

WHAT IS BEHAVIOURAL OR?

L. Alberto Franco & Raimo Hämmäläinen

Behavioural OR: Orientation

- Commitment to *empirically* examine what people do:
 - within a system or problem domain;
 - when engaged in OR–supported processes.
- Two streams of work:
 - Modelling behaviour.
 - Evaluating how behaviour affects, or is affected by OR–supported processes.

Drawing from practice theories

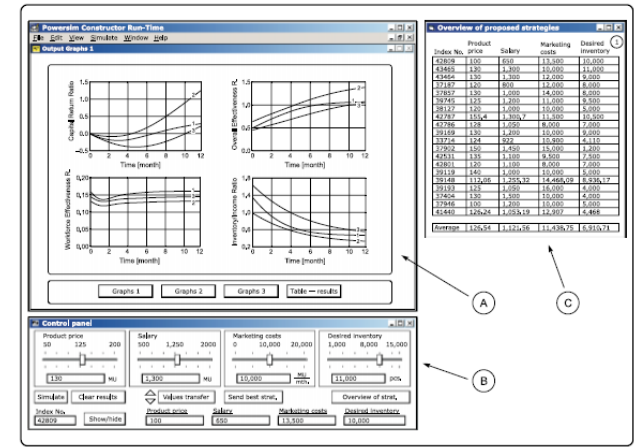
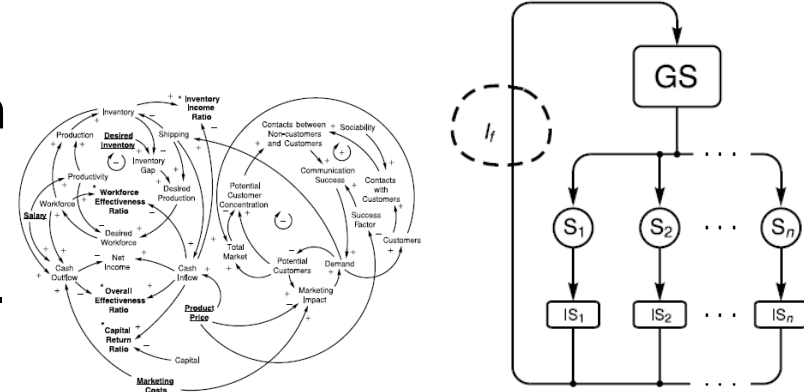
- Practice theories (e.g. Feldman & Orlikowski 2011; Jarzabkowski 2005; Nicolini 2012; Schatzki *et al* 2001, Whittington 2006) address three questions relevant to BOR:
 - **What** guides behaviour?
 - **Whose** behaviour counts?
 - **How** behaviour is enacted?
- Answers to these questions can provide explanations of impacts achieved (or not) from the application of OR.

What guides behaviour: OR *methods*

- OR interventions:
 - single and/or multi-methodology approaches
- OR techniques:
 - Core techniques such as optimisation, simulation, forecasting, decision analysis, problem structuring methods, etc.
- OR tools:
 - e.g. software, visuals, spaces.

Illustration

- Skraba et al.'s (SDR 2003) study of the effect of feedback information on a SD-supported group process:
- Task was to determine best strategy.
- The use of group feedback information, in addition to using the SD model:
 - positively influenced convergence of the decision process;
 - contributed to higher (individual) performance.



