

## [context] New Approaches to the Participatory Steering and Evaluation of Complex Adaptive Systems Workshop 12-14th February 2019

The Challenge: Participation of stakeholders and citizens is increasingly recognized as a helpful and, in some circumstances, crucial ingredient when managing complex, adaptive socio-ecological systems. The scale, interconnectedness and ongoing dynamics of these systems require new approaches bringing together stakeholder knowledge and problem ownership with new complexity-appropriate tools. Such approaches have much to offer both ex-post evaluation and ex-ante policy appraisal. However, methods for achieving effective participation are not well understood and often fail and participatory approaches for complex systems entail even greater challenges. Recently, there have been a range of interesting experiments and innovations involving aids to participation in complex adaptive systems ranging from immersive digital tools to “low tech” hands-on or experiential techniques.

# Theories of Change in development aid agencies

- Designs range from:
  - Single linear sequence of events
  - Complex network structures with # of causal pathways  $\approx n^{\text{links}}$
- Dynamic ToC that illustrate outcomes of network structures are rare:
  - Knowledge of simulation methods is scarce
  - Complexity may be daunting
- Design criteria in tension:
  - Ease of adaptation / alteration
  - Adequacy as a representation
- Is there some useful middle ground?

# ParEvo

Web-assisted participatory evolution of scenarios

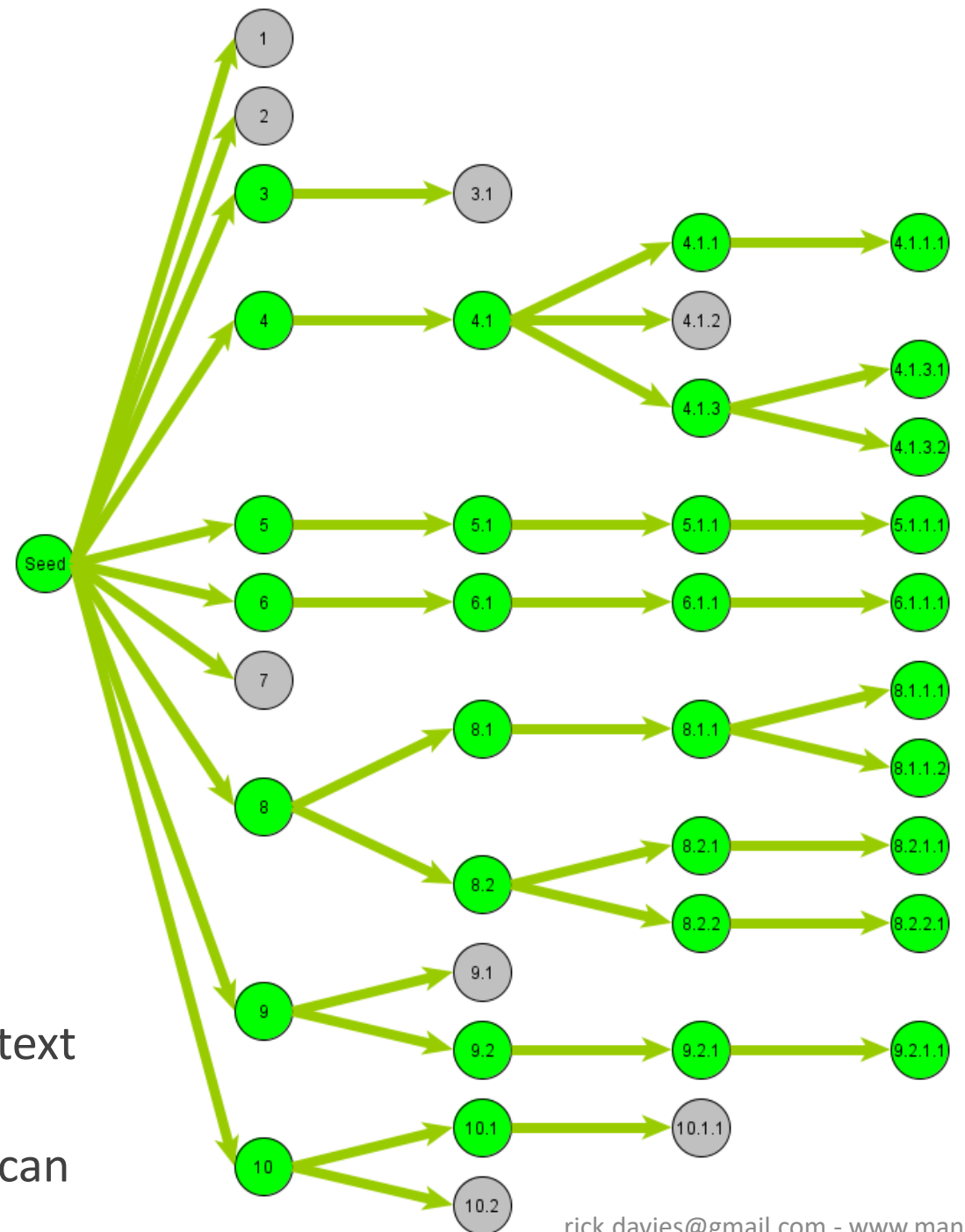
**Nodes** = short text description of events

