

Brief Introduction to the Data and Selected Images from the GKG Project

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In what follows we provide a very brief set of caveats about the data and future plans for the data. We then provide an index of images we've generated. Finally, we provide these images along with some brief text describing them. These represent a small selection of the images possible through the NetMap Visualizer software using the current GKG trade data.

The Data:

The 93 commodities currently in our data library were chosen in part for their relevance to a set of themes (overall trade, food, shelter, energy, clothing, and machinery) and in part because they were commodities with consistent data for the three years we chose (1980, 1990 and 2001). Some commodities of general interest (E.g. micro-processing chips), are not currently included because they are so new that they were only recently assigned SITC codes. Our future plans include comprehensive inclusion of all commodities for all years where data are available.

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Total Trade in 2001 with No Threshold

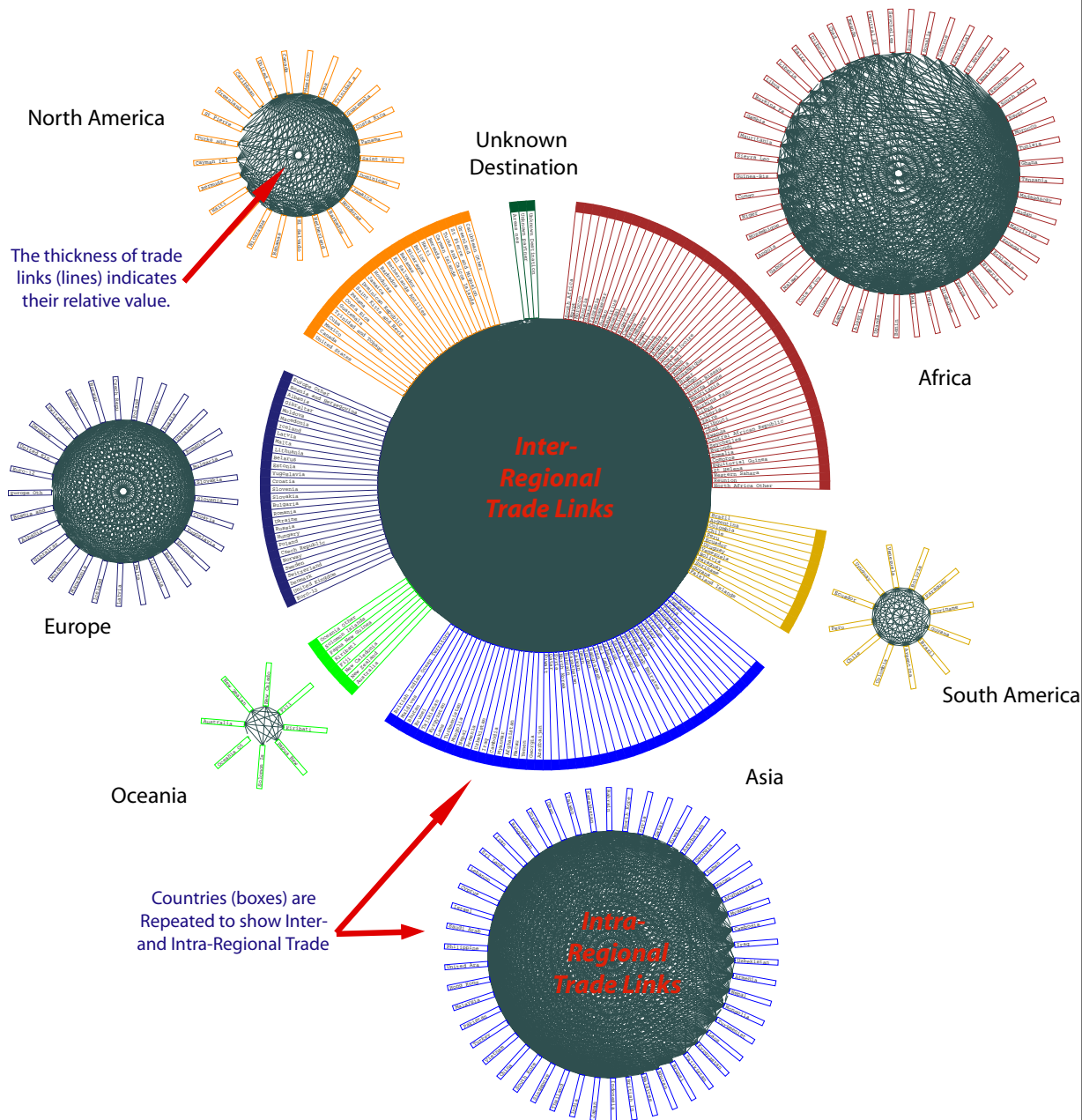


Image 1: Total World Trade in 2001
(Countries Grouped by Continent,
No Threshold Applied)

The first image gives some indication of the vast amount of data it takes to represent a picture of world trade and an indication of the capacity of NetMap Visualizer. In this image, boxes, color-coded and grouped by continent (according to United Nations designations), each represent a country. The countries are organized in a circle at the center of the image, and then repeated in the smaller surrounding circles. The dark green lines connecting countries in the outer circles represent trade links within that grouping or continent. The mass of green in the very center of the circle is actually many lines representing inter-group, or inter-continental trade. There is so much data in this image, that it is difficult to see any patterns in the data. Imposing thresholds to limit the number of trade links shown solves this issue.

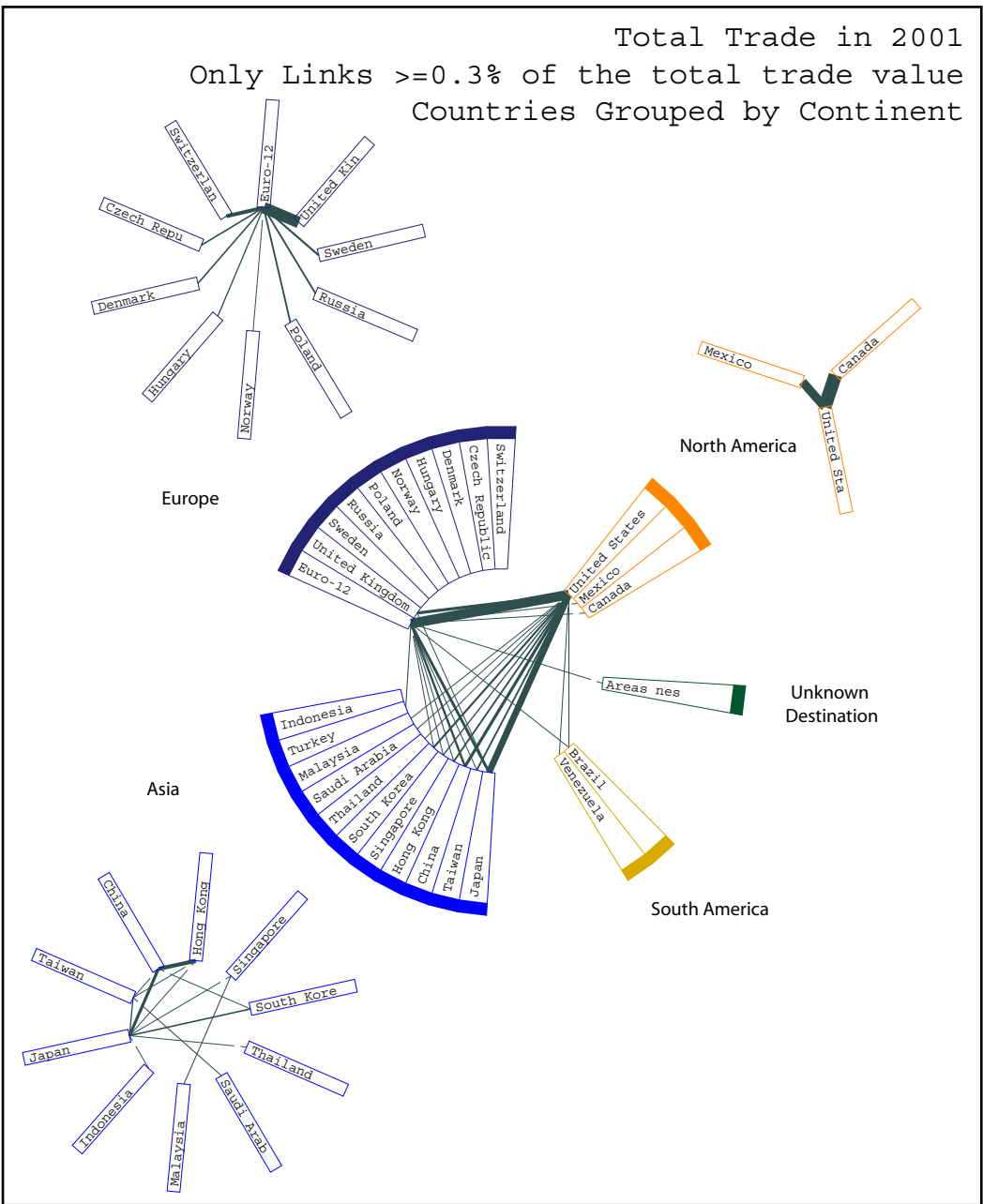


Image 2: Total World Trade in 2001

(Countries Grouped by Continent 2001 with a 0.3% of Total Trade Threshold)

