AARHUS UNIVERSITY

PROCESS-TRACING SOM EVALUERINGSMETODE

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Derek Beach, Professor i Statskundskab, Aarhus Universitet
Email : derek@ps.au.dk

DEPARTMENT OF POLITICAL SCIENCE

Disposition

1. Process-tracing som evalueringsmetode (14.00 – 14.30)
2. Problemer med RCT's
3. Problemer med TBE
4. Mekanismer (14.30 – 15.30)
5. Evidens i PT (15.45 – 16.30)
6. Generalisering (16.30 – 17.00)

1. Process-tracing som evalueringsmetode

- Undersøgelse af kausal processer (mekanismer) med dybdegående case-studier
- 'learn a lot about a little…'
- Processen som forbinder en intervention med en virkning indenfor en bestemt kontekst
- PT som metode:
  1. Mekanismen 'pakket ud'
  2. Observerbare manifestationer af aktiviteter eksplicit
  3. Sammenligning på tværs af cases for at finde lignende kontekst

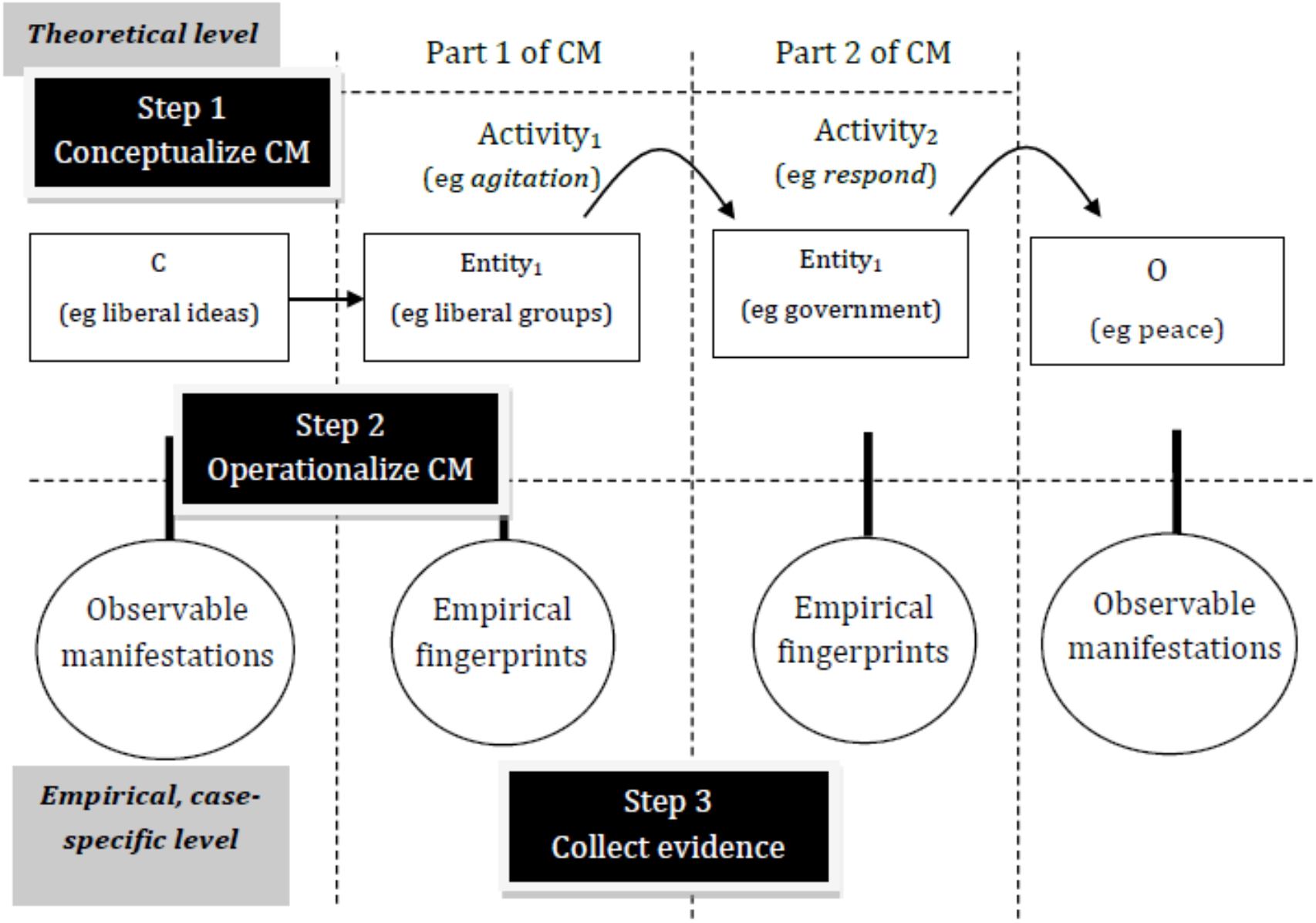


Figure 9.4. – The steps involved in theory-testing process-tracing

2. Problemer med RCT's

› RCT – Randomized controlled trial

1. RCT kan ikke fortælle os, *hvordan* en intervention virker (kun ΔX -> ΔY)
2. Information om *hvordan* en intervention virker har stor betydning for mulighed for generalisering (lære om betydning af kontekst)
   - › Bedre ernæring af børn – projekt 'virker' i Tamil Nadu i Indien…men ikke virker i Bangladesh (Cartwright og Hardie, 2012)
   - › Hvorfor -> programmet i Indien fokuserede på mødre, men i Bangladesh var det farmoren der havde ansvar for børns ernæring
   - › Dvs det er vigtigt at kende mekanismen og hvordan det virker i en bestemt social kontekst

3. Problemer med TBE

› Contribution analysis (Mayne, 2012; Astbury and Leeuw, 2010; Leeuw, 2012)

1. Forbindelser mellem dele af processen er 'antagelser' som ikke undersøges
2. Hvad er evidens?

Table 1. Key Steps in Contribution Analysis.

Step 1: Set out the cause-effect issue to be addressed

- Acknowledge the causal problem.
- Scope the problem: determine the specific causal question being addressed; determine the level of confidence needed in answering the question
- Explore the nature and extent of the contribution expected
- Determine the other key influencing factors
- Assess the plausibility of the expected contribution given the intervention size and reach

Step 2: Develop the postulated theory of change and risks to it, including rival explanations

- Set out the postulated theory of change of the intervention, including identify the risks and assumptions and links in the theory of change,
- Identify the roles of the other influencing factors and rival explanations
- Determine how contested is the postulated theory of change

Step 3: Gather the existing evidence on the theory of change

- Assess the strengths and weaknesses of the links in the theory of change
- Gather the evidence that exists from previous measurement, past evaluations, and relevant research (1) for the observed results, (2) for each of the links in the results chain, (3) for the other influencing factors, and (4) for rival explanations.

Step 4: Assemble and assess the contribution claim, and challenges to it

- Set out the contribution 'story': the causal claim based on the analysis so far
- Assess the strengths and weaknesses in the postulated theory of change in light of the available evidence, the relevance of the other influencing factors, and the evidence gathered to support rival explanations
- If needed, refine or update the theory of change

Step 5: Seek out additional evidence

- Determine what kind of additional evidence is needed to enhance the credibility of the contribution claim.
- Gather new evidence

Step 6: Revise and strengthen the contribution story

- Build the more credible contribution story
- Reassess its strengths and weaknesses
- Revisit Step 4

