Modeling Trans-scale Social Processes

David L. Sallach
Computation Institute

University of Chicago
sallach@uchicago.edu

Argonne National Laboratory
sallach@anl.gov
# Model Trans-Scale Social Processes

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### Abstract

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Topics

• Limits of Empiricism
• Radial Concepts
• Generic Model of Social Action
• Theory Templates
  – Trans-scale Social Coprocess (TSC)
    • Orientation Fields
    • Multigame Interaction
    • Social Structuration
    • Discourse Dynamics
• Conjunctural Theories (Cases)
• Trans-scale Social Analysis

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Empiricism and Its Limits

- Virtue & vice of empirical analysis
  - Past patterns cannot predict the future by themselves

- Vital need for social theory
  - To identify generative patterns and structures within social complexities

- To identify patterns for which there is no data:
  - Dense interaction patterns
  - Private communication & covert actions
  - Intent, its generation & evolution

- Not observable but "be-able" (Bell)

- Computational contribution
  - Move toward finer-grain, more dynamic models
The Need for Social-Theoretical Models

• The limits of empiricism
  – Recognized since Hume
  – Advances in natural sciences have depended on theoretical progress

• Theory substitutes (placeholders) are currently popular
  – Common sense, *ad hoc* rules, folk theories, extrapolations of empirical generalizations
    • A pattern from a particular empirical space is projected into a vast and significantly different setting, yet still expected to be applicable

• Without theory, insights are *ad hoc* and, thus, not repeatable
  – No accumulation of insight or generalization results

• Critical insights developed by social theorists need to be taken into account by modelers
Interpretive Agent (IA) Mechanisms

- **Prototype semantics**
  - Semantic data model
  - Miller ranges
  - Dimensional chunking
- **Orientation fields**
  - Emotion, cognition
    - Mutually redefining
- **Culture, discourse, identity**
  - Orders of indexicality
  - Thin coherence
- **Multigames (structuring action)**
  - Available? Which game? Which (joint?) strategy?
- **Situated Abstraction**
  - Hi-Dim problem solving

### Table 2. Notional Orientation Fields circa December 1859

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Concepts with Radial Structure

- Prototype concepts are an empirical discovery of cognitive science
  - Similar to Wittgenstein’s ‘family resemblances’
- Once recognized, they can be theorized, but their form was identified by experiment
- Prototype structures are multidimensional and radial, with an (idealized) exemplar at the core and more idiosyncratic representatives along the radians
- They define a basic form that bounded rationality takes
Genocide as a Radial Concept

Semantic data models
Bounded Rationality and Complexity

• Radial structures provide a way of organizing and controlling the complexity of empirical representations
  – Allowing **bounded rationality** to manifest more conceptual power & flexibility than might otherwise be possible.
  – Prototype concepts *group similar phenomena together*,
    • with the most pervasive (or the most salient) being central in the reasoning process
    • with divergences being laid out on a periphery defined along **axes** and/or **regions** of ever greater difference

• Radial concepts are used throughout the Trans-scale Social Co-process template
  – The resulting structure is far more flexible and powerful than, for example, simple sets of objects, as formalized in set theory
    • Typically presumes unambiguous definitions of objects, and discrete specification of set boundaries
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<th>Scale</th>
<th>Description</th>
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<td>Generic Typologies</td>
<td>Actor types, propensity types (influence, interest, utility, constraints, affordances), identities, protoroles, protorules</td>
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<td>Trans-scale Social Coprocess (TSC)</td>
<td>multigame interactions; social structuration; orientation fields, identities &amp; discourse dynamics</td>
</tr>
<tr>
<td>Social Conjunctures</td>
<td>The type of historical setting/process, e.g., decline of empire coupled with the emergence of local rebellions, the rise of extremist/totalitarian movements, predatory intervention in resource rich provinces, etc.</td>
</tr>
<tr>
<td>Historical Configuration</td>
<td>The instantiation of a particular social conjuncture by the identification of the specific structures, institutions, movements, factions, events, etc.</td>
</tr>
<tr>
<td>Empirical Dynamics</td>
<td>The mining of communications and actions (extended by the use of thesauri), to broaden the scope of empirically-oriented scenarios &amp; discourse analysis</td>
</tr>
</tbody>
</table>
A Quasi-Syllogism of Pragmatic Action

- Chinese ethical thinking . . . follows an implicitly logical form approximating to [a] syllogism, applicable directly to concrete situations.
  - In awareness from all viewpoints, spatial, temporal, [social], and personal, of everything relevant to the issue, I find myself moved toward X; overlooking something relevant I find myself moved toward Y.