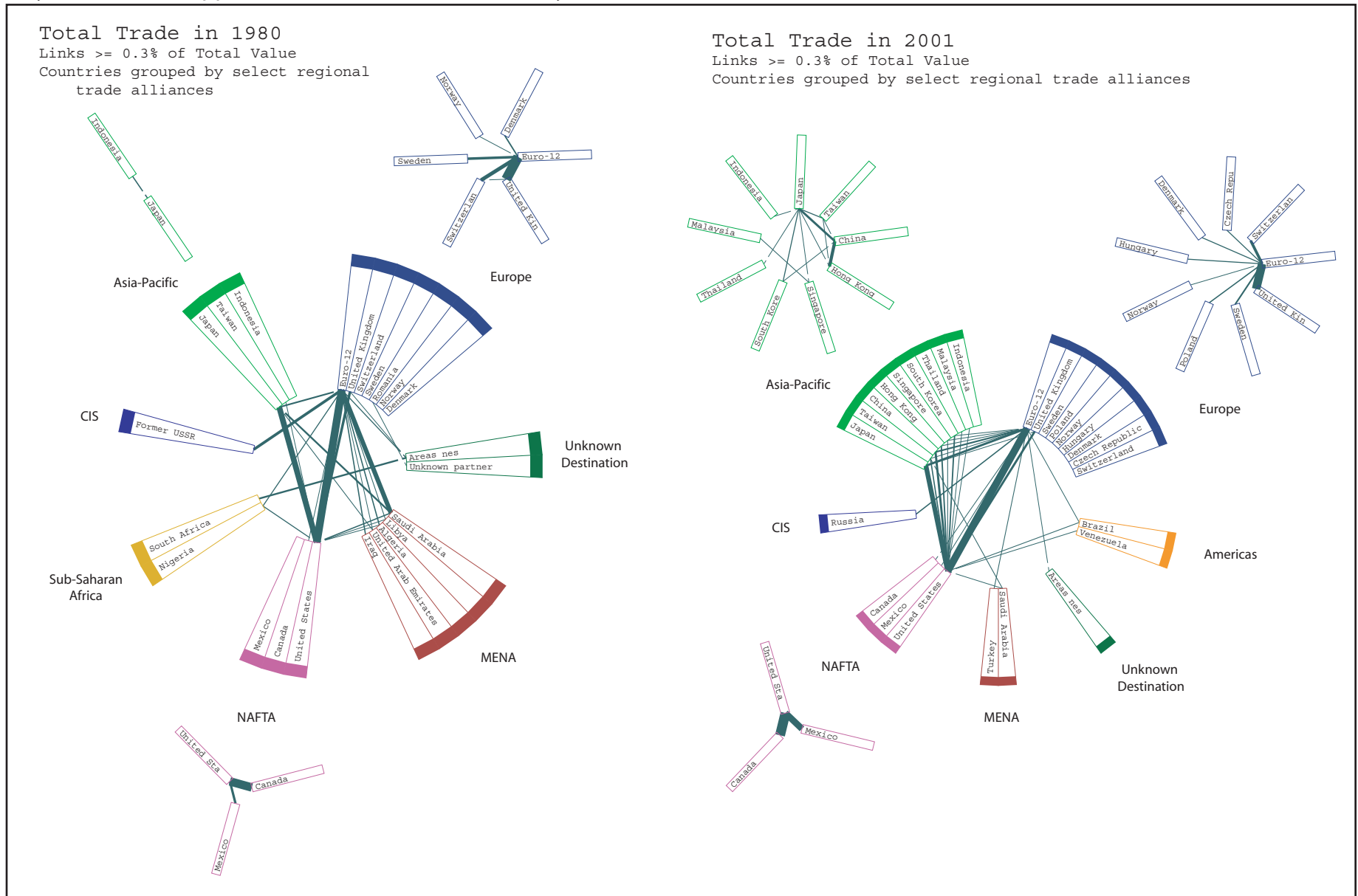
This next image is organized in the same manner as the first image with inter-continental trade indicated by the lines at the center of the image, and intra-continental trade shown in the clusters surrounding the central circle. However, in this image, only trade links that are greater than or equal to 0.3% of the total world trade are shown. Countries with no trade links that meet this threshold are excluded from the image. Here it is possible to see that the thickness of the line represents its relative dollar value; thicker lines represent greater value trade relationships. It is also possible to see that trade directionality is indicated by gaps in the lines. A gap or break in the line is analogous to an arrowhead pointing in the direction of the flow of goods. For example, in the lower left of the image, the line connecting Japan and Singapore shows that at this threshold Japan exports to Singapore. Where a line is solid, there is two-way trade at this threshold level. For example, in the upper right corner, trade between the U.S. and Canada is bi-directional, meaning that both countries are exporting at values greater than 0.3% of the world total. We have aggregated the twelve countries that share the Euro currency into one box labeled "Euro-12." It is possible to make images without this aggregation, but for this series Euro-12 is used so that the importance of this de facto trading block is not understated.

The flexibility of the software allows for any threshold to be viewed. At the 0.3% threshold (consistently used in the remaining images), a dominant world trade structure is visible. In 2001, there is a strong triad structure in the inter-continental trade with the U.S., Euro-12 and UK and Asia (particularly East Asia) forming the points of the triangle. The thick links between the U.S. and Mexico and Canada, representing an enormous amount of trade is obvious in the upper right corner. It is also clear that within the rest of Europe the Euro-12 countries dominate trade.

While using U.N. designated continents is a straightforward way of grouping the countries, many other groupings are possible, including income level, type of government, or regional trade alliances. The following images use eight select regional trade groupings: NAFTA, the rest of the Americas, Europe, Commonwealth of Independent States (CIS), Middle-East and North Africa (MENA), Sub-Saharan Africa, Asia-Pacific, and Unknown Destinations (necessary due to data limitations.)

Image 3: Total World Trade in 1980 and 2001 (Countries Grouped by Selected Regional Trade Alliances with a 0.3% of Total Trade Threshold)

On this image, it is clear that the 2001 triadic structure holds even with the regrouping of the countries (right half of the image). It is also clear that this was not the dominant structure two decades earlier. In 1980 (left half of the image), the U.S. and Euro-12 (and the U.K. to a lesser extent) have a huge amount of trade with each other, and the U.S. and Japan have a large amount of trade, but the link between Europe and Japan is not particularly strong. As well we see that Euro-12 also has a significant tie to Saudi Arabia (and other MENA countries), which by 2001 has diminished enough to no longer meet the 0.3% threshold. In intra-regional trade, the U.S.-Canada tie and the Euro-12-U.K. tie remain among the largest, while U.S.-Mexico and the number of European partners of the Euro-12 grow. Three other significant changes in world structure include the growth of Asia (in relative value of trade links, the number of inter-regional trade partners and the amount of intra-regional trade), the disappearance of any African nation trading at this threshold by 2001, and the appearance of Brazil and Venezuela by 2001.



Images 4-15: Trade in Selected Commodity Categories in 1980 and 2001

(Grouped by Selected Regional Trade Alliances with a 0.3% of Total Trade in each Commodity Threshold)

Image 4: Road Vehicles (SITC 78)

Trade in all commodities gives an interesting picture of the world, but examining the structure of more specific commodity categories may be more useful for industry analysis. Trade in road vehicles (SITC revision 2 code 78) shows a shift over the two decade period from Japan being a dominant exporter to both the U.S. and Europe, to triad structure in which Japan is also importing at high levels in 2001. It also shows the growth in Asia-Pacific participation, growth in European engagement with the Euro-12, and closer integration within NAFTA.

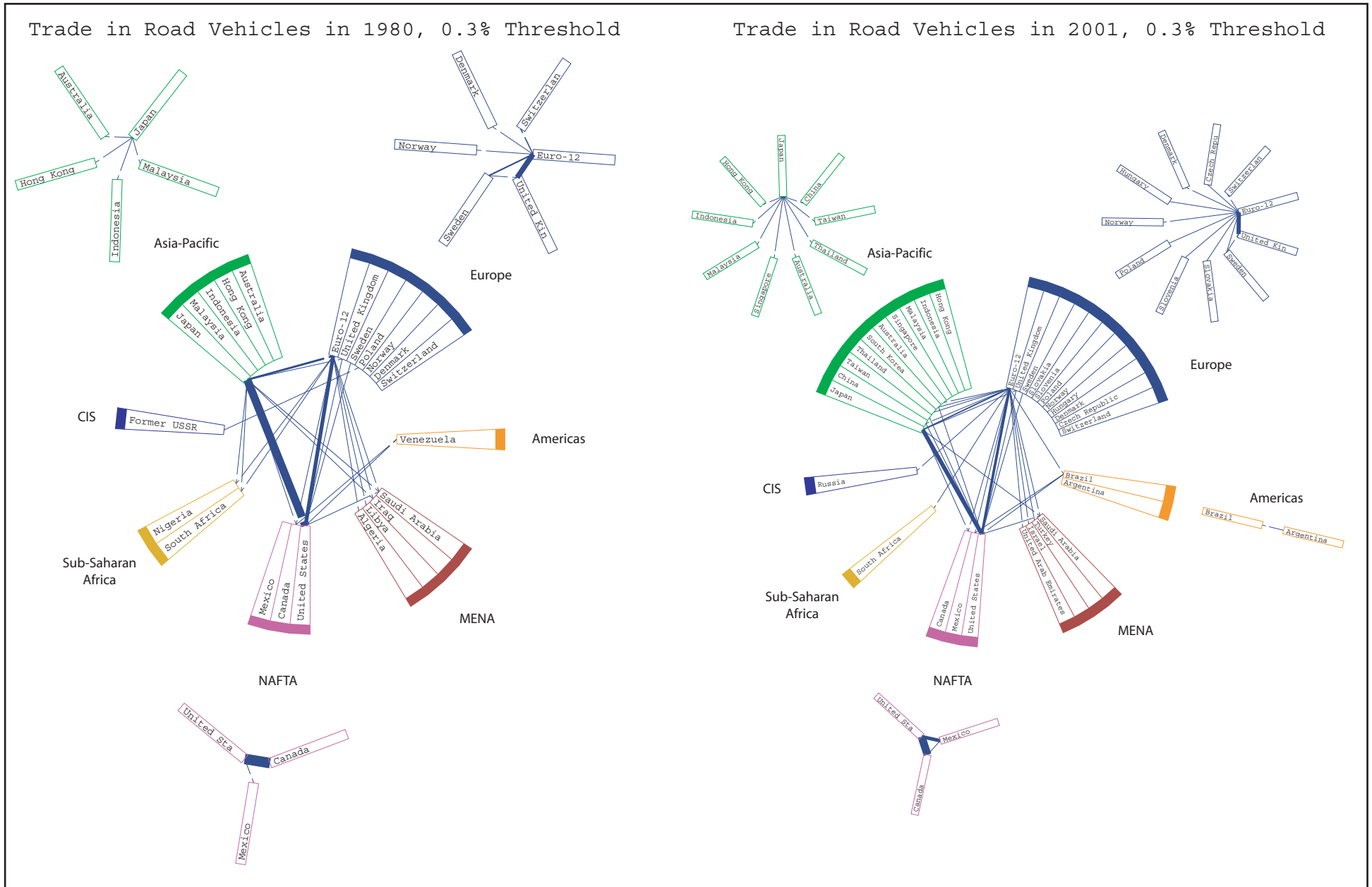
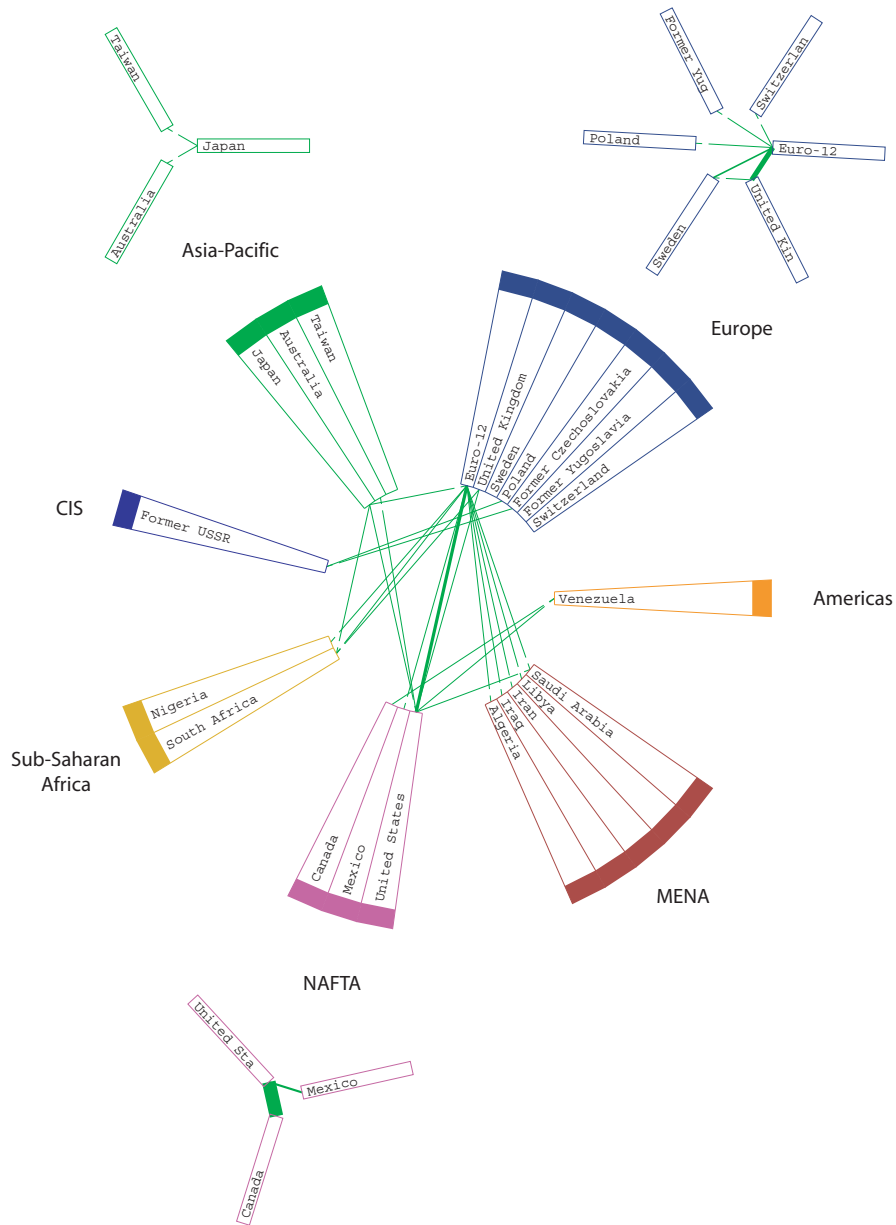