Kilde : Mayne, 2012: 272

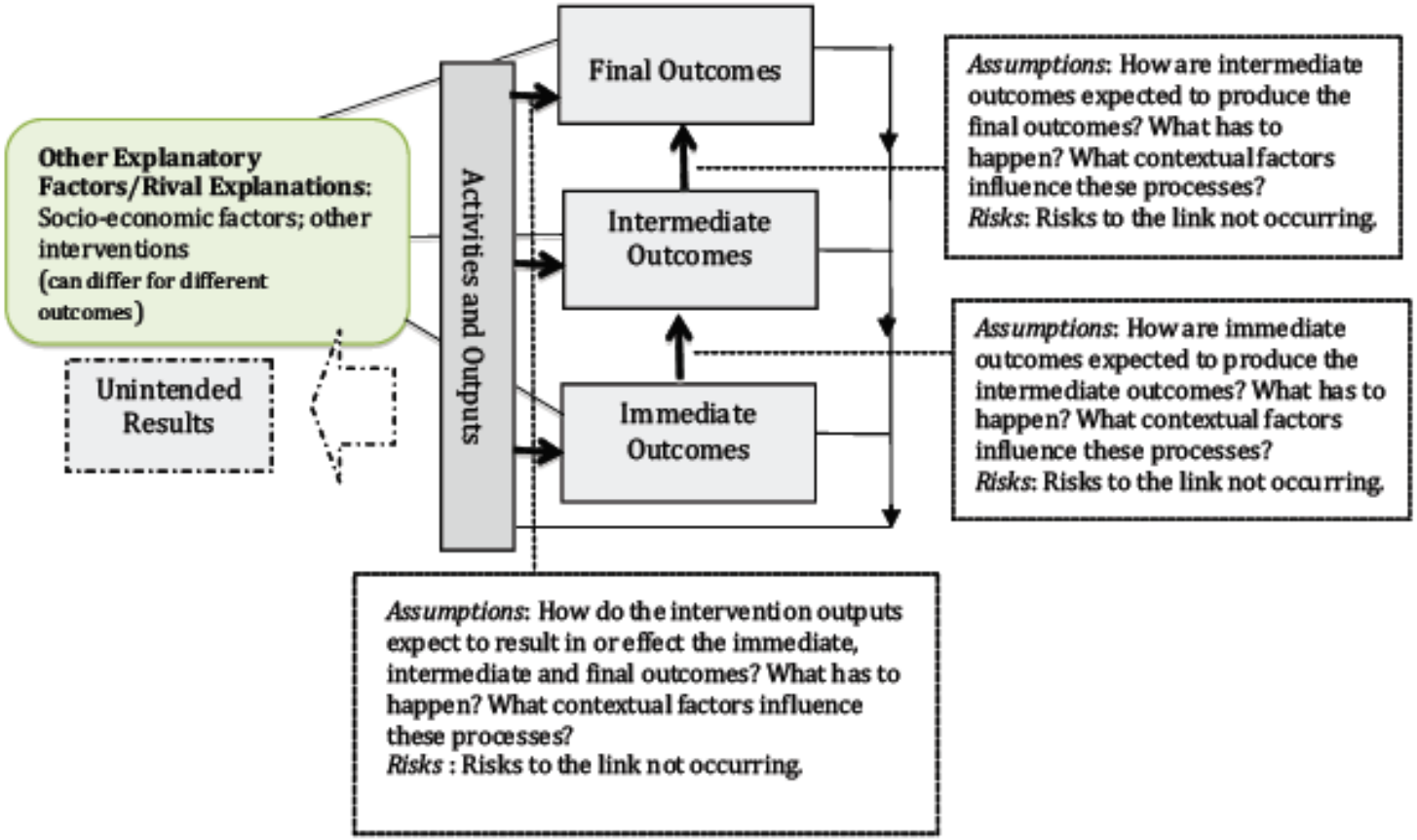


Figure 1. Displaying a theory of change.

Terms:

Assumptions are events and conditions that need to happen for the link to work. They are developed from a mix of stakeholder and social science theories and research.

