

The Eurocentric Nature of Mental Maps of the World

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Sketch maps of the world, a form of mental map, indicate that our images of the world tend to be Eurocentric. These sketch maps are generally centered in Europe (Saarinen 1988), and the size of Europe is greatly exaggerated (Saarinen et al. 1996). Furthermore, Europe is known in greater detail than any other continent. These conclusions are based on the Parochial Views of the World project, a worldwide study of mental maps of the world. The project was supported by the International Geographical Union and funded by the National Geographic Society.

Keywords: *mental maps, Eurocentric view*

THE PAROCHIAL VIEWS OF THE WORLD STUDY

The Parochial Views of the World study was conceived as peace research near the end of the Cold War. One defense against the dangers of an unstable international system would be a reasonably accurate shared image of the world. No documentation existed concerning whether there was a shared image of the world or a series of parochial views held by people from different countries. The study aimed to remedy these deficiencies by providing a systematic set of world images by having individuals from a carefully selected sample of countries sketch a simple map of the world. When current world images are understood education can be designed to remedy any weaknesses revealed.

University geography departments on all inhabited continents were visited and students in first year geography classes were asked to sketch a map of the world. This population was selected to represent people who have completed the basic educational process in their country and are interested enough in geography to enroll in a geography course. It was assumed that their general level of competence in map-drawing would enable them to produce sketch maps of the world representative of the general level of geographic knowledge of the educated population of their country. A major advantage of the sketch map method is that, once the short and simple instructions are translated, it is easy to administer and it provides directly comparable products

from countries of widely differing languages and cultures. Standardization of procedures to enhance comparability of results were accomplished by having the exercise administered directly by the principal investigator and his research assistant.

The exact wording of the instructions were:

“Draw a sketch map of the world on this sheet of paper (8 1/2 x 11 inches or the closest local equivalent). Label all the countries and any other features you think are of interest or importance. Do not worry if your map is not perfect. Just do the best you can. I am sure you will find this an interesting experience once you get started. Take about 20 to 30 minutes to complete the task.”

For the group sampled, drawing a sketch map of the world was an interesting challenge and only a handful of the 2488 participants turned in a blank sheet. The sample was extended by having cooperators follow a standardized set of instructions and mail the sketch maps they collected to the author. This final total consisted of 3568 sketch maps from 75 sites in 52 countries (Table 1).

In drawing a map of the world on a blank sheet of paper, the sketcher is trying to reproduce a world political map from memory, since the instructions explicitly asked for the names of all the countries. These instructions should enhance the general tendency observed on previous global sketch maps to use nations as building blocks (Saarinen, 1973). The task, though interesting, is difficult. The map sketcher likely relies on memories of the type of world map that most readily comes to mind. The map most readily recalled would probably be the one most commonly seen and used in the map sketcher's society. How the sketch maps were centered in this broad international sample reveals something about how the world political map is presented in different parts of the world and gives insight as to how one's society is viewed in relation to the rest of the world.

On the back of the maps the sketchers provided basic information on their age, sex, education, world travel, and languages spoken. In addition, after the exercise, a subsample of map sketchers were asked a series of questions about their maps, such as: where they began, the sequence of continents sketched, which portions were easiest, and

Continent	No. of countries	No. of sites	N	%
Africa	11	13	656	18.4
Asia	16	24	950	26.6
Europe	13	13	706	19.8
North America	5	14	726	20.3
Oceania	3	5	305	8.5
South America	4	6	225	6.3
World Total	52	75	3568	100

Table 1. Number of sketch maps of the world collected by continent (November 1985-March 1987)

most difficult to draw and why, as well as specific questions related to why areas were left blank or done in great detail.

LITERATURE REVIEW

The research is a derivative of the burgeoning interest in “cognitive maps,” whose scope and approaches, were first sketched out by Downs and Stea (1973); though the earliest use of the term is credited to Tolman (1948) and early inspiration is traced to *The Image of the City* by Lynch (1960). The present project extends the sketch map technique to the global scale and was one of the first cognitive mapping studies to explore images of the world (Whittaker and Whittaker 1972, Saarinen 1973; Bosowski 1981, Overjodet 1984).