Image 5: Parts for Road Vehicles (SITC 784)

Displaying trade in parts for road vehicles (SITC 784), we see Japan in a different role. It exports relatively much less to the U.S. and Euro-12, particularly in 1980. However, there is a similar pattern of growth in Asia-Pacific and European participation, diminished MENA participation and, additionally, increased participation by South American countries over the two decades.

Trade in Parts for Road Vehicles in 1980
0.3% Threshold



Trade in Parts for Road Vehicles in 2001
0.3% Threshold

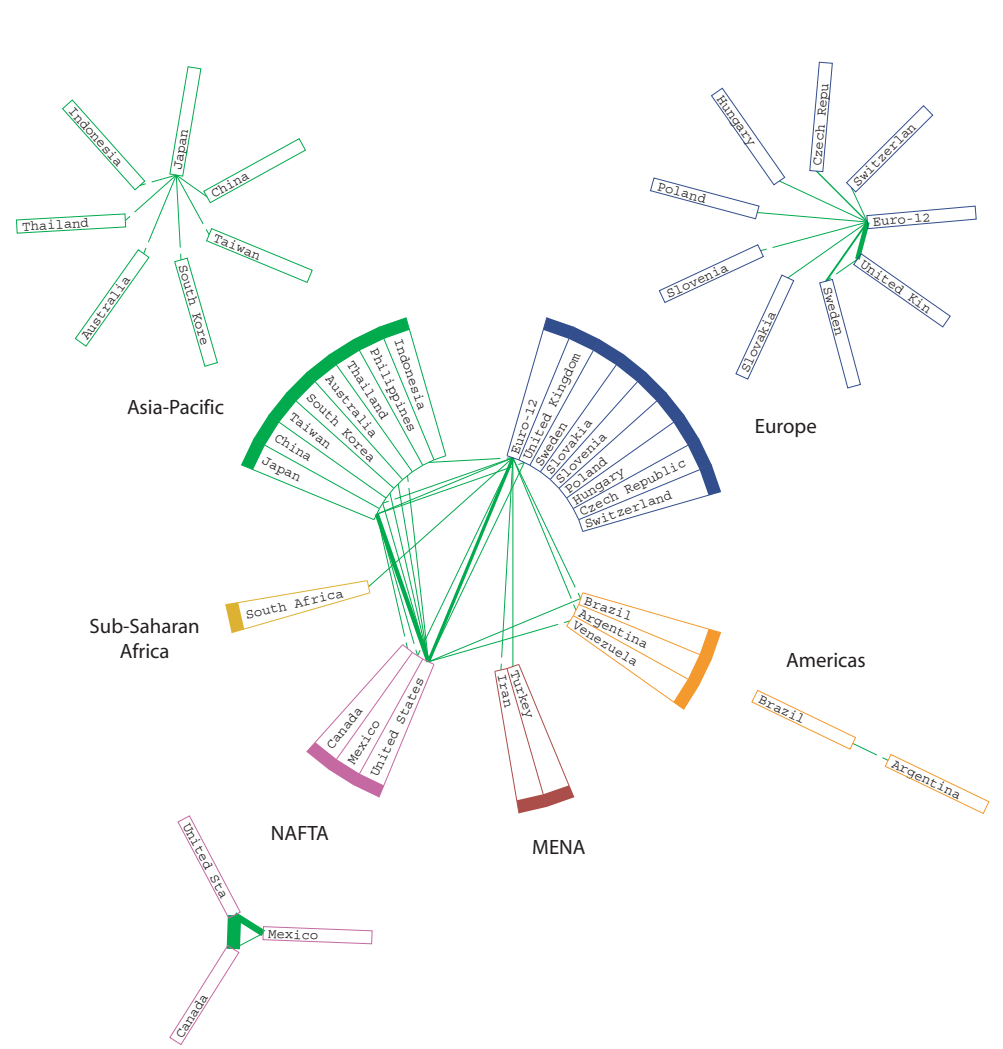


Image 7: Iron & Steel Structures (SITC 691)

Whereas in apparel and accessories there is growth in the number of countries participating at the threshold level, in trade in Iron and Steel Structures (SITC 691 on Image 7) there is a contraction over the two decade period. By 2001, all of Sub-Saharan Africa no longer meets the threshold, but the real story is in MENA. Major importers in 1980 such as Algeria, Libya, Iraq, and most dramatically, Saudi Arabia (a major importer from the U.S., Japan, the Euro-12 and the U.K.) do not trade at all at the 2001 threshold. Significant growth is visible in intra-European trade and in NAFTA. However, despite trade growth with Mexico and Canada, in inter-regional trade the U.S. only imports at this threshold.

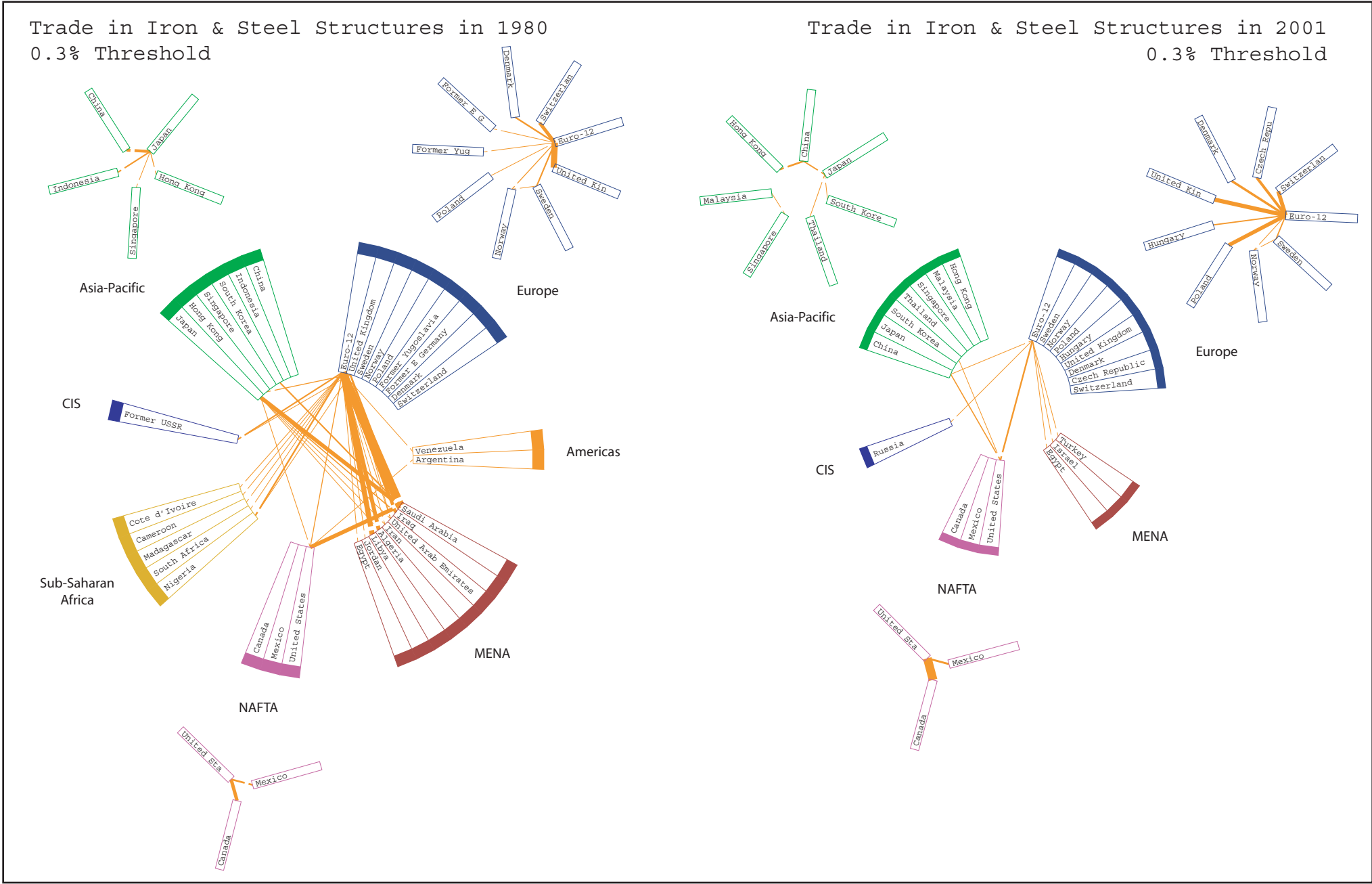


Image 8: Nails etc... (SITC 694)

The U.S. is in a similar situation for trade in Nails and other similar products (SITC 694). In 1980, the U.S. and Japan have strong bi-directional trade. By 2001, the U.S. still has bi-directional trade with Japan, but is importing significantly more from Taiwan, and exports back to Taiwan do not meet the threshold. Here too we see the rise participation by Southeast Asian nations.

