

Growing Knowledge about Globalization (GKG)

Observing Trade, 1980-2001

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

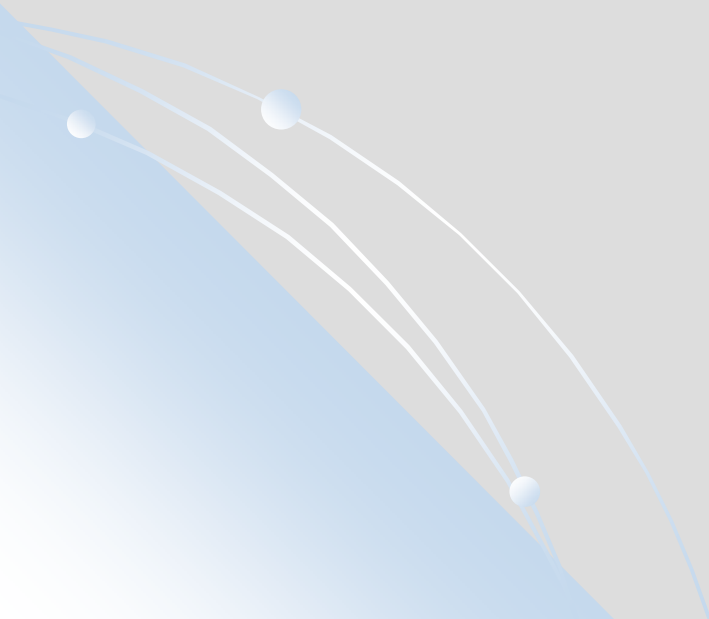
Princeton University, University of Washington, University of Technology
Sydney & NetMap Analytics

Institute for the Study of the Americas
University of London

September 19, 2005

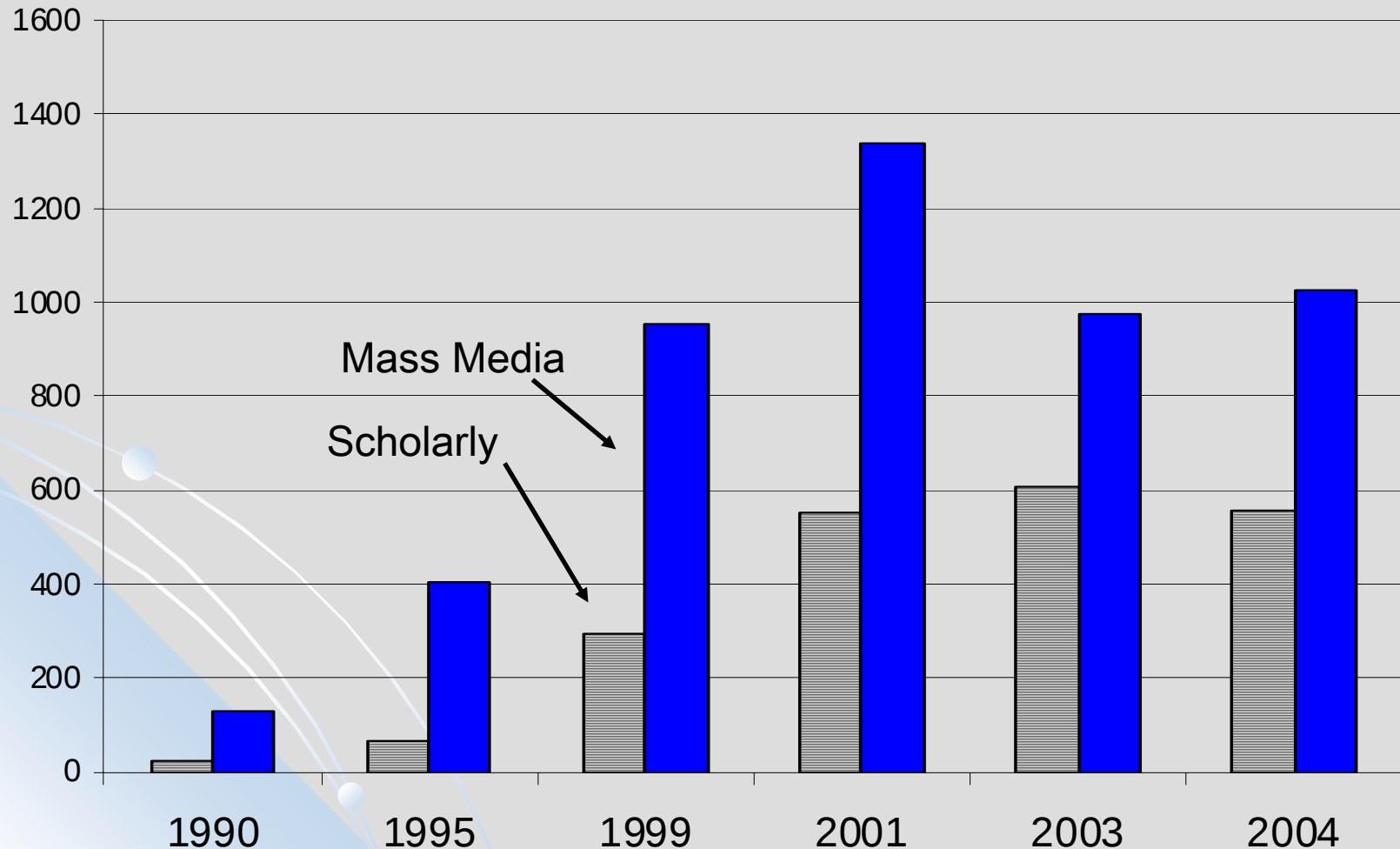
Globalization is a process leading to greater interdependence and mutual awareness (reflexivity) among economic, political, and social units in the world, and among actors in general.

Mauro Guillén 2001



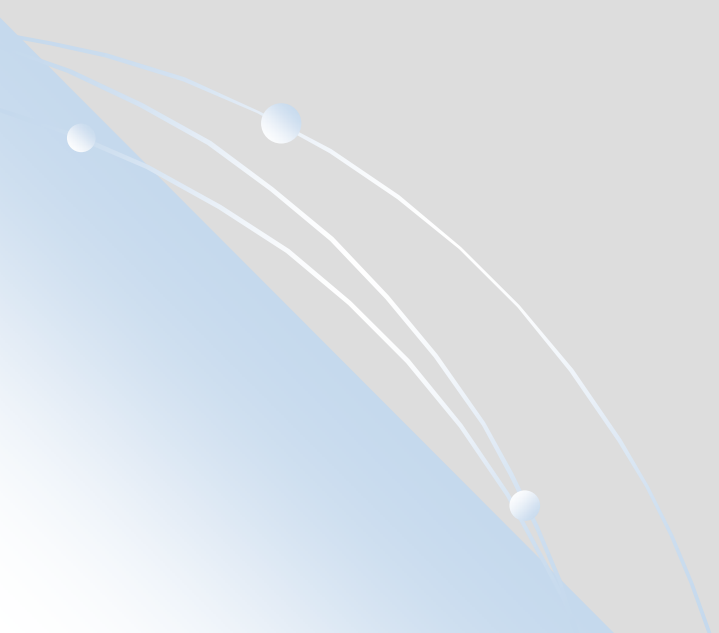
Globalization is everywhere....

Articles on Globalization

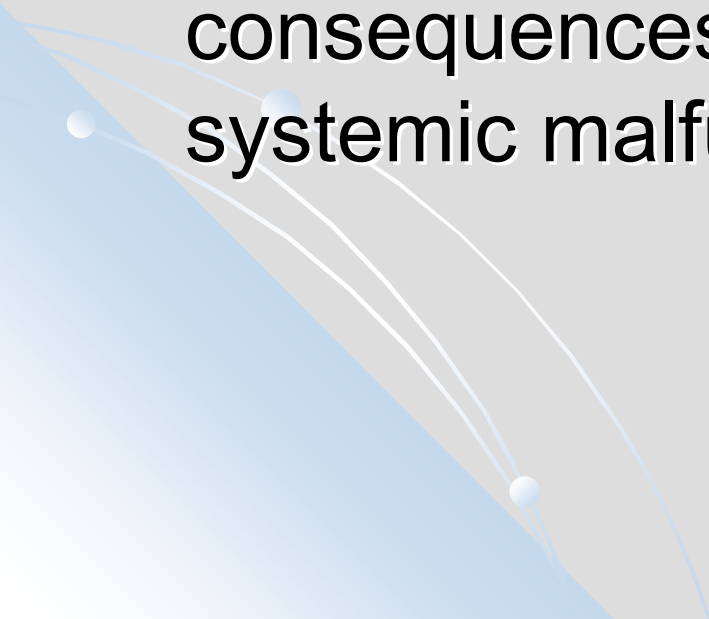


Globalization is a Black Box

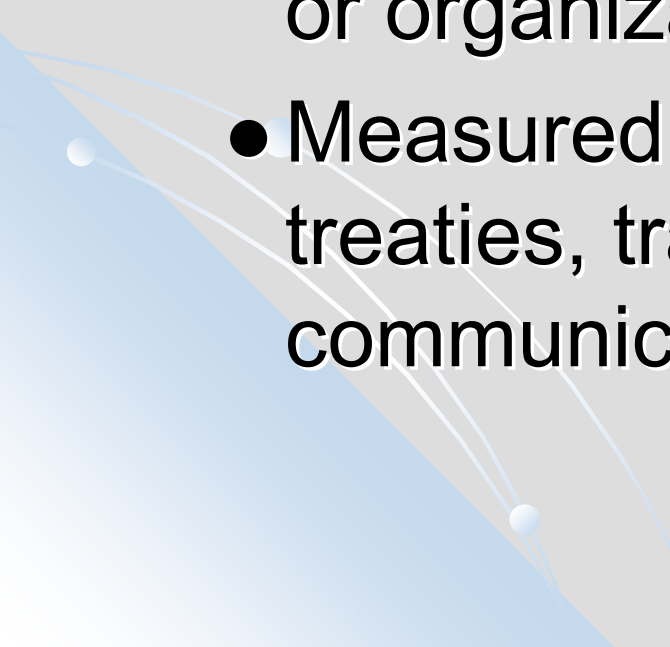
- Theory raced ahead of evidence
- Entrenched theoretical and public policy debates: *Is it good or bad?*
- Empirical evidence is uneven



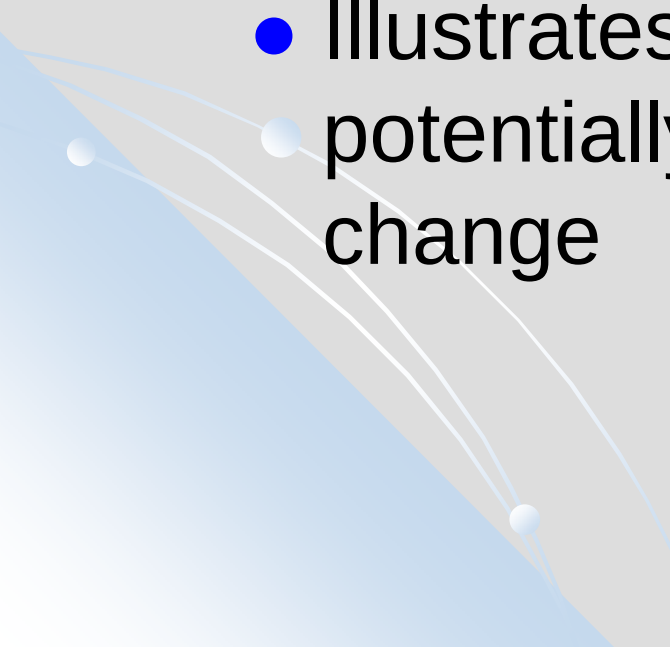
Consequences of the....

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

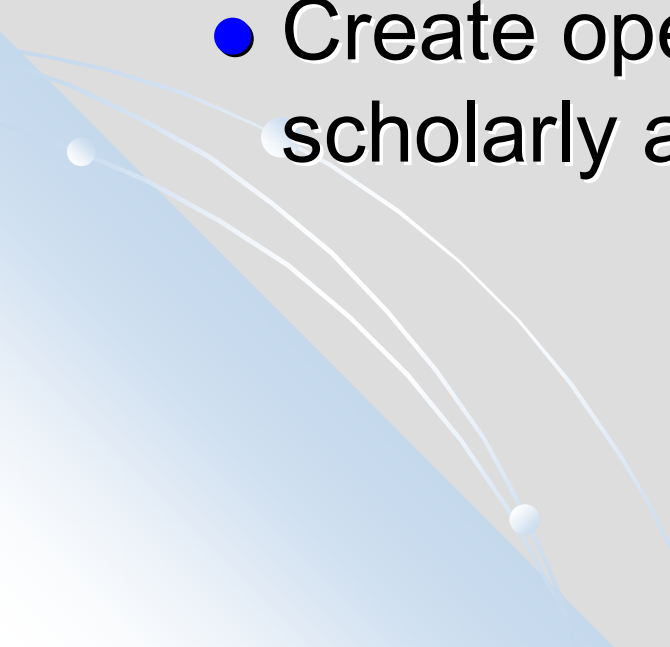
Contents of the Black Box: Transactions

- Link disparate actors (nodes) around the globe
 - Actors can be people, cities, countries, or organizations
 - Measured as trade, capital transfers, treaties, travel, collaborations, and communication
- 

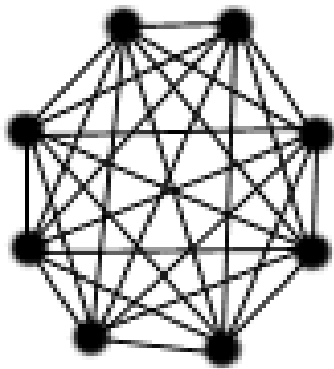
Black Box of Globalization: Network Analysis

- Reveals the structure of social relations
 - Reveals winners and losers of globalization processes
 - Illustrates change over time and potentially reveals mechanisms of change
- 

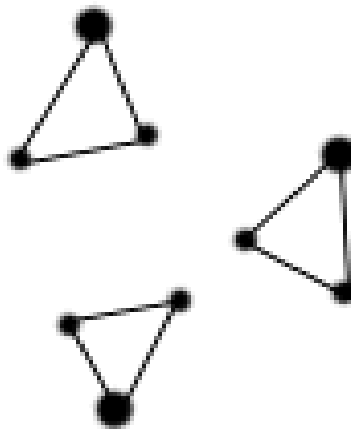
Map the Pattern of Transactions: Reveal Globalization Network

- Build database on transactions
 - Develop tools for visualizing transactions statically and dynamically
 - Create open access data and tools for scholarly and public policy investigators
- 