- In which direction shall I let myself be moved?
  - Be aware of everything relevant to the issue.
  - Therefore, let yourself be moved towards X. (Graham 1989)

- Note, in particular, the multi-dimensional nature (“from all viewpoints”) of reasoning within this quasi-syllogism.
  - Allows, for each viewpoint, a region of sufficiency to be identified
  - Supports high-dimensional and approximate action selection
  - Mechanism may provide a pragmatic approach to a problem that can be modeled consistent with domain-specific requirements
A (Richer) Pragmatic Hermeneutic

- Problem
  - Experience to dissatisfaction
- Constraint
  - Barriers & obstacles
- Dependence
  - Relational needs
- Affect/Intent
  - What you seek/defend/resist

- Solution
  - Satisfaction to experience
- Affordance
  - Overcoming barriers
- Power
  - Relational control
- Action/Effect
  - Results, expected & actual

Endogenous, situated coherence shapes mechanism evolution
Situated Abstraction: Four Pragmatic Pairs
(Prospective / Activated)
Theory Templates

• The nature of theory templates (Fararo, 2001)
  – Abstract forms of process mechanisms that are filled in with more specific forms for the given cases under study
  – A logical placeholder for the construction of innumerable theoretical models that satisfy the template

• Examples of theory templates
  – Four function (AGIL) paradigm (Parsons, 1957)
    • Adaptation, goal-attainment, integration, latency
  – General Social Equilibrium theory (Coleman, 1990)
    • Theory of markets, generalized
    • Actors & interests, resources and control
  – Game-Theoretic Unification (Gintis, 2009)
    • Four types of game theory provide the basis for social science unity
      – Evolutionary GT (& complexity theory) define lower & upper bounds
        » Suggestive rather than definitive or predictive
      – Classical, behavioral & epistemic game theories
        » Norms as a motivating & correlating device
TSC Template as a Synthetic Framework

- **Orientation fields**: affinity, bonding, identification, trust, respect, status, reputation, solidarity, patriotism, legitimacy, authority, corruption
  - Recognition as a scale phenomenon: affinity, solidarity, universality

- **Multigame interactions**: reciprocities of solidarity, exchange and conflict, building resources for economic or military domination, the generation of social structures

- **Social structuration**: role theory, division of labor, class conflict, religious conflict, religious sectarianism, ethnic conflict, acculturation, circulation of elites, status inconsistency

- **Discourse dynamics**: mass belief systems, the rise of religious &/or ideological movements, sectarian fracturing, historical transformations (Renaissance, Reformation, Enlightenment), axial ages

- Each process is simultaneously active
  - Social co-processes are trans-scale and mutually shaping
Trans-scale Social Coprocess
The Fecundity of ‘Games’

- John von Neumann, 1944
  - *Theory of Games and Economic Behavior*
- Norton E. Long, 1956
  - The local community as an ecology of games
- Ludwig Wittgenstein, 1958
  - *Philosophical investigations*
- Harold Garfinkel, 1963
  - A concept of, and experiments with, ‘truth’ as a condition of stable concerted actions
- James P. Carse, 1986
  - *Finite and Infinite Games*
- Agent models have the potential to draw upon and realize qualitative game insights
Ludwig Wittgenstein

Family Resemblances among Games

• Consider the proceedings that we call ‘games’ … board-games, card-games, ball-games, Olympic-games, and so on

• **What is common to them all?**
  – You will not see something that is common to all, but similarities, relationships, and a whole series of them at that.
    • Don‘t think, but look! Are they all amusing? Or is there always winning and losing, or competition among players? Look at the parts played by skill and luck … We can go through many, many groups of games … see how similarities crop up and disappear?
    – We see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail
    – I can think of no better expression to characterize these similarities than ‘family resemblances’

• —shall say that ‘games‘ form a family”
Finite and Infinite [Open-Ended] Games

- A finite game is played for the purpose of winning
- Power is a concept that belongs only in finite play
- The exercise of power always presupposes resistance
- Power is not evident until two or more are in opposition
- Defeat is death in finite play; the finite player dies under the terminal move of another