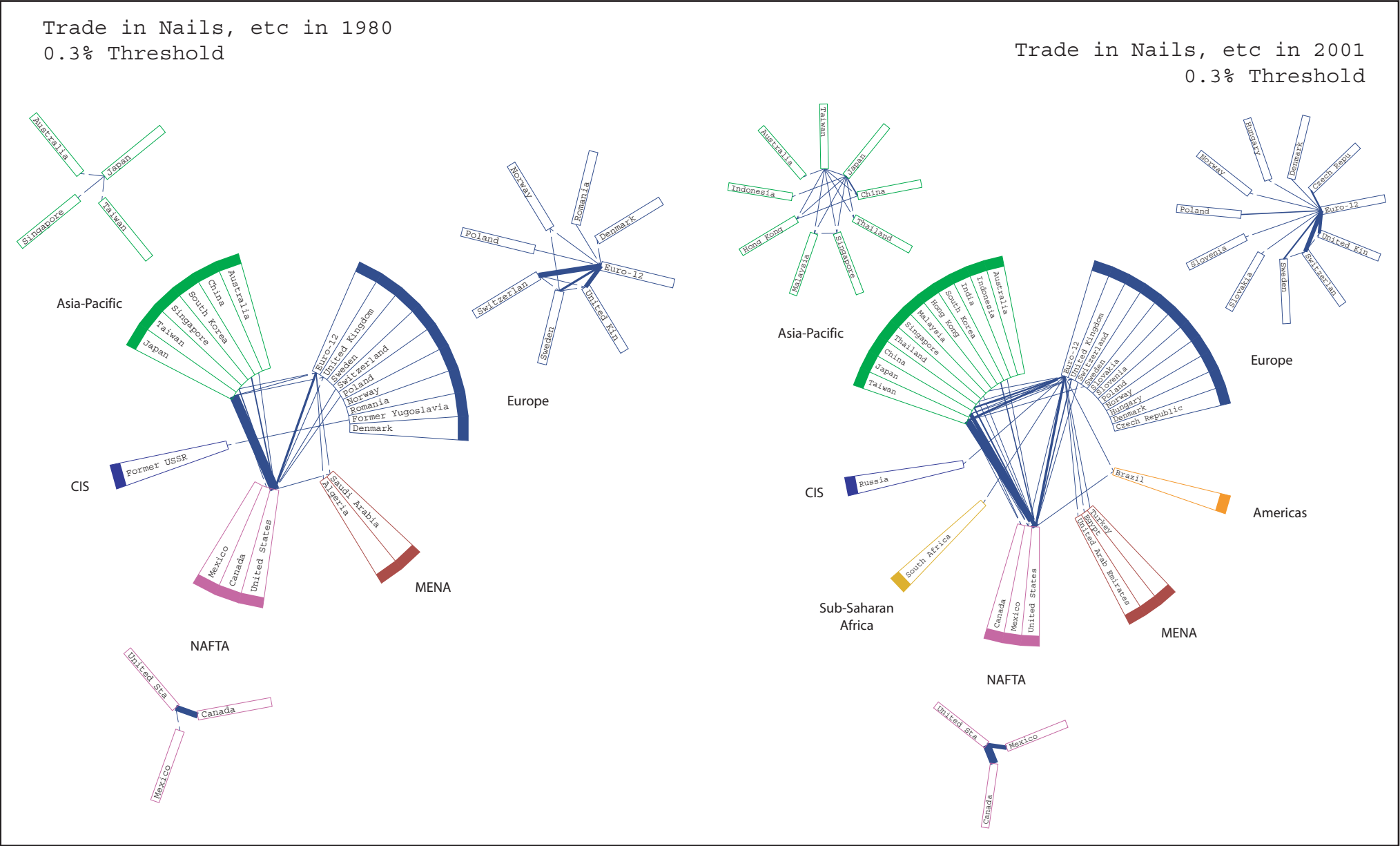


Image 9: Cement (SITC 661)

In other construction materials such as cement (SITC 661), again MENA's diminished trade relationship with Europe is clear. This is particularly so for Saudi Arabia, a huge importer of cement in 1980 much diminished by 2001. There is substantial growth in intra-European trade and growth in trade between Asia and Europe by 2001

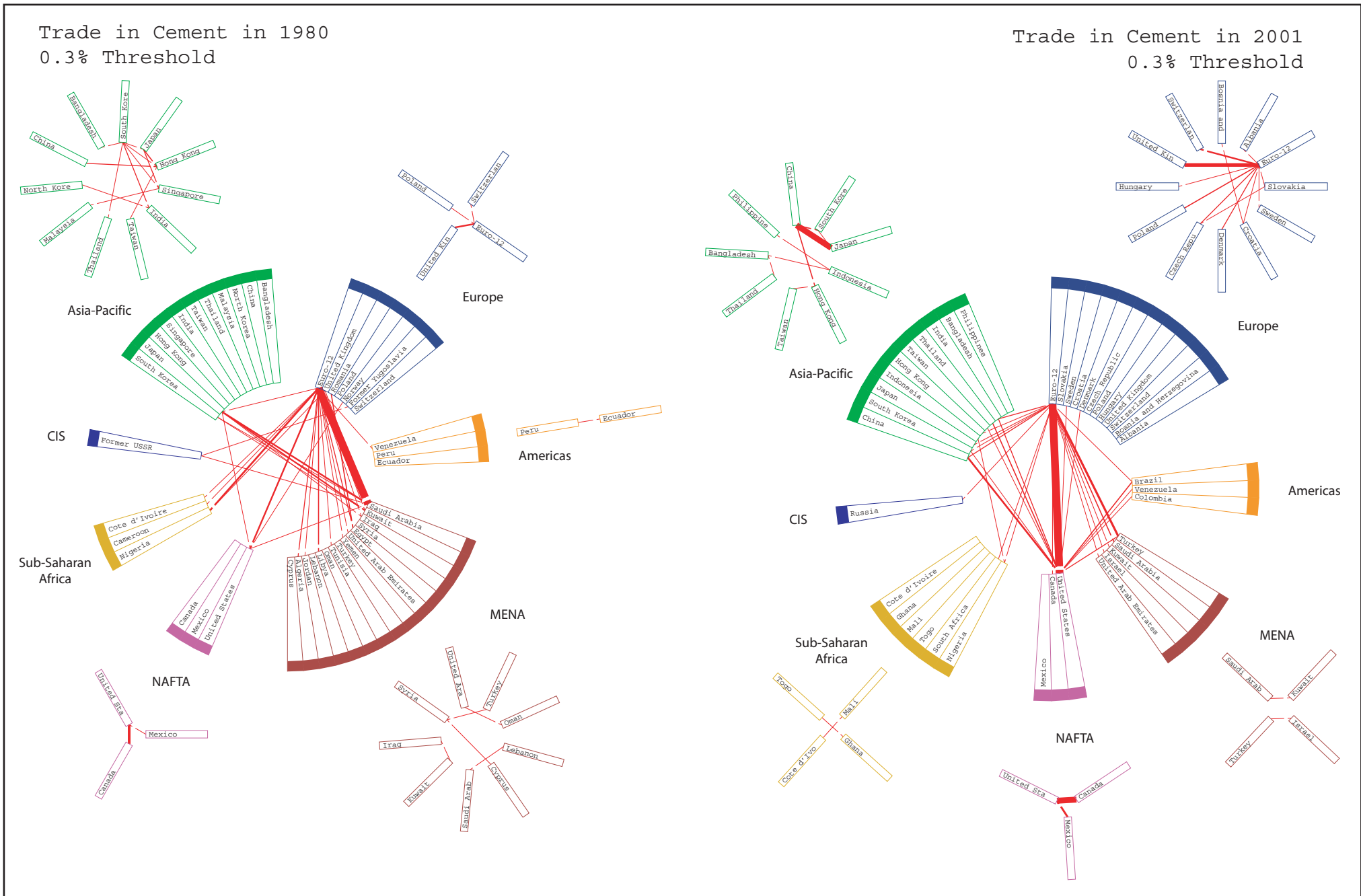
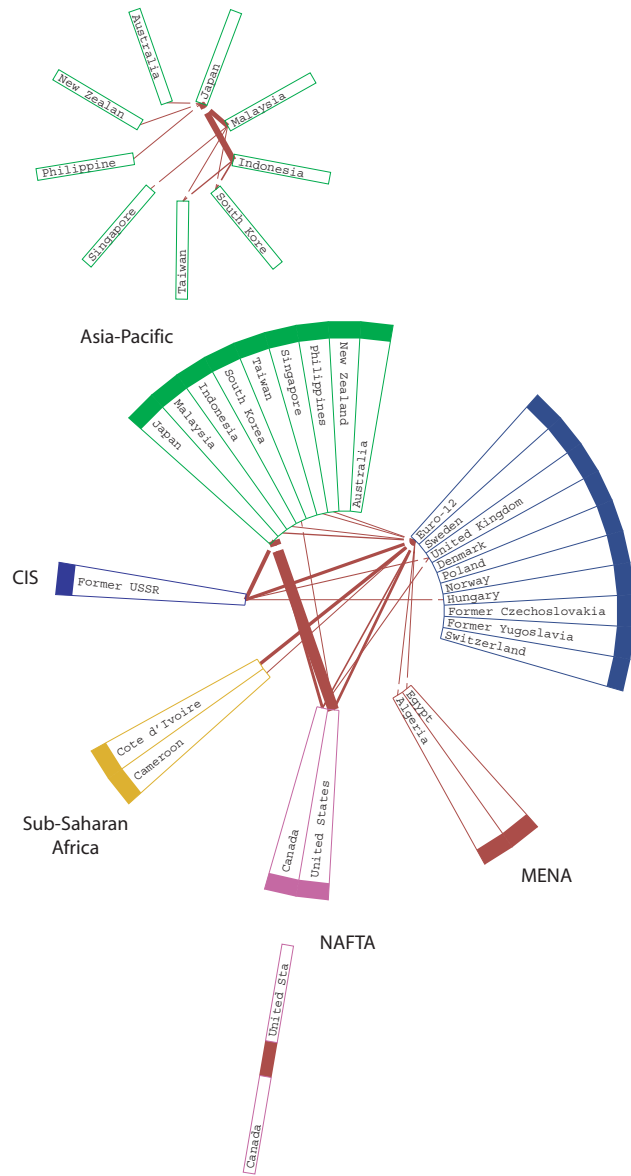


