



Building bridges (part II)
– *from qualitative analysis to
simulation*

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Part IIa

My thinking about how to bridge before the dialogue started

CSNE Analysis Framework

CSNE Aspect	Corresponding Property
Context	Relevance
Scope	Applicability
Narrative Element	Local: cause-effect pairs, decision points, sequences, alternatives etc.

1. **Context**: the kind of situation one is in that determines the 'bundle' of knowledge that is relevant to that kind of situation
2. **Scope**: what is and is not possible given the current situation and observations
3. **Narrative Elements**: the narrative elements that are mentioned assuming the context and scope

Different Aspects Illustrated

Universe of Knowledge

Knowledge indicated by current cognitive context

Knowledge that is possible to
apply given circumstances

Cause1 & Cause2... →
Result1 & Result2...

Event1, event2, etc.

About Scope

- By “scope” I mean the reasoning as to which knowledge is possible given the circumstances
- For example, if all the seats are taken in a lecture, then some of the norms, habits and patterns as to where one sits might not apply
- Reasoning about scope can be complex and is done consciously
- However once judgments about scope are made then they tend to be assumed (i.e. are fixed), unless the situation changes critically

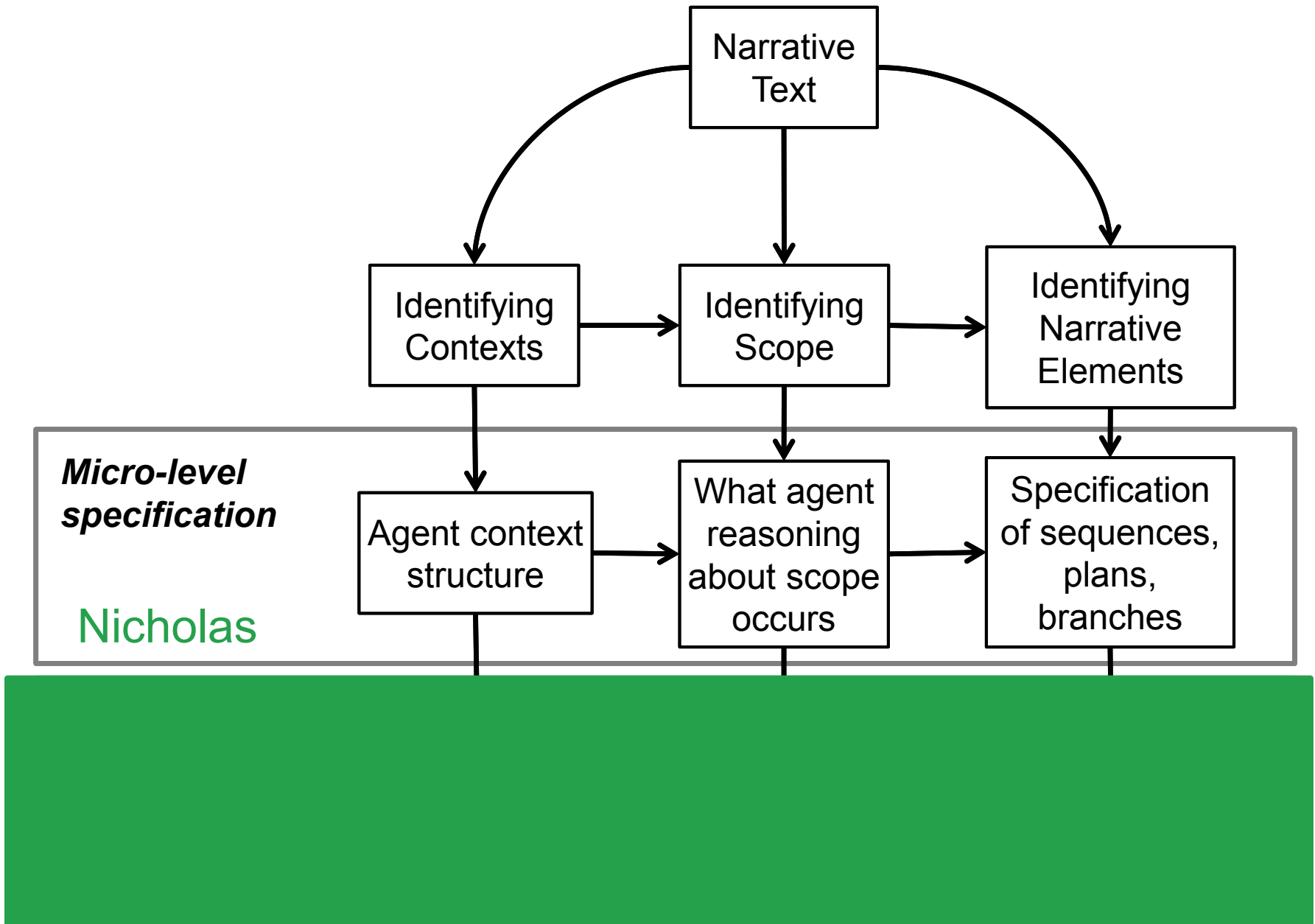
Scope vs. Cognitive Context

- Both scope and cognitive context determine which knowledge is useful for any particular situation that is encountered
- However, they play different roles:
 - CC is learnt using pattern recognition over a long time, but then is largely a 'given', is almost impossible to change when learnt, is quick and automatic and is socially rooted
 - Scope is largely reasoned afresh each time, taking effort to do so, is possible to re-evaluate but only if needed, and is more individually oriented

