

EMERGENCE OF AGENCY

The world is changed. I feel it in the water.
I feel it in the earth. I smell it in the air.

→ IHenrik von Wehrden - Methods I -VII



LEUPHANA
UNIVERSITÄT LÜNEBURG

AGENCY, COMPLEXITY AND EMERGENCE

Boundary objects of the world
for a richer and diverse model



AGENCY

Agency is defined as the capacity of an individual to act intentionally with the assumption of a causal outcome based on this action

What is intentionality?

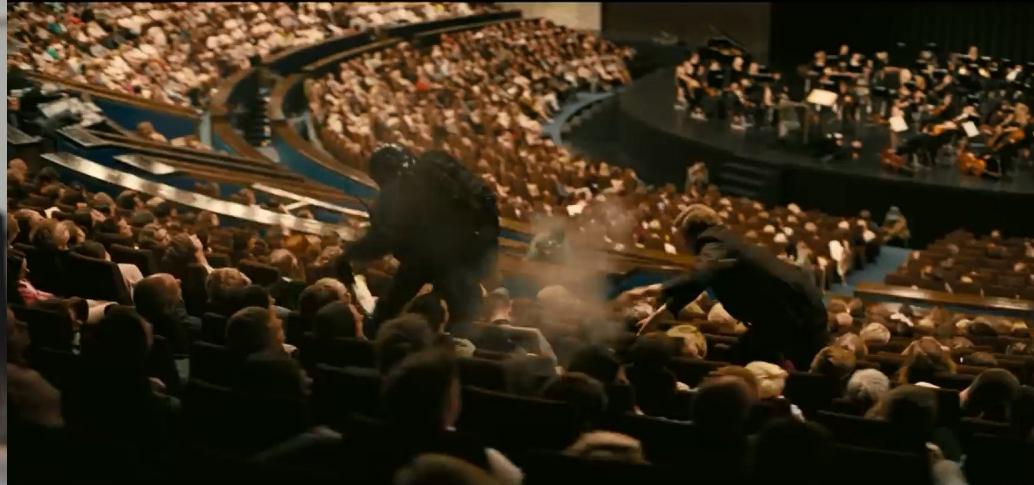
How do we consider causality?

What are actions?



AGENCY

Agents, their actions, and the consequences of their actions



AGENCY

- How to approach agency methods-wise
- Started in philosophy, then social theory
- Thomas Aquinus: Habitus
- Dewey: “critique of behavioral reductionism “
- Bourdieu: habitus to illuminate the formative influences of the past upon the cognitive, corporeal, and intentional structures of empirical action”
- Giddens: Stratification of action: unconscious, practical consciousness, and discursive consciousness

Emirbayer, M., & Mische, A. (1998). What is agency?. *American journal of sociology*, 103(4), 962-1023.



AGENCY

“We define it as the temporally constructed engagement by actors of different structural environments—the temporal- relational contexts of action—which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations. “

Emirbayer, M., & Mische, A. (1998). What is agency?. *American journal of sociology*, 103(4), 962-1023.



AGENCY

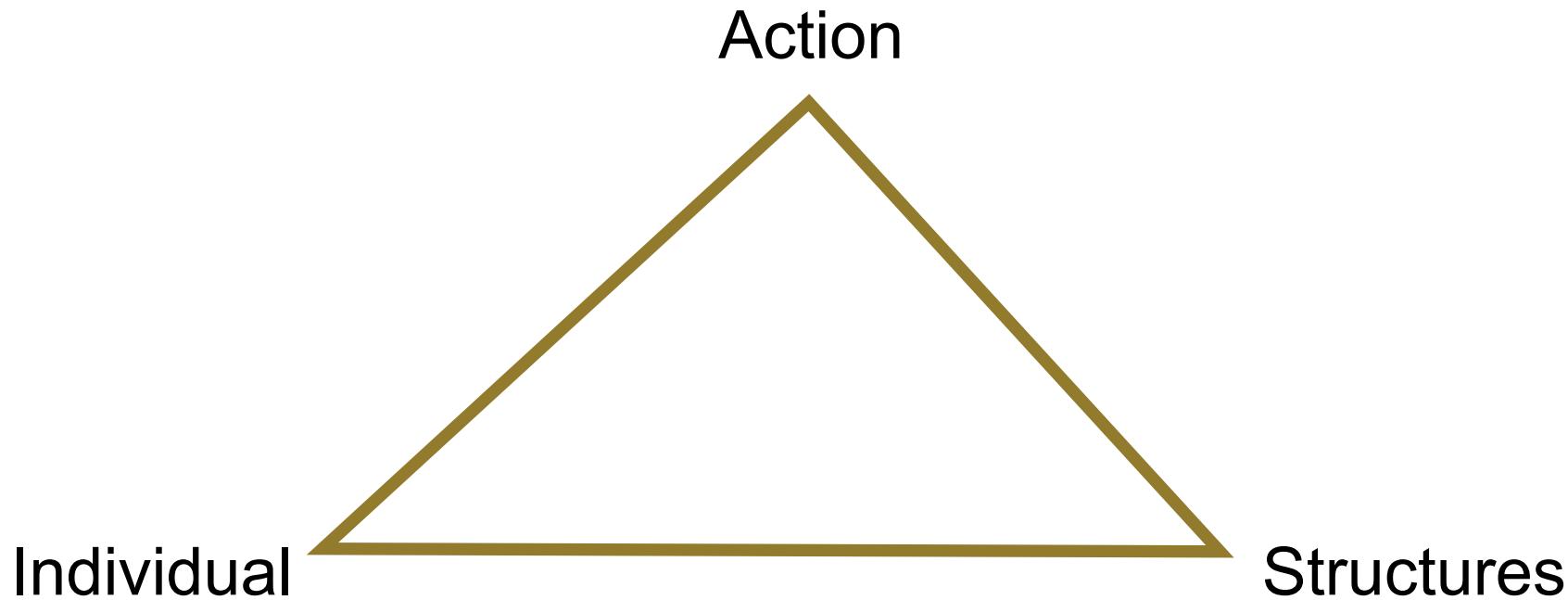
- Empirically:
- Temporal orientation:
 - -Temporal perspectives, future scenarios and visions, institutional development.
- Contextual, reflexiv in relation to action, social and relational, self as basis of dialogue.
- Pragmatic focus on action
- Examples of concepts: Practical wisdom (Aristotle), feminist theories

Emirbayer, M., & Mische, A. (1998). What is agency?. *American journal of sociology*, 103(4), 962-1023.