Image 10: Cork & Wood (SITC 24)

Another commodity that has changed significantly for the U.S. from 1980 to 2001 is Cork and Wood (SITC 24). Huge exports from the U.S. to Japan dominate the world trade structure in 1980, but by 2001, U.S. exports are similar to those of many other countries

Trade in Cork & Wood in 1980, 0.3% Threshold



Trade in Cork & Wood in 2001, 0.3% Threshold

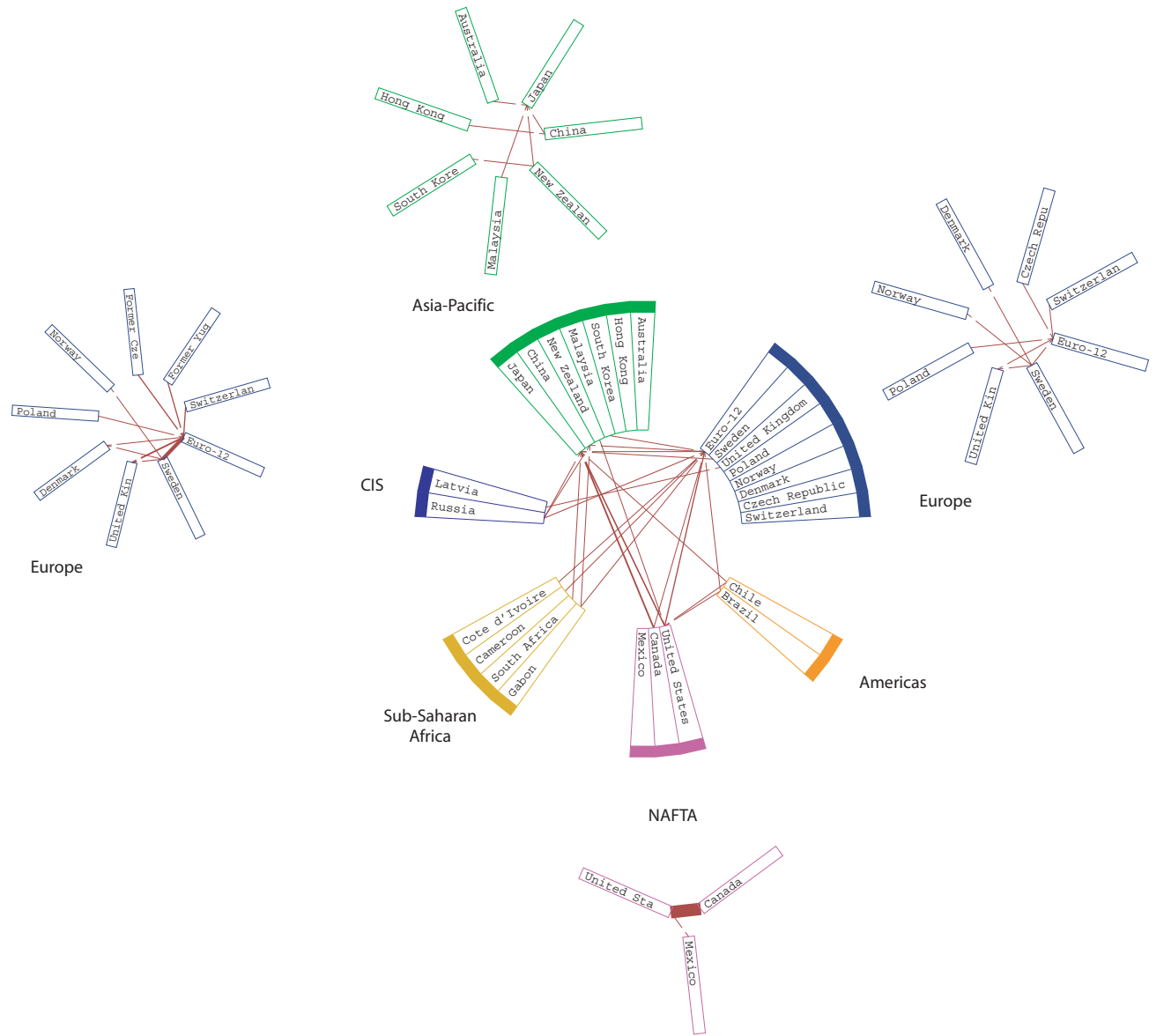
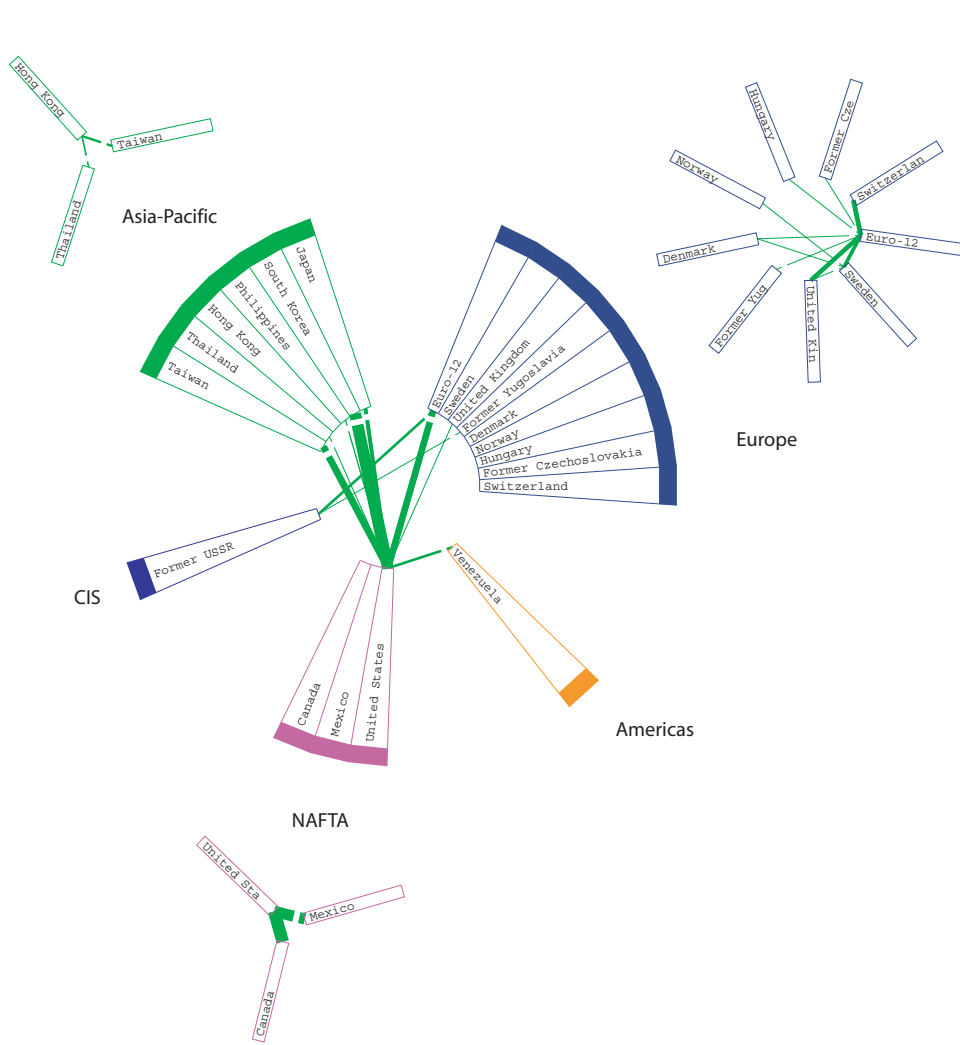


Image 11: Waste Paper (SITC 2511)

Not so for U.S. exports of waste paper (SITC 2511). The U.S. is by far the dominant exporter of waste paper in 1980, sending the greatest values to South Korea, Taiwan, Euro-12 and Mexico, and engaging in bi-directional trade with Canada. By 2001, Mexico is exporting back to the U.S. at levels high enough to meet the threshold, and Euro-12 is exporting more to Asia, but the U.S. is still the biggest exporter.