Narrative Elements

A variety of narrative structure elements are possible, including:

- Causal stories: A ... resulted in ... B
- Sequences: A ... then ... B ... then C
- Choices: had to choose between ... A and B
- End points: which resulted in A which was a disaster/really good/...
- Parallelism: A ... happens at the same time asB



Part IIb

Mapping to agent behavioural rules *– a post-hoc rationalisation of the process*

'Causal Stories'

From SD's papers/talking to her or my inference from this + common knowledge:

- Some stay apart from protests by fear of consequences or worry about family
- Some agents are initially motivated by conditions or seeing an attack
- Others may join motivated by positive emotions of (optimism, solidarity etc.)
- Emotion and knowledge build over time
- Importance of gathering locations

How agents may differ

- Employed/unemployed
- Susceptibility to emotion
- Whether on facebook
- What personal friends they have (others they would text/phone)
- Where they are
- Current knowledge of attacks, protests
- Whether protesting, whether attacked
- Current emotional level

Different Contexts

Different locations:

- **Home** – away from active involvement, but still in contact via phone and FaceBook
- **Street** – socialising area, vulnerable to attack, face-face emotional influence, start of protests
- **Square** – where critical mass is achieved, protests persist

Different times of day:

- **Waking** – calmer at start of day but with variation, clean slate as to knowledge of protests, attacks
- **Daytime** – unemployed socialise on street, might move to square
- **Evening** – all socialise in street, might move to square
- **Night** – employed go home, unemployed might go home

Scope Reasoning

This did not really come up but *I think* that the reason for this is that when programming one does not code for the impossible