AGENCY

Empirically challenging

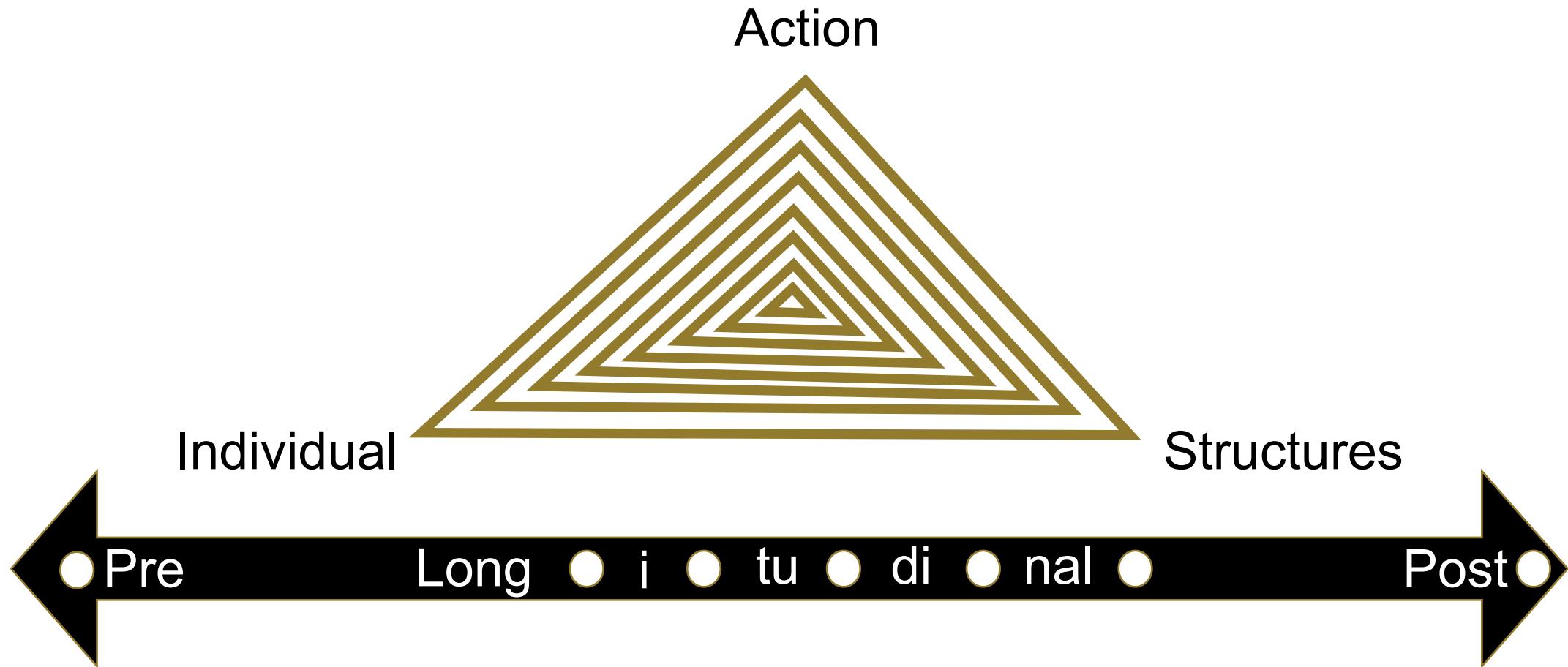


Emirbayer, M., & Mische, A. (1998). What is agency?. *American journal of sociology*, 103(4), 962-1023.



AGENCY

Fourth dimension of time to evaluate change



COMPLEXITY

- Currently not defined!
- Adaptive dynamics and interactions
- Non-linear behaviour
- Spontaneous order
- Defined by our own imperfections in understanding in this place in space and time
- What is complex today is simple tomorrow?



EMERGENCE

Definition:

If two or more entities together have a characteristic or behaviour that could not be anticipated only based on their individual parts, then this non-anticipated property is called “emergent”

A property of a complex object is said to be emergent if neither of the constituents or precursors of the object possesses it (Bunge 2003)

Bunge, M. (2003). *Emergence and convergence: Qualitative novelty and the unity of knowledge*. University of Toronto Press.

METHODOLOGICAL IMPLICATIONS I

Examples: Complex system theory

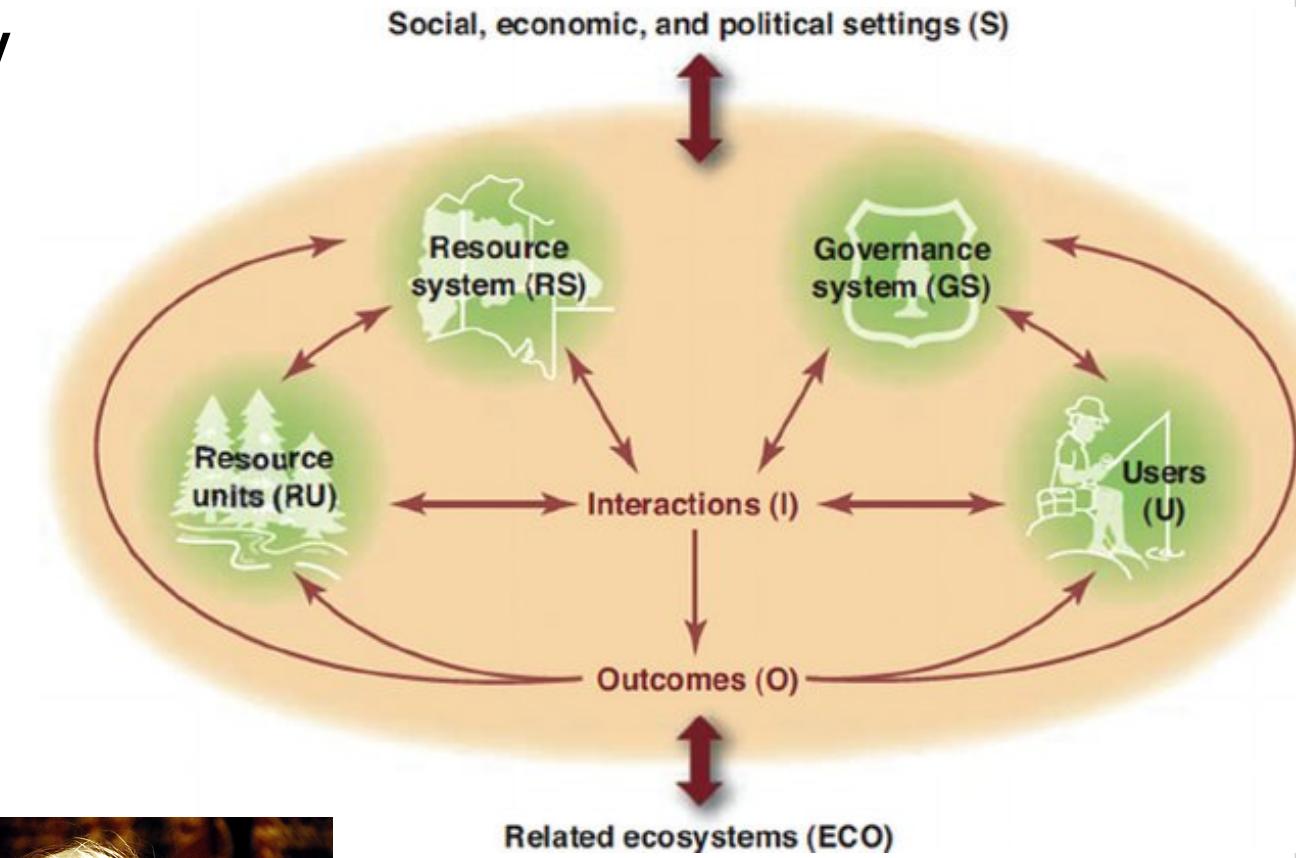
Game of life



John Horton Conway



Elinor Ostrom



METHODOLOGICAL IMPLICATIONS II

- Agency, complexity, emergence
- all challenge positivist methods and thinking
- Examples of challenges (so far)
- Interconnectedness
- Changeability of patterns
- Depth of the mind, origin of actions
- ?