During the 1990s there has been a steady trickle of papers by geographic educators using sketch maps of the world as a research and teaching tool. Wise and Heckley-Kon (1990) wrote a paper about assessing geographic knowledge of students using sketch maps. Metz (1990) showed how the use of repeated sketch maps over the course of a year could lead to marked improvement in student knowledge. Stoltman (1990) found that the accuracy of world sketch maps drawn by teachers was most closely related to secondary school geographic education. Marran (1992) also advocated repeated use of sketch maps

to help grade 12 students learn what they should know about the world. Rifas (1996) outlined a method for sketching an accurate world map. Chiodo (1993) tested preservice teachers' mental maps of the world and found them wanting. Chiodo (1995) developed lessons to improve the mental maps of 7th grade students.

The first paper utilizing the Parochial Views of the World data set was on the centering of mental maps of the world (Saarinen, 1988). A paper probing the use of world sketch maps as surrogates for geographic knowledge followed (Saarinen, MacCabe and Morehouse 1988). In it qualitative and quantitative scales were developed to classify map quality, and major sources of map knowledge were investigated.

The first paper, focusing on a single country, used a Finnish sample and it served as a how-to guide to aid cooperators in the task of combining statistical data and sample maps into a portrayal of their nation's image of the world as well as the world's image of their country (Saarinen and MacCabe, 1989). The desirability of involving a local geographer in the explanation of why certain countries were included became apparent early. They were sought for the regional papers that followed on India (Tewari et al., 1989), Australia (Walmsley et al., 1990), Rwanda (Lowry, 1990), Poland (Nunan, 1990), and South Africa (Saarinen et al., 1990). The quality of the sketch maps in South Africa, drawn by three samples of students, two white, from an English and an Afrikaans university, and one from a "colored" university, showed great disparities, due to educational differences under Apartheid.

Further national studies followed on Hong Kong (Wong et al., 1992), Saudi Arabia (Al-Maharwi et al., 1992), Israel (Burmil et al., 1993), Singapore (Kong et al., 1994) and Norway (Dale et al., 1996) in which gender differences were explored. Cumulatively, these studies of different areas, besides elucidating national images, were also used to test whether there was a shared world map at the time the maps were obtained.

Pinhiero (1991) demonstrated the reliability of the scoring system using many different scorers. Keidel (1991) wrote a paper on sketch maps as research tools reviewing the recent positive assessments of the sketch map technique.

As the reunification of Germany approached, Saarinen and

MacCabe (1990) wrote a paper on the world image of Germany. Although East and West Germany were separated for half of this century and for the entire life of the students doing our sketch maps, the area was more often referred to as Germany than either of the then official names. The same pattern applied in the use of Korea, instead of North and South Korea (Saarinen et al., 1991)

Papers incorporating a large number of similar samples followed. Gourley et al. (1991) found that only a faint image of the British Commonwealth remains in the 1305 sketch maps drawn by Commonwealth students. Kirsch et al. (1998) examined the world image of Eastern Europe and the Eastern European image of the world just prior to the end of the Cold War. Berkowitz analyzed the differences and similarities of the African and world images of Africa (Berkowitz et al., 1992). Dean et al. (1992) wrote an analysis of Chinese sketch maps, including those from Hong Kong. Choker and Saarinen analyzed West African nations, Nigeria and Togo (1992). Another paper compared the two map sets from Armidale, Australia and Dunedin, New Zealand, and included discussion of male-female differences in map drawing and map humor (Gourley et al. 1993). Southeast Asia is one of the least known areas on Earth. This was documented in detail and contrasted with the worldview of various Southeast Asian nations (Kong et al., 1992). Bailly et al. (1995) studied the Francophone nations' views of the world and how they were viewed by the world.