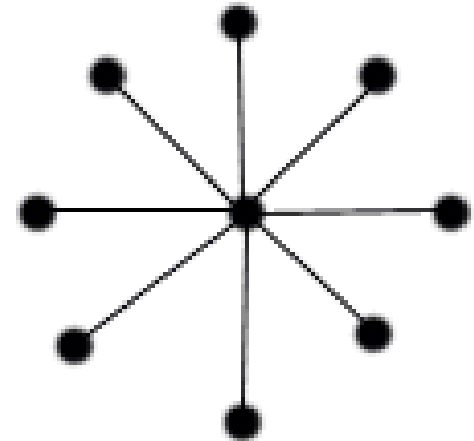
Models of Globalization



Universal



Clustered

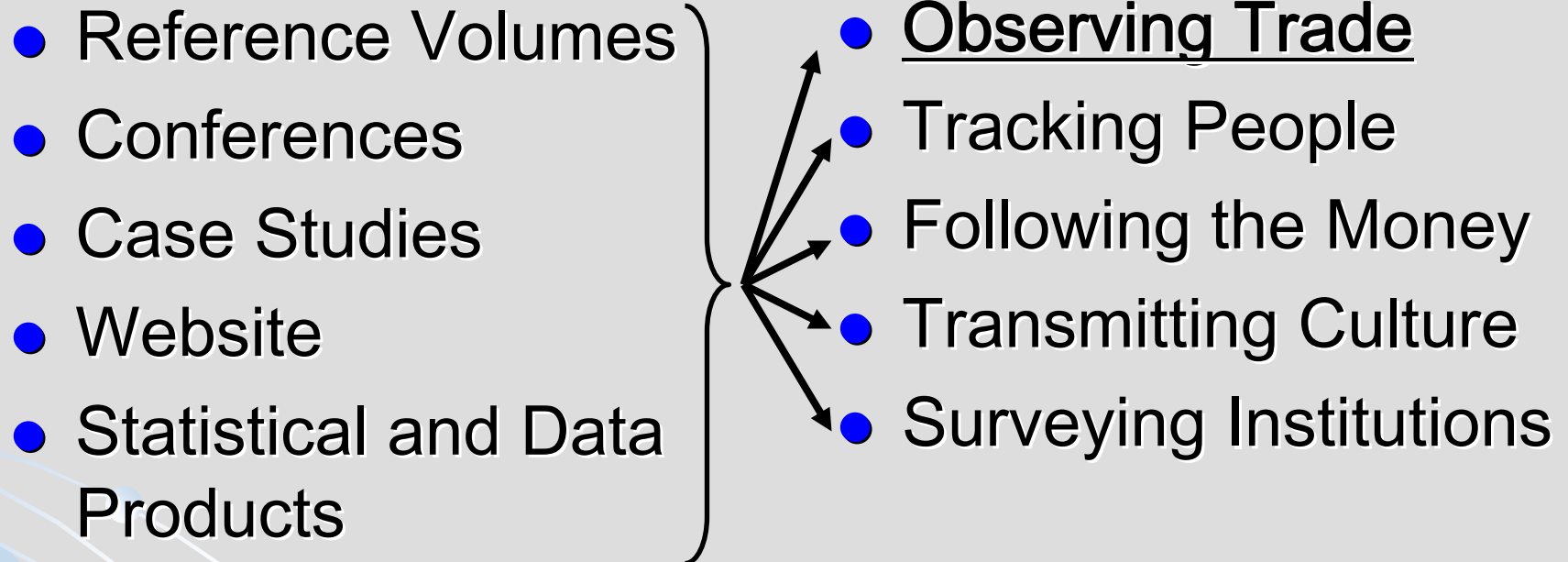


Hegemonic

Growing Knowledge about Globalization

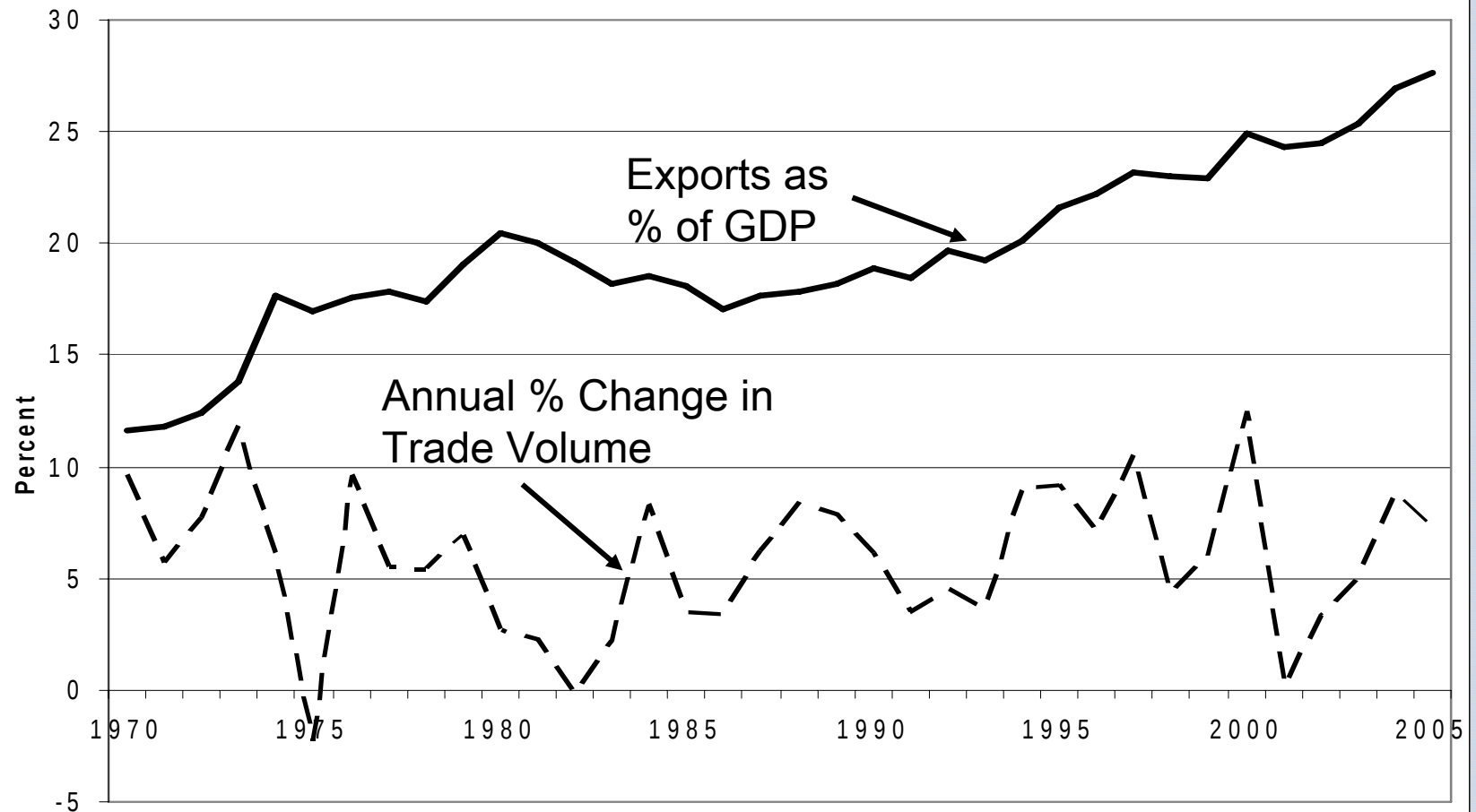
- Who?
 - A cross-national, multi-institutional collaboration
- What?
 - Database, web-based interface for public access, and development of visualization tools
- How?
 - Research, descriptive publications, teaching tools, and open access website
- When?
 - Five-year effort from 2005-2010

GKG Projects and Products



Observing Trade

Worldwide Exports



Significant Moments of Observation

Year	Characterization of Era
1980	“Crisis in the Global System” Post OPEC, UNCTAD, collapse of Import Substitution, onset of debt crisis
1990	“Victory of the Market” Establishment of EC, End of Cold War, GATT, Structural Adjustment Policies, Container Shipping
2001	“North versus South” WTO, Internet

Data and Methods

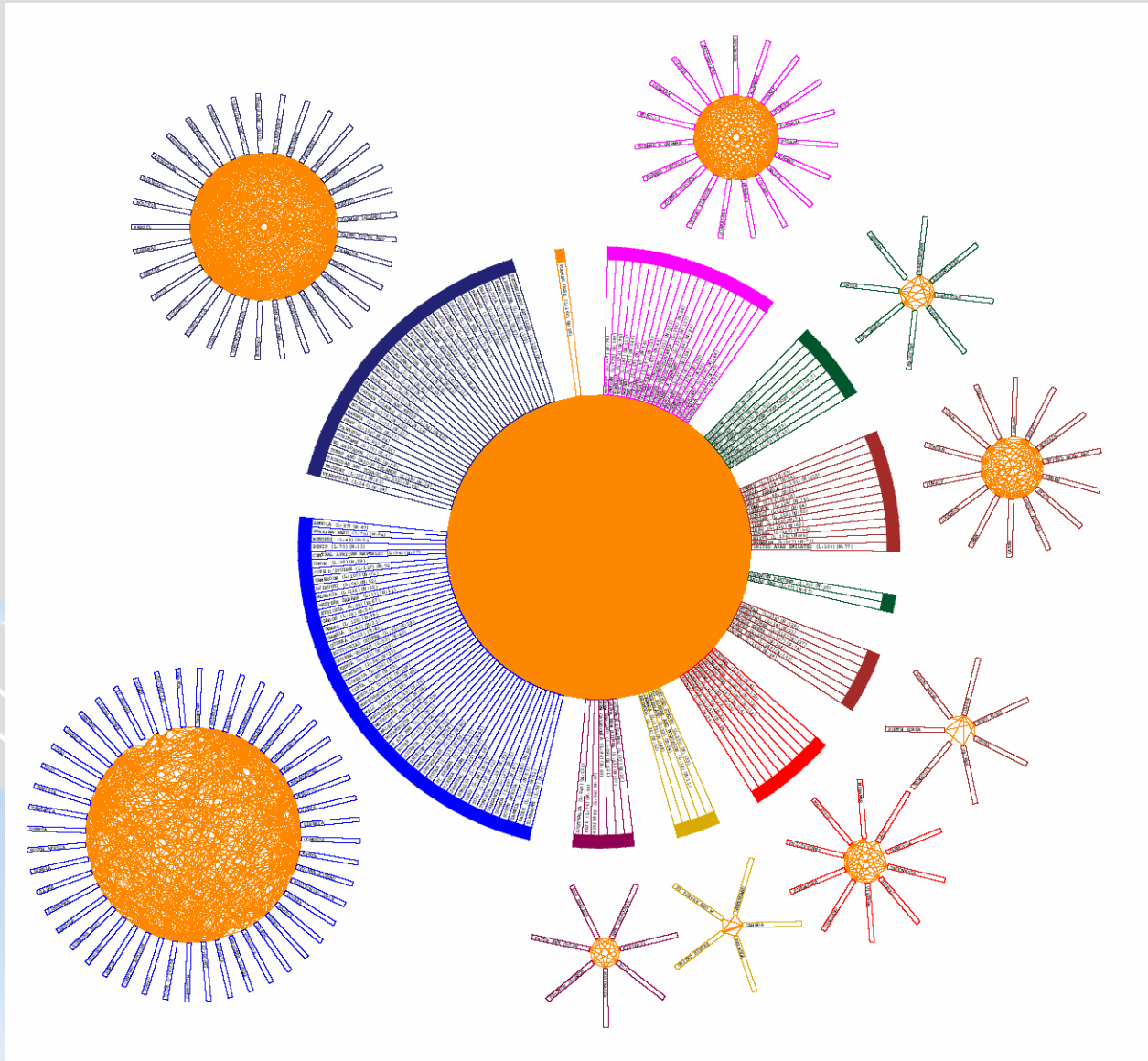
● Trade Data

- World Trade Analyzer
- 1980, 1990, 2001
- \$ Amount of exports/imports between every country
- Including an aggregate of all commodities and 93 of those related to food, shelter, clothing, energy, machinery and engines.

● Network Maps

- Apply *NetMap Visualizer* software
- Analyze country and regional trade patterns
- Observe emergent groups
- Display Cartesian maps
- Follow step links from central nodes

Too Much Information?