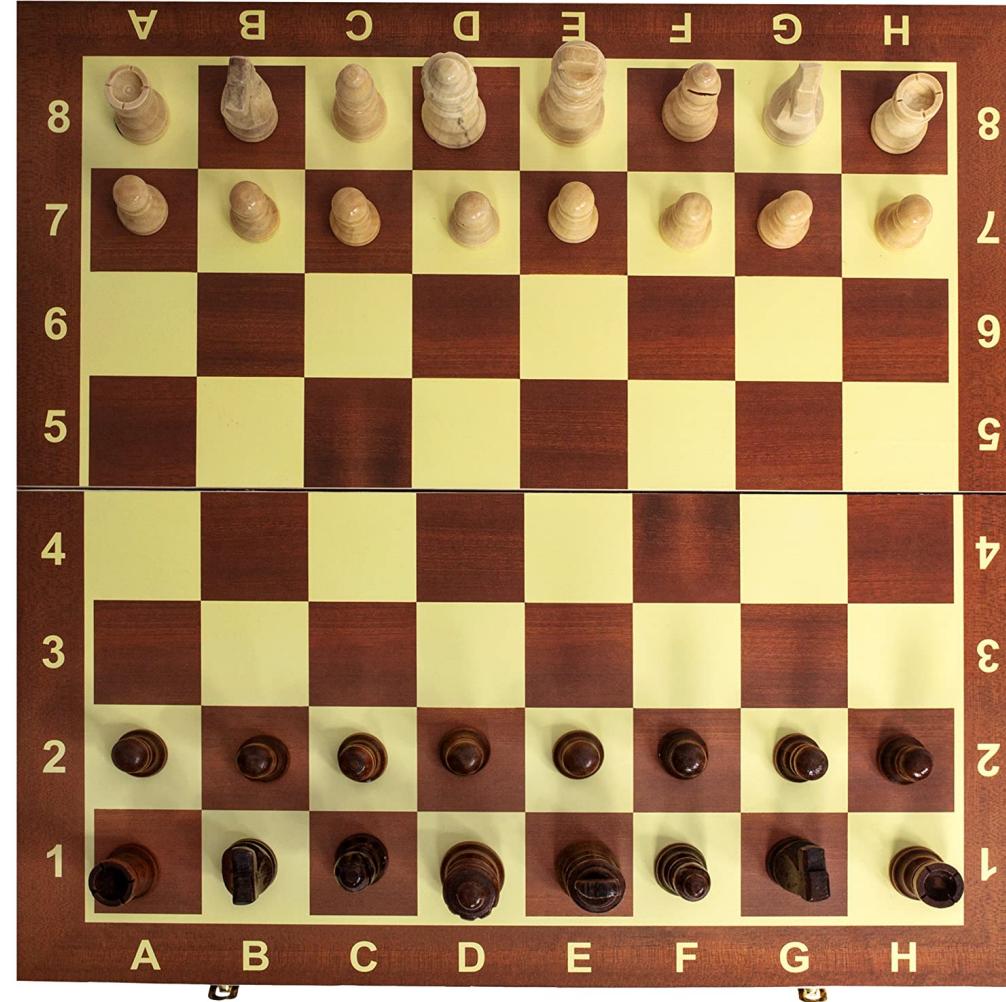
METHODOLOGICAL IMPLICATIONS III

- Temporal challenges and measures of agency
 - Theoretical foundations of intentionality
 - Measures of actions
- Empirical observations of complex phenomena
 - Non-linearity
 - Scale
- Emergence is not predictable
 - Emergent phenomena are wicked
 - Can we find patterns in emergence
- What did Roy Bhaskar say about all this?



AGENCY, COMPLEXITY, EMERGENCE

One example this time



My favourite explanation

Another explanation

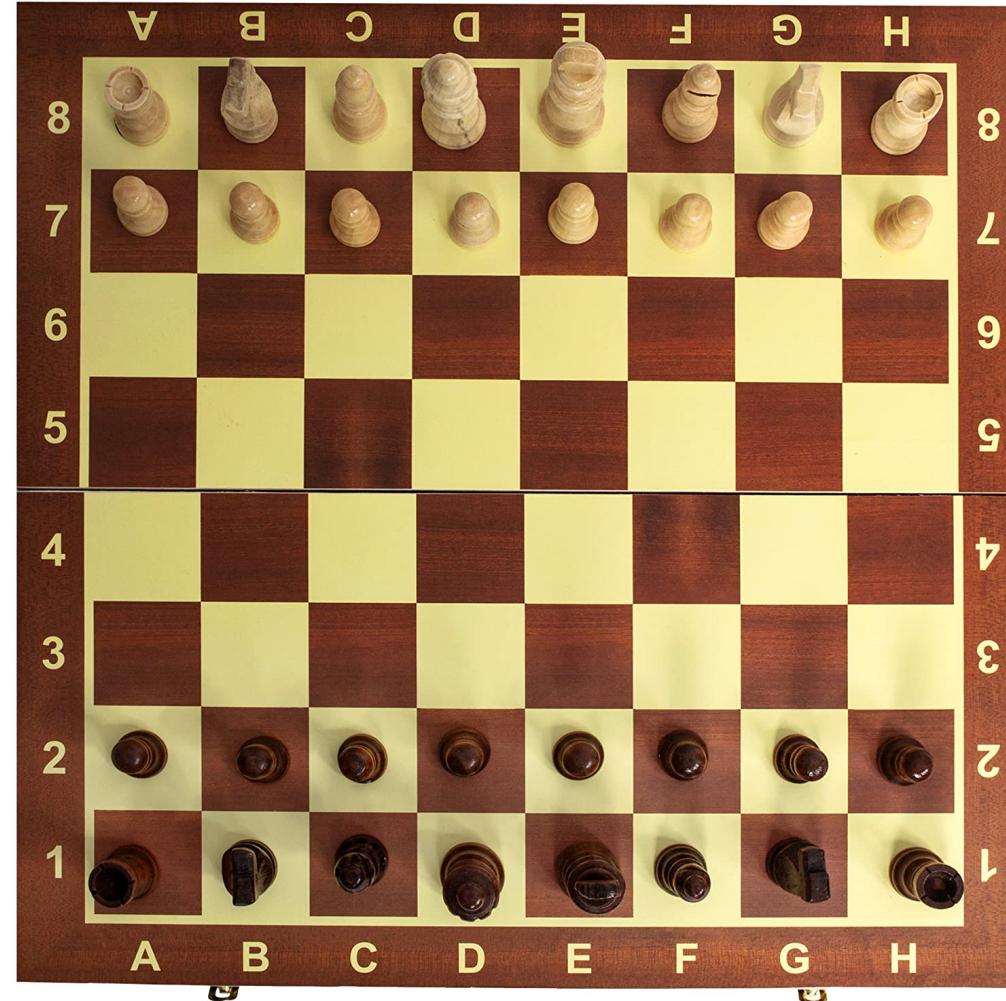
<https://www.youtube.com/watch?v=cfvtP0qlUt0>

