Complexity & Realist Evaluation

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Overview

1. Complex development interventions and consequences for evaluation

2. Overview of theory-driven evaluation approaches

3. Introduction to Realist Evaluation

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1. Complex development interventions and consequences for evaluation

Complexity is in essence about *uncertainty* and confronts us with the problem of *not knowing* what will happen or how it will happen

But, **no panic**, we can (somehow) prepare for uncertainty

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Complex?

Not all problems or interventions are complex
(but a lot of them are)

Useful to differentiate between **simple, complicated** and **complex**

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Simple, complicated and complex problems

Simple problems

- have **simple** causes (linear causality)
- have **standard** solutions that can be applied without specific expertise

Knowledge and solutions can be formulated into **standard operating procedures**
Technical skills are sufficient

Example

- Baking a cake
- Controlling a cholera epidemic

Glouberman S, Zimmerman B. Complicated and complex systems: what would successful reform of Medicare look like?: Commission on the Future of Health Care in Canada; 2002.

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Simple, *complicated* and complex problems

Complicated problems consist of **sets of simple** problems, but cannot be reduced to them

- Compounded by **scale** and **coordination** problems

Solving complicated problems requires **specialised expertise**

- **Formulas** and **instructions** can be developed and are critical to success
- Outcomes can be **predicted**

Example

- Constructing a high-speed railway across a continent
- Setting up a national vaccination campaign
- Building a hospital

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Simple, complicated and *complex* problems

Complex problems

- include **sets** of simple and complicated problems to which they are **not reducible**
- **non-linear causal** relations
- are **context**-sensitive

To solve complex problems,
expertise may help,
but is not necessarily sufficient for success

Example

- Raising a child
- Managing decentralisation

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Simple, complicated and complex problems

Conflation of 'complicated' with 'complex' leads to problems

- If solutions fit for complicated problems are applied to complex problems, failure is likely
- Do not apply evaluation and research designs fit for complicated problems to complex ones…

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2. Complex (adaptive) systems theory

- Emerged from general systems theory, chaos theory
- Cybernetics (1950s and 1960s) and information theory: some open systems were found to be able to adapt themselves to internal or external changes
- Taken up in management studies since 1990s
- More a 'set of related concepts' than a 'science'

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Complex adaptive systems

CAS consist of **multiple** elements that are **interconnected**

- Problems with bad banks ➔ crash of banking system in US ➔ global crisis

CAS interact with and are influenced by their **environment**

- Co-evolution

The elements of a CAS can interact in **non-linear** ways

- Non-proportional effects are frequent
  - Small intervention ➔ large effects

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CAS

- Interactions between the elements show negative & positive **feedback loops**

Bestseller list effect

- **Time delays** in feedback: impact may often show quite late

Reduction in tobacco use after decades-long prevention campaigns

- Positive feedback enables a system to **escalate many tiny (incremental) changes** into different behaviour patterns (Stacey 1995)

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CAS

Path dependence
CAS are influenced by their evolution in time, which narrows the options for change

= capable of learning and evolving through human interaction (**emergence**)

= not just 'passive' adaptation to environment,
but essentially human capacity to learn, adapt and survive

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As a consequence

A ***complex adaptive system*** can only be understood as a whole

- its **elements**, **relations** and **history** all matter
- evolution **cannot be (fully) predicted**
  - non-linear relations between its elements and environment

but there are some **patterns** to be discovered

- sensitivity to initial conditions & path-dependency constrains the trajectory to some degree

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Challenges of complexity for researchers & evaluators

- **Emergence** of unpredictable behaviour & outcomes
- **Causality** is complex
  - non-linear causal relations
  - multiple (synergetic) causal pathways & feedback loops
- Embeddedness in multi-layered contexts and systems (**co-evolution**)
- Difficulties of **attribution**

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Consequences of complexity for the evaluation of *development programmes*

Development programmes are about people and dynamic social relations that generate emergent social action -> **complex**

Social, relational or qualitative complexity, a third strand of thinking

- Relational sociology (Crossley, 2011, Donati, 2011)
- Generalised complexity (Byrne & Callaghan, 2014)
- Realist social theory (Archer, mid 1990s; Bhaskar) – reducing the agency-structure binary logic: causality is always attributed either to structure or to agency

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Consequences of complexity for the evaluation of *development programmes*

Two main ways of managing complexity in the evaluation of development programmes (Morin cited in Byrne, 2014)

Restricted complexity
Reducing complexity: taking the parts apart

- Within epistemological boundaries of positivist paradigm

Generalised complexity
Trying to comprehend the whole, the synergies between different programme components, influence of relational dynamics, causal mechanisms & emergence

- Challenges positivist paradigm: "why, how and in which conditions?"