What guides behaviour: OR *methods*

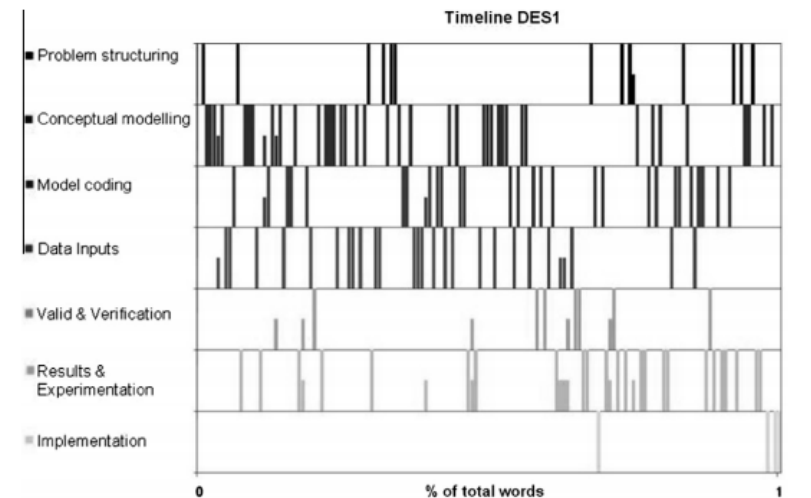
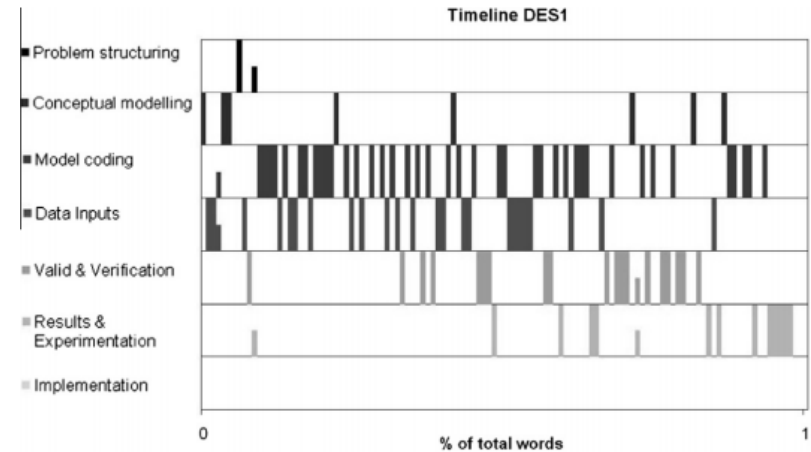
- OR interventions:
 - single and/or multi-methodology approaches
- OR techniques:
 - Core techniques such as optimisation, simulation, forecasting, decision analysis, problem structuring methods, etc.
 - **BUT also techniques that are typically in the background of OR work, e.g. facilitated modelling scripts, work routines/procedures, communication strategies.**
- OR tools:
 - e.g. software, visuals, spaces.

Whose behaviour counts: OR *actors*

- Individuals who, individually or as part of a team, design, implement or engage with OR-supported processes:
 - e.g. OR practitioners.
- Focus on actors' characteristics:
 - demographics, roles, experience, status/power, knowledge, motivation, etc.
 - cognitive differences –e.g. need for closure, cognitive style, time orientation, information format preferences.

Illustration

- Tako & Robinson's (EJOR 2010) study of expert DES and SD modellers:
 - **Seven modelling stages** identified.
 - All modellers switch between stages, BUT...
 - **DES modellers** follow a more **linear progression**.
 - **SD modellers** focus more on **conceptual modelling**
 - **DES modellers** focus more on **model coding** and **V&V**.