<https://www.youtube.com/watch?v=fKxG8KjH1Qg>



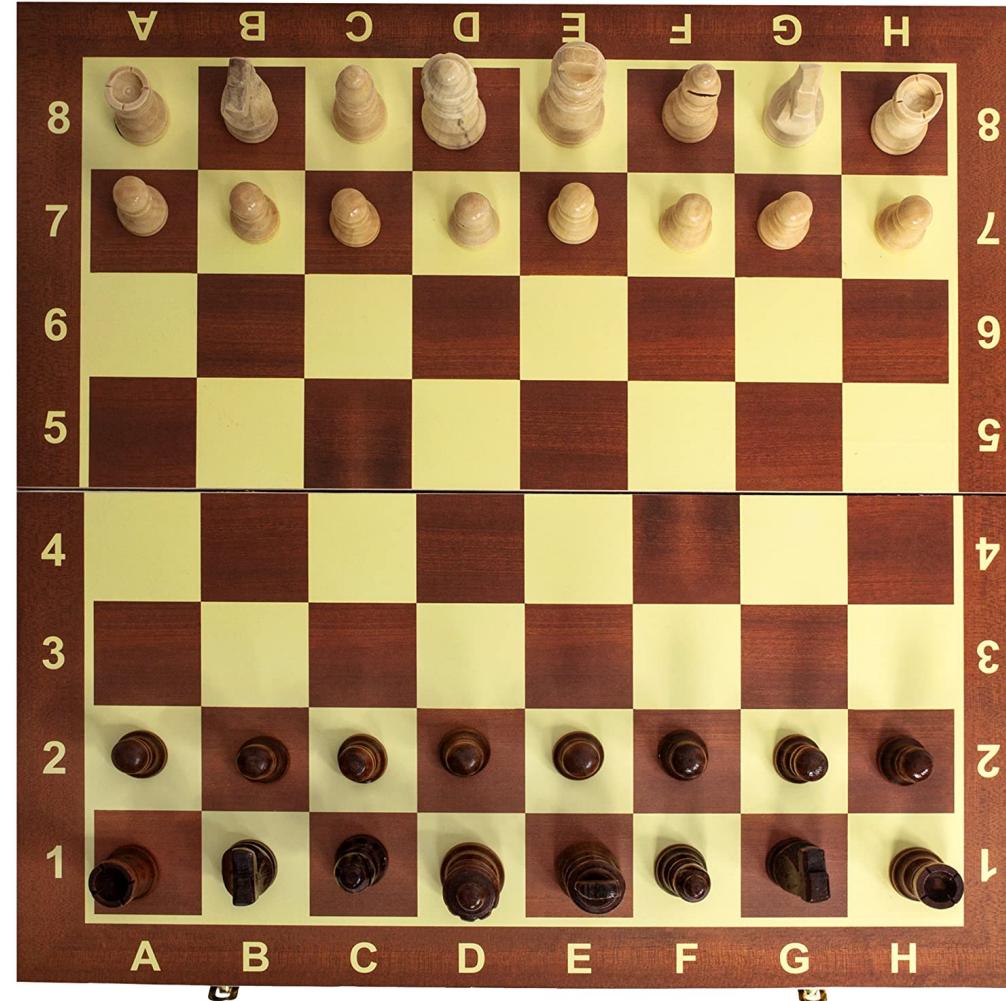
AGENCY

One example this time

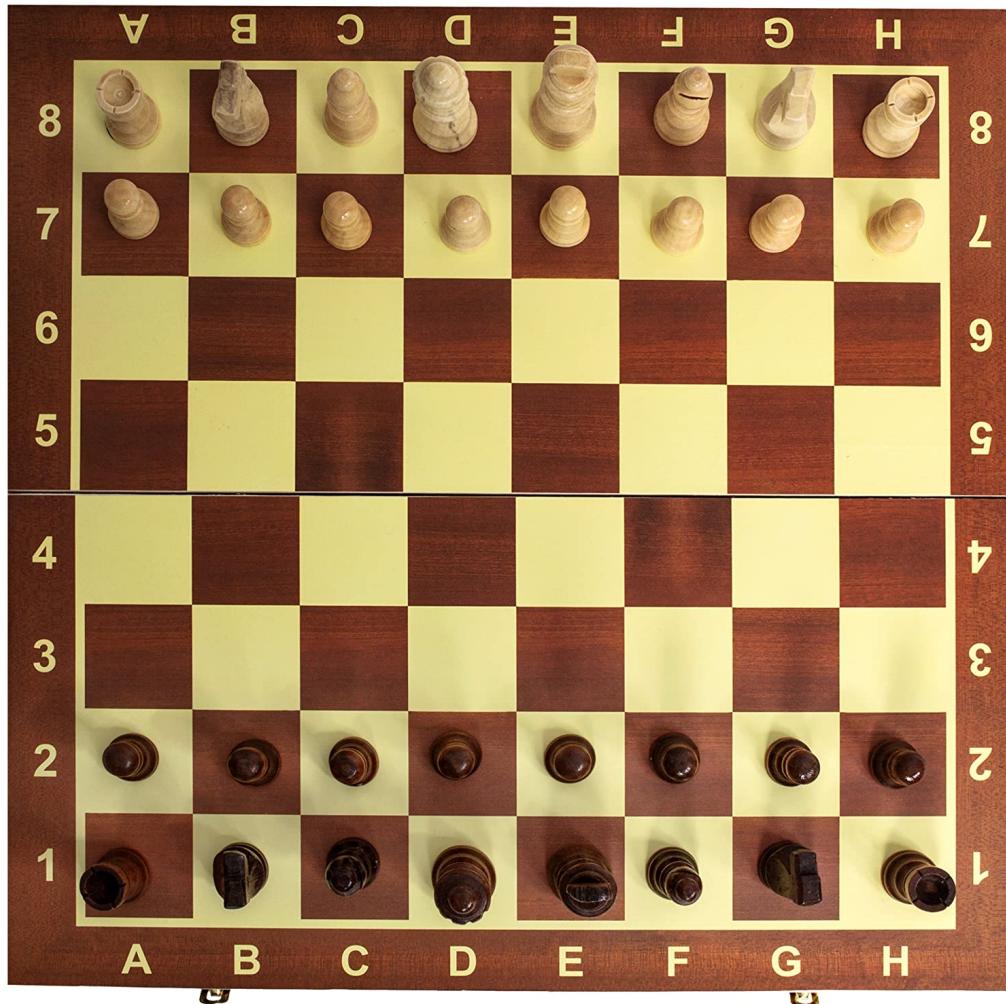


AGENCY

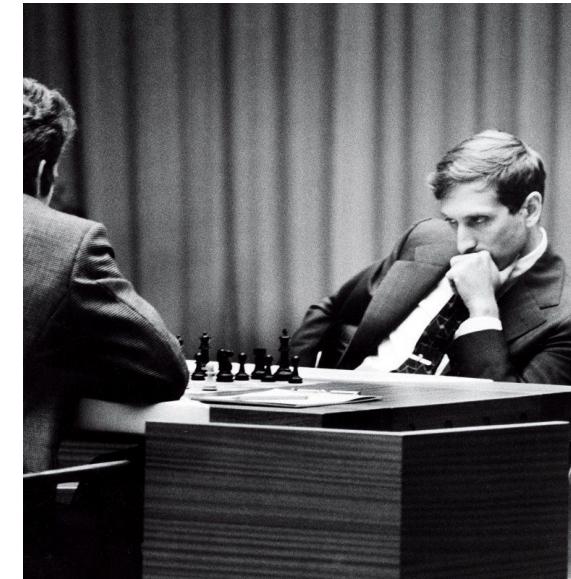
Agency is defined as the capacity of an individual to act intentionally with the assumption of a causal outcome based on this action