Blades (1990) demonstrated the reliability of the sketch map technique, at the intraurban scale, by having respondents sketch two maps of the same area separated by some time. At the world scale, groups of students from similar classes separated by five years (1986-1991) produced group images almost identical. The only exceptions were for new additions, due to current events, such as new nations, that were formerly parts of the USSR, or countries appearing more frequently because of the Gulf War i.e., Kuwait, Iraq, or Saudi Arabia (Keidel et al. 1992, Pinheiro 1992, Gams et al. 1993). The reliability of the sketch maps technique is further attested to by consistency of scores among separate samples from the same nation (Saarinen and MacCabe, 1995).

Several other works more topical than regional were: world patterns of geographic literacy (Saarinen and MacCabe, 1995), relative

size of continents on world sketch maps (Saarinen et al., 1996), and determining whether sketch maps depend more on knowledge or drawing skills (Saarinen, 1998).

In his dissertation, Pinheiro (1996) used a multiple regression model to work out the main influences determining the distribution of countries known to a sample of Brazilian students. These influences were: a Brazilian version of the board game Risk, citations of nations in Brazilian newspapers, size and map position of nations, and soccer participating nations.

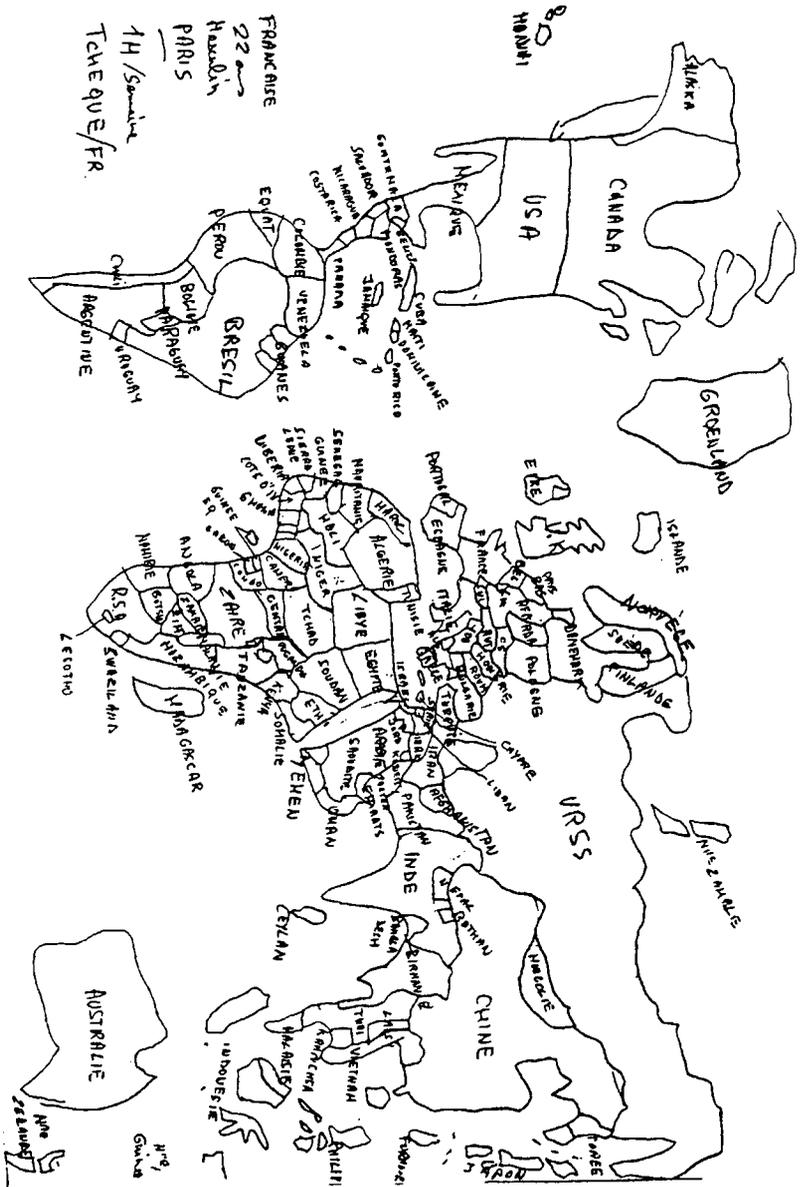
THE CENTERING OF THE MAPS

Examination of the sketch maps indicated obvious differences in the ways students centered them. The three most common types of centering are described as Eurocentric, Sinocentric, and Americentric. In addition, a variety of other maps were not centered in any of these three ways.