**Branches** = storylines = sequences of events

Tree = set of storylines built up iteratively, in parallel

Evolutionary algorithm =

- Variation – New texts added in each iteration
- Selection – Each participant can only add one new text to one existing storyline
- Retention/reproduction – only surviving storylines can be added to



# A web-based process...

1. Allows distant *and* local participation
2. Ensures anonymity of contributions within a known set of participants
3. Provides a user friendly navigation within & between storylines
4. Speeds up the process of soliciting, analysing and representing contributions
5. Minimises errors otherwise likely if the above are done manually
6. Provides a platform for multiple users, thus learning across users

# Three forms of participation are involved

## 1. Per iteration

- Participants contribute a text to a continuing storyline,  
= *Responses* to existing scenarios and *development* of emerging scenarios

## 2. In between iterations

- Participants can comment on any of the most recent text contributions  
= Facilitation of cross-fertilisation of ideas,

## 3. After the last iteration

- Participants evaluate the surviving storylines  
= Enables a focus on key storylines, and parts thereof

# Steering ParEvo – a complex system in microcosm

- Participants can vary:
  - Content and placement
- Facilitator can vary:
  - Participants
  - Variation degree
  - Selection pressure
  - Speed of iteration
  - Performance feedback
  - Duration of exercise
  - Evaluation function