Whose behaviour counts: OR *actors*

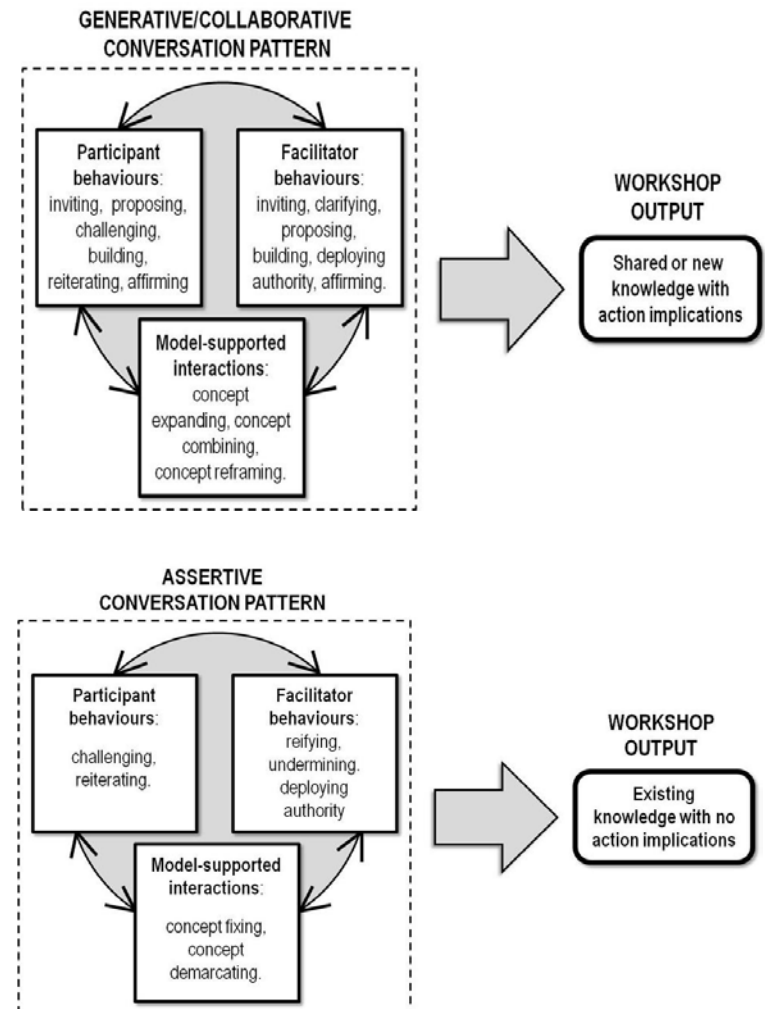
- Individuals who, individually or as part of a team, design, implement or engage with OR-supported processes:
 - OR practitioners... **BUT also OR academics, OR users, OR clients, OR sponsors, OR students.**
- Focus on actors' characteristics:
 - demographics, roles, experience, status/ power, knowledge, motivation, consulting approach, etc.
 - cognitive differences –e.g. need for closure, cognitive style, time orientation, information format preferences.
- **Impacts of actors' behaviour and methods are intertwined.**

How behaviour is enacted: OR *praxis*

- What OR actors actually do with OR methods *in situ*.
- OR praxis is most visible within specific ‘episodes’:
 - OR modelling sessions.
 - OR-related meetings
 - OR-related presentations.
 - OR-supported workshops.

Illustration

- Tavella & Franco's (GDN 2015) study of facilitated modelling processes:
 - **Generative model-supported conversations** (e.g. inviting, proposing, clarifying, building) lead to new or shared knowledge.
 - **Assertive model-supported conversations** (e.g. challenging, reiterating, undermining, deploying authority) lead to recycling existing knowledge.