AGENCY



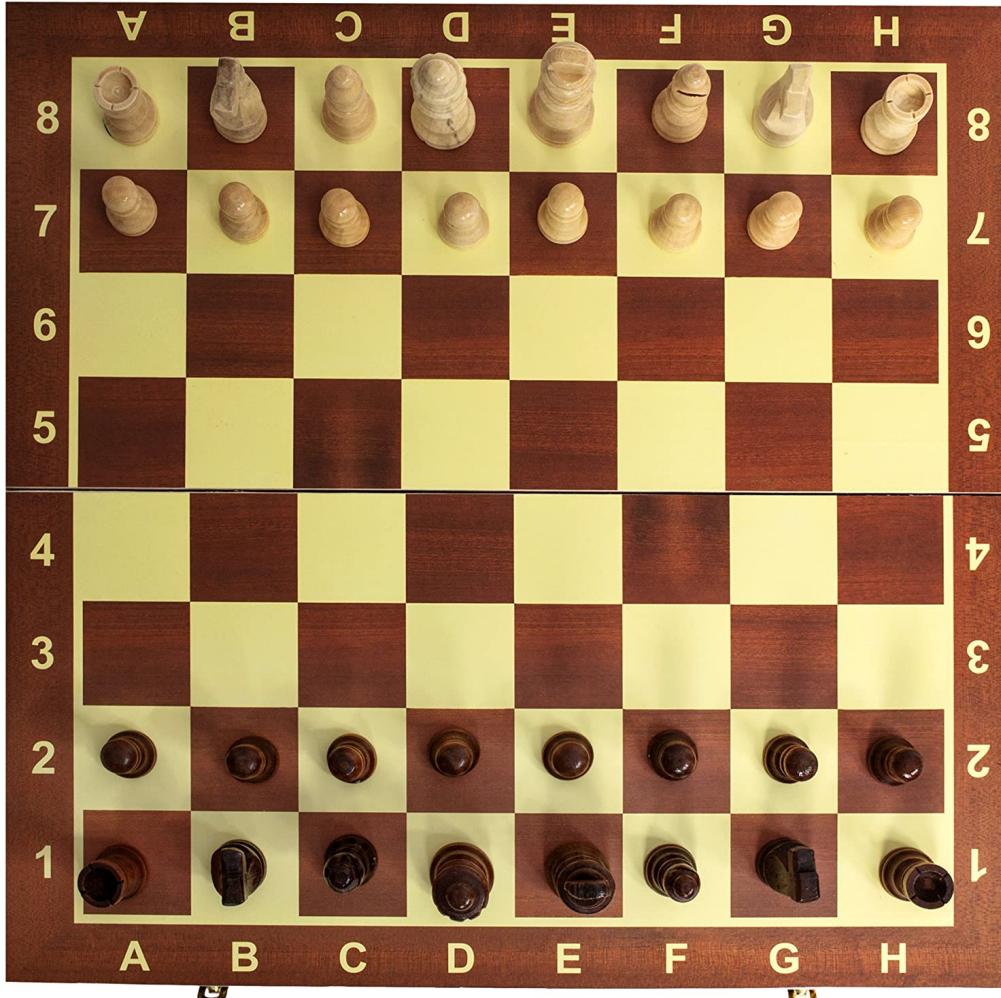
The queen's gambit



Bobby Fischer



AGENCY



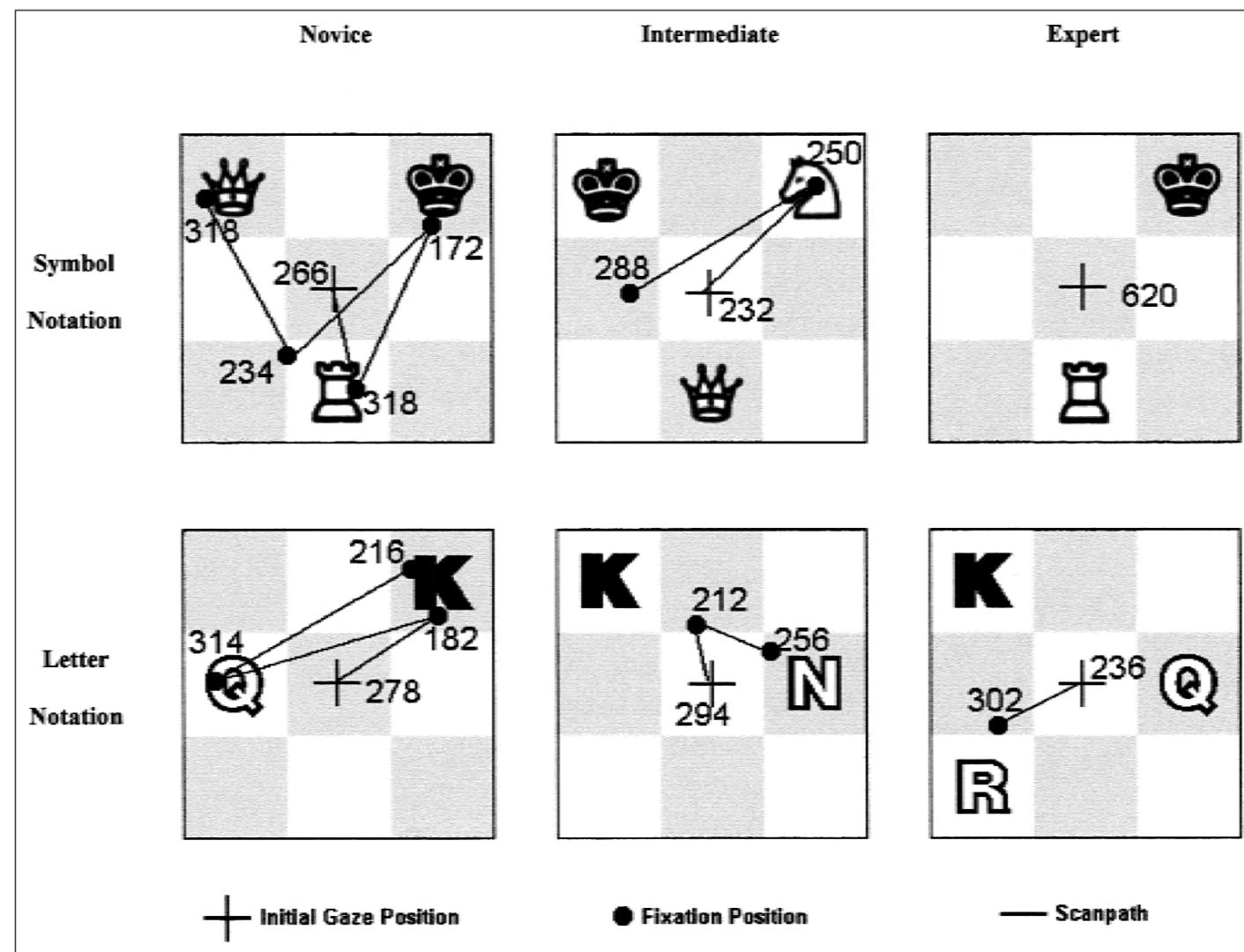
Board awareness is about an intuitive understanding of a position based on experience.

By measuring the time intervals between placements of successive pieces when the subjects attempted to reconstruct the positions, we were able to identify the boundaries of perceptual chunks. The data suggest that the superior performance of stronger players (which does not appear in random positions) derives from the ability of those players to encode the position into larger perceptual chunks, each consisting of a familiar subconfiguration of pieces. Pieces within a single chunk are bound by relations of mutual defense, proximity, attack over small distances, and common color and type.

Chase, W. G., & Simon, H. A. (1973). Perception in chess. *Cognitive psychology*, 4(1), 55-81.



Board awareness



PSYCHOLOGICAL SCIENCE

Research Article

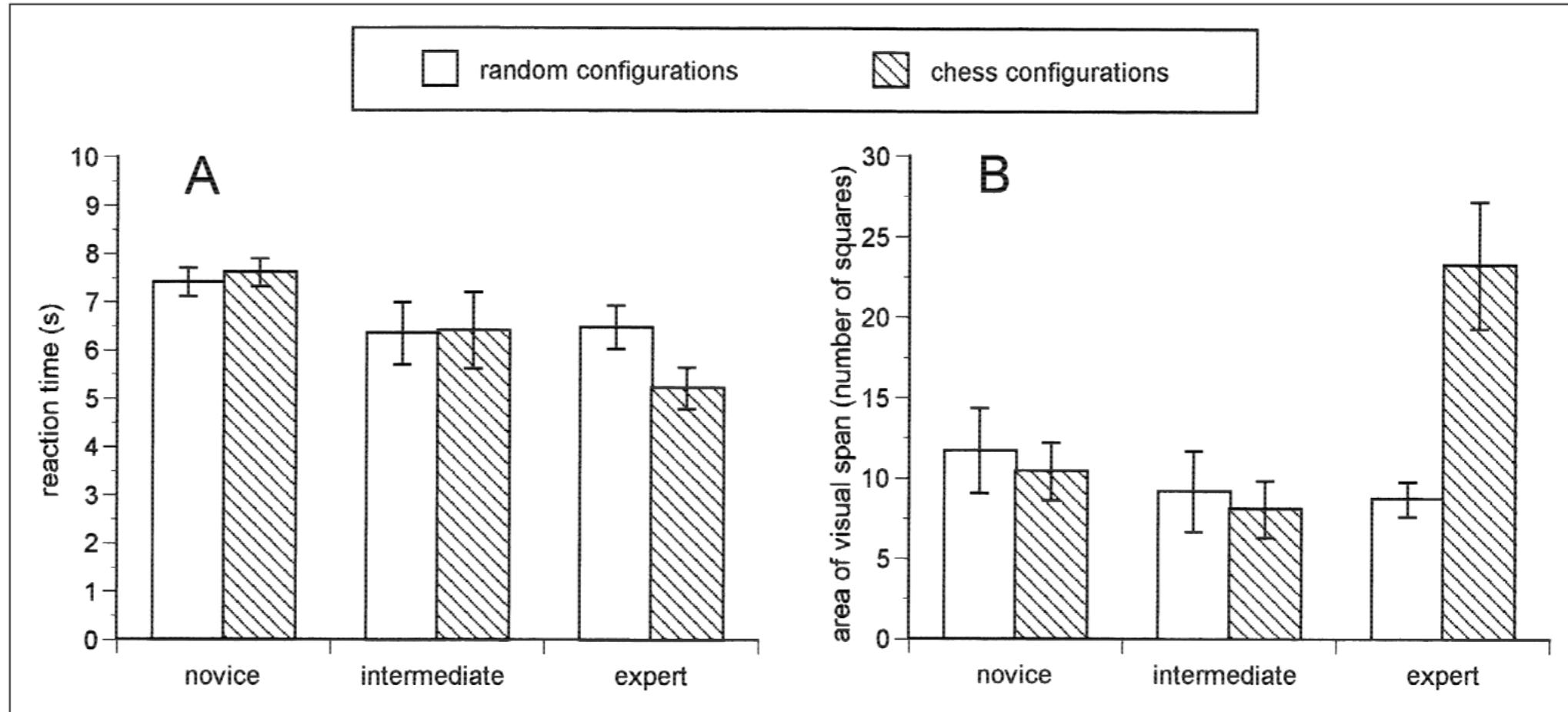
VISUAL SPAN IN EXPERT CHESS PLAYERS: Evidence From Eye Movements

