

INSTITUTE
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Evolutionary theories of socio-economic change: building blocks, achievements and challenges ahead

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Background references

Dosi G., S.G. Winter, “Interpreting economic change: evolution, structures and games”, in M. Augier and J. March (eds.) *The Economics of Choice, Change and Organizations: Essays in Memory of Richard M. Cyert*, M. Cheltenham, UK, Edward Elgar, 2002

Dosi G., R.R. Nelson, “An Introduction to Evolutionary Theories in Economics”, *Journal of Evolutionary Economics*, 1994

Dosi G., *Innovation, Organization and Economic Dynamics. Selected Essays*, Cheltenham, Edward Elgar, 2000

Dosi G., *Economic Organization, Industrial Dynamics and Development: Selected Essays*, Cheltenham, Edward Elgar, 2012 and especially their introduction also available as LEM Working paper 2012/08 at <http://www.lem.sssup.it/wplem.html>



The evolutionary research programme: “building blocks”

(Methodology)

1. “Dynamic, first...”
2. “Phenomenological” evidence as a discipline

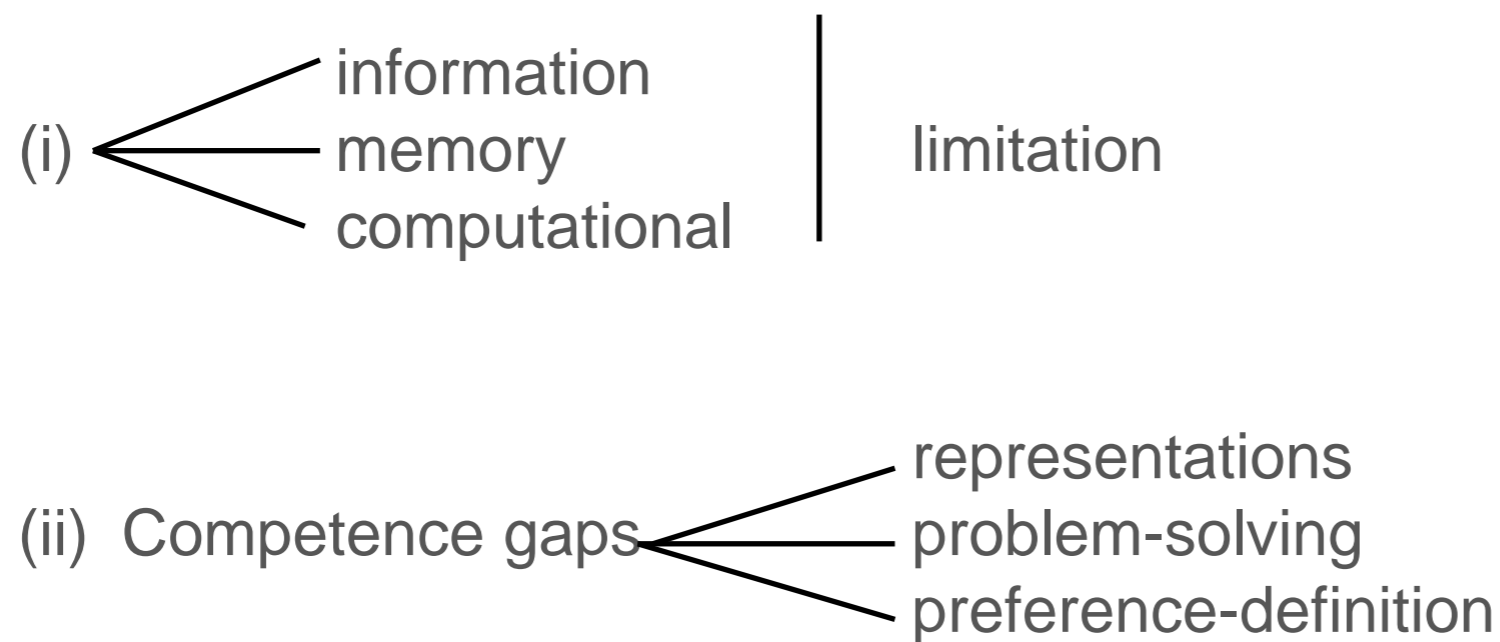


The evolutionary research programme: “building blocks” (cont’d)