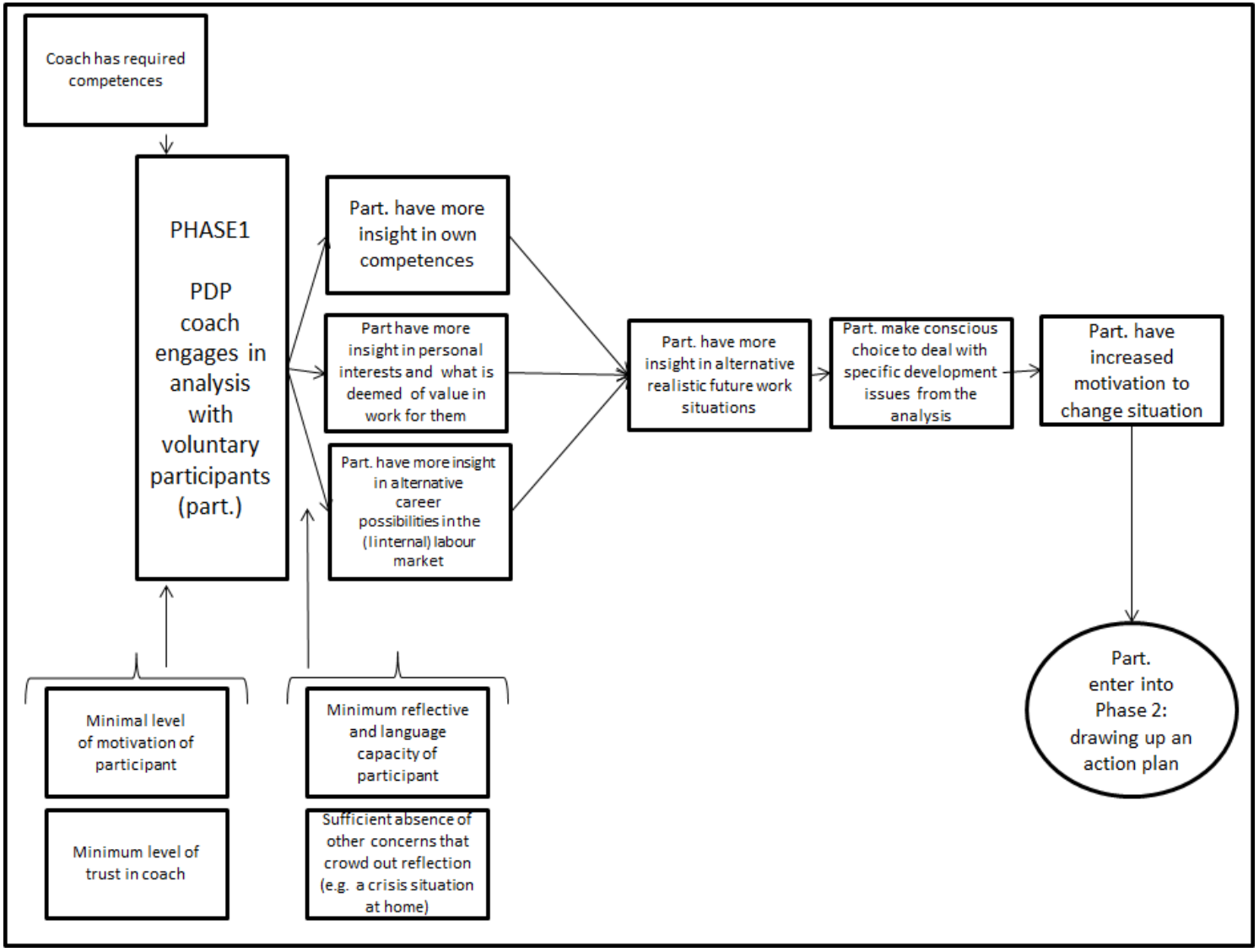
Risks are external event and conditions that could put the causal link at risk.

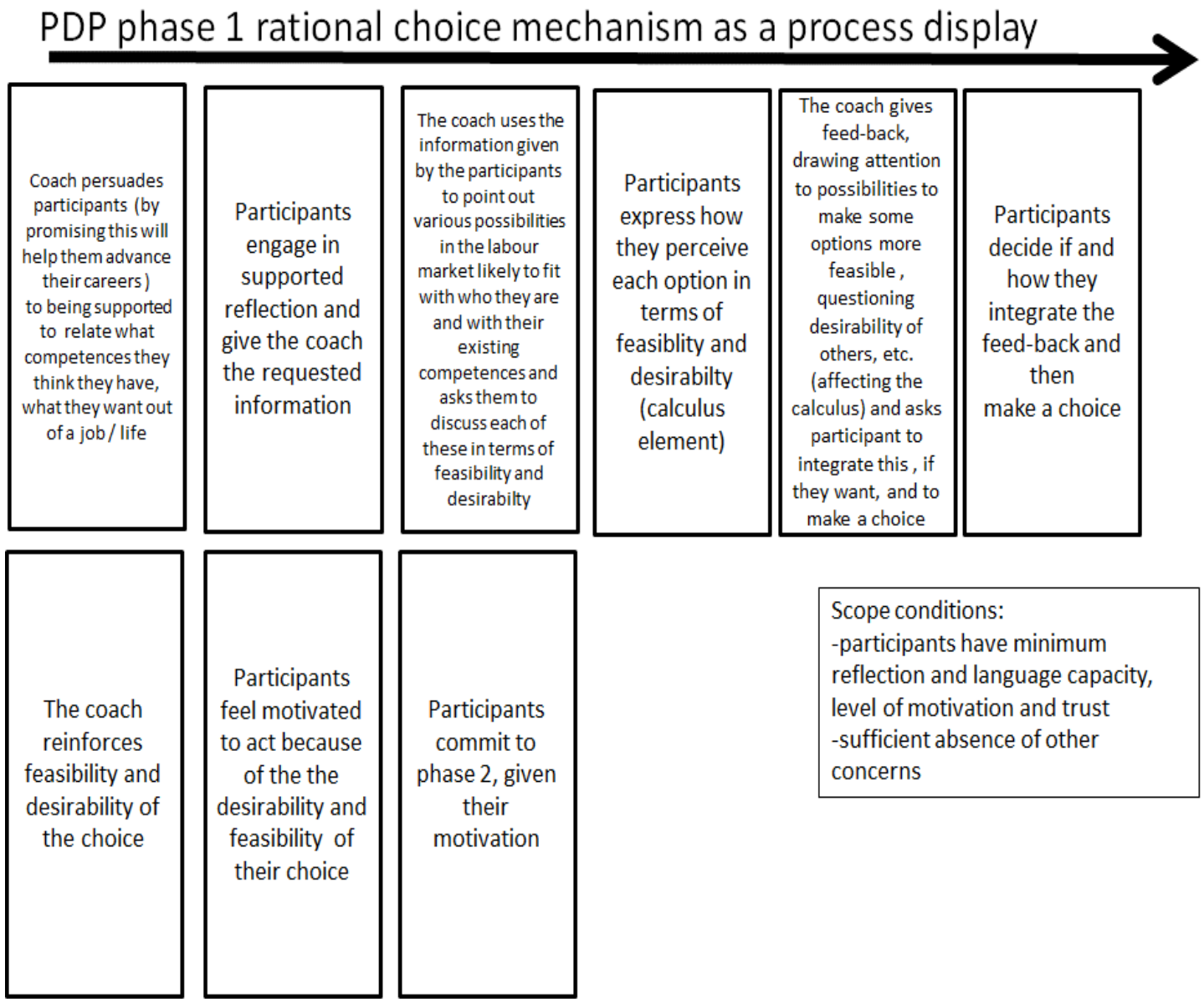
Other Explanatory Factors are other factors or conditions that might help explain the occurrence of the observed result other than the influence of the intervention.