Eyal M. Reingold,¹ Neil Charness,² Marc Pomplun,¹ and Dave M. Stampe¹

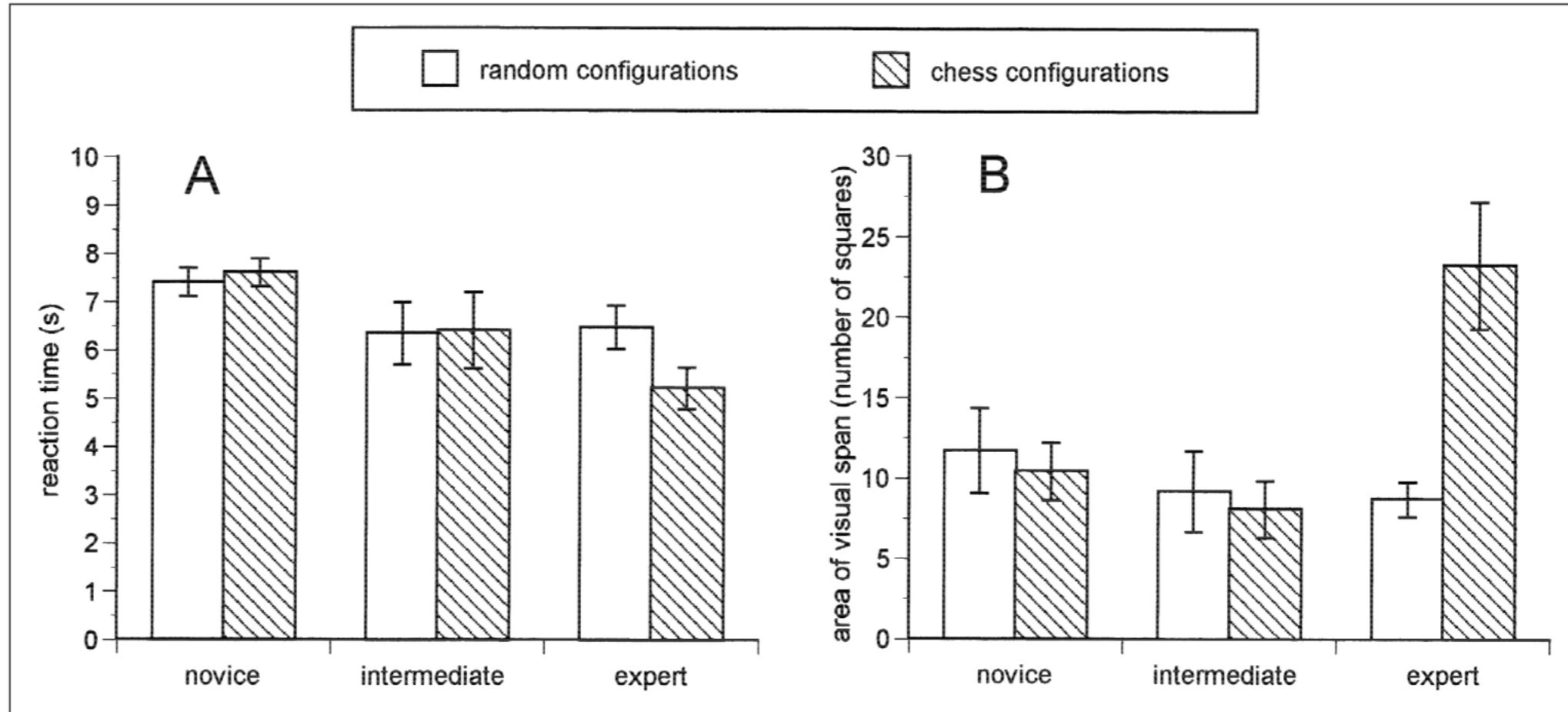
¹University of Toronto, Toronto, Ontario, Canada, and ²Florida State University