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Different methodological approaches

Restricted complexity	**Generalised complexity**
Quasi-experimental designs (RCT) in development evaluation (Duflo, MIT Poverty Lab)	Theory driven evaluation
Systems modelling (Trochim et al, 2006)	ToC
	Patton's developmental evaluation
	Realist evaluation

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Restricted complexity:
Enhanced approaches

Quasi-experimental designs

- Adding ***process*** evaluation to RCTs
  - E.g. process evaluation to understand uptake of two different systems for insecticide-treated bednets
- Adding ***context*** analysis to cluster randomized community intervention trials

- Golden standard to assess efficacy and effectiveness but not for assessing the mechanisms of change (why)
  - See e.g. 3ie – International Initiative for Impact Evaluation

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Restricted complexity:
Enhanced approaches

Systems modelling

- Used in attribution of an effect to an intervention
  - E.g. Avahan project: modelling used to test HIV prevalence in case prevention programme would not have been carried out

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Dealing with social *generalised* complexity

Developmental evaluation (Patton, 2011)

- Focus on complex situations and interventions
- Continuous adaptation of the evaluation design to the evolving intervention (emergent evaluation design)

Theory-driven approaches

- Theories of change
- Theory-driven evaluation
- Realist evaluation

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2. Overview of theory-driven evaluation approaches

A group of approaches that are driven by **theory** (and **not method)** and that focus on **mechanisms**

Aim

To learn 'whether an intervention works, for whom, in which contexts and how'

- = essential information for policymakers and programme managers
- Allows appraisal generalisability / transferability of an intervention
  - Different from black box evaluations that only assess whether a programme attained its intended results, not how and in which conditions

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Theory-driven inquiry

3 main schools

- **Theories of change**
  Connell, Kubisch, Schorr & Weiss (1995)

- **Theory-driven evaluation**
  Chen & Rossi (1987)
  aka theory-based evaluation, programme theory evaluation, programme theory-driven evaluation, etc.

- **Realist evaluation** (& **Realist review and synthesis)**
  Pawson & Tilley (1997)

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Theory-driven inquiry

Core element: the programme theory

Prosaic, everyday theories that are concerned with how social problems are generated and programmes function

= beliefs of programme's actors, ≠ grand theories

+

Theories, concepts and knowledge from social science literature

e.g. theory of cognitive dissonance, self-fulfilling prophecy, economic exchange vs social exchange

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Theory-driven inquiry

The PT = a testable hypothesis, the basis for testing assumed causal chains

- **Understanding the contribution** of an **intervention** to the observed **results** through a '**process**' interpretation of causation
  - checking each link between intervention and result
  - if links can be validated by empirical evidence
    ➔ a causal inference can be made
- Identifying and assessing any significant **context factors**
  - that may be needed for the intervention to work
  - that may influence the implementation
  - that may shape the result

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Theories of change

Developed by the Roundtable on Community Change (Aspen Institute, 1995) to evaluate complex community-based programmes that involve

- many agencies and actors
- several levels and strands of activities
- objectives and strategies that shift in time
- outcomes that are difficult to measure

More pragmatic in approach and oriented towards stimulating practical change

(Connell et al., 1995, Weiss, 1995, Fulbright-Anderson et al., 1998)

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Theory driven evaluation

- Not methods, but the **problem and existing knowledge** should drive the research and evaluation design
- Starts from the (implicit) assumptions that steers the choice and design of a programme or intervention is useful ("It's all about the people")
  - allows to understand what is being implemented and why
  - = the programme theory
- Evaluation = critically assessing the programme theory
  - guided by social science theories and previous evaluations / knowledge on similar development interventions

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Theory driven evaluation: its usefulness

At the start of the project, **joint reflection** on PT **with the main actors** helps

- in developing a shared understanding of the intervention and of how it would be best implemented
  - Reduces risks of narrow top-down planning
  - Increases ownership and ties in local knowledge
  - Facilitates joint learning
- in assessing the **effectiveness potential** of a new intervention (reality check)
  - Thinking about the mechanisms of change, and review of the evidence
  - "Is this programme really needed? To whose need is it responding?"
- **informing the monitoring & evaluation system**

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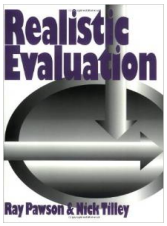
3. Introduction to Realist Evaluation

Pawson and Tilley (1997)

In order to be useful for decision makers, evaluations need to indicate



w*hat works, for whom,*
in what circumstances,
in what respects,
over which duration,
and why?