- An open-ended game is played for the purpose of continuing play
- Infinite play is always dramatic; its outcome is endlessly open
- Infinite players do not oppose the actions of others, but initiate actions in a way that others will respond by initiating theirs
- The joyfulness of infinite play, its laughter, lies in learning to start something we cannot finish
Social Multigames

• Actors play multiple games simultaneously
  – Communications and actions are often simultaneous moves in multiple games

• There are three types of radial multigames: altruistic, economic and coercive
  – Multigames can be embedded one within another
  – Broad games can be deeply constructed

• Interactive games can be associated with actor roles

• Actors may enter into a joint game, yet with each defining it differently

• Institutions, roles and strategies are defined in terms of interlocking multigames

• Multigames may interlock across multiple scales and, thus, structures
An Ecology of Multigames

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<th>Beneficent</th>
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<td>Reciprocity of force &amp; threat</td>
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An Ecology of Multigames

Reciprocity Diagonal

- Beneficent
- Economic
- Coercive

Beneficent

Reciprocity of affinities

Economic

Reciprocity of goods, services

Coercive

Reciprocity of force & threat

Balance

Complimentarity
An Ecology of Multigames

Reciprocity Accounting & Effects

- Beneficent
  - Inexact, fluid & unconscious accounting
  - Virtuous spirals
- Economic
  - Arms-length, quantitative accounting
  - Relative benefit
- Coercive
  - Exaggerated, preemptive accounting
  - Vicious spirals

Multigame interactions
## An Ecology of Multigames

### Off-Diagonal Exchanges

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- **Beneficent** means of acquiring economic resources
- **Economic** means of acquiring coercive resources
- **Coercive** means of acquiring beneficent resources

### Multigame Interactions
Multigame Characteristics

• Prototype games—altruistic, coercive, economic
• Multiple—players play multiple games simultaneously
• Reciprocal—in cooperation or conflict, stable processes arise from reciprocity
• Positional—results are relative, and never final
• Continuous—multigame moves are calibrated
• Open—games can be initiated or entered by new players
• Implicit, emergent—multigames can emerge in fragments and evolve into fuller form
• Historical—multigame characteristics allow historical games to be identified and mapped

• Structurable—Configurations of multigames, including dominant and contributory games, are building blocks of structure
Dimensions of Social Structure

- **BioFunctional Differentiation**
  - Division of labor
  - Institutions
    - family
    - economy
    - state
    - religion
  - Roles
    - age
    - gender
    - organizational
    - capability
    - specialization
  - Evolves thru **action**
    - Divergent, convergent

- **Resource Hierarchies**
  - Class, status, party
    - deference practices
    - cattle
    - land
    - slaves
    - harems, concubines
    - political office, position & influence
    - precious metals
    - symbolic shares of business ownership
    - electronic currencies
  - List is not exhaustive

- **GeoCultural Networks**
  - Civilization
  - Nation
  - Race & ethnicity
  - Language
  - Religion, philosophies & ideologies
  - Cultural traditions, rituals & practices
  - Spreads geographically
    - genetic inheritance
    - contagion
    - diffusion
    - imitation
    - learning
    - conversion
    - migration
    - conquest

- **Social structuration**
Modern Institutional Structures

Theocracy
- Religion
- State
- Market

Modernity
- Market
- State
- Religion

Communism
- State (Ideology)
- Economy
- Religion
Cognitive & Emotional Fields

- Social agents maintain cognitive and emotional fields
  - of the natural, socio-cultural and technical ecologies in which they are immersed,
  - within which, entities, situations, types and relationships are:
    - 1) identified (and sometimes defined), and
    - 2) associated with an emotional valence
  - Both types of fields are grounded in biological capabilities

- Fields fluctuate
  - A dynamic interaction of the two fields defines a composite field of orientation within which agent intentionality is framed
    - Can be settled or highly situated in form,
  - Such intentionality is multi-focal, and
  - Attention and salience fluctuates among focal points, ranges and relative to scenarios
• **Orientation** is a dual structure that combines cognitive referents with affective components
  - **Cognitive components** are conceptual prototypes that manifest a radial structure & reference area reasoning
    • Geometric models
  - **Emotional components** are constituted by continuous valences directed at a particular prototype concept
    • e.g., values ranging from +1.0 to -1.0
    • Some (many) valences may be derived
  
  – Orientation structures are relatively simple, allowing more complex issues to be framed in terms of two interrelated questions:
    • which (aspects of) elements are the focus of the actor’s emotional attraction or repulsion?
    • how do emotional valences change in response to exogenous and endogenous events?
An Historical Example

