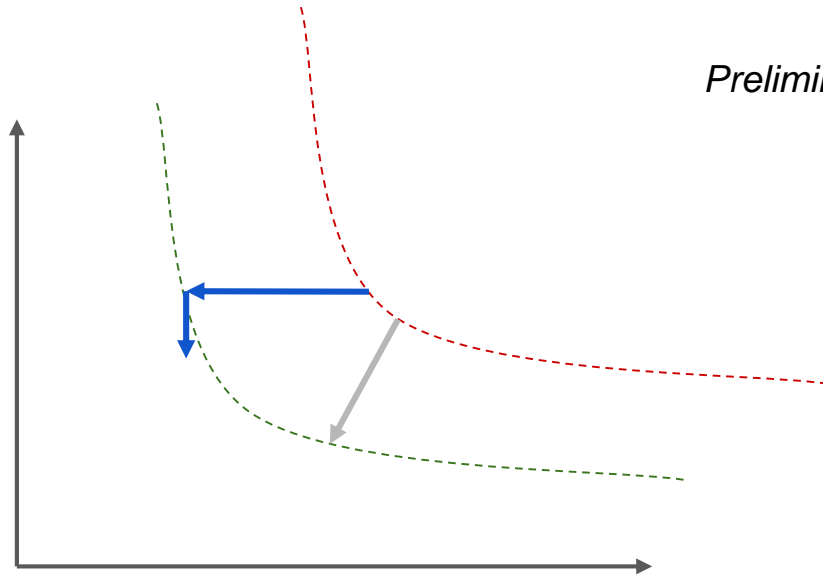
AskNature Database;

- Loss of information
- Limited in scope
- Time intensive

Accessibility of information
(for novice
biologist)



Complexity
of information

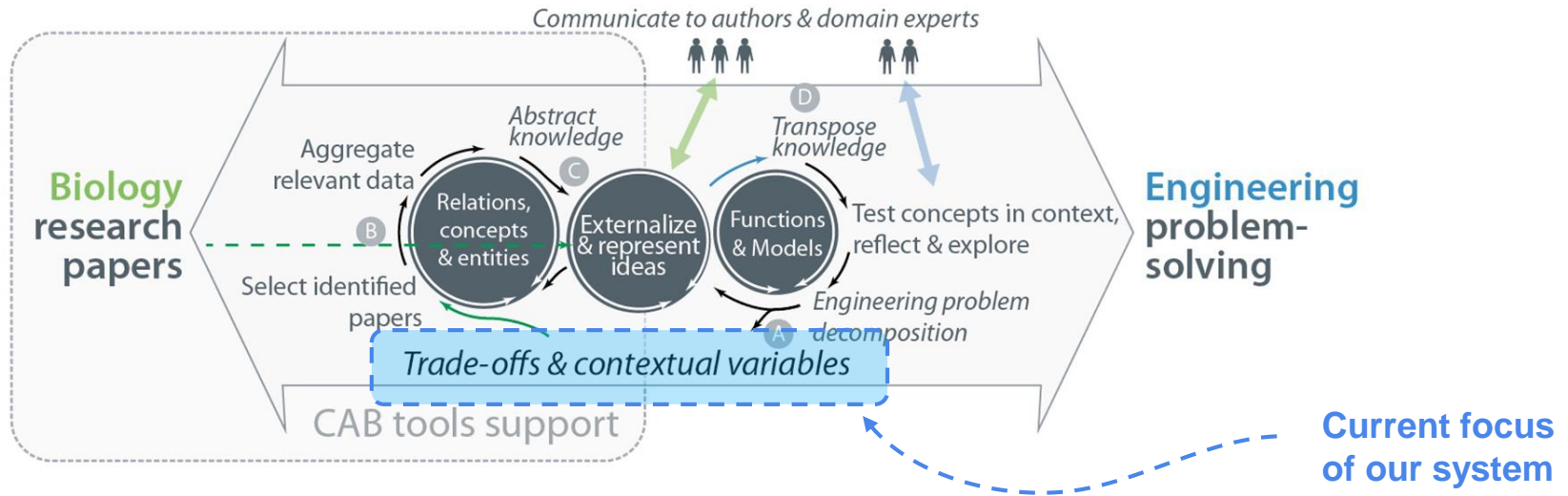


Preliminary Action

Improve access to scientific
biological texts;

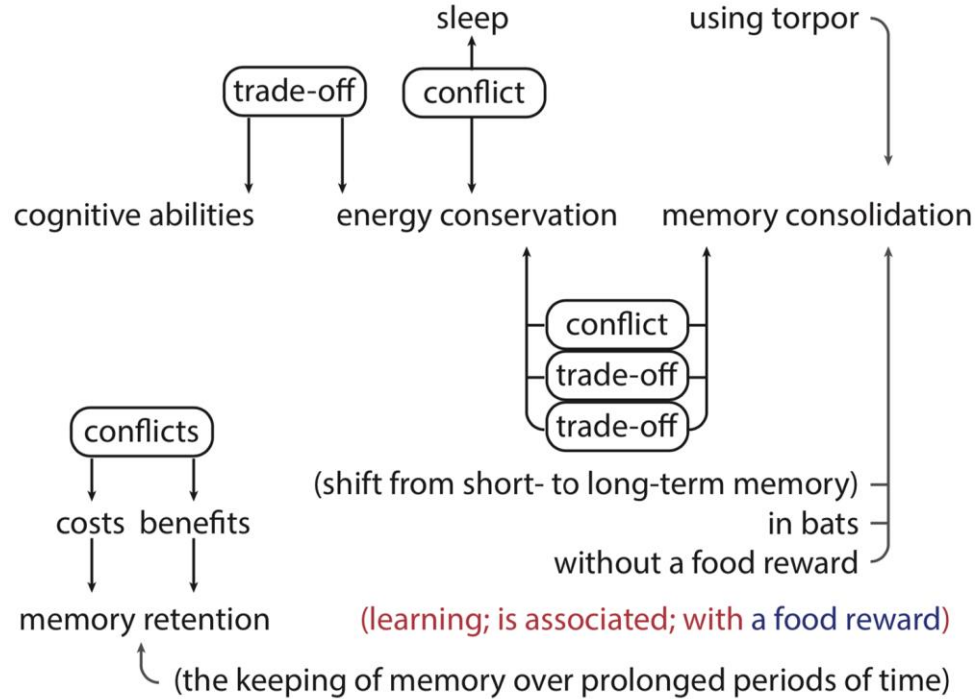
- Retain (complex) context
- Insight relations and concepts