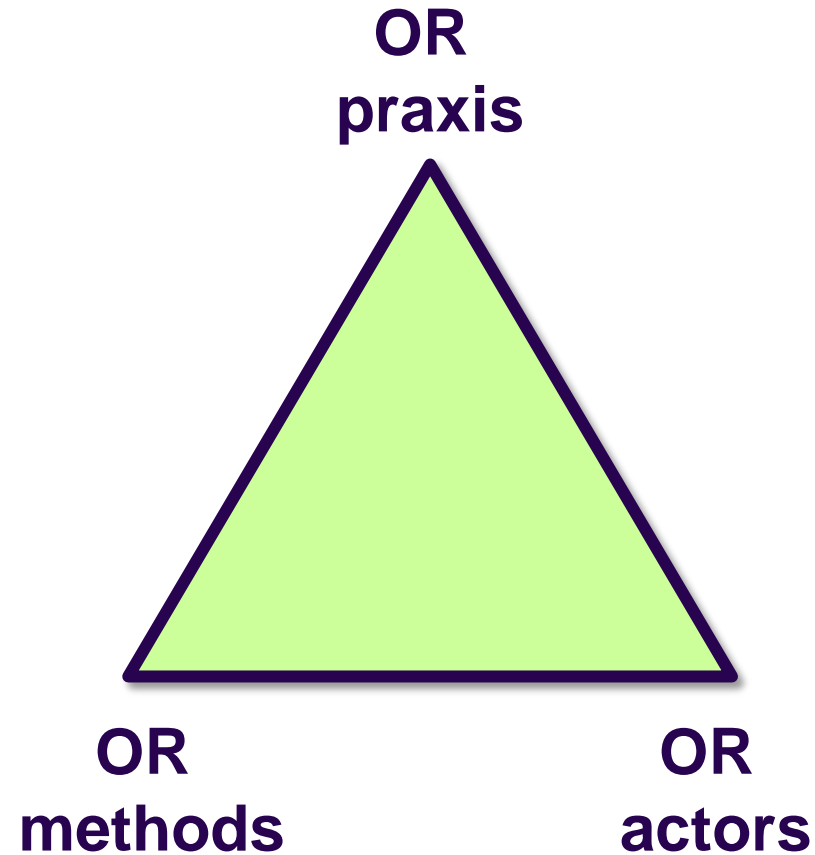


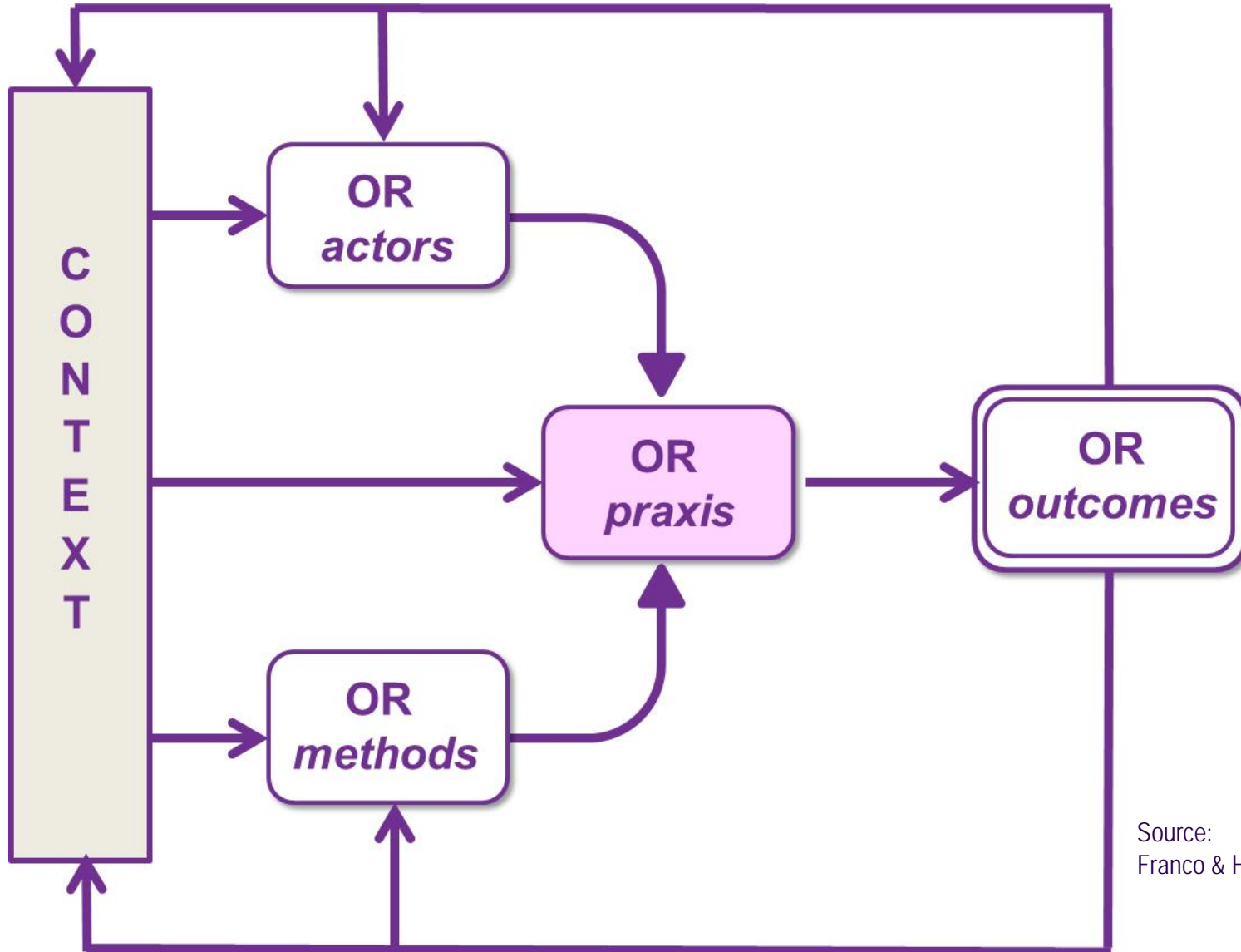
How behaviour is enacted: OR *praxis*

- What OR actors actually do with OR methods *in situ*.
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 - OR-related meetings
 - OR-related presentations.
 - OR-supported workshops.
- Focus on praxis can highlight gap between ‘textbook’ OR and ‘actual’ OR .