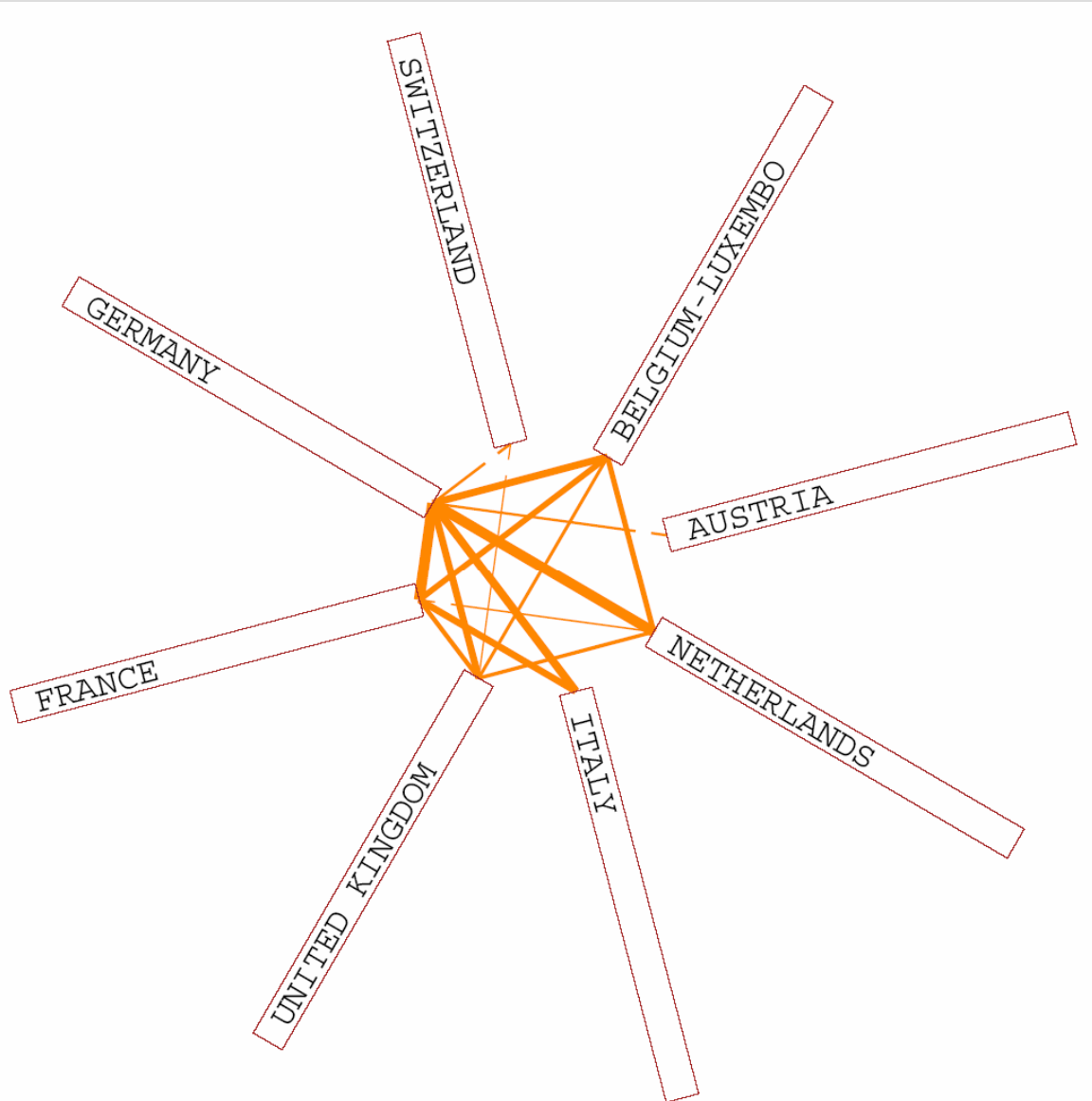
1980

World Trade

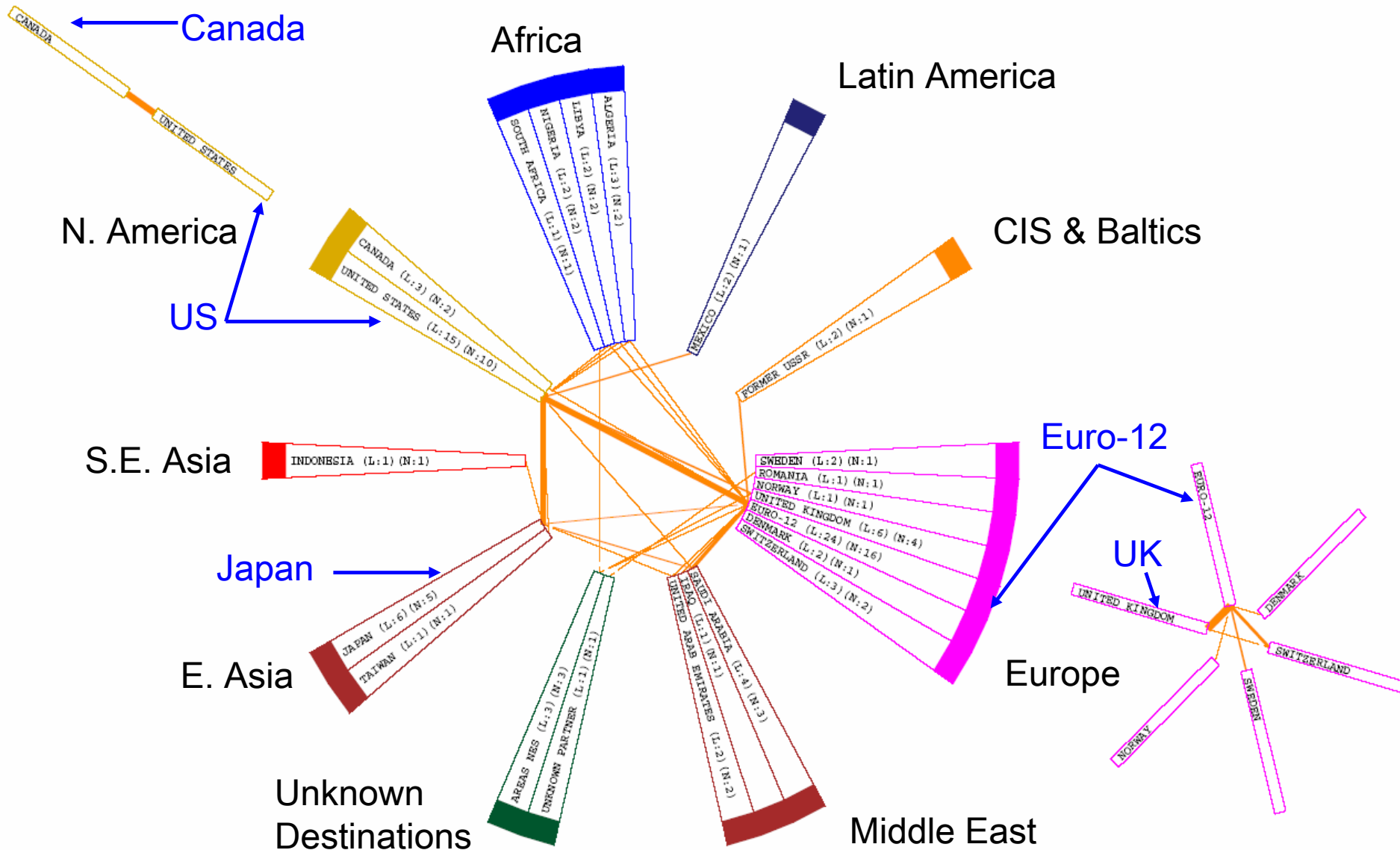
All commodities

No thresholds

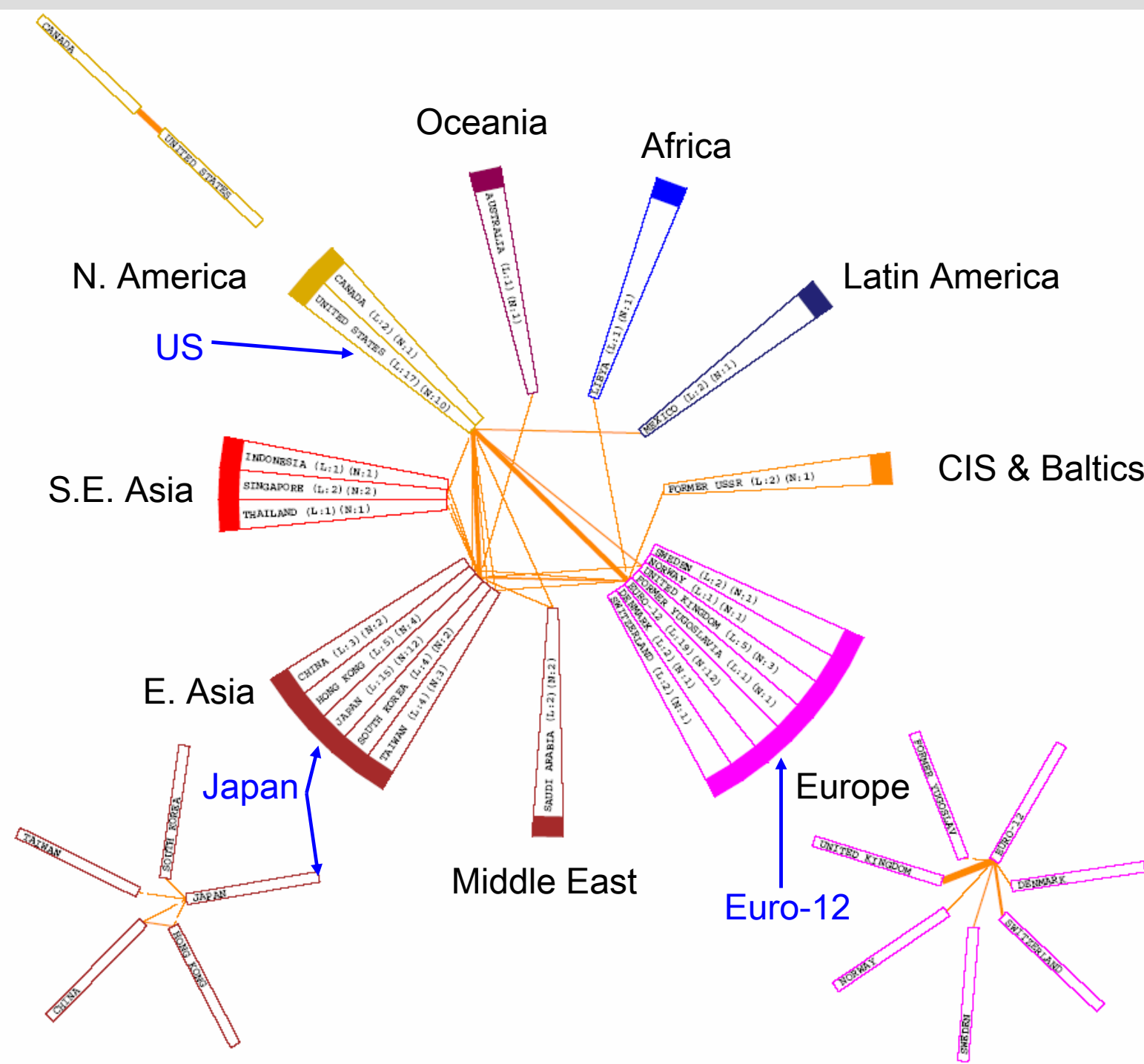
Domestic or International?



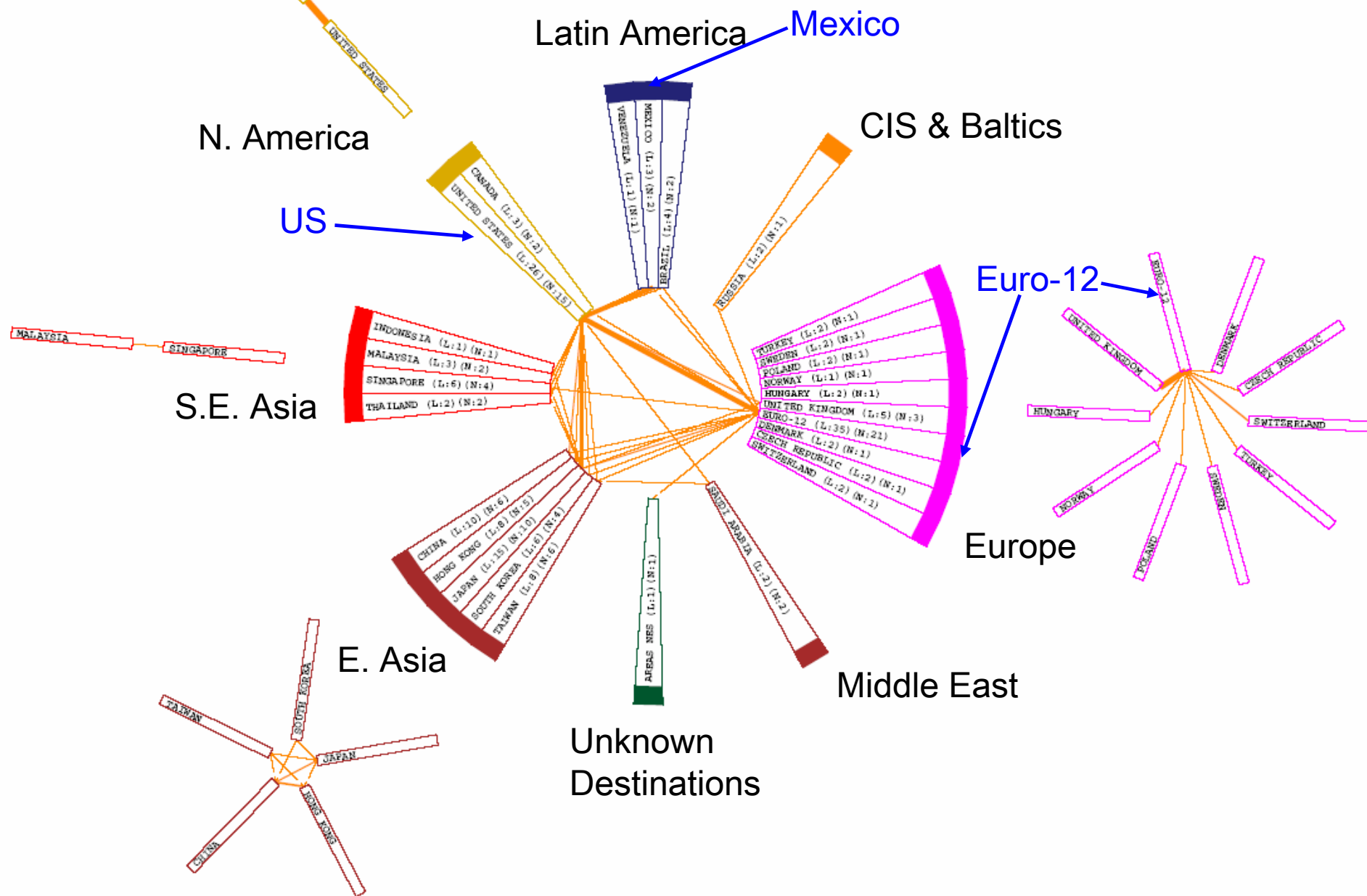
1980 Trade Structure with links $\geq 0.3\%$ of Total Trade Value: Euro-12



1990

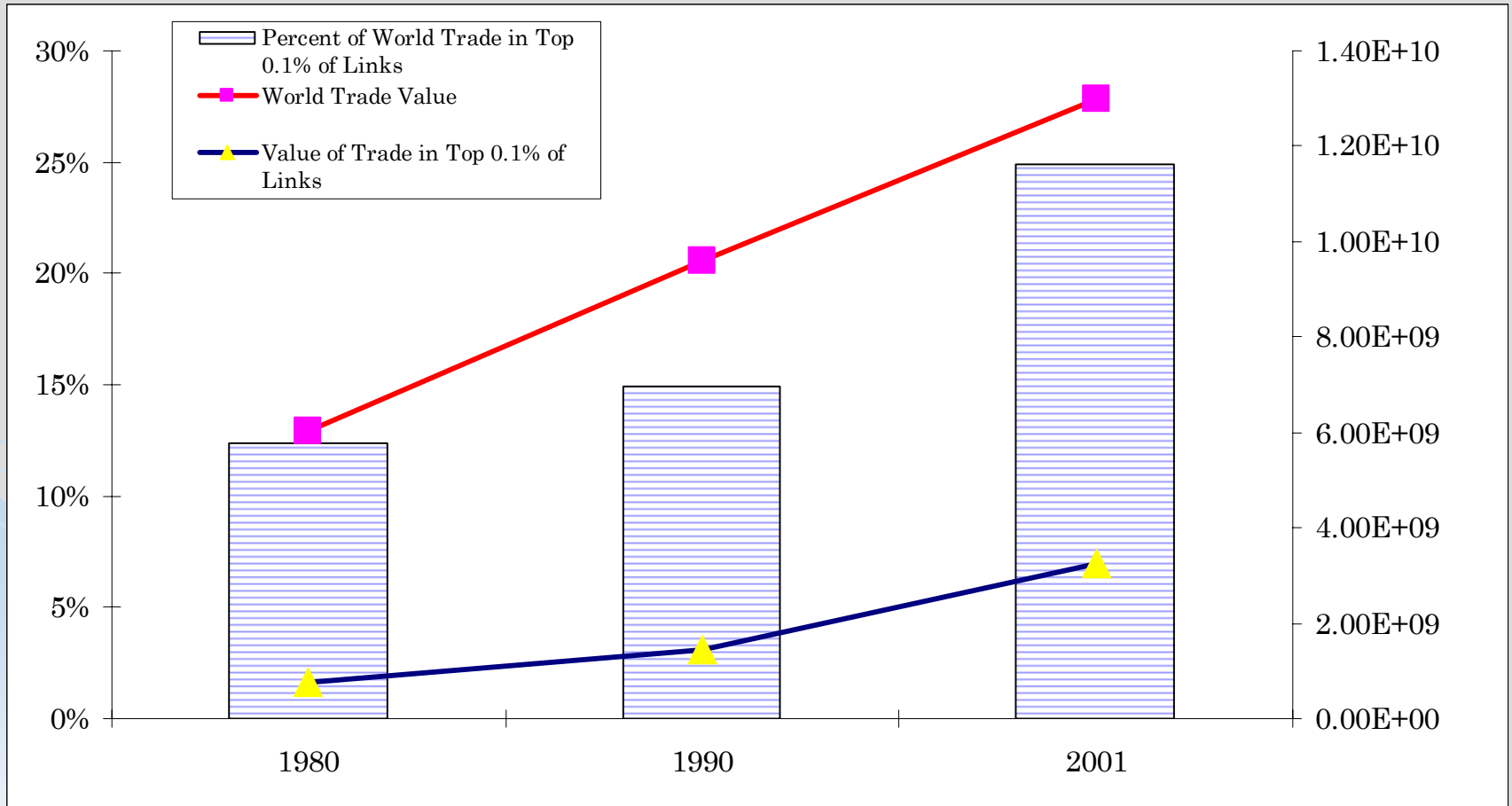


2001



Concentration of World Trade

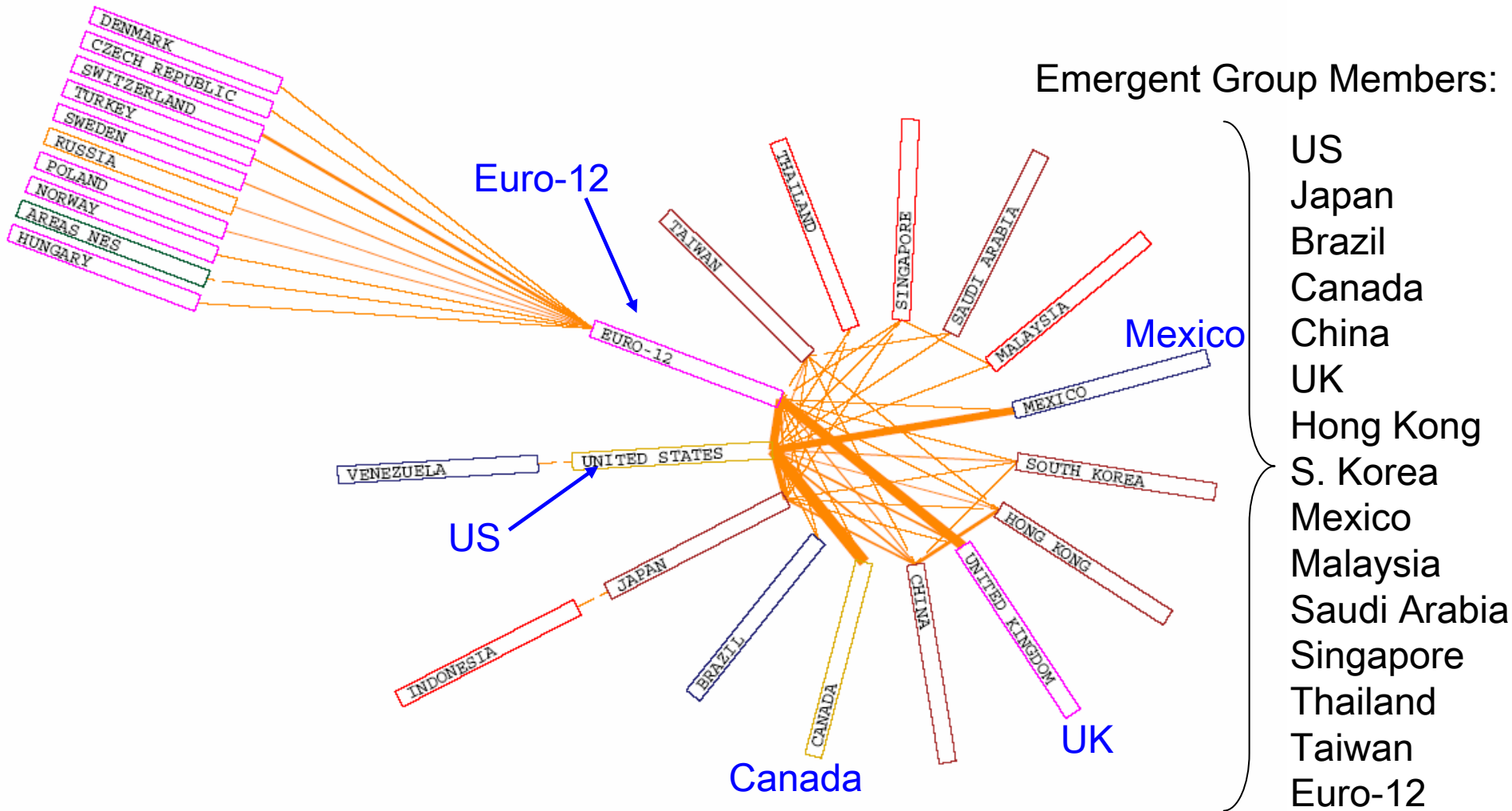
Links $\geq 0.3\%$ of Total Value



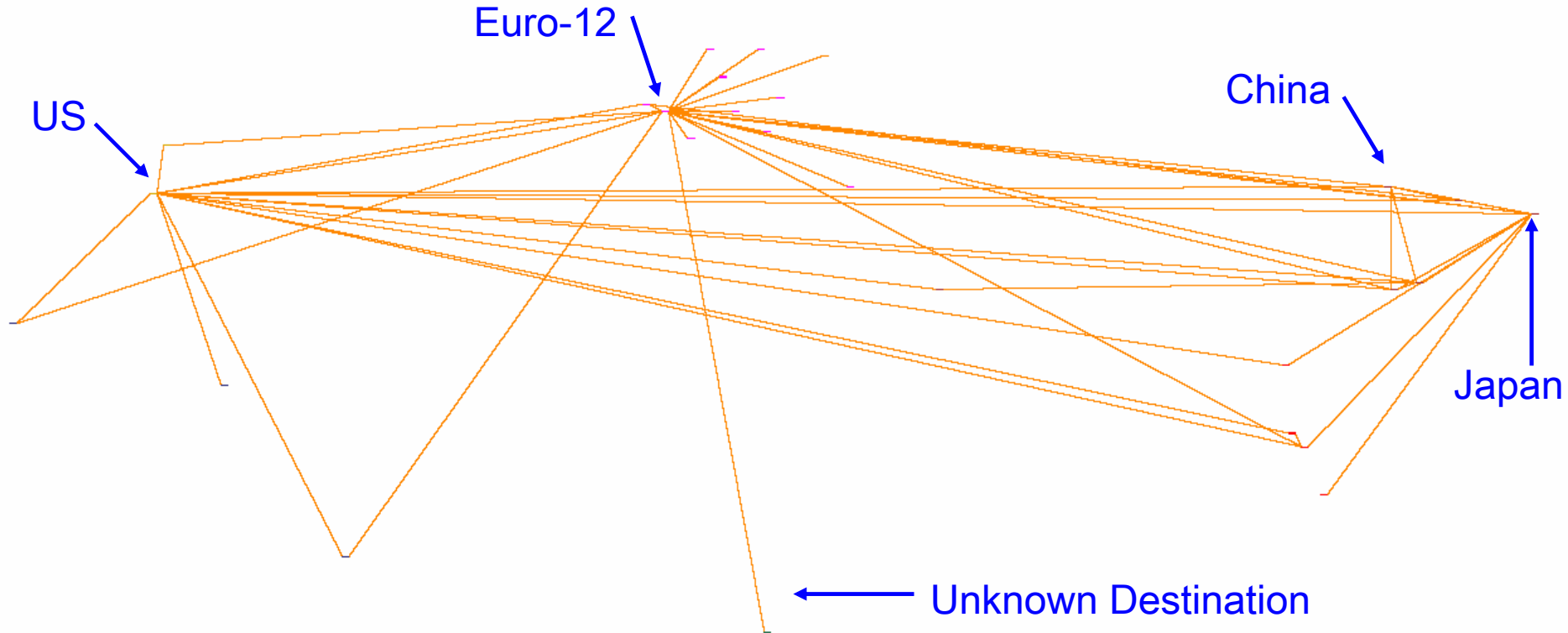
Emergent Group Analysis

- NetMap creates several types of analyses, including:
 - Pre-defined groups based on some attribute such as regions or civilizations
 - Emergent groups
- Emergent groups represent countries which trade more with each other than with any other countries.
 - Composed of at least 3 countries
 - Which share at least 50% of the same trade ties