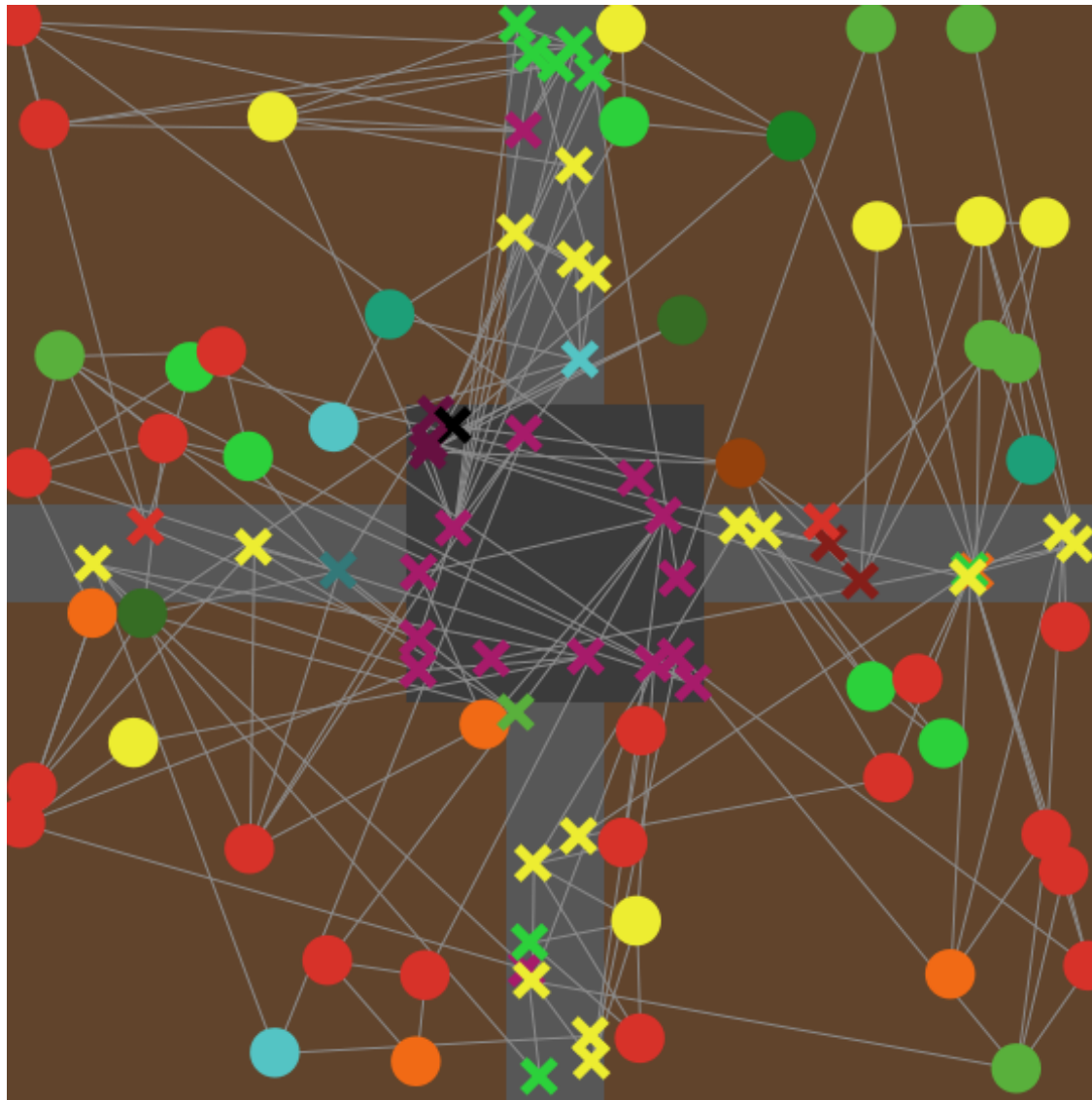
In other words, we constrain our simulations to only be about what we know *as programmer* to be possible

This means no mistakes by agents about what is or is not possible – we impose a kind of *possibilist infallibility* on them

Social Influence

- Knowledge (e.g. of attacks or protests that day) spreads by face-face, phone (friends) or facebook (if on and they have it)
- Emotional influence spreads face-face – increasing up to the average of the others on the same patch
- Both emotion and knowledge reset each morning (emotion reduces and changes somewhat randomly)

The Simulation



How to validate?

- One a few instances of actual case (though might be a series of protesting numbers)
- Can it reproduce broad aspects of known outcomes?
- Are “trajectories” of individual agents plausible?
- Could we add in specific events and check outcomes to that?

Reflections on process

- It helped that SD was already thinking a bit algorithmically and BE had read her papers
- Iteration was also helpful – talk, think/program, talk, think/program etc. ...
- Integration of a tool for rule provenance from qualitative analysis integrated into NetLogo would be helpful **Nicholas**
- Exploration and Validation will be another process between us, yet untried

The model...

- ...is on the blog (as are these slides)
- Presumes you have NetLogo5.* installed!
- Download the .zip file
- Unzip it in a directory (including the two subdirectories with extensions in them)
- Double-click the Egypt Riots.nlogo file