Mapping Globalization

by Miguel Centeno

University of Virginia

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Mapping Globalization

**What:** Empirically driven effort to define globalization and improve analysis

**Who:** Miguel Centeno, Sara R. Curran, John Galloway, Paulette Lloyd & Suresh Sood

**Where:** Princeton University, University of Washington, University of Technology Sydney & NetMap Analytics
Globalization is everywhere....
But, what does it mean?

Globalization is a **process** leading to greater **interdependence** and mutual awareness (reflexivity) among **economic, political, and social** units in the world, and among actors in general.

*Mauro Guillén 2001*
Measures of Globalization

- COFFEE BEAN SOURCE
- PAPER SOURCE FOR CUPS
- SUGAR SOURCE

THE MAGIC BEAN SHOP
A single cup of Starbucks coffee can depend upon as many as 19 different countries. Between the coffee beans, the milk, the sugar and the paper cup, Starbucks coffee is a global hub that connects some of the poorest countries in the world with some of the wealthiest.

STARBUCKS STORES BY COUNTRY
2003

1 - 24
25 - 99
100 - 499
500 - 999
1,000 - 2,999
3,000 - 9,999
10,000 +

THE FRIES THAT BIND US
Probably the single most visible symbol of American influence worldwide, McDonald’s has over 31,000 restaurants in 118 countries, employing more than 1.5 million people. Despite its 13,000 restaurants in the USA, McDonald’s is slipping at home. Its customer satisfaction is worse than any other fast food chain and ranks lower than all major airlines and the IRS.

NUMBER OF STARBUCKS SHOPS WORLDWIDE


6,200 STORES WORLDWIDE, WITH THREE NEW STORES OPENING DAILY
Source: Starbucks.com, US Department of Agriculture, Fortune Magazine

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MAP DESIGNED BY FLAMING TOAST PRODUCTIONS
Technology

Technological Revolution

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet Users</th>
<th>Airline Passengers</th>
<th>TV Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Increasing Wealth

Global Wealth
Per Capita GDP (1995)

Year

OECD, Asian Tigers and China, Rest of World


OECD

10000 15000 20000 25000

Non-OECD
Inequality

Global Inequality

Observation year

Percent of income

Gini Index
Top 10%
Top 20%
Democratization

Bank's polyindex

Year
Some Questions About Trade
How Much Trade?

Source: WTO
How Fast Growing?

CHANGES IN WORLD TRADE

Source: World Economic Aggregates
What is Traded?

Trade by Commodity

Source: WTO
Goods vs. Services?

Goods vs. Services

Ratio Goods/Services

Source: WTO
How Much Does It Cost?

World Prices

Source: BLS, prices for US imports
Who Trades Goods?

Structure of World Trade

Source: UNCTAD
Who Trades Services?

Export of Commercial Services
World Share

Top 5

USA
UK
Germany
Japan
France
Rest of World


USA
UK
Germany
Japan
France
Rest of World
Who Buys, Who Sells?
Concentration of World Trade

Percent of World Trade in Top 0.1% of Links
World Trade Value
Value of Trade in Top 0.1% of Links
Americas in World Trade

The Americas and World Trade

- % of World Total wo NAFTA
- % of World Total with NAFTA
- Inter-American wo NAFTA
- Inter-American with NAFTA

% of World Trade

- 0%
- 2%
- 4%
- 6%
- 8%
- 10%
- 12%
- 14%

Volume (1000USD)

- 0.0E+00
- 1.0E+00
- 2.0E+00
- 3.0E+00
- 4.0E+00
- 5.0E+00
- 6.0E+00
- 7.0E+00
- 8.0E+00
- 9.0E+00
- 1.0E+01

Years:
- 1980
- 1990
- 2001
## Africa in World Trade

<table>
<thead>
<tr>
<th>Percent of World Trade for:</th>
<th>1980</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-Africa Trade</td>
<td>0.11%</td>
<td>0.13%</td>
</tr>
<tr>
<td>Africa Trade including Trade with US and Euro-12</td>
<td>5.48%</td>
<td>1.92%</td>
</tr>
</tbody>
</table>
Trade Axes I