Unintended effects are positive or – more usually – negative unanticipated effects that occur as a result of the interventions activities and results.

Kilde : Mayne, 2012: 274

Eksempel af De Rick et al, 2014




PDP phase 1 rational choice mechanism as a process display
Coach persuades participants (by promising this will help them advance their careers) to being supported to relate what competences they think they have, what they want out of a job / life
Participants engage in supported reflection and give the coach the requested information
The coach uses the information given by the participants to point out various possibilities in the labour market likely to fit with who they are and with their existing competences and asks them to discuss each of these in terms of feasibility and desirabilty
Participants express how they perceive each option in terms of feasiblity and desirabilty (calculus element)
The coach gives feed-back, drawing attention to possibilities to make some options more feasible , questioning desirability of others, etc. (affecting the calculus) and asks participant to integrate this , if they want, and to make a choice
Participants decide if and how they integrate the feed-back and then make a choice
The coach reinforces feasibility and desirability of the choice
Participants feel motivated to act because of the the desirability and feasibility of their choice
Participants commit to phase 2, given their motivation
Scope conditions:
-participants have minimum reflection and language capacity, level of motivation and trust
-sufficient absence of other concerns

3. Problemer med TBE

- Contribution analysis (Mayne, 2012; Astbury and Leeuw, 2010; Leeuw, 2012)
- I PT - aktiviteter som forbinder dele af mekanismen sammen er eksplicit…bedre ideer omkring hvilke empiriske fingeraftryk mekanismen vil efterlade…