2001 Emergent Group Analysis

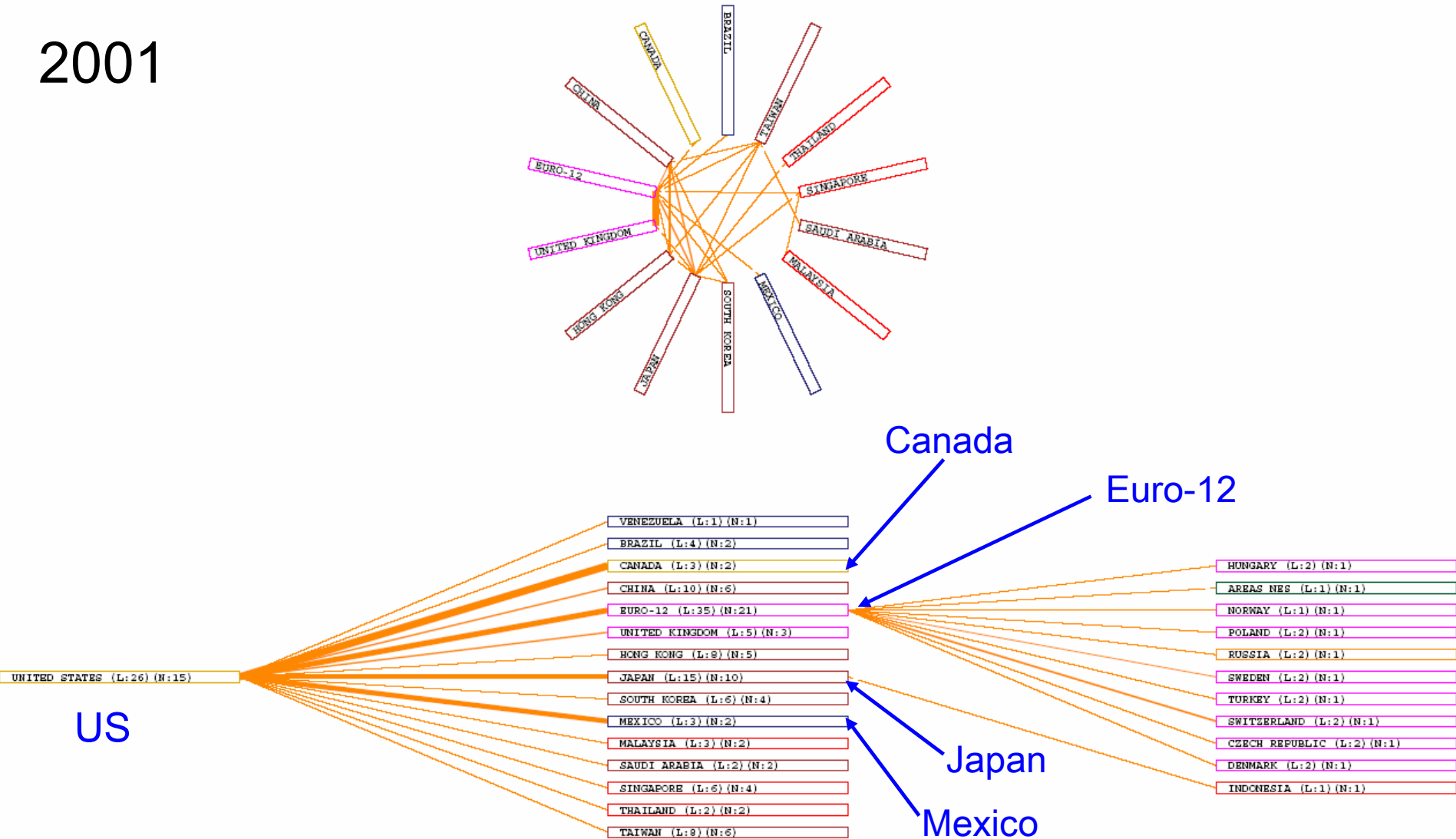


2001 Cartesian Map Analysis

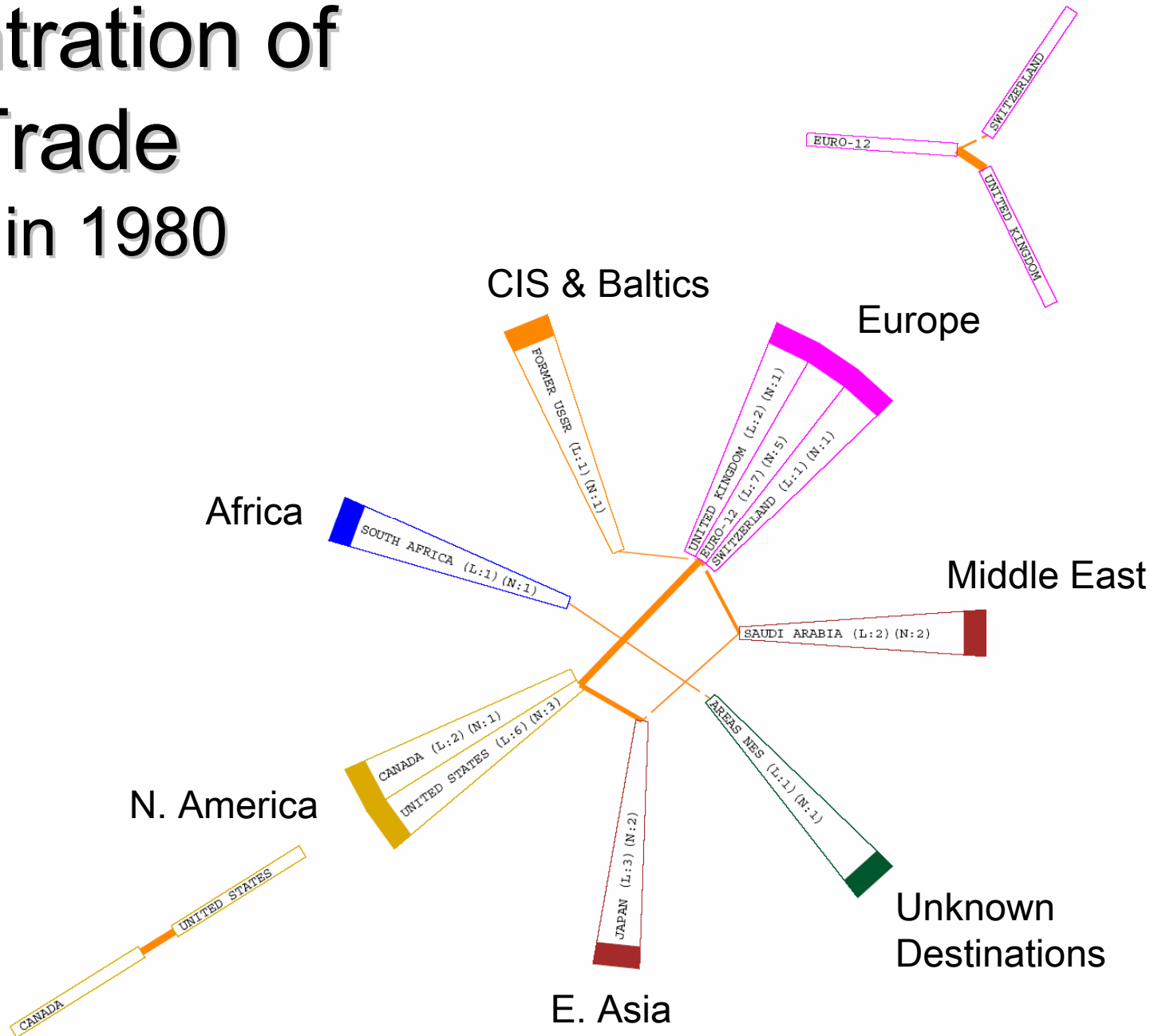


Step Link Analysis

2001

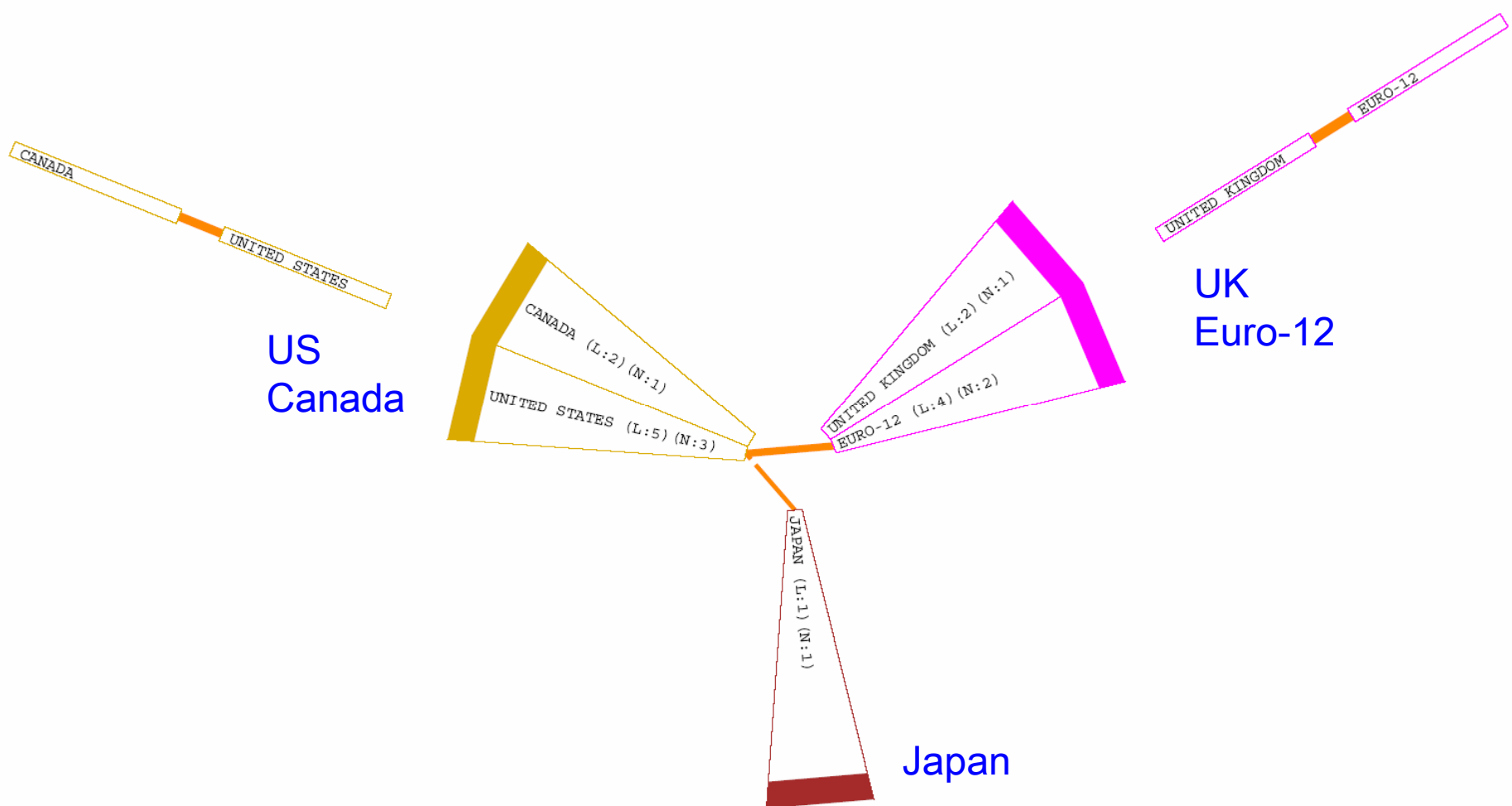


Concentration of World Trade Top 25% in 1980



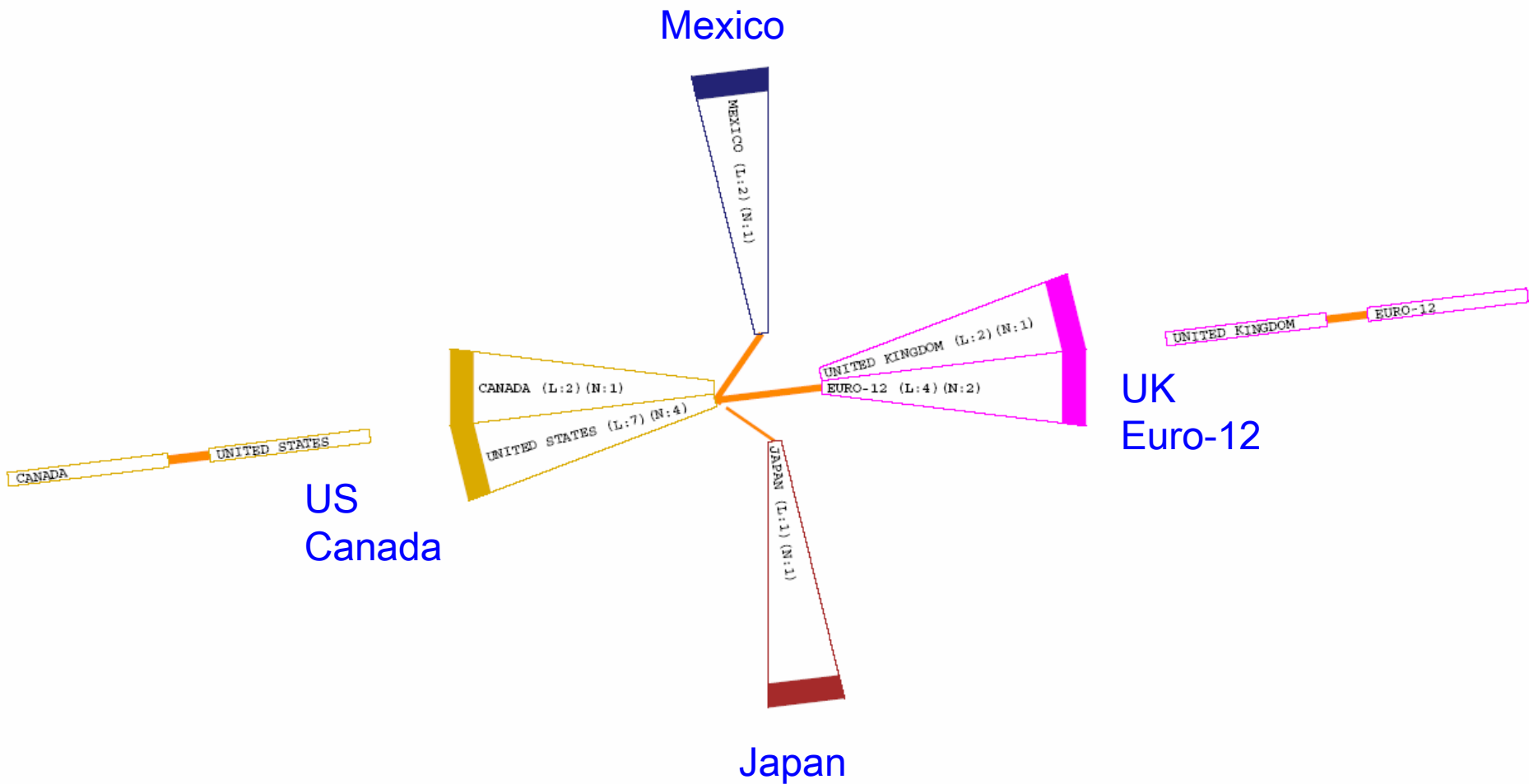
Concentration of World Trade

Top 25% in 1990



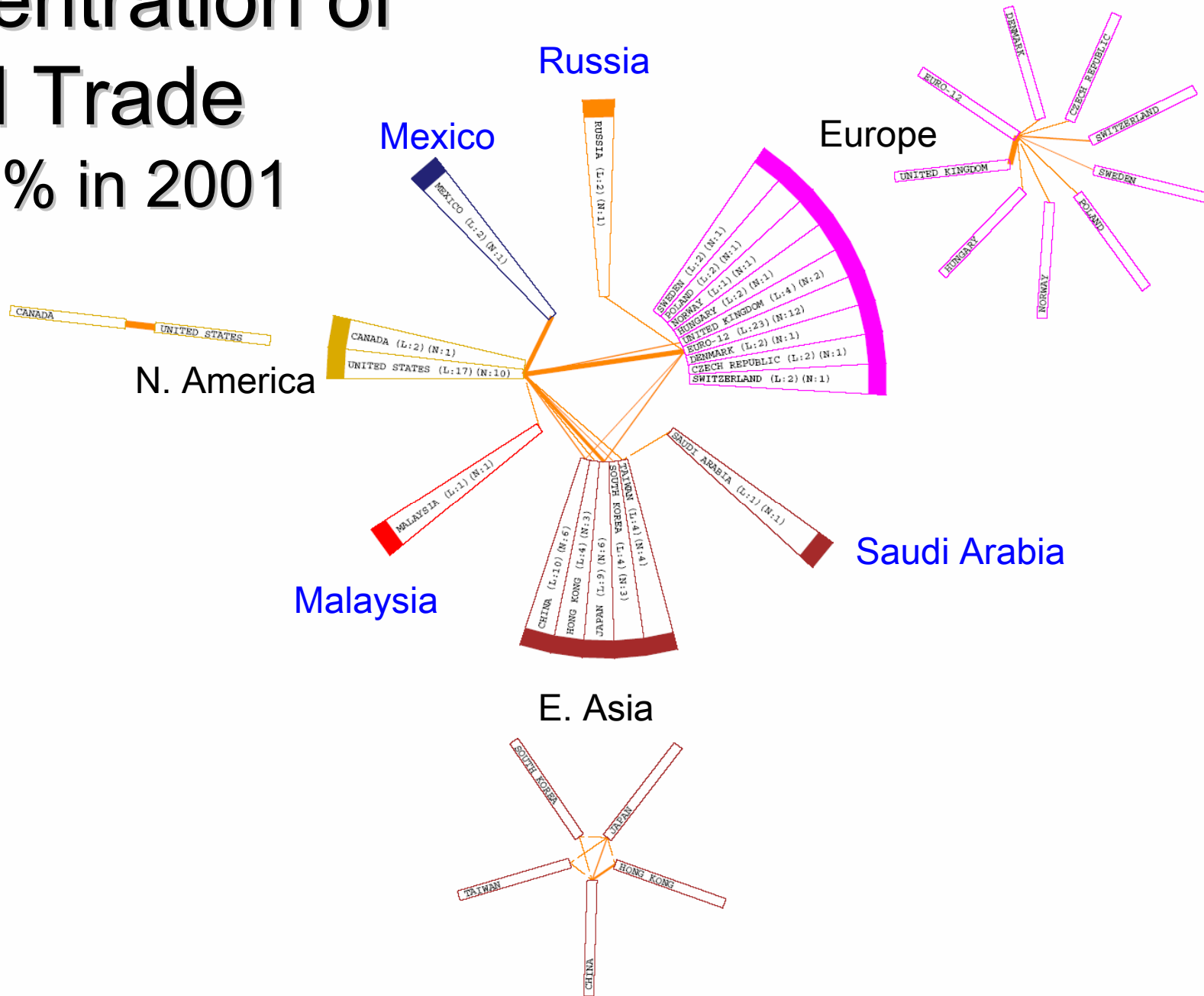