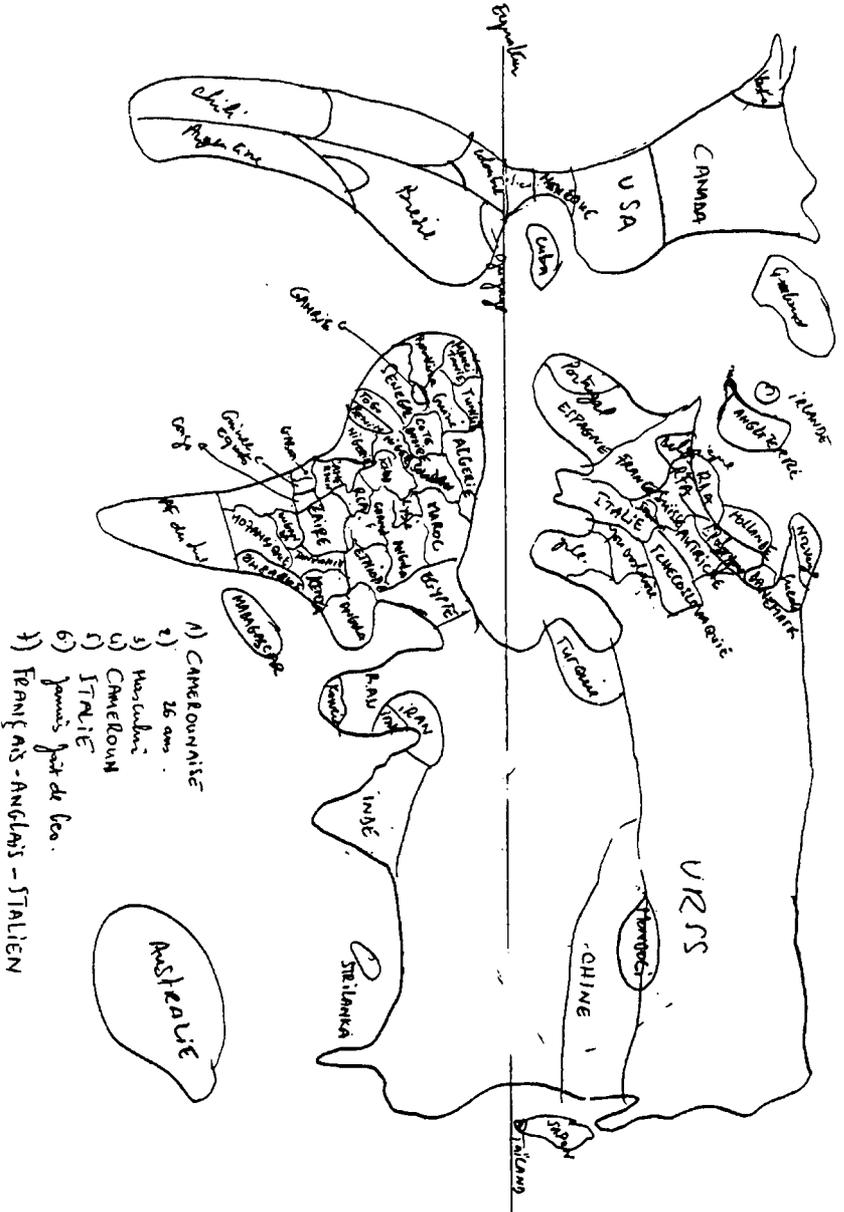
For the purposes of this study the Eurocentric category includes all maps with the Americas on the left, the Atlantic Ocean, Europe, and Africa central, and East Asia on the right. The Pacific Ocean is not featured and appears only on the edges. Europe is not necessarily dead center, nor is the continent always depicted accurately in size or shape. Map 1 shows a sample sketched by a student from Paris. It is the best map in the entire set. It is not just Europeans who draw this arrangement. It was produced in countries on all continents as is illustrated by Map 1 from France, Map 2 from Saudi Arabia, Map 3 from Cameroon, Map 4 from Canada, and Map 5 from Thailand. Map 6 from Australia shows, in a witty way, one potential problem for Australians who use a Eurocentric map.