What is BOR? Summary

- To achieve a holistic picture of the role and impact of behavioural issues in OR, we need to:
 - investigate a wide range of OR methods;
 - attend to who engages with them;
 - closely examine how they are actually used in practice.

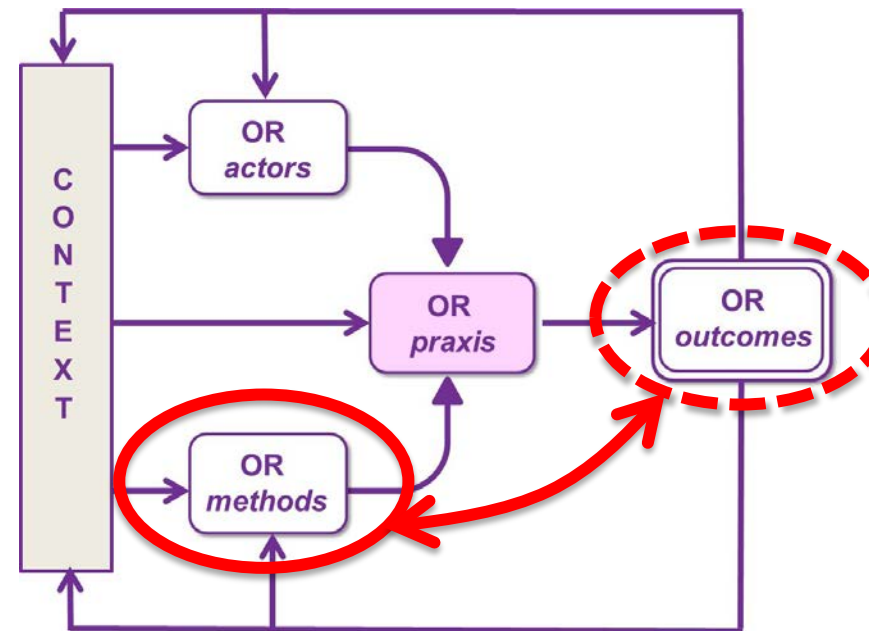




Source:
Franco & Hamalainen (2016)