Concentration of World Trade

Top 25% in 2001



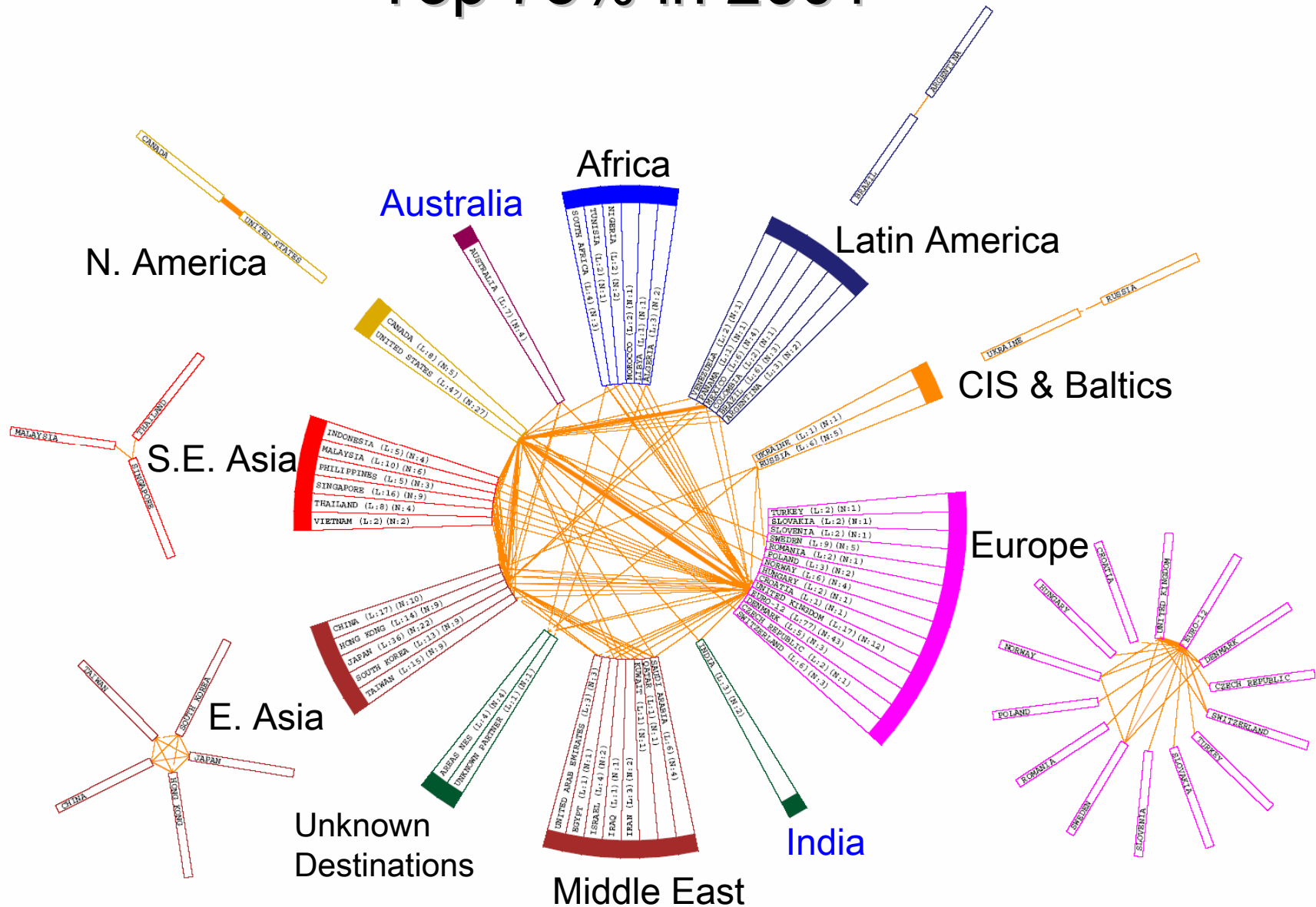
Concentration of World Trade

Top 50% in 2001



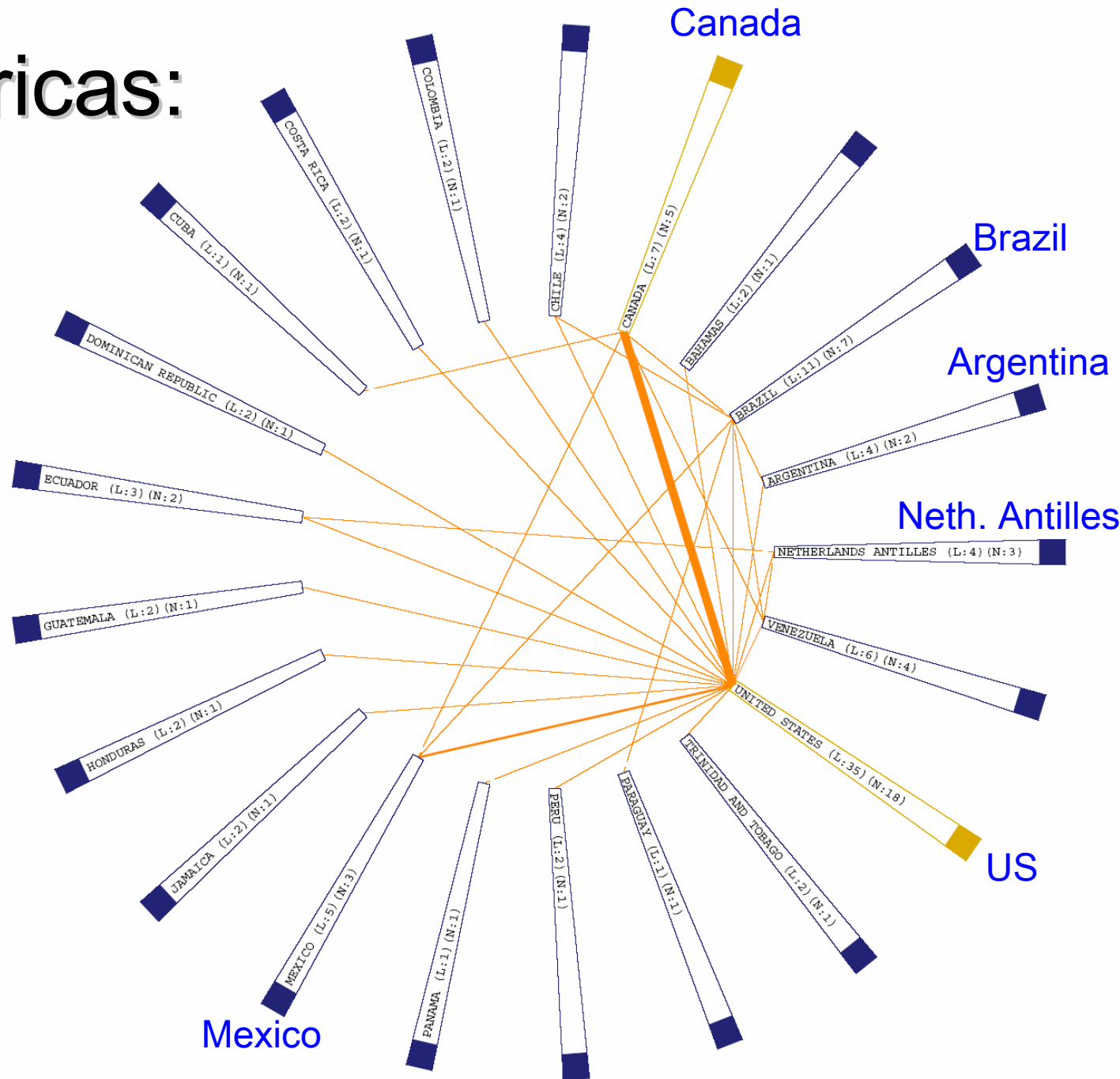
Concentration of World Trade

Top 75% in 2001

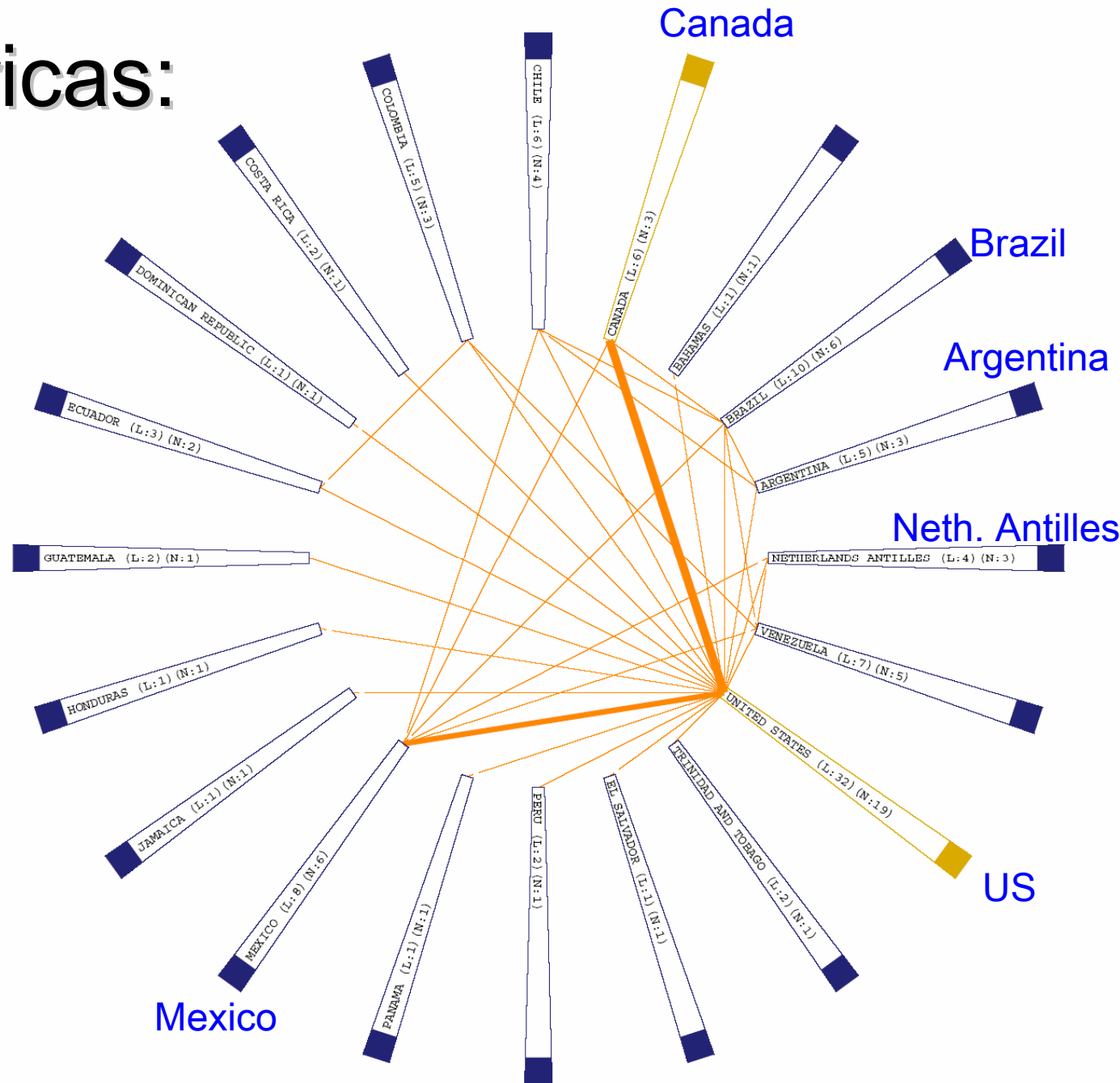


The Americas: 1980

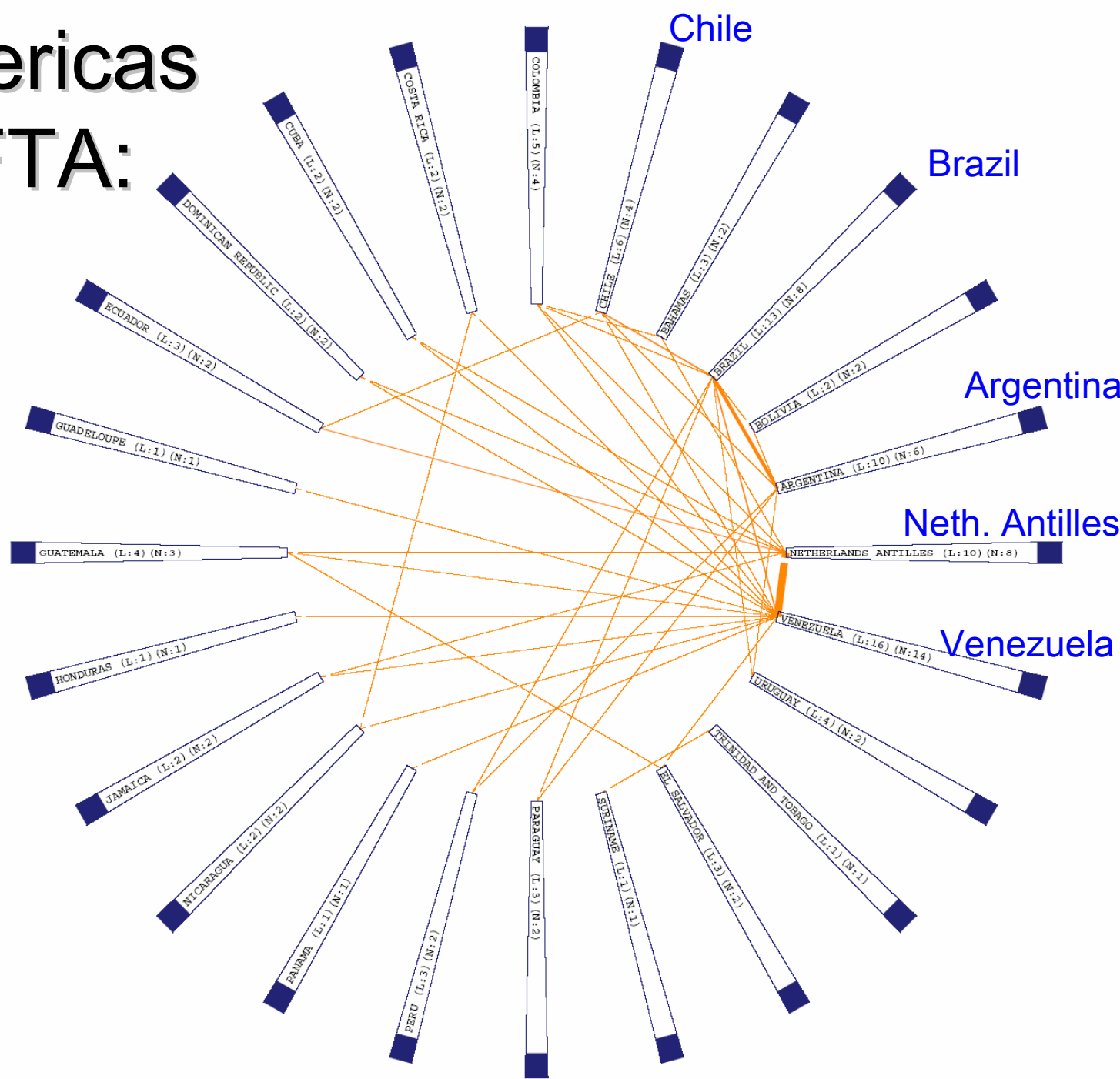
Fifty Largest Unidirectional Trade Links



