Scholarly Collaboration in Brazil: The REAL Network

Eduardo A. Haddad
(with Jesús Mena-Chalco and Otávio J. G. Sidone)
Introduction

• The Regional Economics Applications Laboratory (REAL) celebrates this year its 25th anniversary.

• Philip Israilevich and Geoffrey Hewings started a cooperative venture between the Federal Reserve Bank at Chicago and the University of Illinois at Urbana-Champaign (UIUC) in 1989.

• REAL has become one of the leading research centers of regional science worldwide.

• In this paper, we describe the scholarly network involving REAL’s alumni working in academia in Brazil:
  – Patterns of research collaboration among around 50 Brazilian “Mafia” members.
Genealogy: The Brazilian Branch

- Brazilians account for 6 out of 48 of Geoffrey Hewings’ all-time PhDs

- It is fair to say that the Brazilian branch of Geoffrey Hewings’ academic tree is heavily rooted in the perennial influence of Professor Werner Baer in the shaping-up of economics graduate studies in Brazil
  
  - The constant flow of PhD students from Brazil and Latin America to the Department of Economics at UIUC in the late 1980s and early 1990s, together with the creation of REAL in 1989, provided the opportunity for a fruitful partnership between Werner Baer and Geoffrey Hewings
  
  - Still before REAL, academic interactions between Baer’s students and Hewings created the roots of the Brazilian REAL network (Eduardo Martins, Joaquim Guilhoto, and Manuel Fonseca)

- **Multiplier Effect**: “The Sandwich Program”
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Academic Genealogy of Geoffrey Hewings’ Brazilian Ph.D. Students

Geoffrey Hewings

Ph.D. UIUC

1st generation Sandwich Program

2nd generation Sandwich Program

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Brazilian REAL Scientific Collaboration Database

- How to measure scientific collaboration?
  ⇒ coauthorship in scientific research

- Curriculum *Lattes* (CNPq)
  - Main system of curriculum information for the Brazilian scientific community
  - Information is publicly available
  - But the process of data extraction and mining is complex
    - *ScriptLattes* (MENA-CHALCO et al, 2013)

<table>
<thead>
<tr>
<th>Summary of database</th>
<th>Total of CVs</th>
<th>Total of publications</th>
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<tbody>
<tr>
<td>SIDONE <em>et al.</em> (2014)</td>
<td>1,131,912</td>
<td>7,351,957</td>
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<tr>
<td><em>REAL Network</em></td>
<td>48</td>
<td>1,061</td>
</tr>
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</table>

$LQ_{REAL} = 3.4$
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Number of Publications by Brazilian REAL’s Alumni, 1989-2013

http://professor.ufabc.edu.br/~jesus.mena/REAL-1989-2013/
Identification of Coauthorships (ScriptLattes)

Bibliographical Production selected in CL

| Papers published in peer-reviewed journals |
| Chapters of published books |

Researcher A

Author A; Author B. Impacts of... Journal XX, 2007.

Researcher B

Author A; Author B. Impacts of... Journal XX, 2007.

Similar titles

Coauthorship between researchers A and B

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Identification of Geographic Location (*ScriptLattes*)

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Full Counting Method

<table>
<thead>
<tr>
<th></th>
<th>Region X</th>
<th>Region Y</th>
<th>Region Z</th>
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<tr>
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</tr>
<tr>
<td>Region Z</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

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Coauthorship Networks

• Reflection of the professional links between the researchers

• The nodes are the researchers, and two researchers are linked if they wrote a paper together

• We consider three different sets of researchers:
  1. We start by considering only REAL’s alumni working in research activities in Brazil (endogenous network);
  2. We then include other REAL affiliates elsewhere (extended endogenous network);
  3. We finally expand the endogenous network by considering all coauthors of REAL’s Brazilian alumni registered in the Lattes Platform (exogenous network).
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Number of Brazilian Scholars at REAL, by Period of Initial Affiliation

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Evolution of the Endogenous Network, Non-Cumulative Links by Period

Brazilian researchers associated with REAL are represented in blue

REAL researchers not registered in the Lattes Platform are represented in red

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Coauthorship among REAL’s alumni involves 27 out of the 48 members of the network.

23 researchers form an integrated network

Two main clusters are associated with the nodes Domingues-Haddad-Perobelli and Azzoni-Guilhoto-Haddad
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Extended Endogenous Collaboration, 1989-2013

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Exogenous Collaboration, 1989-2013

501 collaborators with REAL’s alumni in Brazil

Nodes are sized based on the authorRank measure (impact in collaboration) and colored to highlight whether the researcher is a REAL’s Brazilian alumnus (blue), another REAL researcher (red) or a collaborator (green)

Similarly, edges are sized and colored based on the number of collaborations between authors.
Clusters in the Exogenous Collaboration, 1989-2013
Geographical Distribution of Exogenous Collaboration, 1989-2013
In scientifically emerging economies with large territorial extensions, such as the case of Brazil, it is expected that, parallel to an increase in international scientific collaboration, an expansion of domestic collaboration networks from nodes located in centers of national excellence emerges.

- The size of the country allows some scale advantages related to the existence of specialized research institutes; national researchers have more opportunities to collaborate with local partners.

The expansion of the REAL scientific collaboration network in Brazil arises as a relevant mechanism for both the qualitative leap of national scientific production in regional science and for the dissemination of knowledge in peripheral regions of the country.
Initial links in the network were stronger related to international collaboration involving Geoffrey Hewings, Michael Sonis and Werner Baer, from the “foreign” side, and Joaquim Guilhoto and Eduardo Haddad from the “domestic side”.

By the time the network was already established, its own dynamics generated a pattern of hierarchical integration in which NEREUS, a REAL-like lab founded by REAL alumni at the University of São Paulo, served as the key institutional node in Brazil to foster the spread of the network across the country.

It has helped to further develop regional science in the country, triggering a second cycle of academic development of the field in Brazil.

- Research topics by scholars involved in the network mainly address concerns with the analysis of regional problems in Brazil using the toll kits in regional science.

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A Network of REAL People!

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