The predominance of Eurocentric maps, found on 79 percent of the sketch maps, shows that this is the standard world map, the one accepted by convention since the first International Meridian Conference of 1884. At that time, when Great Britain was the dominant power, it was decided that the prime meridian should pass through Greenwich, England. With this convention the meridians were labeled east and west of Greenwich and the Eurocentric map formed the conventional world image with west on the left, east on the right, and north on the top. Before the Greenwich Meridian was agreed upon many prime meridians had been used.

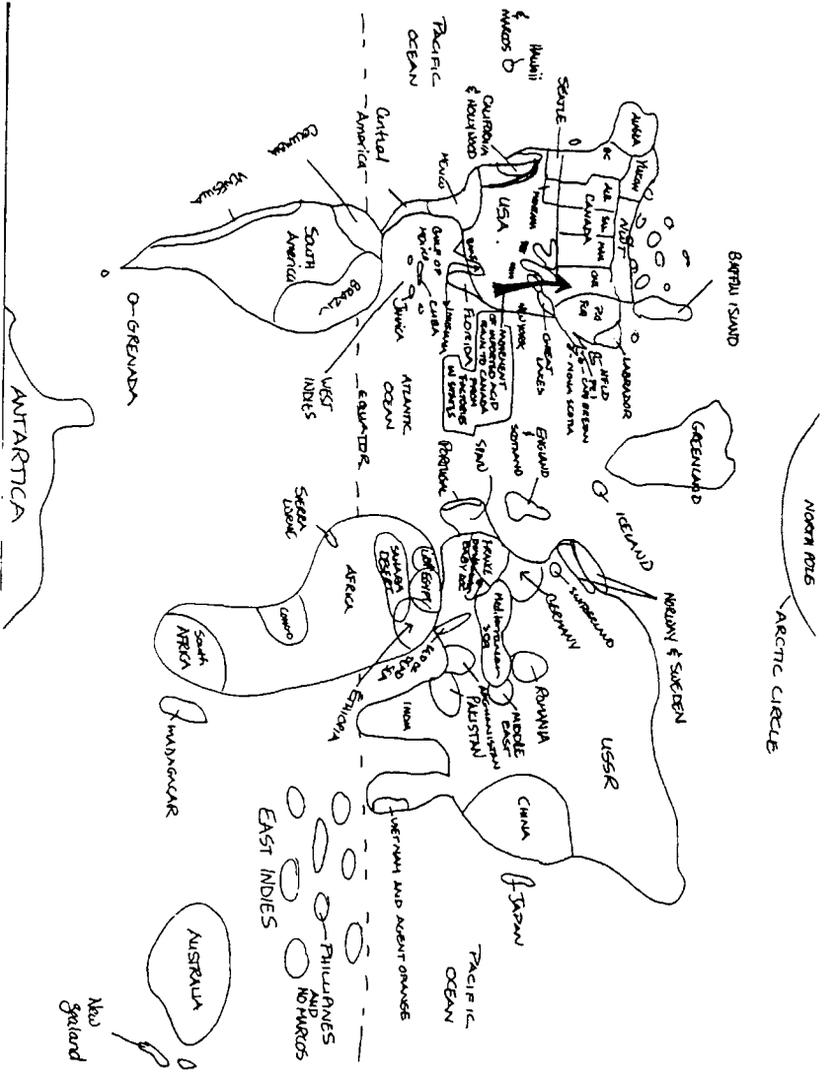
The Eurocentric map is an aesthetically pleasing arrangement of