• U.S. Declaration of Independence examined regarding:
  – The orientation field represented within its text
  – Its location within the orientation fields of contemporary and subsequent historical actors

• Declaration serves as an historical focus illustrating how social fields manifest within and influence history
  – The Declaration expresses negative affect toward the King of England, his legislature and foreign mercenaries
  – It holds positive affect for the “good people of the colonies,” and the “lives, Fortunes and Sacred Honor” of their representatives
  – Overall, animated by antagonism toward oppressive authority

• Orientation fields carried by texts and objects as well
Declaration has (and shapes) Orientation Fields
Evolution of Conflicting Orientations

Abolitionists

Apologists
Collective Orientation

• Orientations are characteristic of collectivities as well as individuals
  – Orientations are continuously shaped through interaction
  – In all social groups and institutions, it matters what the common orientation is
    • It defines beliefs, meanings, values, intentions, motives, expectations, hopes and fears, scenarios and narratives
• Social orientations are dynamic, and never precisely shared
  – Even among individuals with very similar perspectives, what is focal to one, is derived for another
  – Expressed commonalities are often calibrated relative to self-image and ‘other orientation’
  – Social orientations are partially indexical and somewhat fluid
Polarized Orientation Field

Multidimensional representation
Orientation Fields

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Orientation Accounting: Social Effects

- Significant other(s)
  - mother, father, spouse, etc.
- Family reunion
  - deferring to the climate of opinion
- Peer pressure
  - implicit and explicit constraints
- In/out groups
  - diverse types and forms
- Anticipatory socialization
  - From the priesthood to the mob
- Reference groups & the social self
  - exemplary representatives
  - toward the remote, historical, fictional
- All are sociological classifications. In interaction, orientation accounting is given various labels but is largely unconsciously practiced
Nations as an example of social structuration

1. **Nations (and various social identities) are mental constructs** (Anderson)

2. National (and various social) identities are produced and reproduced (as well as transformed and dismantled) discursively

3. **National identities imply similar concepts & emotional dispositions**

4. Material and institutional conditions intertwine with discursive practices

5. In national discourse, cultural and political discourses are intertwined

6. National discourses emphasize uniqueness and uniformity and tend to ignore intra-national differences

7. Diverse identities are discursively constructed according to audience, setting, topic and content and, therefore, malleable, fragile and diffuse
Generation of Discourse Communities

- Dynamic interplay of cultural resources and situated identities
  - Entrepreneurial roles
  - Creation, organization and shaping of public rituals
  - The emergence of ideal types
  - Coercive enforcement, economic reinforcement,
  - Organization, cross-articulation, evolution, reorganization

- Apter and Saich have proposed four historical movement mechanisms:
  - Retrieval involves the creation of a mythical past
  - Projection is the derivation of an identified future
  - Exegetical [ideational, ritualistic] bonding as a form of discipline
  - Symbolic capital [plus what else?] as a form of power
    - Such mechanisms can be generalized and focused

- Any nations &/or historical setting will contain dozens or hundreds of overlapping discourse communities
The Fluidity of Coherence

• **Symbols are indexical**
  – All signs, gestures, words and terms acquire content, significance, truth and meaning from the context of their utterance and/or invocation. Emphasis, irony, innovation and drift cause what symbols denote, connote and imply to be limited in scope.

• **Logics are local**
  – All logics are dependent upon the clarity and stability of the terms they reference and, thus, the discourses from which these terms derive. Physical, biological, and social circumstances and settings contribute to their coherence and boundaries. All ‘sets’ are subject to ambiguities of definition.

• **Propensities are situated**
  – Natural propensities, structural dependencies and social intentions are shaped by circumstance and setting and are, accordingly, subject to transformation on various temporal scales.

• **Structures transform**
  – All structures are established and maintained through relationships. Relative to their constitutive interactions, structures are enduring, but also in flux, both in their forms of persistence and in their proximate effects.

• **Discourses evolve**
  – The dynamics of propensities, structures, and dependencies, as well as incentives, intentions and interactions cause discourses to transform and evolve. Cultures are large-scale, extensible, weakly coherent social discourses.

• **Paradox reframes**
  – In both mundane and rigorous discourse, contradictions and paradoxos gives rise to recategorization, innovative abduction, and emergence.