4. Mekanismer

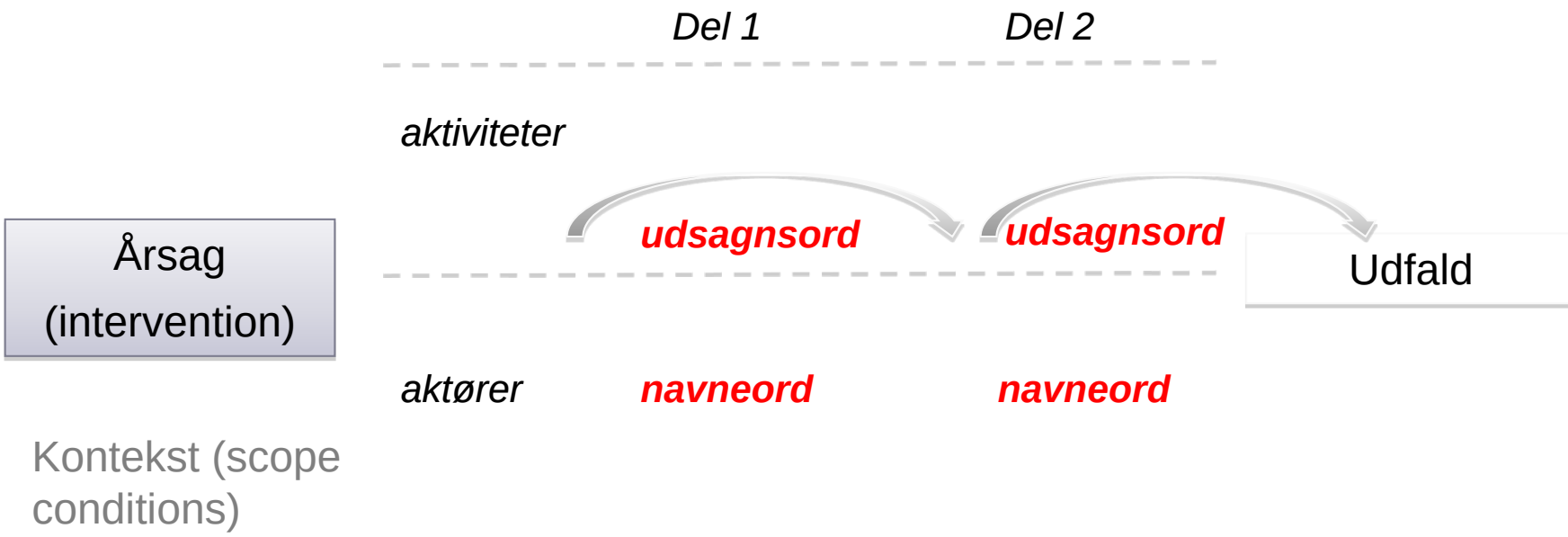
› Mekanisme = a system of *interlocking* parts that *transmits causal forces* from X to Y (Glennan, 1996; Bunge, 2004; Illari og Russo, 2014)

› Teori om mekanisme = 'how possible' forklaring

› Sammen med evidens af aktiviteter = 'how actually' forklaring

4. Mekanismer

› PT – pakke mekanismerne ud…



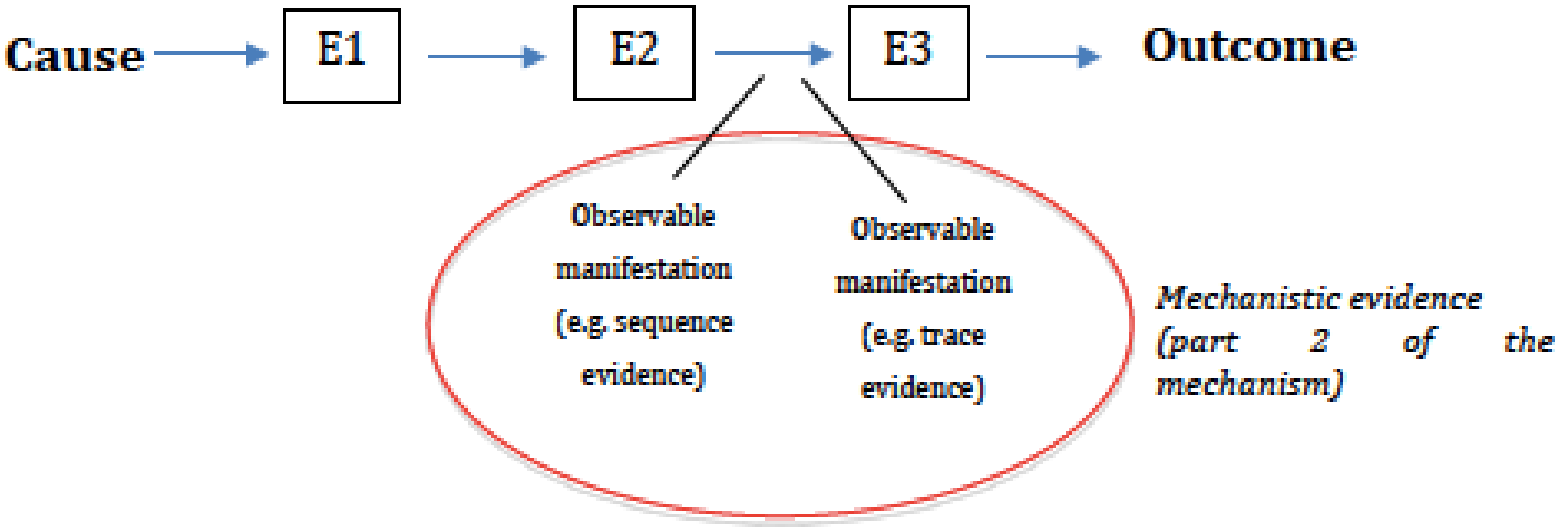
4. Mekanismer

› Gruppearbejde 1

Forlængelse af skoledagen ??? Mere indlæring hos elever

5. Evidens i PT

› Causality lies in the production…



5. Evidens i PT

- Evidens = al empirisk materiale der gøre os klogere på aktiviteterne
- 4 typer af mekanistisk evidens