(Substantive HPs)

3. Microfoundations...(what multiple agents do and why they do it)

4. “Bounded rationality” - broadest sense:



The evolutionary research programme: “building blocks” (cont’d)

5. Heterogeneity

- (obviously) preferences/endowments
but also
- models-of-the-world
- problem-solving repertoires
- learning mechanisms (?)

6. Persistent emergence of novelties

7. Interactive environments (including markets) also as *mechanisms of information exchange and selection*

8. Aggregate phenomena as *emergent properties*

9. Emergence and self-maintenance of *organizational forms and institutions*

10. “Institutional embeddedness” of evolutionary processes:

...co-evolution...

...time-scales...



Some related notions and qualifications

Emergent properties

“properties of some aggregate description of the system which cannot be imputed to the intentional behavior of any one agent or collection of them, but rather (partly) unintentional outcomes of far-from-equilibrium learning/adjustment/selection”

Evolution is **not** opposed to “revolution”

(cf. punctuated equilibria)

Metastability ...



Some related notions and qualifications

(cont'd)

Stochasticity **alone** does **not** qualify for an evolutionary interpretation

Evolution entail non-linearities by the converse is not true

No commitment to “Darwinian blind mutation” in socio-economic affairs



Levels of description

Level 0 cognitive and behavioral foundations

e.g. learning processes, nature of knowledge,...
developments of routines, ...endogeneity of preferences...

Level 1 from microfoundations to the phenomenological description of economic agents

individuals and organizations ... behavioral regularities ...

Level 2 “meso” and “macro” aggregates

... from size distribution of firms/industrial, dynamics, etc. ...
to aggregate variables (GPD, productivity, employment,
distribution shares, etc.)



Levels of description (cont'd)

Level 3 Co-evolutionary processes

... institutional embeddedness of economic change ...
Institutional and economic co-evolution

Level 4 “Grand” historical conjectures

... broad patterns of change of capitalism ...



Examples of evolutionary (and “quasi-evolutionary”) analysis

1. The patterns of innovation and diffusion as evolutionary processes

C. Freeman N. Rosenberg R. Nelson K. Pavitt G. Dosi

2. Innovation, diffusion, growth and development fuelled by technical change

Nelson & Winter Dosi & al. David Conlinsk
Eliasson Iwai Arthur & al. Fagerberg
Silverberg & al. Verspagen & al. Cimoli, Dosi, Stiglitz



Examples of evolutionary (and “quasi-evolutionary”) analysis (cont’d)

Industrial evolution

- non-formalized interpretations
(Pavitt, Freeman, Abernathy-Utterback, Malerba-Orsenigo...)
- Winter
- Dosi et al. / Bottazzi et al.
- Life cycle models (Klepper et al.)
- “History friendly” models



Examples of evolutionary (and “quasi-evolutionary”) analysis (cont’d)

Individual and organizational learning

- Firms as bundles of capabilities
- Formal models: Levinthal / Marengo etc.



For the agenda ahead

1. What type of environments
 - *small - 'open-world'...*
 - *selection dynamics*
 - *...*
2. What 'rationality gap'...
3. Phenomenological discipline
 - *cognitive sciences...*
 - *business economies...*
 - *experiments...*



Missing elements and “Heroic” simplifications

1. Abundance everywhere of “animal spirits” of innovation
2. Innovative efforts grow with expected profitability
3. Market selection works properly
4. All distributive issues are neglected
5. Neglect of all “Keynesian” issues of demand formation and management
6. No social and ecological debris left over by evolutionary process



Major policy challenge

Toward an innovation-friendly
environment-friendly highly re-distributive
New Keynesianism