Board awareness

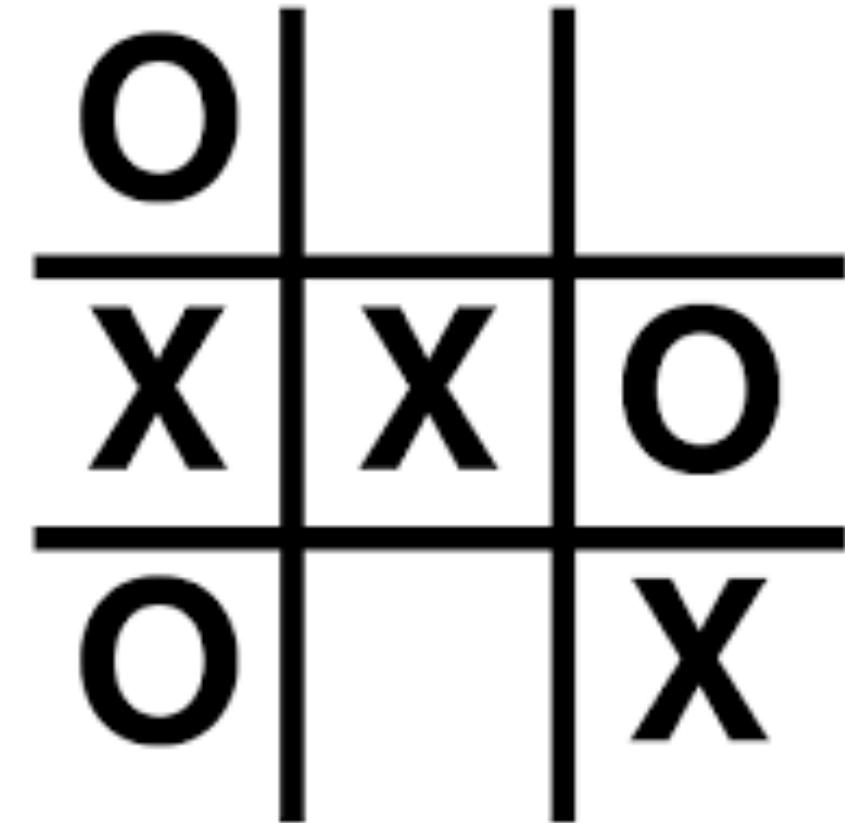


Board awareness



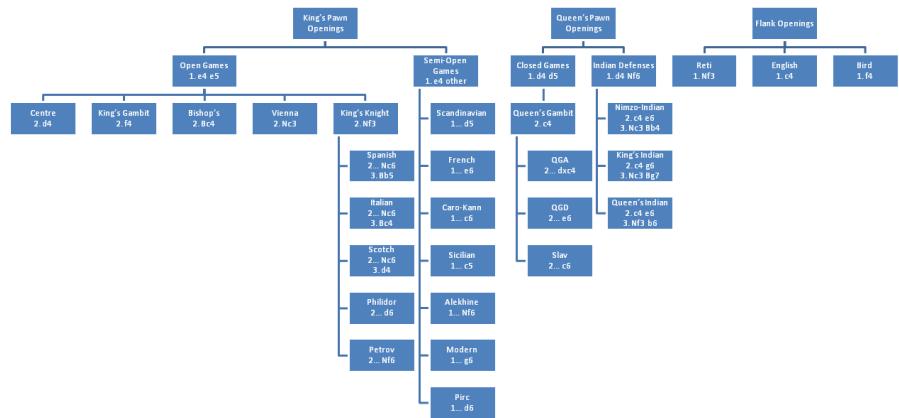
COMPLEXITY

$$3^9 = 19,683$$



COMPLEXITY

Opening moves in Chess



Sicilian Defense



French Defense



Ruy Lopez Opening



Caro-Kann Defense



Italian Game



Sicilian Defense: Closed



Scandinavian Defense



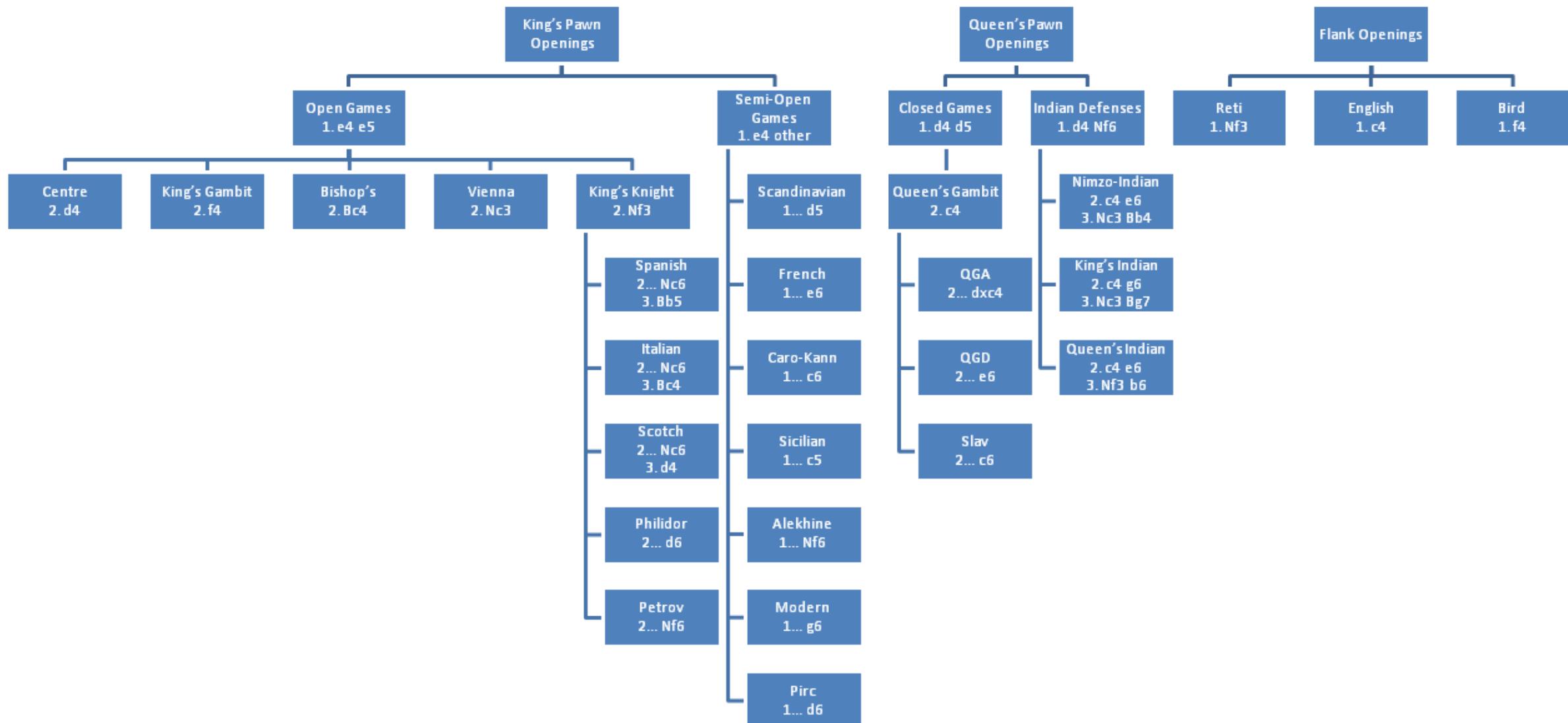
Pirc Defense: 2.d4 Nf6



Sicilian Defense: Alapin Varia...

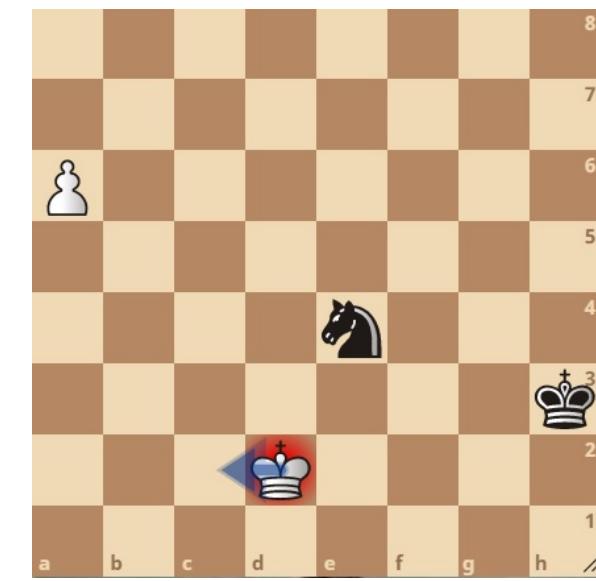
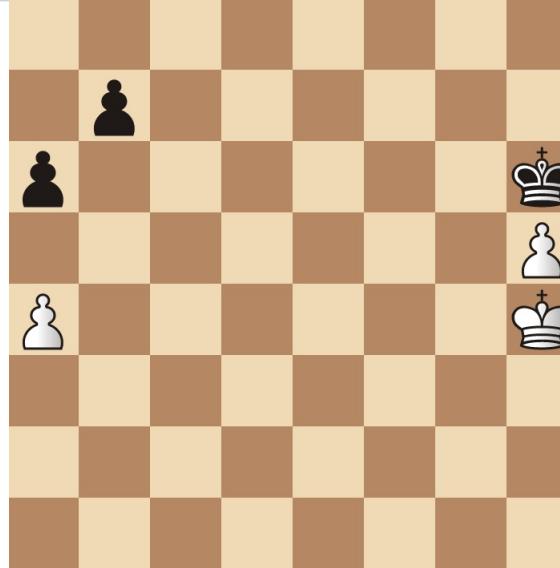


COMPLEXITY



COMPLEXITY

Endgames



COMPLEXITY

Millions of chess games in databases

Eight moves ahead is more games than starts in the Universe

Number of plies (half-moves)	Number of possible games
1	20
2	400
3	8,902
4	197,281
5	4,865,609
6	119,060,324
7	3,195,901,860
8	84,998,978,956
9	2,439,530,234,167
10	69,352,859,712,417