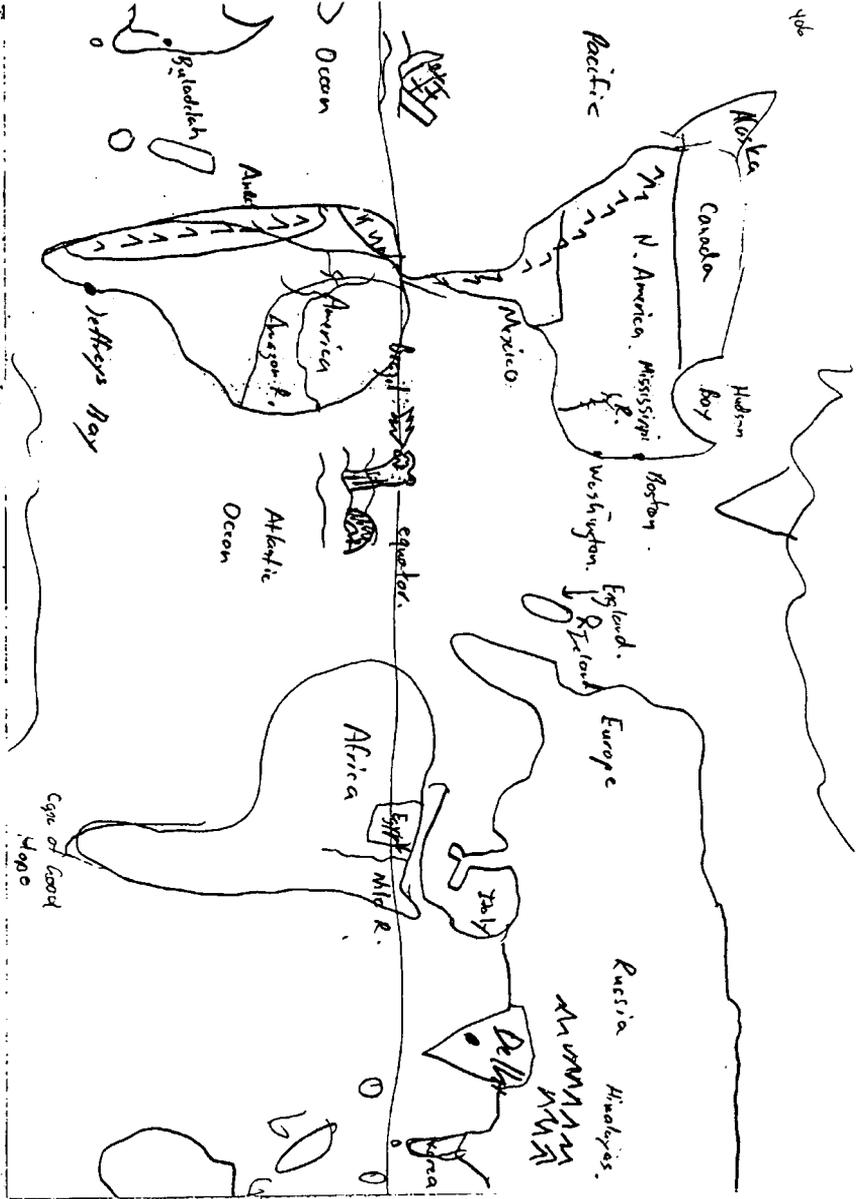
Map 1. World map drawn by a student in Paris, France.



Map 3. World map drawn by a student from Cameroon.



Map 4. World map drawn by a student in Canada.



Map 6. World map drawn by a student in Australia.

the world's landmasses, which minimizes the space devoted to oceans. Like the Sinocentric map it represents all continents whole.