1. Pattern
2. Sequence
3. Trace
4. Account

5. Evidens i PT

- Bayesiansk logik…
- updating

Verbal Form	Numerical Equivalent
certainly, sure to, no question about	1.0
almost certainly	0.9
very probably	0.8
probably	0.7
on balance, somewhat more likely than not	0.6
like as not, even money	0.5
somewhat less than even chance	0.4
probably not	0.3
very probably not	0.2
almost certainly not	0.1
certainly not, impossible	0.0

Kilde = CIA Intelligence Report, Bayes Theorem and the Korean War, July 1968, No. 0605/68.

5. Evidens i PT

Bayes' formula

posterior = prior x theoretical weight of evidence x accuracy of evidence

5. Evidens i PT

posterior probability = the posterior probability of the degree of confidence we have in the validity of a hypothesis (h) about the existence of a part of a causal mechanism *after* collecting evidence (e).

$$p\,(h \mid e)$$

5. Evidens i PT

Prior = degree of confidence that the researcher has in the validity of a hypothesis prior to gathering evidence, based upon existing theorization, empirical studies and other forms of expert knowledge.

$$p(h)$$

5. Evidens i PT

Theoretical certainty = predicted evidence that based on theoretical and empirical knowledge must be present in the case

› e.g. suspect in town on night of murder…

$$p(e \mid h)$$

5. Evidens i PT

Theoretical uniqueness = whether we can explain existence of *predicted* evidence in case with any plausible alternative explanation (usually not rival theory)…

› e.g. DNA sample under victim's nails matches suspect in physical assault crime

$$p(e \mid \sim h)$$

5. Evidens i PT

(p(e | h) = certainty of test (risk of false negatives) –> 'what do we have to find'

(p(e | ~h) = uniqueness of test (risk of false positives) –> 'any other plausible explanation?'

5. Evidens i PT

Bayes' formula

$$p(h|e) = \frac{p(h)}{p(h) + \frac{p(e|\sim h)}{p(e|h)} * p(\sim h)}$$

5. Evidens i PT

Silver Blaze historien – del af processen (h = hasten bortført af en 'insider')

- Prior = lav (hvorfor stjæle ens egen hest!) = 20% (p(~h) = 80%)
- e = hunden som ikke gøede
  - high certainty (skal finde…) => p(e|h) = 90%
  - very unique (andre forklaringer ikke særlig plausibel) => p(e|~h) = 20%

5. Evidens i PT

Silver Blaze eksempel

- Hvis finde e… (+17%)

$$37\% = \frac{0.2}{0.2 + (0.2/0.9) * 0.8}$$

- Hvis ikke finde e…(-17%)