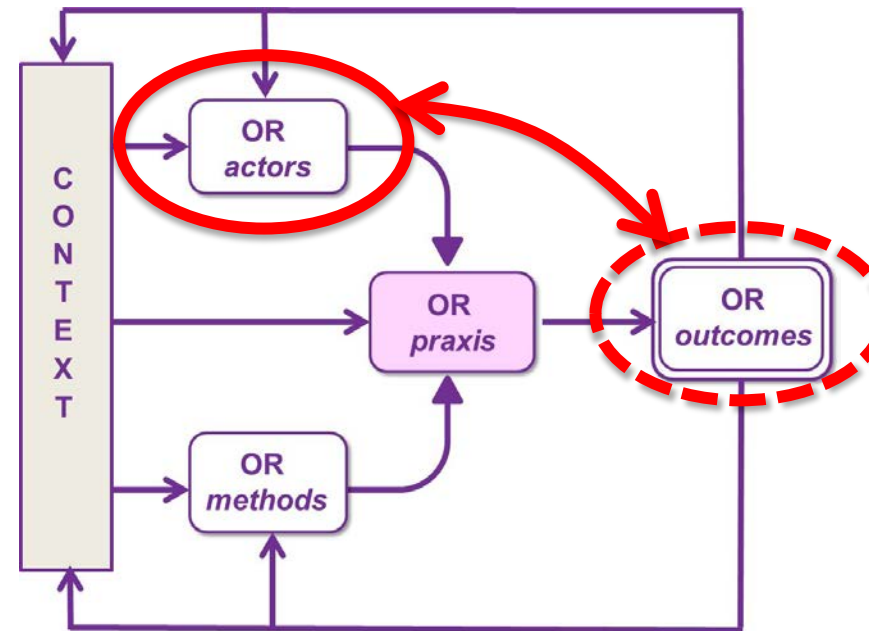
Focus on OR methods

- Behavioural-related outcomes of models/modelling:
 - Results from simulations.
 - Changes in cognition, attitudes or interactions.
- Behavioural-related impacts of data elicitation protocols.
 - De-biasing effects.
- Under-researched methods:
 - Routines/scripts.
 - Communication strategies.
 - Norms/procedures.
 - OR teaching methods



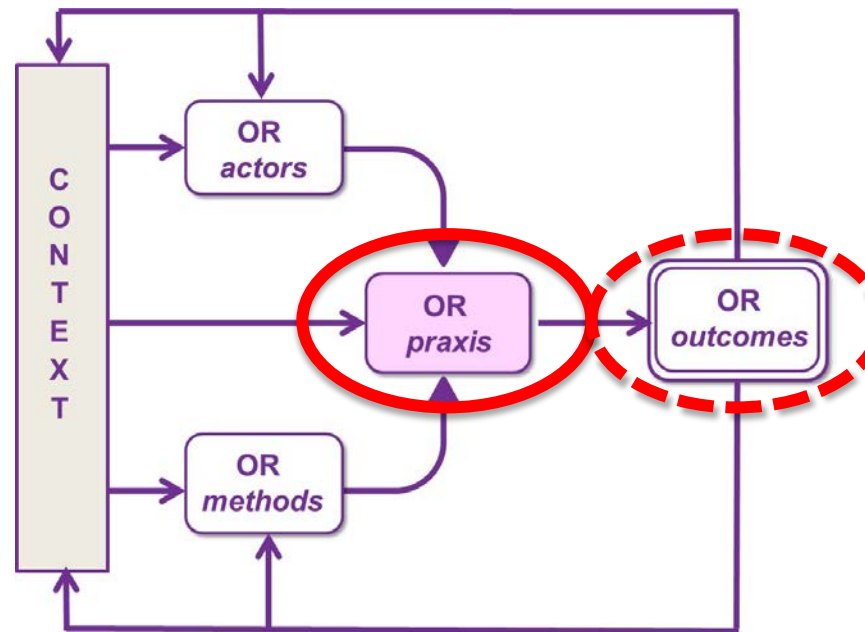
Focus on OR actors

- Expert/novice modellers and/or user studies doing simulation, forecasting, decision analysis, strategy.
- Same method can lead to different outcomes depending on actors' characteristics, e.g.:
 - Competences.
 - Cognitive style.
 - Consulting approach.
 - Status/authority.



Focus on OR praxis

- Pays attention to the *situated* nature OR method use.
- Still relatively underexplored, particularly in the field, with few exceptions.
- Observed deviations from expectations of method use may or may not imply bad OR praxis.



Conclusion

- Eclecticism implied by current published BOR studies should be embraced, not discouraged:
 - Alternative analytical foci and entry points to BOR are possible:
 - OR methods, OR actors, OR praxis (choose what is in the foreground/background).
 - Focus chosen must be connected to OR outcomes.
- BOR studies can offer an empirically-derived theory of effective OR practice that can lead to:
 - better OR methods, improved OR praxis, and increasingly competent OR actors.

Thank you!

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