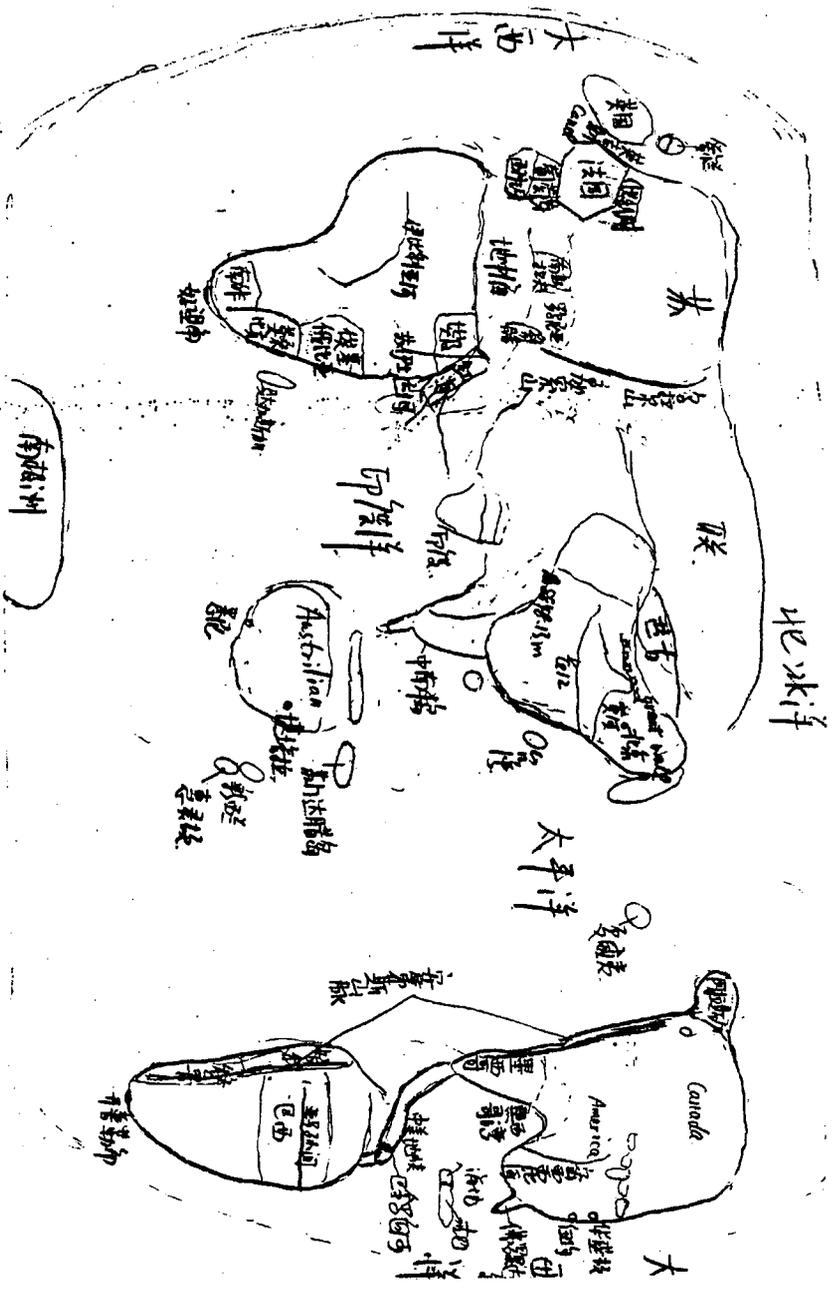
Sinocentric maps are arranged with Europe on the far left, East Asia and the Pacific Ocean central, and the Americas on the right. The Atlantic Ocean only appears on the edges of the map. This type of world map dates from the time of Matteo Ricci, a Jesuit priest, who arrived in China in 1583. He is credited with bringing Renaissance knowledge of cartography to China (Needham, 1959). Many scholarly Chinese were fascinated by the world map he displayed in his mission, but did not think it appropriate to place China on the map edge rather than the center where, it seemed to them, it belonged. Ricci responded with his famous world map of 1602 (Baddeley, 1917), which centered on China. This type of centering was second to the Eurocentric accounting for 11 percent of the sketch maps of the world.

Map 7 from China, and Map 8 from Japan are typical examples from countries where the Sinocentric map has a long tradition. Map 9 from New Zealand represents a nation which more recently started using such maps.