rather than respond to '*does it work?*

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RE shares emphasis on the use of **theory** with Theory-driven evaluation and Theories of change

- RE is not method-driven, but theory-driven
  - Driven by a hypothesis
  - Realist evaluation starts with a theory and ends with a (refined) theory
- Theory should in this case be understood as **middle-range theories** (Merton 1968)

  "*theories that lie between the minor but necessary working hypotheses (…) and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behavior, social organization and social change*"

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RE is different from the other schools of **theory-driven inquiry**

- RE is based on scientific realism
- Specific assumptions about
  - the nature of reality
  - the nature of knowing that reality
  - causation
  - attribution
- Specific approaches to study design, methods and analysis
  - Importance of mechanism, context and actors

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Principles of realism

(1) There is a reality independently of the observer

Realist ontological position

- The material and social world are 'real'
- Anything that has a real effect is real
  - Class, gender, power position, …
  - Also policies, programmes, interventions, etc. are real … as well as social structure

Westhorp (2014)

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Principles of realism

(2) Knowing reality through science is unavoidably relative to the researcher

Weak relativist epistemological position

- Developing knowledge on reality
  - is constrained by cognition and is socially constructed
  - remains often incomplete
- But obtaining a better insight in the nature of reality is possible

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Principles of realism

(3) All social systems are complex systems

- Programmes are open systems, embedded in and in constant interaction with the (social) systems in which they intervene
  - Choosing the boundaries of the study object may not be easy
  - Context matters
- Programmes are dynamic (while most evaluations are snapshots…)
- Observed outcomes are likely to be multi-determined
- Causality may be non-linear

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Principles of realism

(4) Perspective on causation is grounded in 'mechanisms'

Generative causality (Pawson & Tilley, 1997)

- **Actors** have a potential for change by their very nature
  - Agency : actors can produce change intentionally (or unintentionally)
- Actors and programmes are rooted in a layered **social reality**
- Result: **interplay** between individuals and institutions, each with their own interests and objectives
- ***Causal mechanisms*** reside in social relations and wider structural conditions as much as in individuals (structure-agency)

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Principles of realism

(4) Perspective on causation is grounded in 'mechanisms'

- Pawson & Tilley: mechanisms = the cognitive, psychological and/or social drivers that influence the reasoning of actors

- Mechanisms are activated when the context conditions are right
  - Ex.: the effect of releasing a tennis ball
    - Different effect in a swimming pool or on the Moon (Westhorp 2014)

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Example: a pay for performance scheme

Intervention

Remuneration tied to performance

Outcome

Increase in performance

Mechanism

Extrinsic motivation
People work harder if you pay them in function of their performance

Actors

Financial incentives work for
- actors with strong extrinsic motivation who aren't paid well
- a certain time (ceiling effect)

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Example: a pay for performance scheme

Outcomes are often explained by several mechanisms simultaneously

Intervention works in **specific conditions**

Actions may have **unintended effects**

Performance: Intrinsic motivation, working conditions, management style, organisational culture, etc.

$ incentives ➔ good performance

if personnel is also competent, the working conditions are right, etc.

PBF

➔ Crowding out of intrinsic motivation
➔ Gaming

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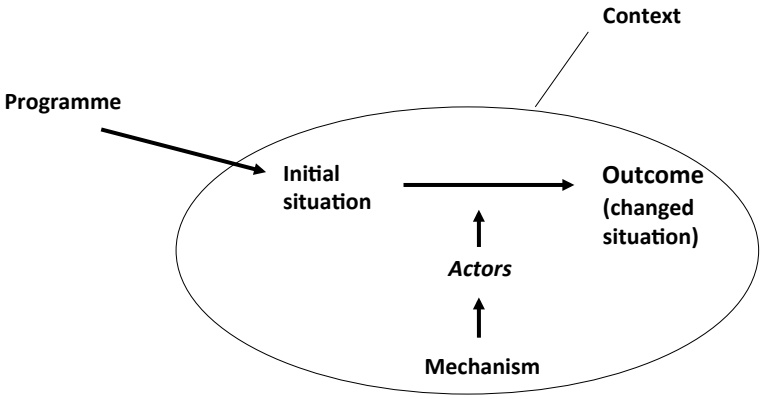
Principles of realism

(4) **Perspective on causation is grounded in 'mechanisms'**

The CMO heuristic



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Principles of realism

Using the CMO configuration as an analytical tool

CMOs are not tables with lists of mechanisms, lists of context elements and lists of outcomes (Cfr. Pawson & Manzano-Santaella, 2012)