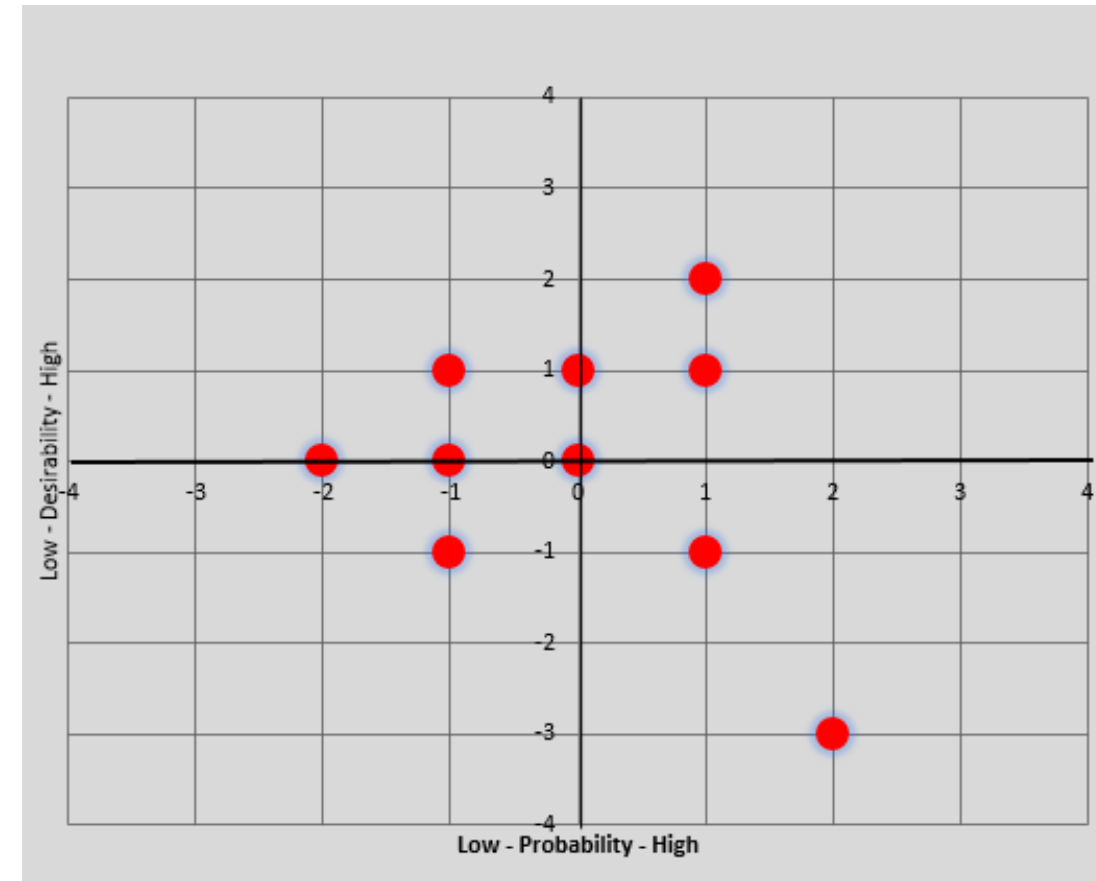
# Evaluation of storylines

## Criteria

- Pre-set: Probability, Desirability
- Emergent: From Comments

## Measurement

- Summary-by-selection
  - Please identify from the list below one storyline that you think is *most* [criteria]
  - Please identify from the list below one storyline that you think is *least* [criteria]
- Aggregation
  - Subtract # of “least” from # of “most”, for each criteria
  - Plot these numbers



Numbers = numbers of participants selecting. Points = individual storylines

# Other variables of interest

## 1. Contents!

1. E.g. What types of actors are mentioned and what roles they have

## 2. Participant's contribution strategies:

1. % of all own contributions to others, versus to self
2. Diversity of contributions to others (variety & balance)

## 3. Value of contributions by an individual participant


1. Immediate value to others: # contributions by others, by % of others
2. Long-term value to all: % of all own contributions in surviving storylines

## 4. Storyline characteristics: Diversity of contributions; # side branches

Simpson's Diversity measures



Literature on diversity and achievement





# ParEvo as a steering process on a larger scale

- Development aid programmes can be seen as meso-level complex systems
  - Renewed emphasis on “adaptive programme planning”
  - ParEvo may fit a niche between simple static linear and complex dynamic network Theories of Change used for Monitoring and Evaluation purposes
  - ParEvo could provide a framework for monitoring change, within a pluralistic vision that is both bounded and easily updated

“Monitoring and evaluation of adaptive programme management remains an underdeveloped art”  
ODI, 2019

# Progress to date

- Early 1990s, prior to public access to WWW
  - Basic concept designed as part of PhD thesis on organisational learning
  - Process pre-tested with school students in Swansea
- 2018-19
  - Two pre-tests using manually managed hybrid of web services (blogs, online surveys, network visualisation software)
  - [Aptivate](#) begins work on single integrated web version

**Objective: A web platform for multiple parties to run their own ParEvo processes, configured to their specific needs**