Trade in Waste Paper in 1980, 0.3% Threshold



Trade in Waste Paper in 2001, 0.3% Threshold

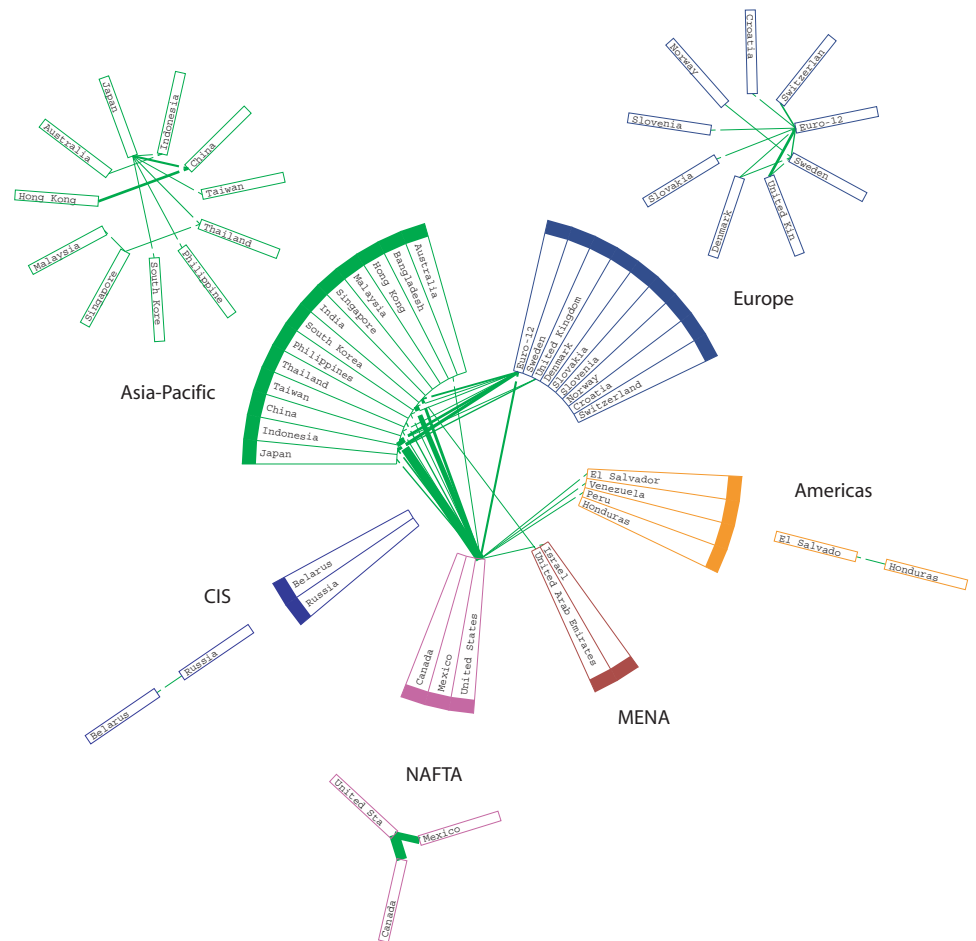
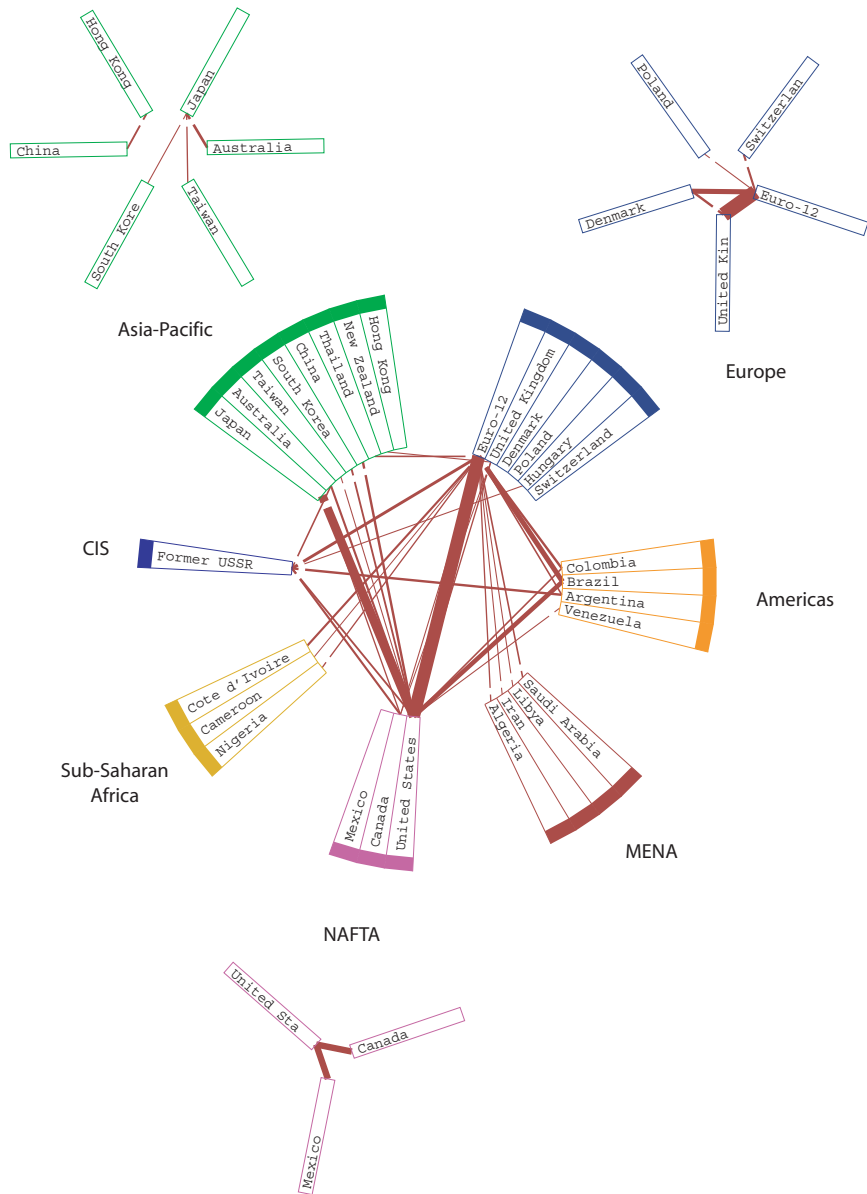


Image 12: Food (SITC 0)

The transformation of world trade in food is clear. This may result from drastic relative declines in price, meaning that the same amount in weight might not qualify for the threshold in 2001, or greater national and regional self-reliance. What is perhaps most interesting here is the continuing, and indeed increasing, centrality of the United States as a food exporter.

Trade in Food in 1980, 0.3% Threshold



Trade in Food in 2001, 0.3% Threshold

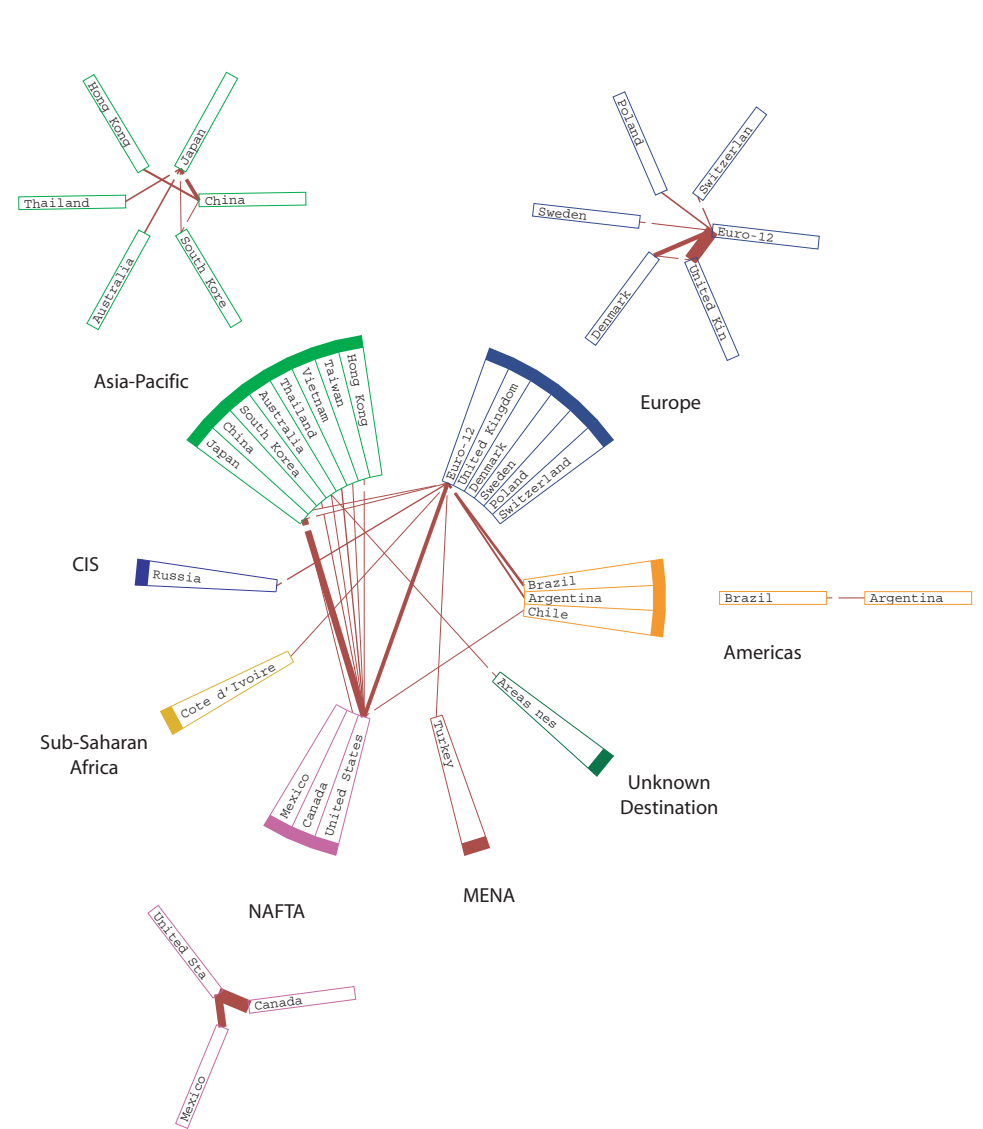


Image 13: Crude Fertilizers (SITC 271)

Trade in Crude Fertilizers (SITC 271) displays a structure unlike any of the previous commodities. There is a complete lack of the triadic U.S.-Europe-Asia structure seen in varying degrees in many of the commodities. Here it is MENA, particularly Morocco, and then Jordan as well in 2001, that dominate exports. While the U.S. exports a certain amount to Euro-12 and East Asia in 1980, by 2001 it too is importing from Morocco with no exports meeting the 0.3% threshold. The Euro-12 remains a large importer over the two decades, but by 2001 India joins it as a major importer. Another point of interest in the world structure of this commodity is that there is relatively little intra-regional trade from any region.