➔ CMO ***configuration***

At the end of the study, the CMOs are compared with the initial programme theory

Repeated studies lead to accumulation of insights and to a refined PT

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Principles of realism

(5) Context matters - a lot

Context conditions

- have an influence on the implementation of the programme
- provide the necessary conditions for the mechanism to be triggered
- may have an effect on the observed outcome

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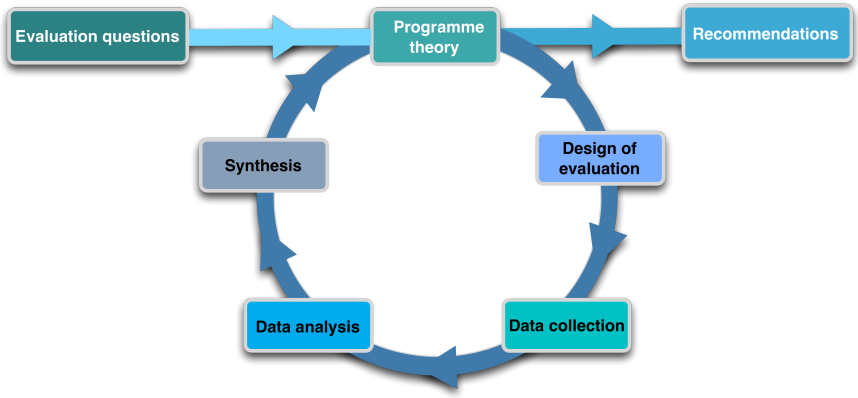
Designing a realist evaluation
The RE cycle



Source: Marchal, et al. 2012

How does RE view complexity?

A perspective on causation that is complexity-sensitive

"Programmes are complex interventions introduced in complex social systems"
(Pawson 2013, p. 33)

- Programmes are **open** systems
- Most Community Based Health and First Aid programmes are **embedded** in and in constant **interaction** with the communities and societies in which they intervene
- Programmes are **dynamic**
- Branch managers and volunteers aim at improving CBHFA programmes, not just implement them

How does RE view complexity?

- Programmes are **social** in nature: people/relations (agency) & structure/culture
- Volunteers (**people**) are key to success of CBHFA programmes
  Motivation influenced by
  – leadership, management style and organisational culture
  – the social, economic, cultural, … context
- Programmes have **multiple** outcomes
- CBHFA programmes lead to ***desired*** but perhaps also ***undesired*** **outcomes**
  – Result of multiple processes, and intermediate outputs

A realist's checklist

VICTORE - Key characteristics of programme complexity
(Pawson 2013, p. 33)

Volition
Implementation
Contexts
Time
Outcomes
Rivalry
Emergence

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VICTORE

Volition

Programmes are people – not programmes but people change situations

- Map the actors, their interests and relations, their preferences and choices

Implementation

Implementation chains are long and reiterative, in constant adaptation

- Map the implementation chains
  - actually implemented activities (intensity, duration),
  - actors actually involved
  - intermediate outputs and outcomes
  - underlying processes

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VICTORE

Contexts

- ***Proximal*** context
  Individuals, interpersonal relations, organisations
- ***Distal*** context
  Social/political/cultural/economical/ecological environment
  - Map layers of the context in function of the key programme processes

Time

Intervention history and timing are important (**path dependence**)

- Map the implementation history, previous experience of actors with similar programmes, key events/decisions

VICTORE

Outcomes

Multiple outcomes, contested interpretations, attribution problems

Success = different things for different people

- Map outcomes by talking to all stakeholders - identify contestation

Rivalry

Influence of other programmes

- Map **other programmes** and events that may have shaped the outcomes
- Seek to establish ***con*tribution** – not *a*ttribution

VICTORE

Emergence

Not all actual outcomes are planned

- Search for intended but also unintended outcomes, and both positive and negative effects

Conclusion

When to do a RE?

Useful when learning is a must and/or situations of uncertainty

- Systematically building upon existing knowledge
  (see eliciting the initial PT)

- Empirical research
  - causal web, differentiating planned and actual intervention, planned and actual outcome, underlying mechanism and essential context factors

- The programme theory as a bridge between cases
  - Helpful in expanding external validity

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Conclusion

When to do a RE?

CAUTION: RE can be time-consuming…

… but is very rewarding

- Increased context adaptation and use of local knowledge
- Framing of programme in existing knowledge allows for systematic learning

  Initial PT - contextualisation – decontextualisation – refined PT

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Further information and support

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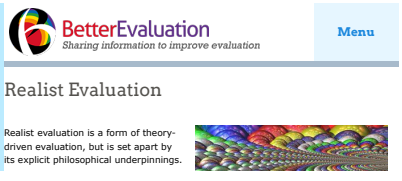
Better Evaluation
betterevaluation.org/approach/realist_evaluation



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