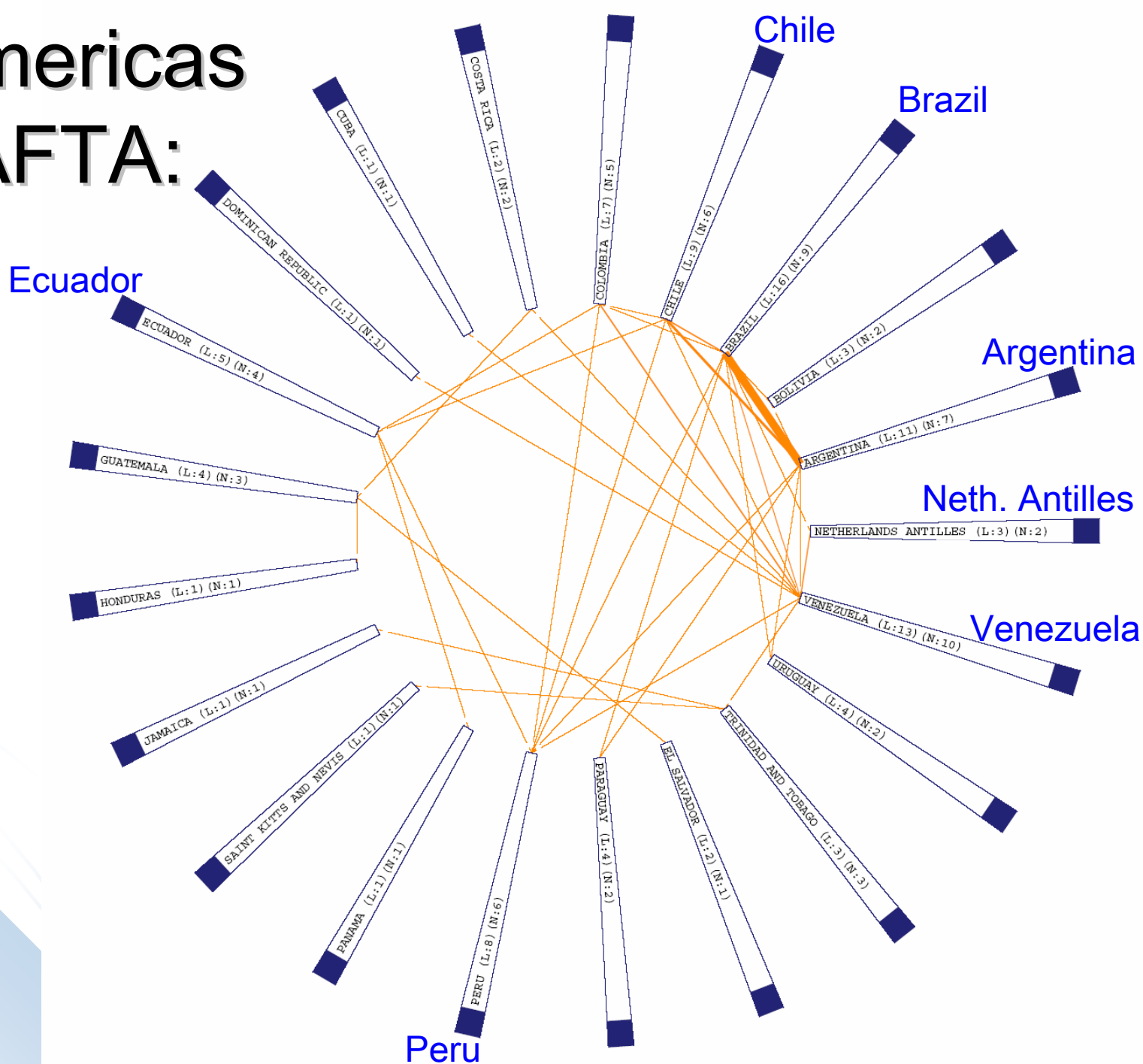
The Americas: 2001



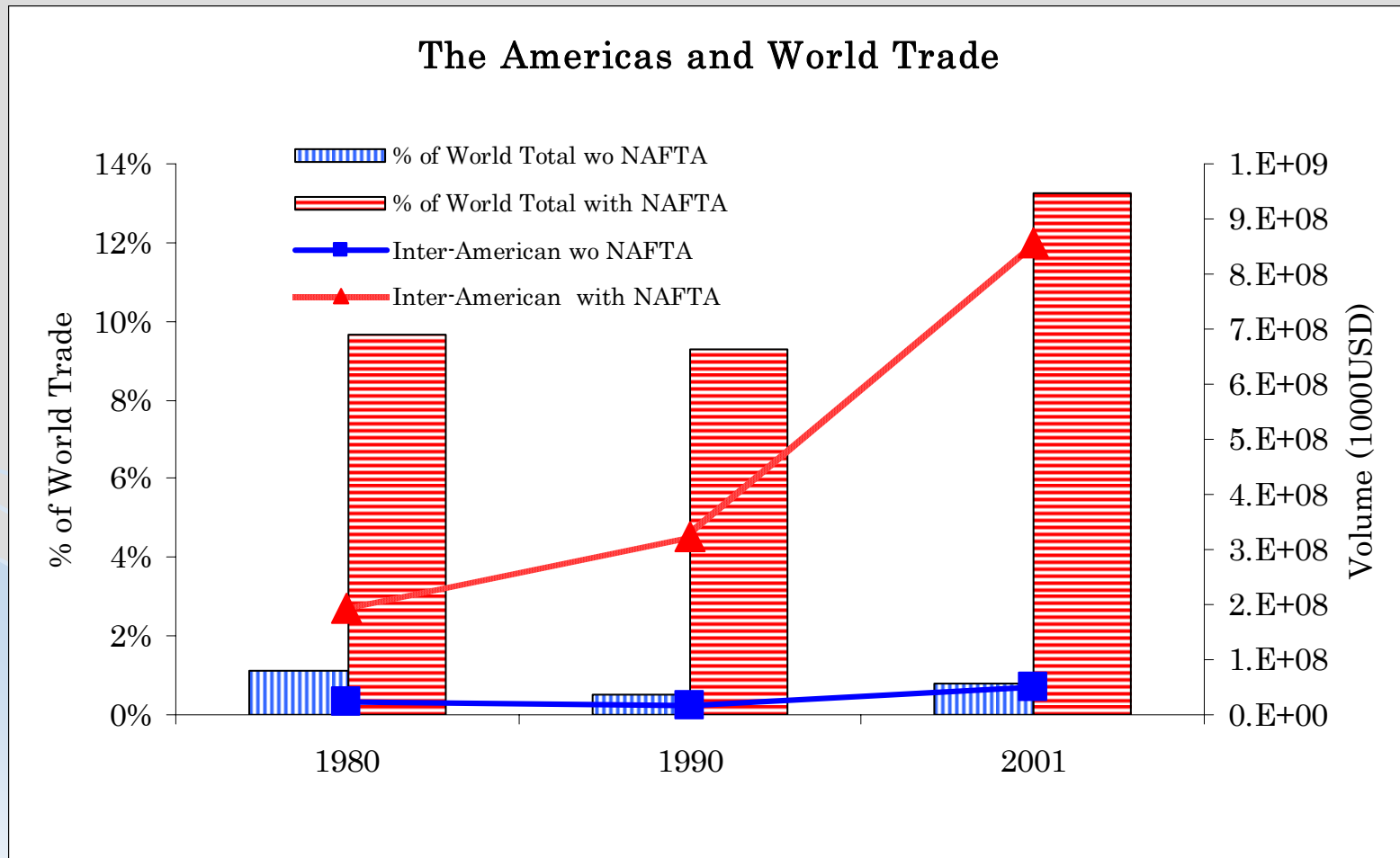
The Americas w/o NAFTA: 1980



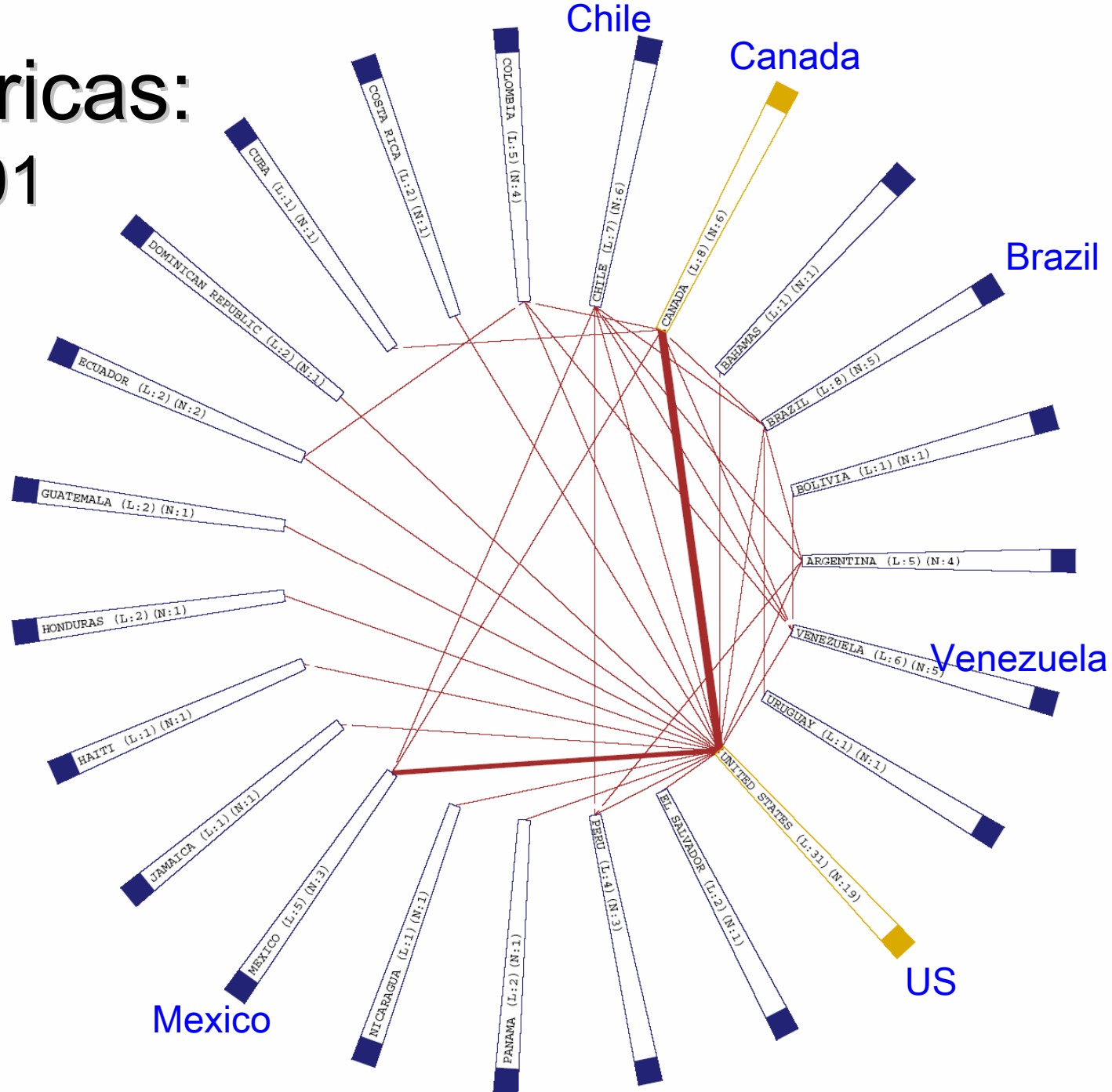
The Americas w/o NAFTA: 2001



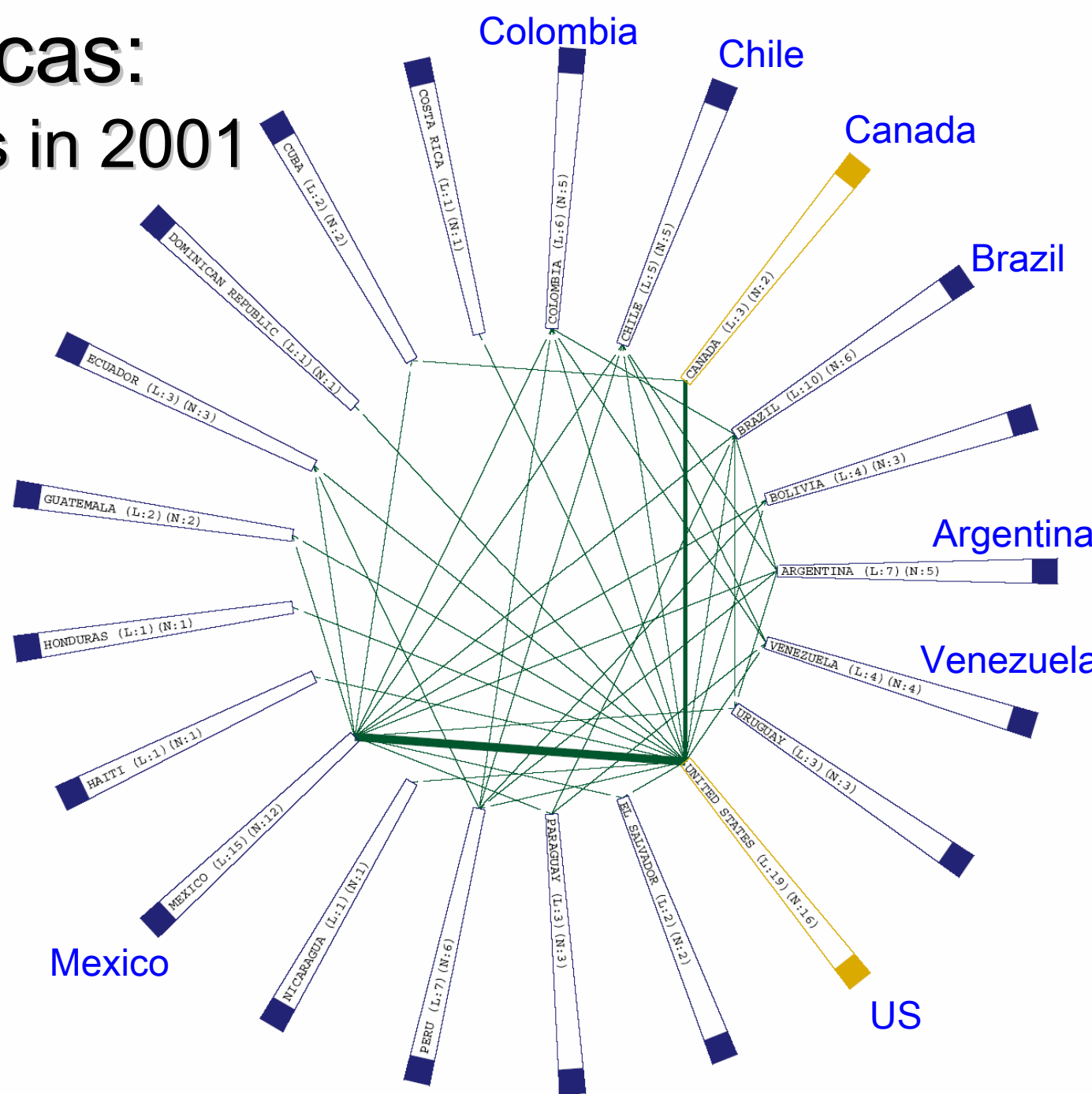
Americas in World Trade



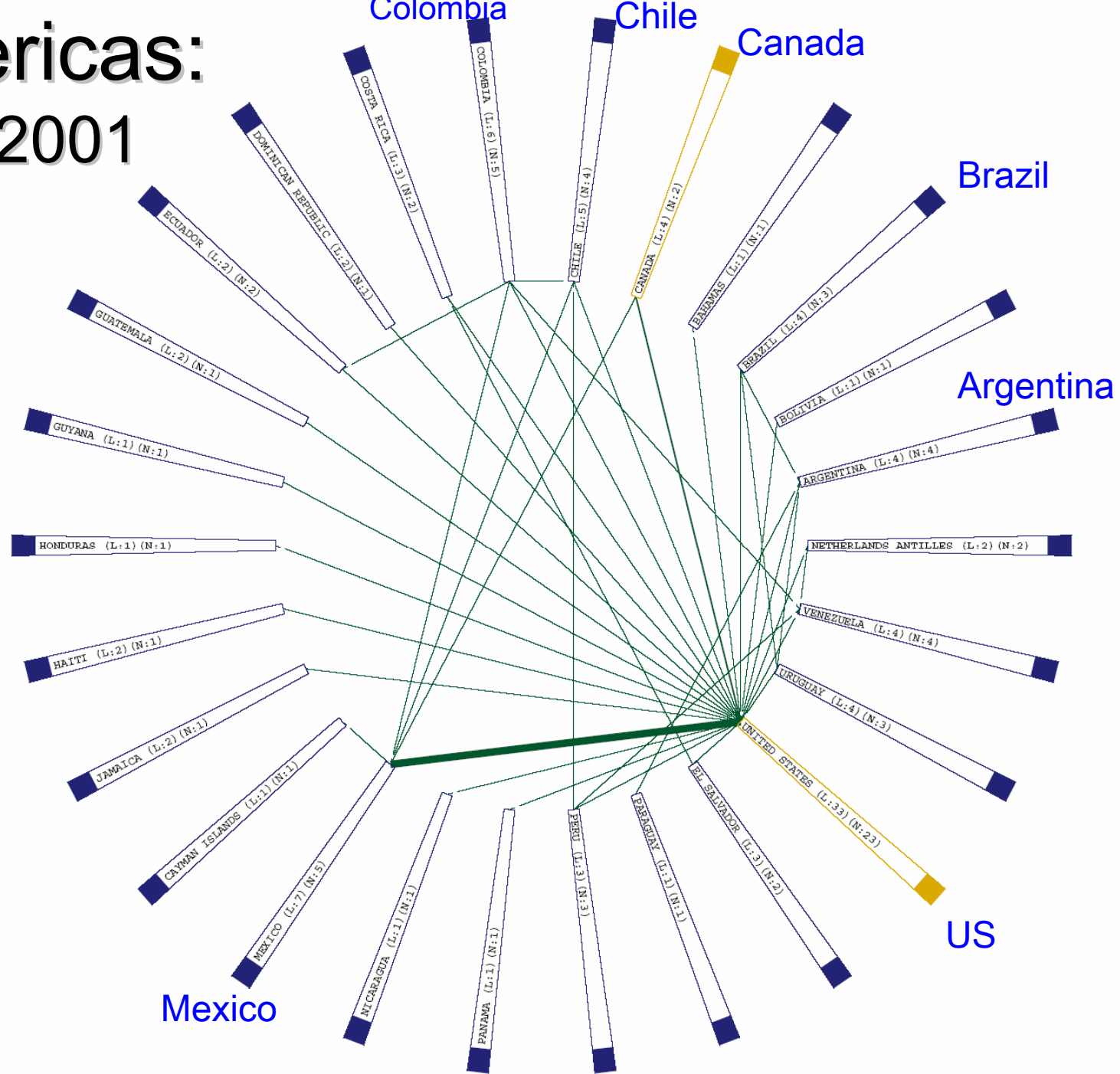
The Americas: Food in 2001