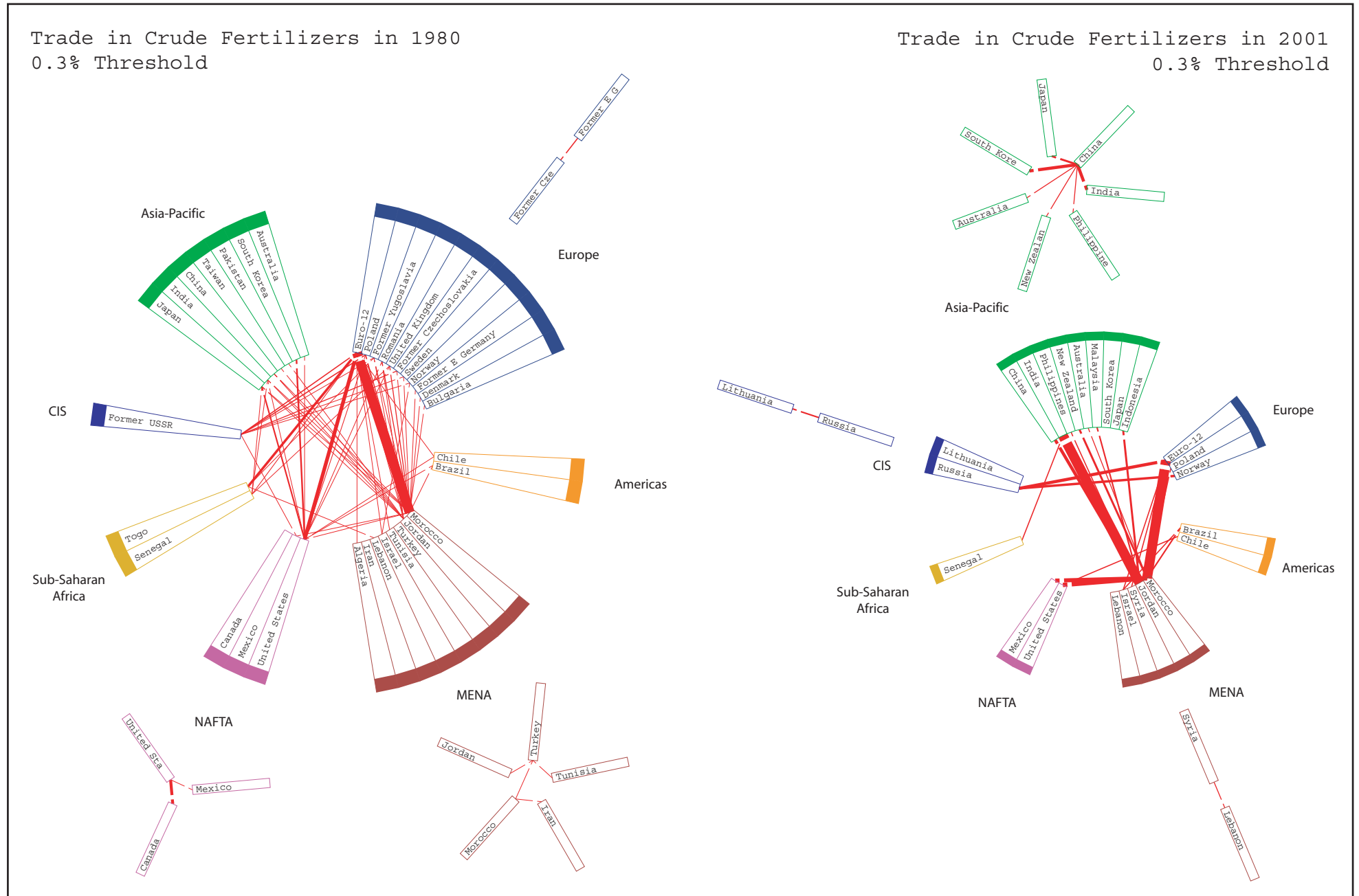


Image 14: Manufactured Fertilizers (SITC 562)

When compared to Manufactured Fertilizers (SITC 562) we see a different pattern, but still not really the triadic structure of overall world trade. Here the U.S. is the largest inter-regional exporter, although trade between the U.S. and Canada is bi-directional. Part of the difference is accounted for by the relatively strong participation of Brazil as an importer in both years, and by the participation of the CIS countries as exporters.

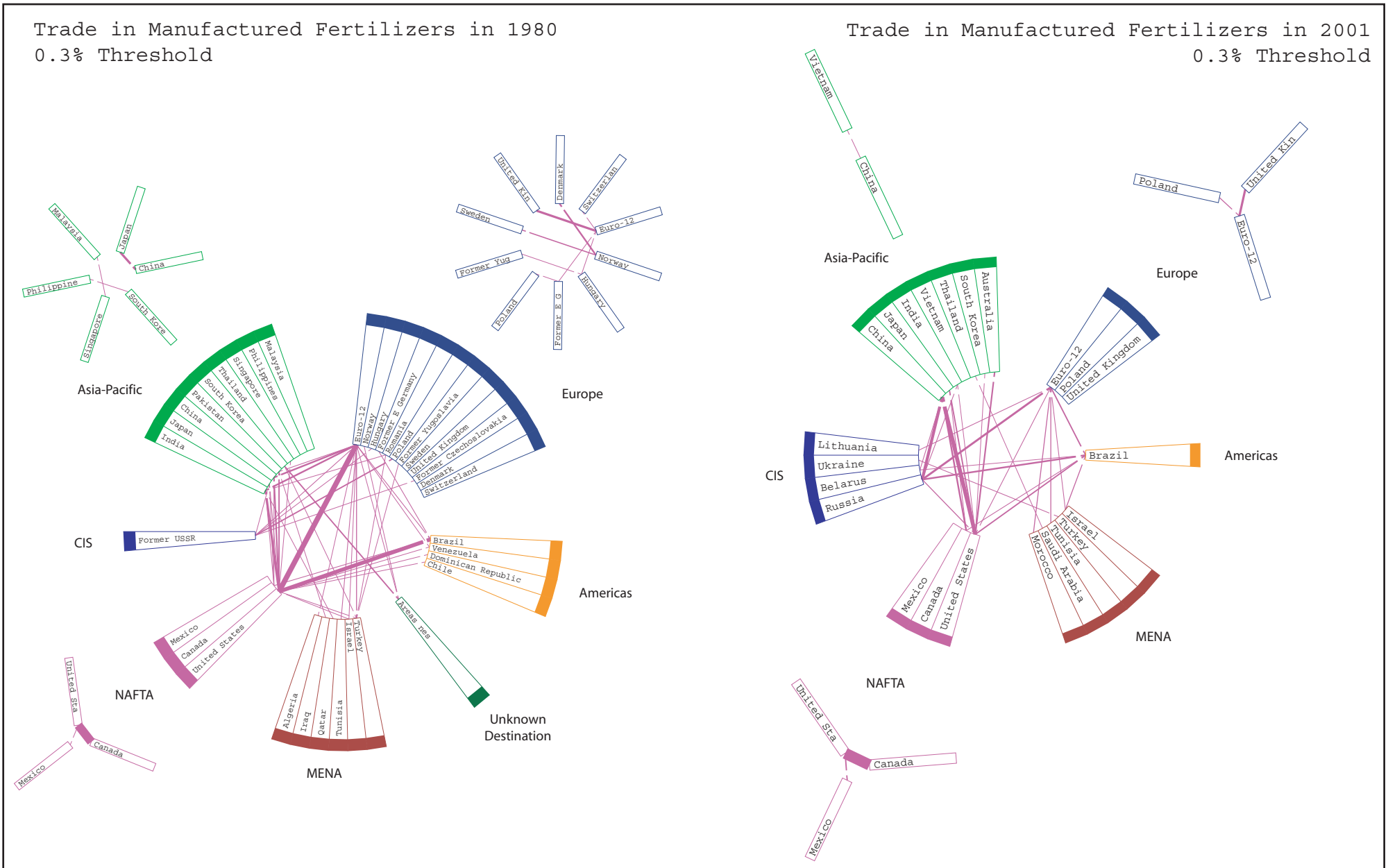
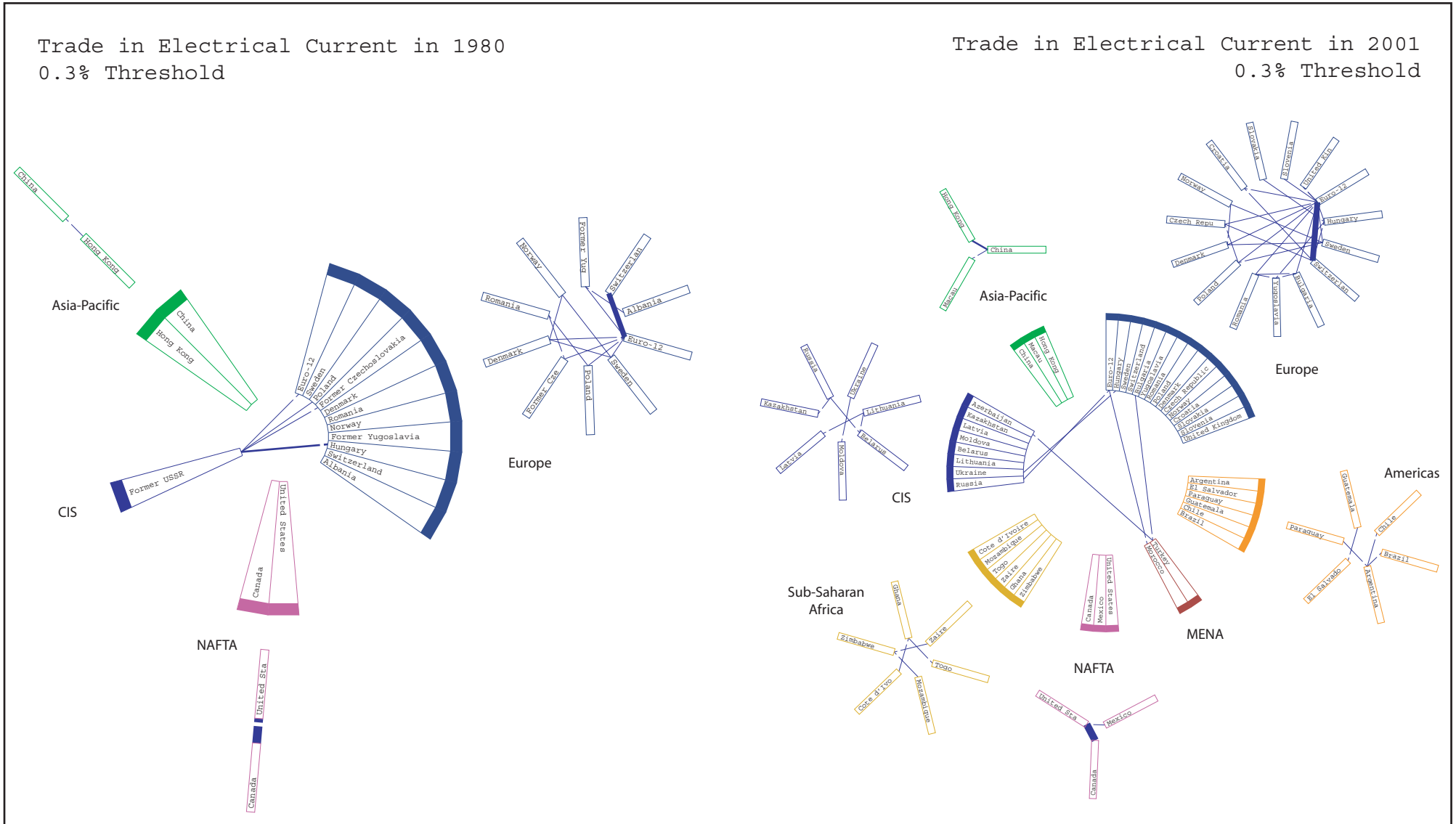


Image 15: Electrical current (SITC 35)

The most distinct structure seen yet is in trade in Electric Current (SITC 35). The little inter-regional trade that exists is between adjacent areas like the U.S.S.R and Hungary or Poland. The one exception by 2001 connects Morocco and the Euro-12. Also interesting is the growth not only in the number of countries trading electricity at the 0.3% threshold by 2001, but the number of regions. Sub-Saharan Africa, MENA and the Americas all join the international trade.