$$3\% = \frac{0.2}{0.2 + (0.8/0.1) * 0.8}$$

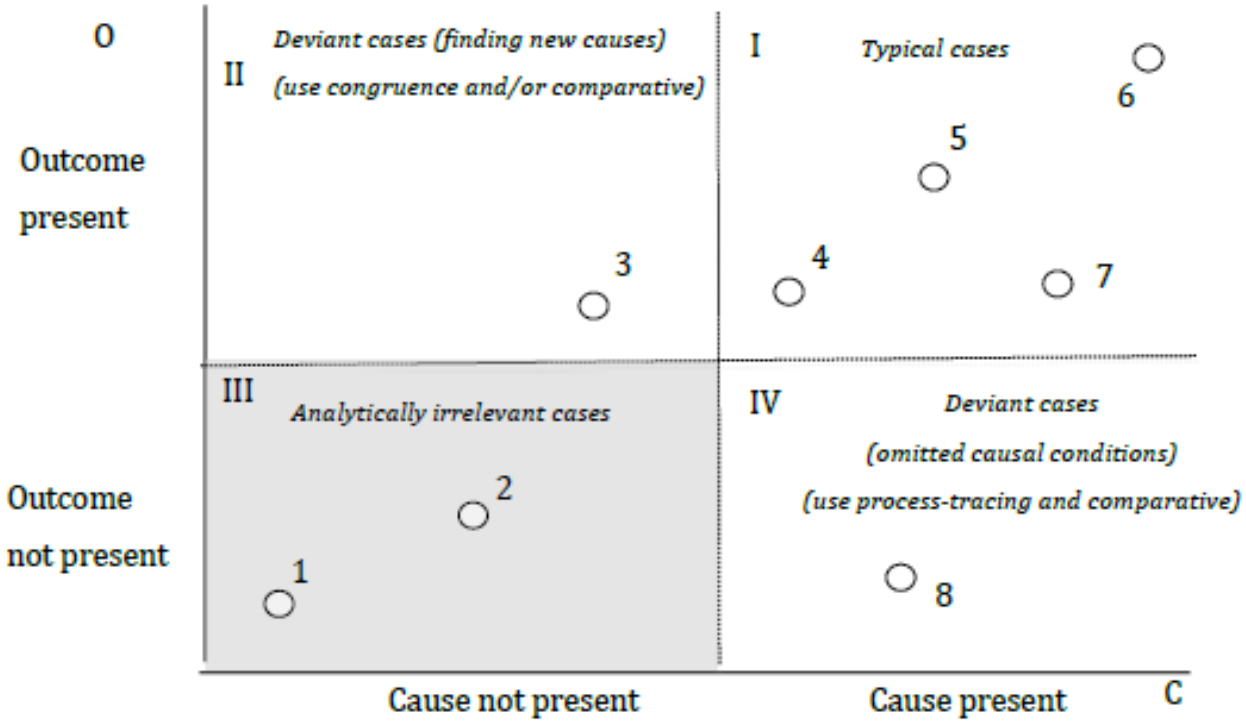
5. Evidens i PT

Gruppearbejde II

1. Udvikle et stykke mekanistisk evidens for en del af mekanismen
2. Skal man finde det? (certainty)
3. Er der andre forklaringer af fundet af evidensen? (uniqueness)

6. Generalisering

› Typer af cases i PT



6. Generalisering

› Kan ikke antage, at samme intervention har samme effekt, eller samme process, i andre cases…

1. Kortlæg population (årsag, udfald, kontekst)
2. Undersøge, om samme intervention -> samme proces -> samme udfald i andre cases med forskelle i kontekst…
3. Snowball-outwards…

Case	Y	A	B	C	D	Comments	
4	1	1	1	0	0		
2	1	1	1	1	0	1 difference in context	***Problem 1 omitted conditions?***
3	1	1	1	0	1	1 difference in context	
1	1	1	1	1	1	2 differences in context	
9	0.8	1	1	0.8	0.8	DoD in Y	***Problem 2 degree differences***
10	0.6	1	1	0.6	1		
11	1	0.8	1	0.8	0.8	DoD in A	
12	1	0.6	1	0.6	1		
13	1	1	0.8	0.8	1	DoD in B	
14	1	1	0.6	0.8	0.8		
27	0.8	0.8	0.8	0.4	0	DoD in A, B and Y	
28	0.6	0.6	0.6	0.4	0		
5	1	1	1	0.8	1	DoD in context	
6	1	1	1	1	0.8	DoD in context	
7	1	1	1	0.6	1	DoD in context	
8	1	1	1	1	0.6	DoD in context	
15	1	0.8	0.8	0.2	0.2	A and B lowest	***Problem 3 ordering and degree differences***
16	1	0.6	0.6	0.4	0		
17	1	0.6	0.8	0.6	0	A lowest value	
18	1	0.8	0.6	0.6	0		
19	0.8	1	0.8	0.6	0.4	Y and B lowest	
20	0.6	1	0.6	0.6	0.4		
21	0.8	1	0.6	0.2	0.2		
22	0.6	1	0.8	0.2	0.4		
23	0.8	0.8	1	0.6	0	Y and A lowest	
24	0.6	0.6	1	0.4	0		
25	0.6	0.8	1	0.6	0.4		
26	0.8	0.6	1	0.6	0.4		
29	0.6	0.8	0.8	0.6	0	Y lowest, at lower levels	
30	0.8	0.6	0.8	0.6	0	A lowest, at lower levels	
31	0.8	0.8	0.6	0.6	0	B lowest, at lower levels	

Table 8 –Full set of cases that are members of A, B and Y.

Videre læsning…

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