Change 1980-2001
Constant 2000 $
Trade Axes II
Summary

• Globalization is not a global phenomenon—only part of the world is flat
  – Its growth has been largely restricted to a few set of countries
• Increasing regional effect
• Asia is unique among NICs in:
  – Increasing centrality in global trade.
  – Creation of an independent regional network
Globalization Remains a Black Box

• Theory raced ahead of evidence
• Entrenched theoretical and public policy debates:
  • *Is it good or bad?*
• Empirical evidence is uneven
Consequently…

• Failure to understand the structure of globalization
• Failure to analyze interaction dynamics
• Failure to foresee unintended consequences, crises, “normal accidents”, systemic malfunctions
Focus on Transactions

Link disparate actors (nodes) around the globe
–Actors can be:
  » People
  » Cities
  » Countries
  » Organizations

–Measured as:
  » Trade
  » Capital transfers
  » Treaties
  » Travel
  » Collaborations
  » Communication
Data on Transactions

• Build database on transactions
• Create open access data and tools for scholarly and public policy investigators
• Matrix where ijth cell represents transaction between country i and country j
• Several data sets now available at www.princeton.edu/~ina
Network of Transactions

• Develop tools for visualizing transactions statically and dynamically
• Reveal the structure of social relations
• Reveal participants and isolates
• Illustrate change over time and potentially reveals mechanisms of change
Models of Globalization

- Universal
- Clustered
- Hegemonic
NetMap

The thickness of trade links (lines) indicates their relative value.

Countries (boxes) are repeated to show inter- and intra-regional trade.
1980

Trade Structure
with links $\geq 3\%$
of Total Trade Value
Global Inequality

- Rich get Richer?
- 80/20 Rule?
- Power Law Distribution?
## Distribution of Links

<table>
<thead>
<tr>
<th></th>
<th>Threshold</th>
<th>1980</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Isolates</strong></td>
<td>$\text{Million}$</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>$0.03%$</td>
<td>83</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>$0.3%$</td>
<td>136</td>
<td>149</td>
</tr>
<tr>
<td><strong>Average Number of Links</strong></td>
<td>$\text{Million}$</td>
<td>45.4</td>
<td>63.9</td>
</tr>
<tr>
<td>without Isolates</td>
<td>$0.03%$</td>
<td>6.3</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>$0.3%$</td>
<td>2.8</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>Degrees of Separation</strong></td>
<td>$\text{Million}$</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>without Isolates</td>
<td>$0.03%$</td>
<td>2.3</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>$0.3%$</td>
<td>3.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>
Distribution of Links

2001

Number of Links

Number of Countries

2001

Number of Links

Number of Countries

2001

Number of Links

Number of Countries
Concentration of World Trade 1980

Trade structure of the largest links accounting for 25% of total world trade
The Americas, without NAFTA

Trade structure of the 50 largest unidirectional links

1980

2001
The Americas, NAFTA, Triad
Sub Saharan Africa, Triad

1980

2001
Intra-Asia Pacific

1980

2001
Intra-Europe

1980

2001
Europe, Triad
Intra-MENA

1980

2001
MENA, Triad

1980

2001
Fuels

Trade structure of the largest links accounting for 50% of total world trade in that commodity
Machinery

Trade structure of the largest links accounting for 50% of total world trade in that commodity
Apparel & Accessories

Trade structure of the largest links accounting for 50% of total world trade in that commodity
Emergent Group Analysis
Step Link Analysis
Cartesian Map Analysis
Other Data in Development

- Phone Calls
- Tourism
- Air Travel and Freight
- FDI
- Embassies
Phone Traffic in 1995
Interactive Mode
Data Access
Historical Material
Mapping Globalization

• Data Driven
• Open Access
• Network Methods

www.princeton.edu/~ina

• Forthcoming 2 volumes on Trade