Images 16-18: U.S. Trading Partners in Selected Commodity Categories in 1980 and 2001 (with a 0.3% of Total Trade in each Commodity Threshold)

The flexibility of the NetMap software not only allows for varying thresholds and how countries are grouped, but it also allows for a closer focus on individual countries. Here we focus on the U.S.'s trading partners in several commodities. This display makes it very easy to see diversification (or not) in partners over time and also the relative importance of specific partners over time.

Image 16: Apparel (SITC 84)

For example, in Apparel and Accessories (SITC 84), the explosion in U.S. trading partners by 2001 is obvious. It is also possible to see the growth of Mexico as a significant partner, particularly as one of America's few importers at this threshold.

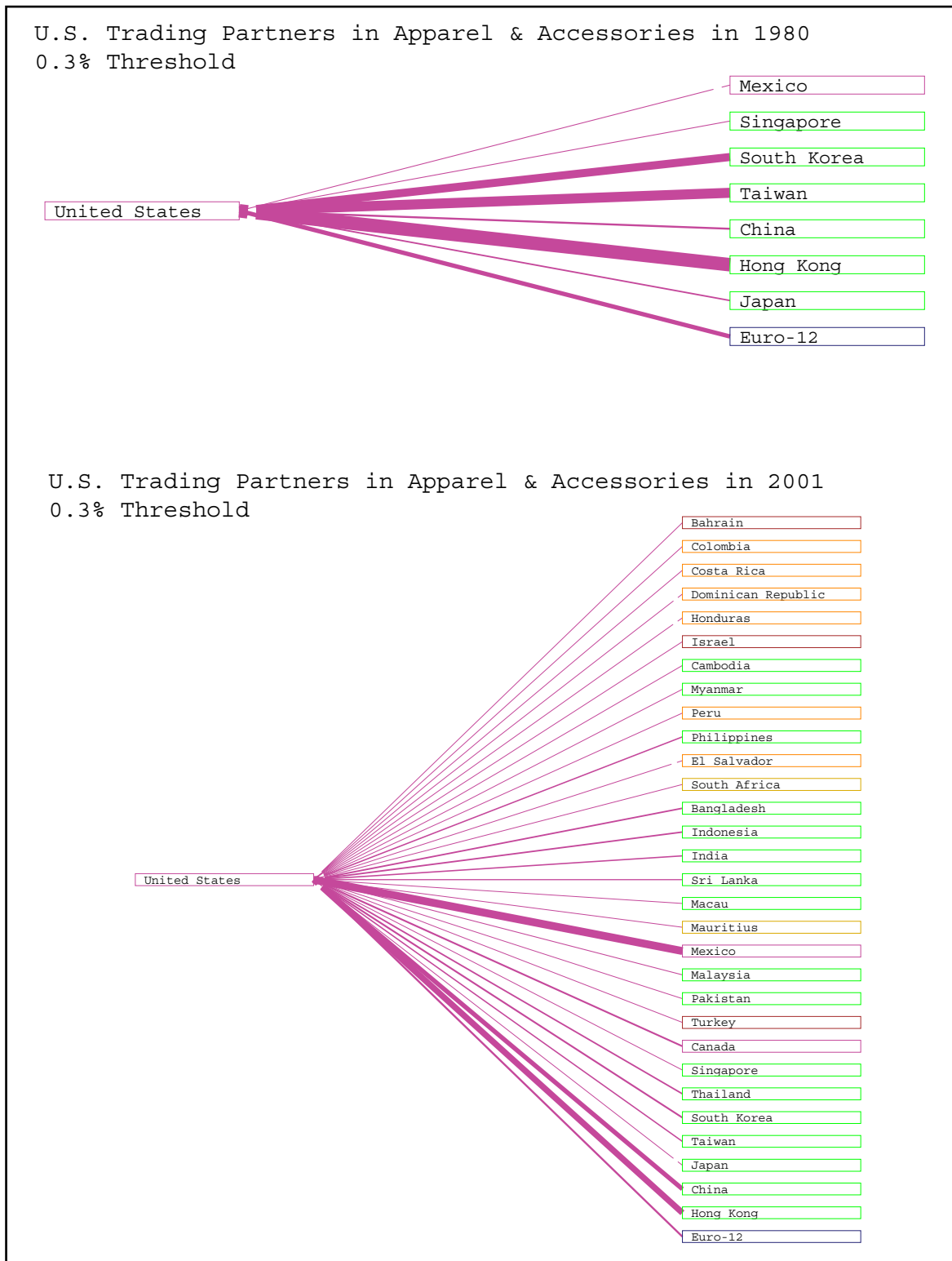


Image 17: Crude and Manufactured Fertilizers (SITC 271 & 562 respectively)

Fertilizers, both crude (SITC 271) and manufactured (SITC 562), follow a reverse pattern for the U.S. over time. In both types of fertilizer, the number of partners decreases by 2001, dramatically so for crude fertilizers.

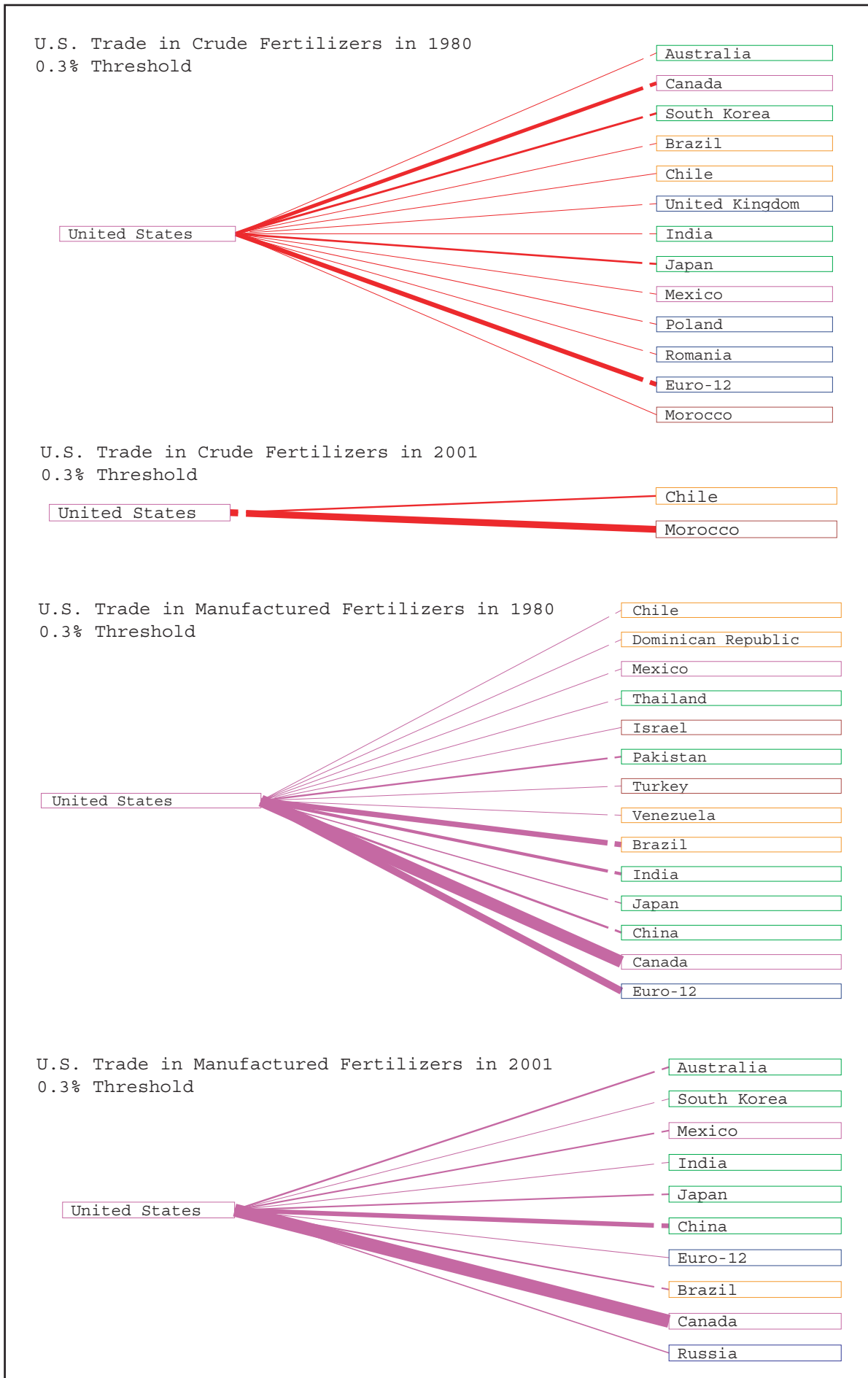


Image 18: Petroleum and Electric Current (SITC 33 & 35 respectively)

In certain energy commodities, the U.S. does not necessarily have a significant change in the number of partners, however there is some change in the composition of those partners at the 0.3% threshold. In petroleum and petroleum products (SITC 33), the relative importance of Canada, Venezuela, and Mexico all increase. Several new partners are added, such as Angola, Colombia, Iraq, Norway and the Euro-12, which replace U.A.E, Algeria, Libya, Indonesia, Trinidad and Tobago, Netherlands Antilles, and the Bahamas. In electrical current (SITC 35), the shift for the U.S. is that by 2001 it trades bi-directionally with Canada, even though it starts importing from Mexico at levels that meet the 0.3% threshold.