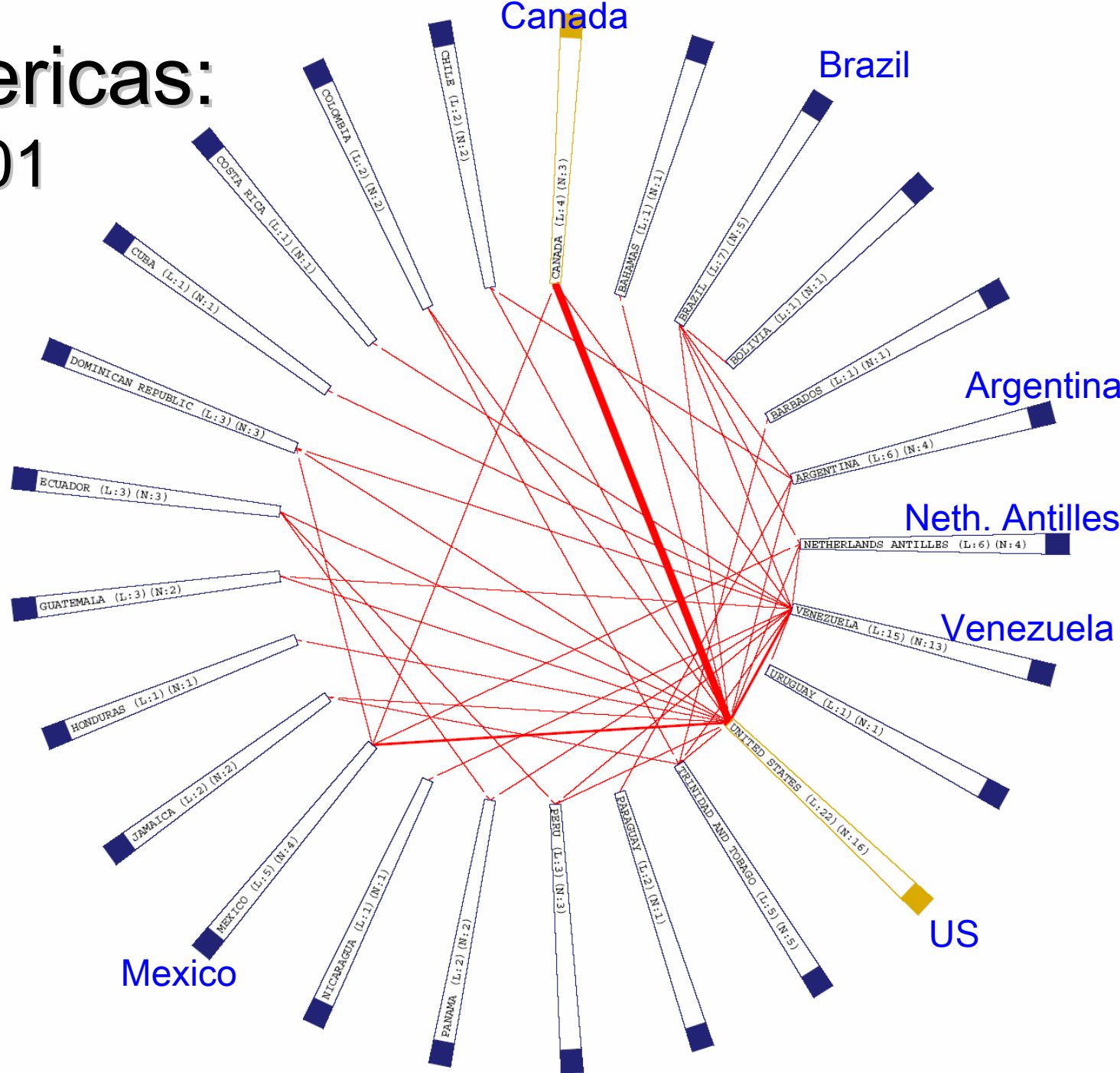
The Americas: Textile Fibers in 2001



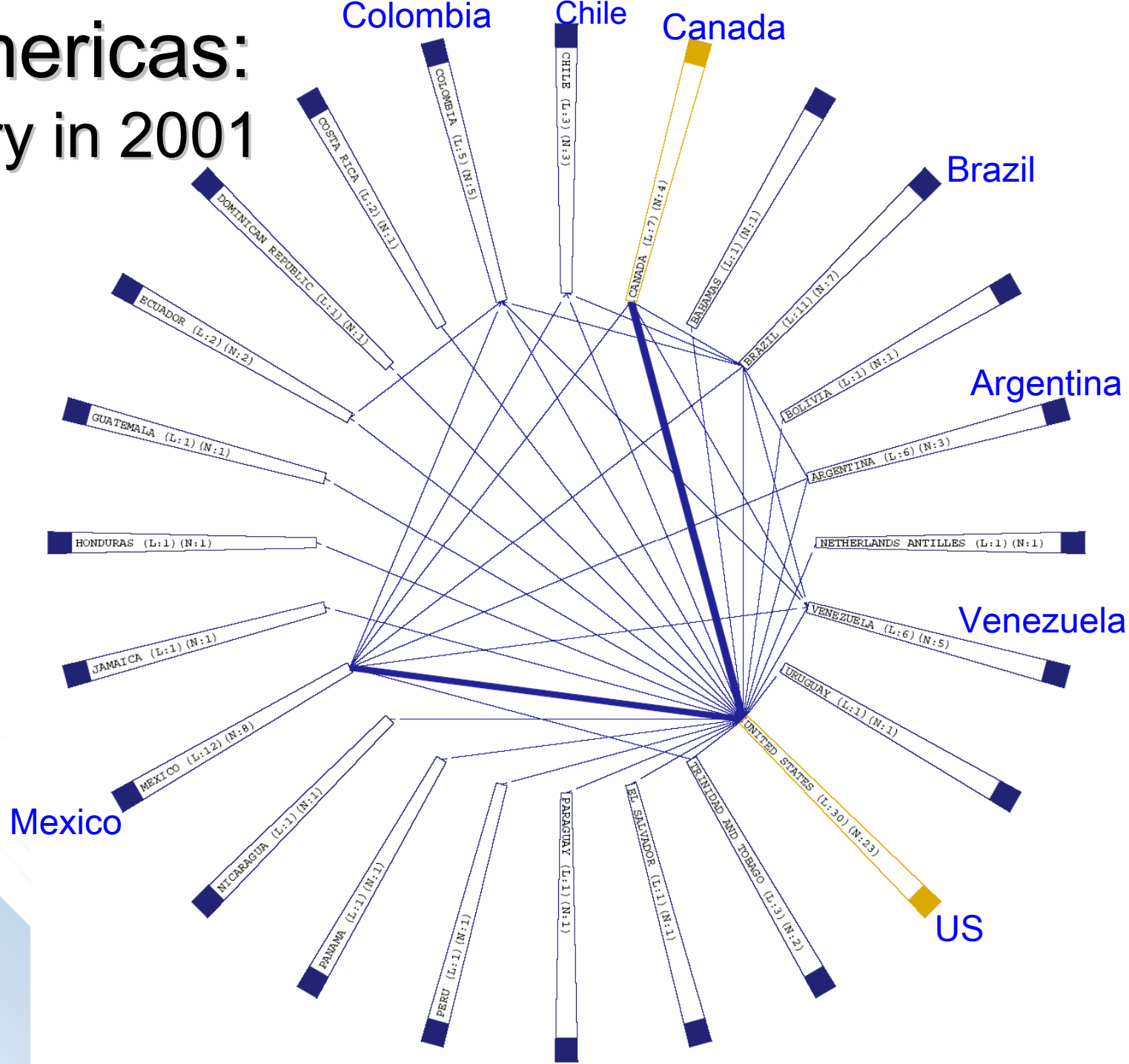
The Americas: Apparel in 2001



The Americas: Fuel in 2001



The Americas: Machinery in 2001



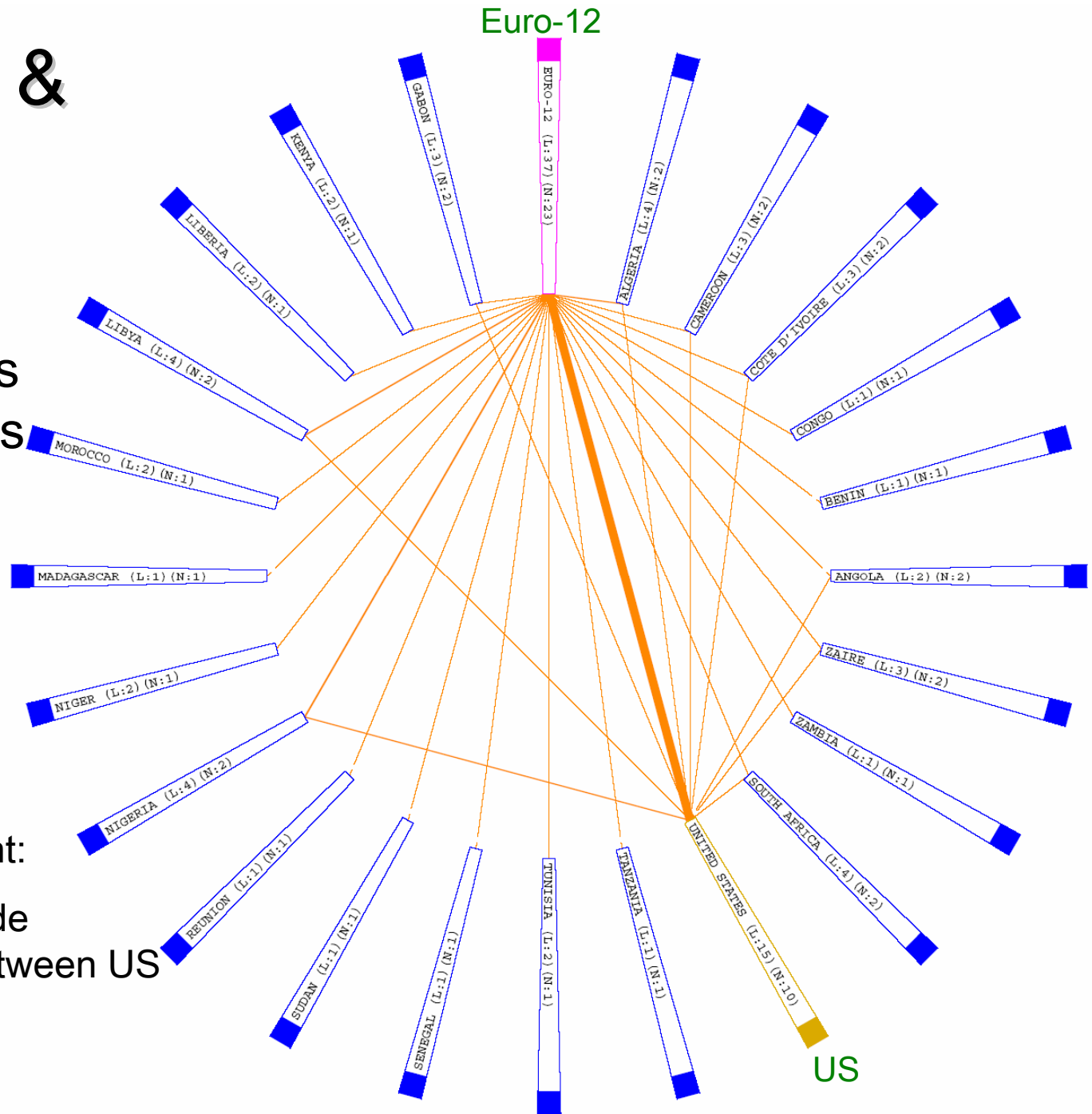
Africa, US & Euro-12

1980

All Commodities
50 Largest Links

These links represent:

88.90% of Africa trade
discounting trade between US
& Euro-12



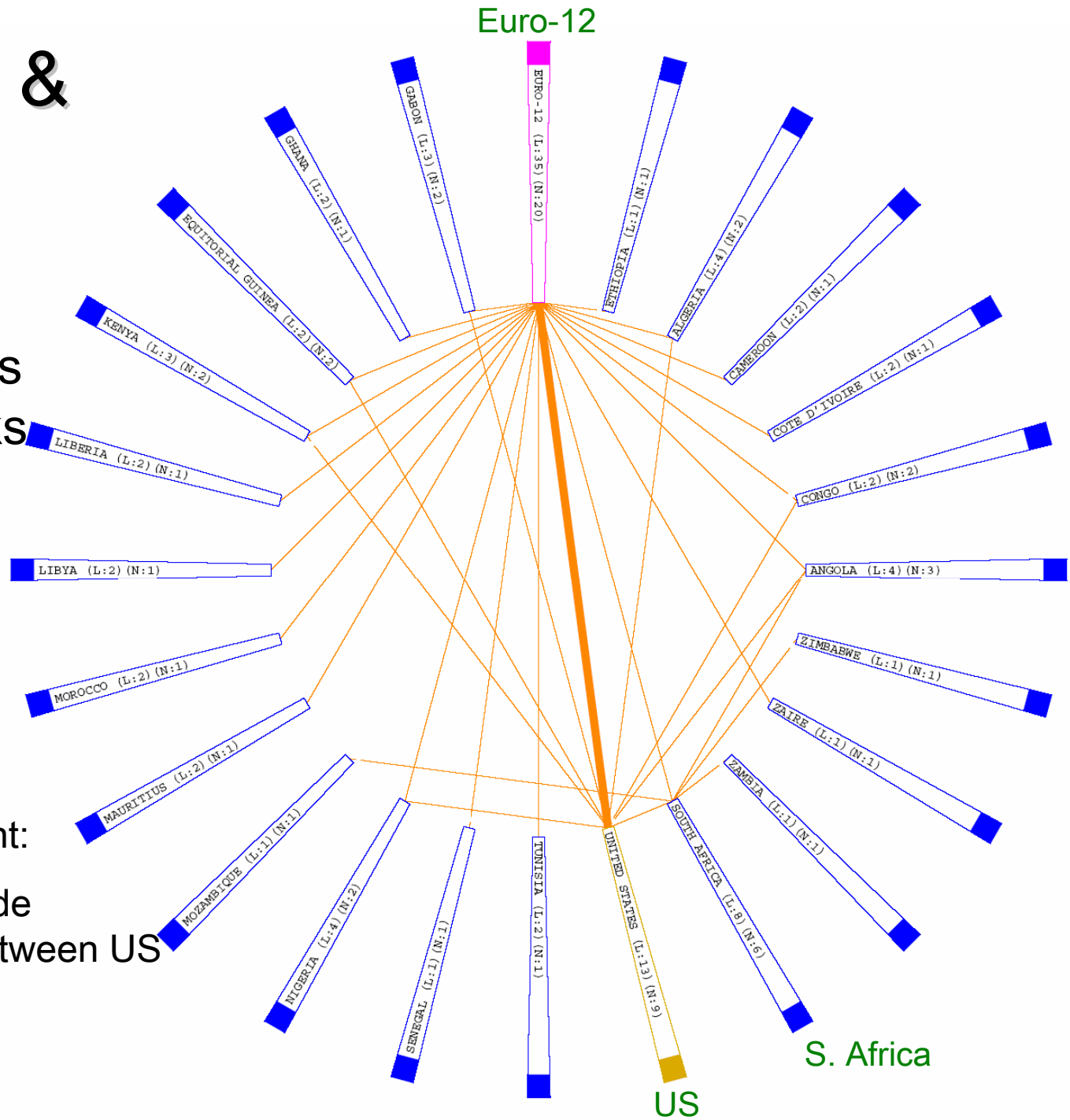
Africa, US & Euro-12

2001

All Commodities
50 Largest Links

These links represent:

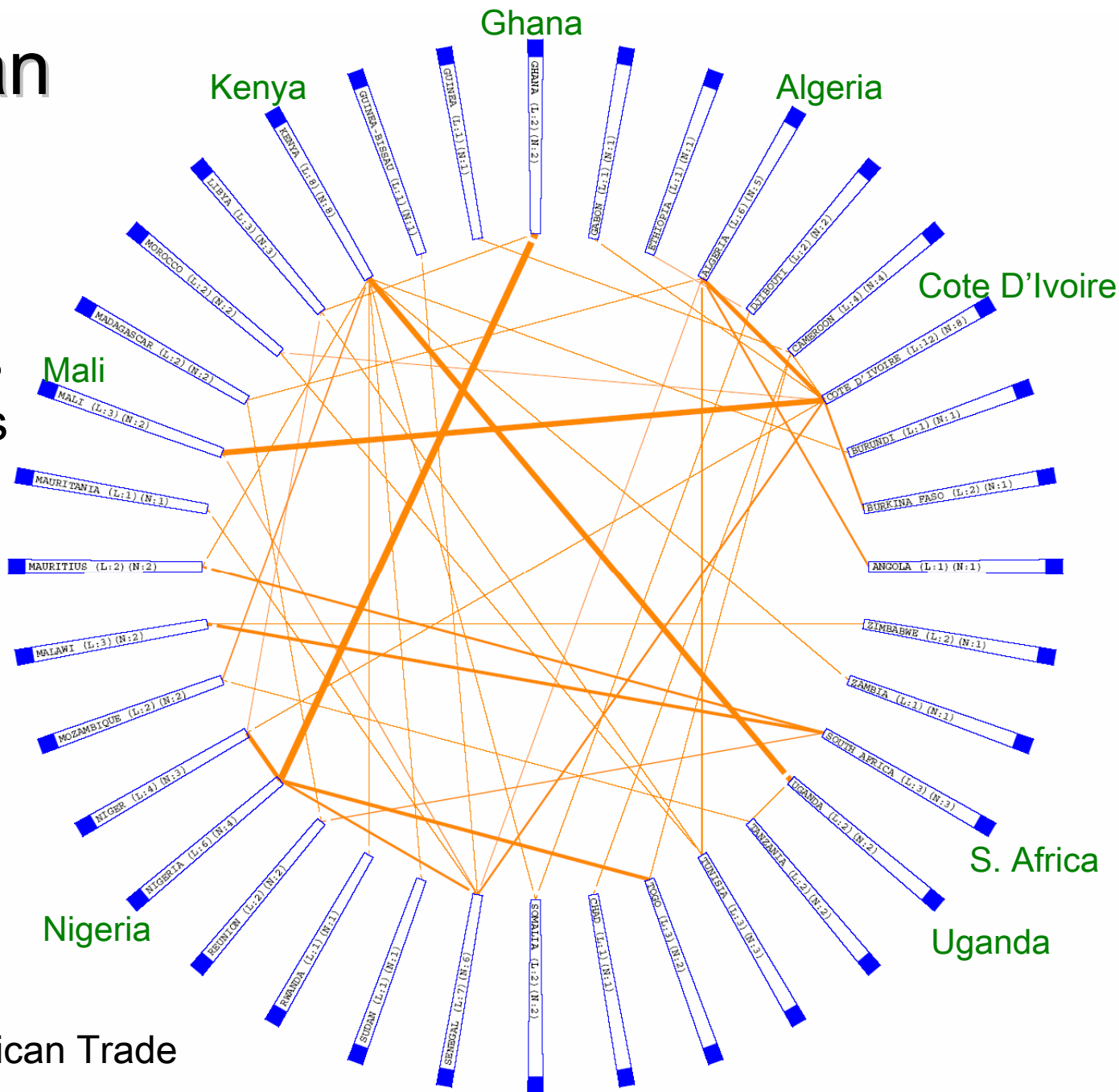
84.65% of Africa trade
discounting trade between US
& Euro-12



Intra-African Trade

1980

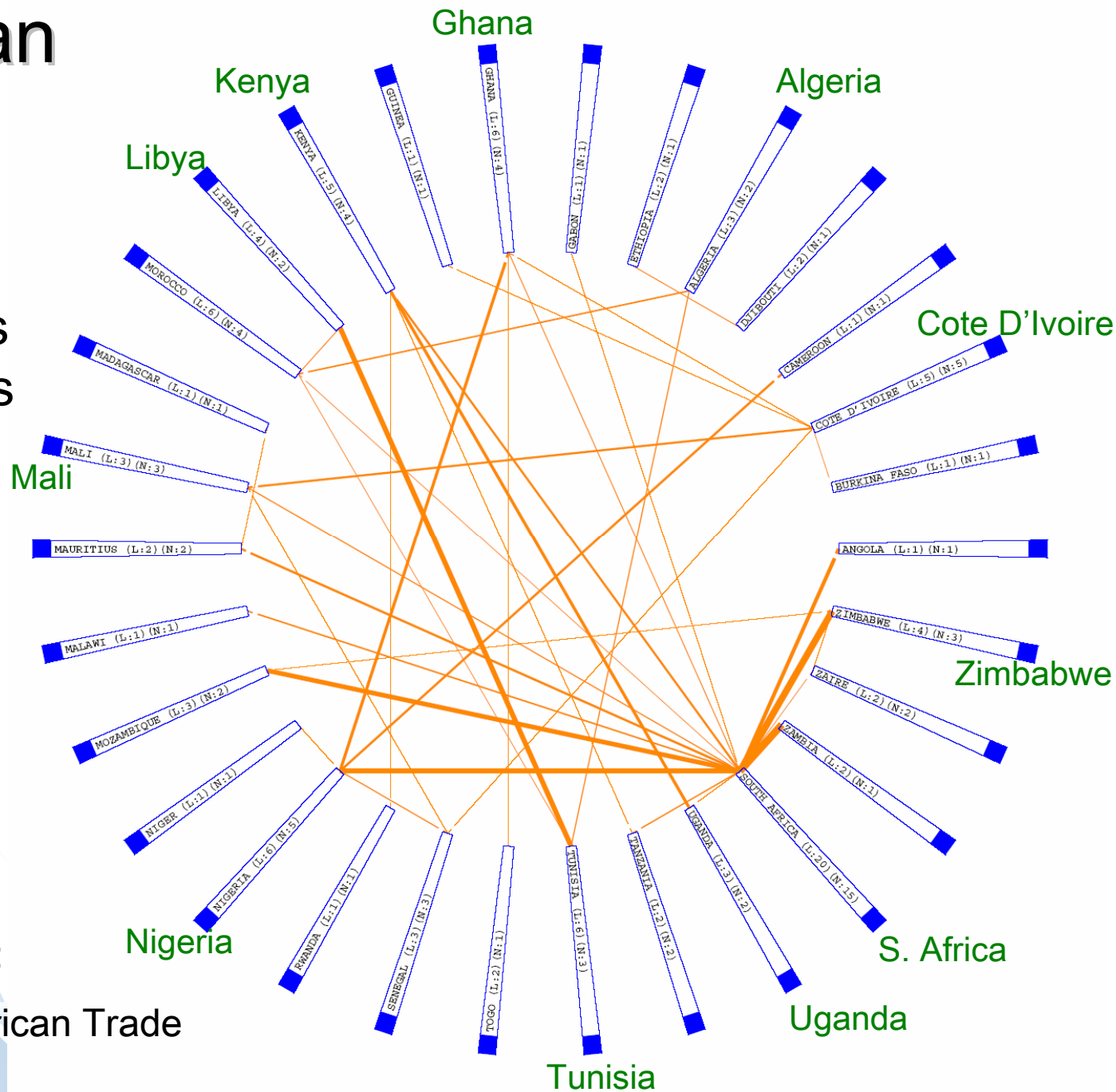
All Commodities
50 Largest Links



Intra-African Trade

2001

All Commodities
50 Largest Links



Africa in World Trade

Percent of World Trade for:	1980	2001
Intra-Africa Trade	0.11%	0.13%
Africa Trade including Trade with US and Euro-12	5.48%	1.92%

Summary and Next Steps

- Nodes: Additional characteristics
 - Empire and “Civilization”
 - World Development Indicators and Economic System
 - Etc.
- Links: Additional transactions
 - Tourism and Air Travel
 - Internet usage and Phone calls
 - Migration
- Layering Structures
 - E.g., Combining trade linkages and cultural information
- Dynamic Modeling
 - E.g., Visualizing change over time or thresholds

Nodes

Links

All

Highlighted Nodes

=

and

Highlighted Nodes

=

☒ Link Filter

Amount

AT LEAST

0

ONLY

Amount

AT LEAST

0

Link type

MajorCategory

MinorCategory

Export

Import

☐ Off ☒ or ☐ and

☐ Off ☒ or ☐ and

☐ Off ☒ or ☐ and

☐ Off ☒ or ☐ and

☒ Off ☒ or ☐ and

☐ Trade

☐ Food

☐ Fuels

☐ Machinery & transport

☐ Other

☐ Total

☐ 0-Food

☐ 00-Live animals

☐ 01-Meat preparations

☐ 0111-Beef

☐ 0113-Pork

☐ 0114-Poultry

☐ 03-Fisheries

☐ 0341-Fish

☐ 0344-Fish frozen fillets

☐ 036-Crustaceans

☐ 04-Cereals

☐ Afghanistan

☐ Albania

☐ Algeria

☐ Angola

☐ Areas nes

☐ Argentina

☐ Armenia

☐ Australia

☐ Austria

☐ Azerbaijan

☐ Bahamas

☐ Afghanistan

☐ Albania

☐ Algeria

☐ Angola

☐ Areas nes

☐ Argentina

☐ Armenia

☐ Australia

☐ Austria

☐ Azerbaijan

☐ Bahamas

☒ Draw Link if

Amount

AT LEAST

0

ONLY

Amount

AT LEAST

0

Link color

MinorCategory

Link style

Directional

Link width

Amount

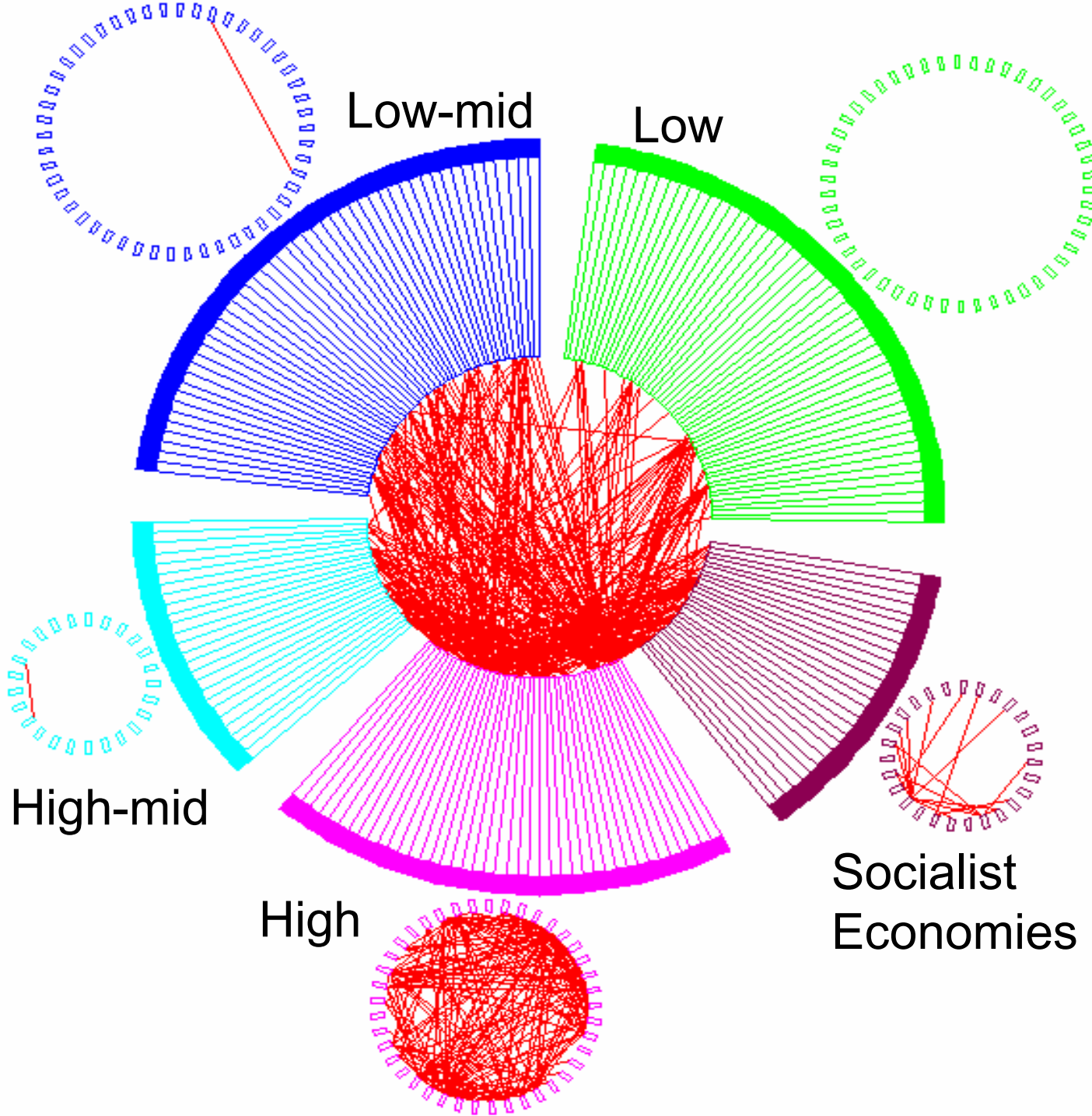
OK

Cancel

Apply

Telephone Calls 1995

by World Bank
Estimated
Income Levels



- Classic display of the relationships predicted by dependency theory.

- Richest countries and even semi-rich (Socialist economies): internally and globally integrated.

- Poorer regions: not well integrated with each other and links only to the rich.

Schedule 2005-06

- Data uploaded to www.princeton.edu/~ina
- Interactive production of Netmap
- Conference March 2006
- Publication of Observing Trade Fall 2006
- Expansion of data and further pubs, 2006-2010.

www.princeton.edu/~ina/gkg