COMPLEXITY

Millions of chess games in databases

Eight moves ahead is more games than starts in the Universe

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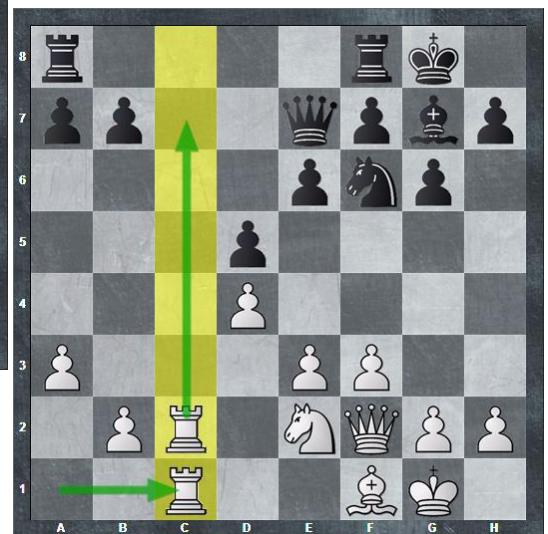
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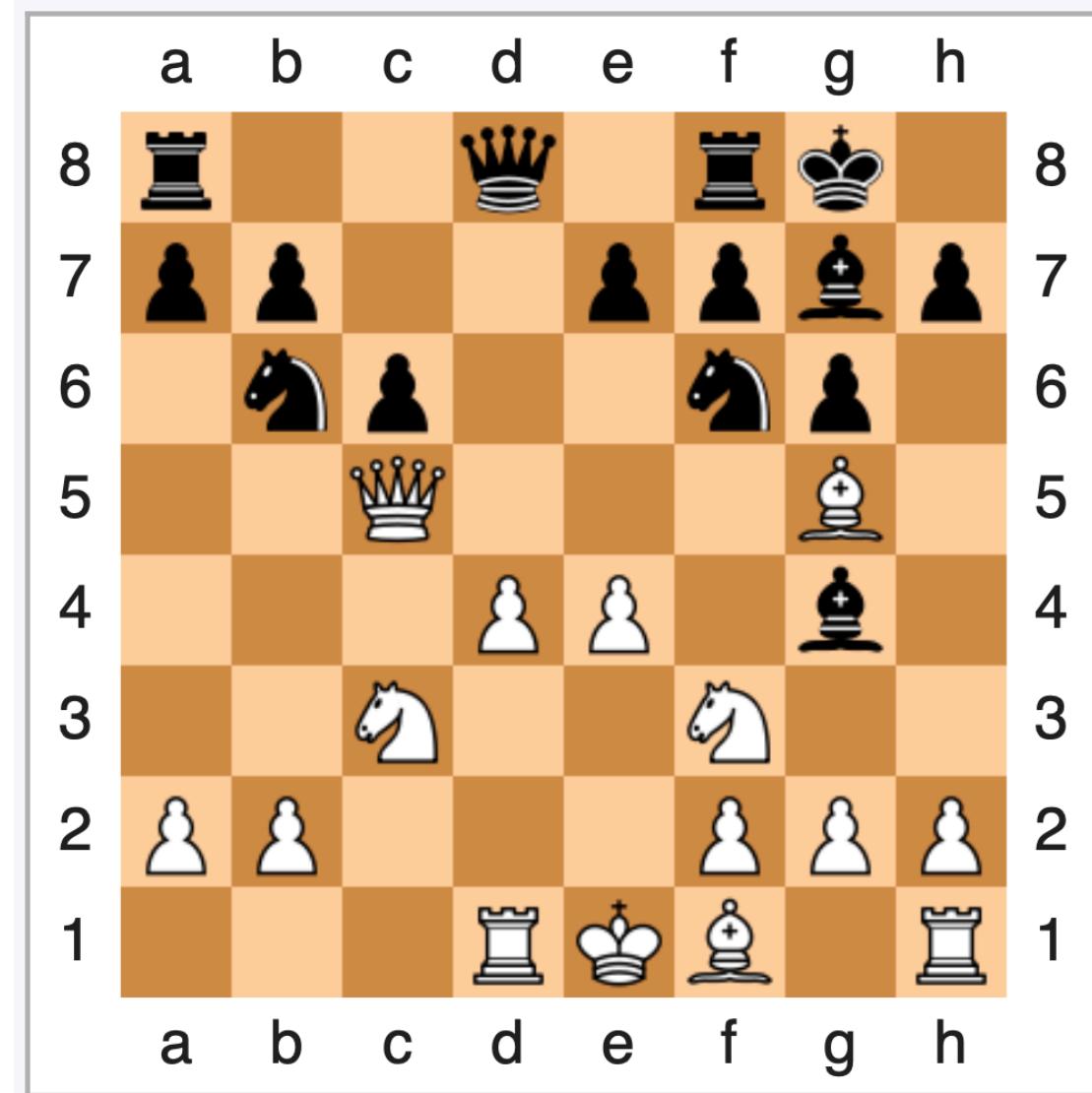
COMPLEXITY

Centrality
Flank pawns?
Pair bishops
No weak squares
Isolate pawns
Occupy space



EMERGENCE

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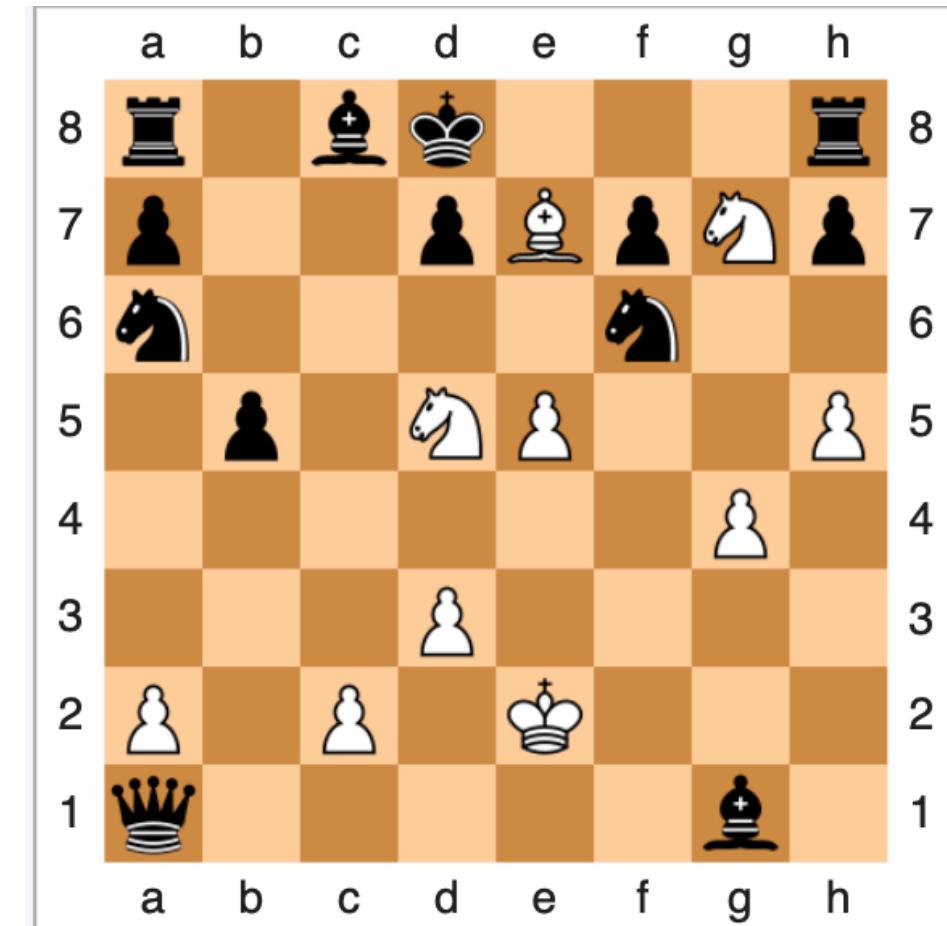
Position after 11.Bg5

[https://en.wikipedia.org/wiki/The_Game_of_the_Century_\(chess\)](https://en.wikipedia.org/wiki/The_Game_of_the_Century_(chess))



EMERGENCE

The bold sacrifices Anderssen made have made it one of the most famous chess games of all time. Anderssen gave up both rooks and a bishop, then his queen, checkmating his opponent with his three remaining minor pieces.



Final position after 23.Be7# (a [pure mate](#))

https://en.wikipedia.org/wiki/Immortal_Game



SUMMARY

- Agency is defined as the capacity of an individual to act intentionally with the assumption of a causal outcome based on this action
- Adaptive dynamics and interactions, non-linear behaviour, spontaneous order are all parts of complexity
- Two or more entities are emergent if they together have a characteristic or behaviour that could not be anticipated only based on their individual parts
- These concepts are examples of principles that highlight the limitations of the current methodological paradigm
- Promising developments are underway, yet by definition these concepts highlight normativity, wickedness and limitations as permanent.



DEREK PARFIT

What matters not the most is that we do not end human history



CONTACT

Henrik von Wehrden | Faculty of Sustainability
Universitätsallee 1 | 21335 Lüneburg
Fon 04131.677-1671 | henrik.von_wehrden@leuphana.de
<https://henrikvonwehrden.web.leuphana.de>
Use Rocket chat!