Accessibility of information
(for novice
biologist)



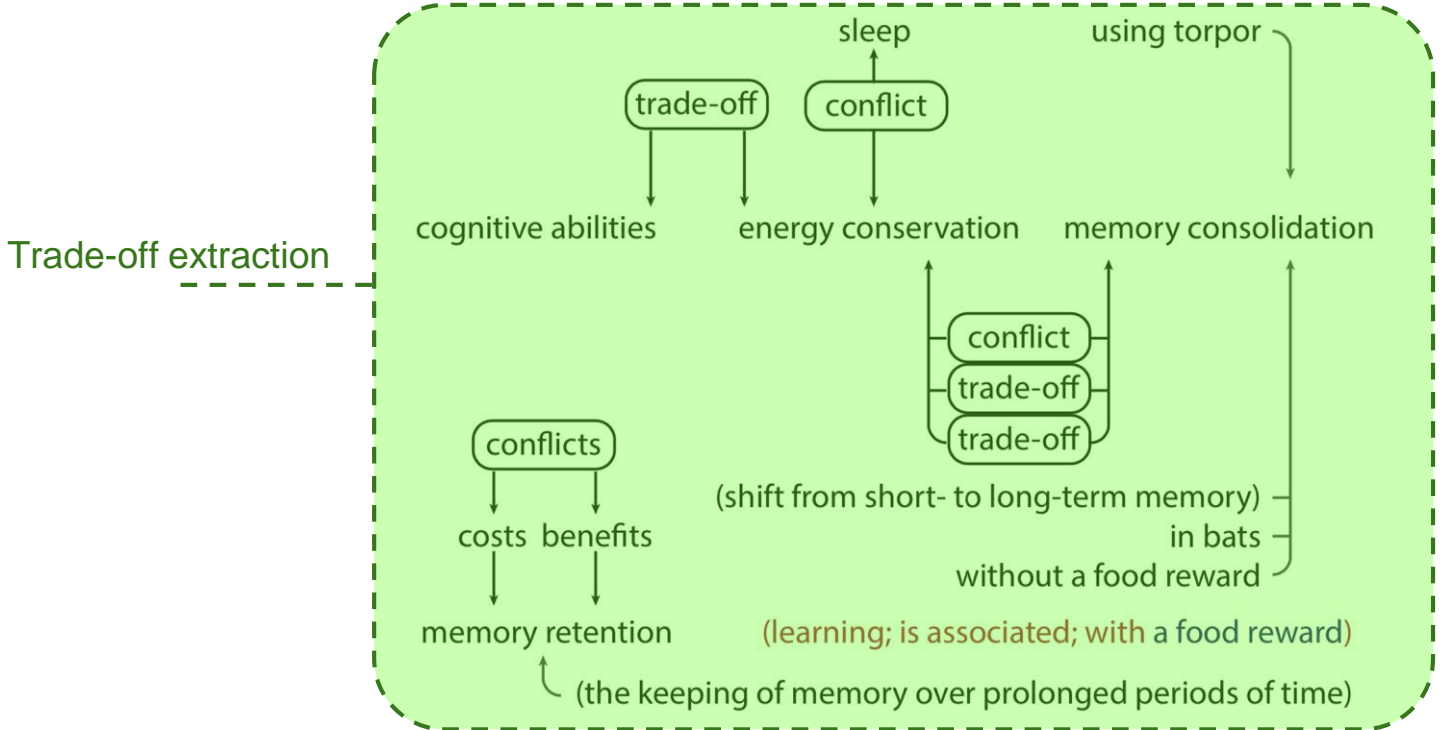
Kruiper et al. (2018) [Towards a Design Process for Computer-Aided Biomimetics](#)
 Vincent (2016) [The Trade-off – A Central Concept for Biomimetics](#)

(Sleep deprivation; has; negative effects on both memory consolidation)
 (torpor; has; a negative influence on memory consolidation)
 (digestion; prevents; the bats; from falling into torpor quickly)
 (torpor ; indeed affects ; learning abilities)



(A memory; is normally formed;
 after repeated learning events; sleep enhances this process)

(Sleep deprivation; has; negative effects on both memory consolidation)
 (torpor; has; a negative influence on memory consolidation)
 (digestion; prevents; the bats; from falling into torpor quickly)
 (torpor ; indeed affects ; learning abilities)



(A memory; is normally formed;
 after repeated learning events; sleep enhances this process)

Semi-Open
 Relation Extraction