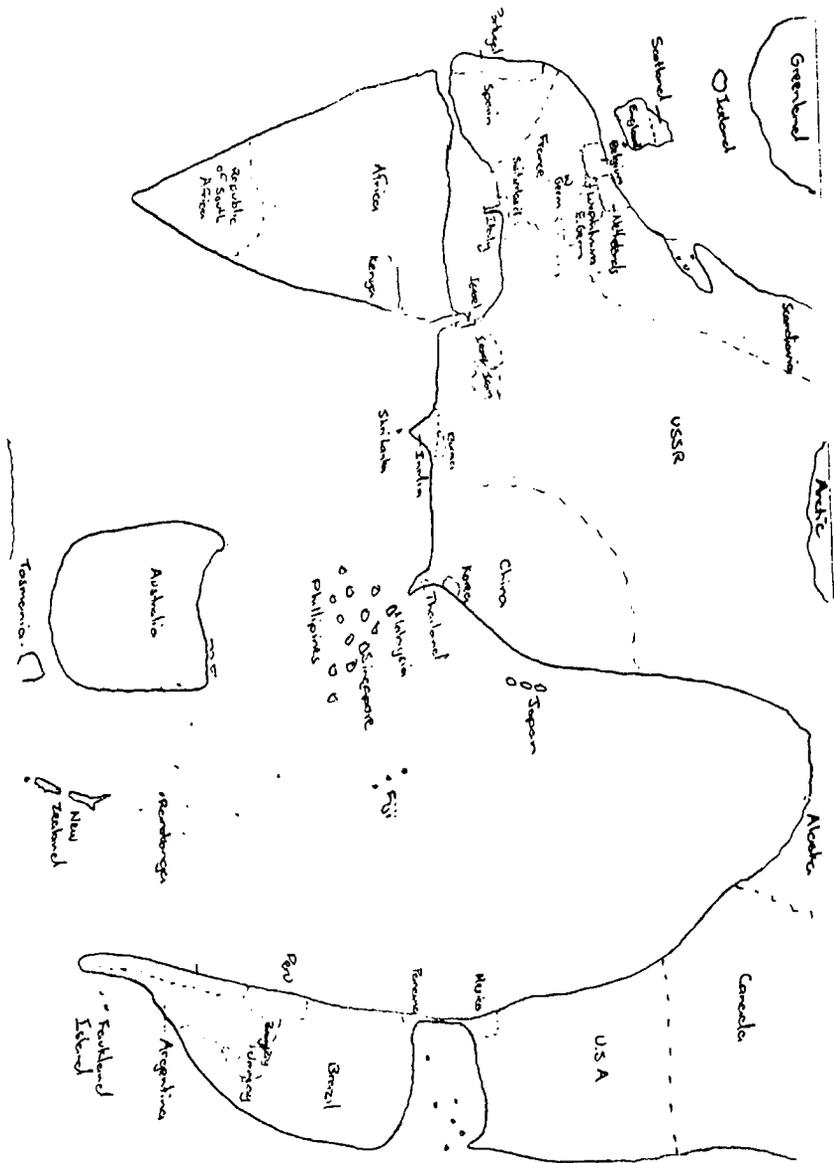
The Americentric maps of the world are those that place the Americas in the center. This has the advantage of featuring both the Atlantic and Pacific Oceans but the disadvantage of splitting the Eurasian continent so that the eastern portion of Asia appears on the left side of the map, and parts of Europe and Africa on the right. According to Alan Henrikson (1980), some of the earliest of the Americentric world maps were published in Boston in 1850 and New York in 1851. Map 10 from Chicago and Map 11 from Taiwan are typical. Map 12 by a student from Peru is interesting. It is clearly Americentric, which raises the question, whether a sample on the west coast of South America would yield more of this type of world sketch map. Of the total sample, 7 percent were Americentric.

The other category contained a variety of maps, which could not be classified in the first 3 categories. Some of these maps, such as Map 13 from the Philippines, were ethnocentric, including only the homeland. The other category also included two hemisphere maps, azimuthal equidistant polar maps, incomplete maps, and others. The other category was 4 percent of the total.

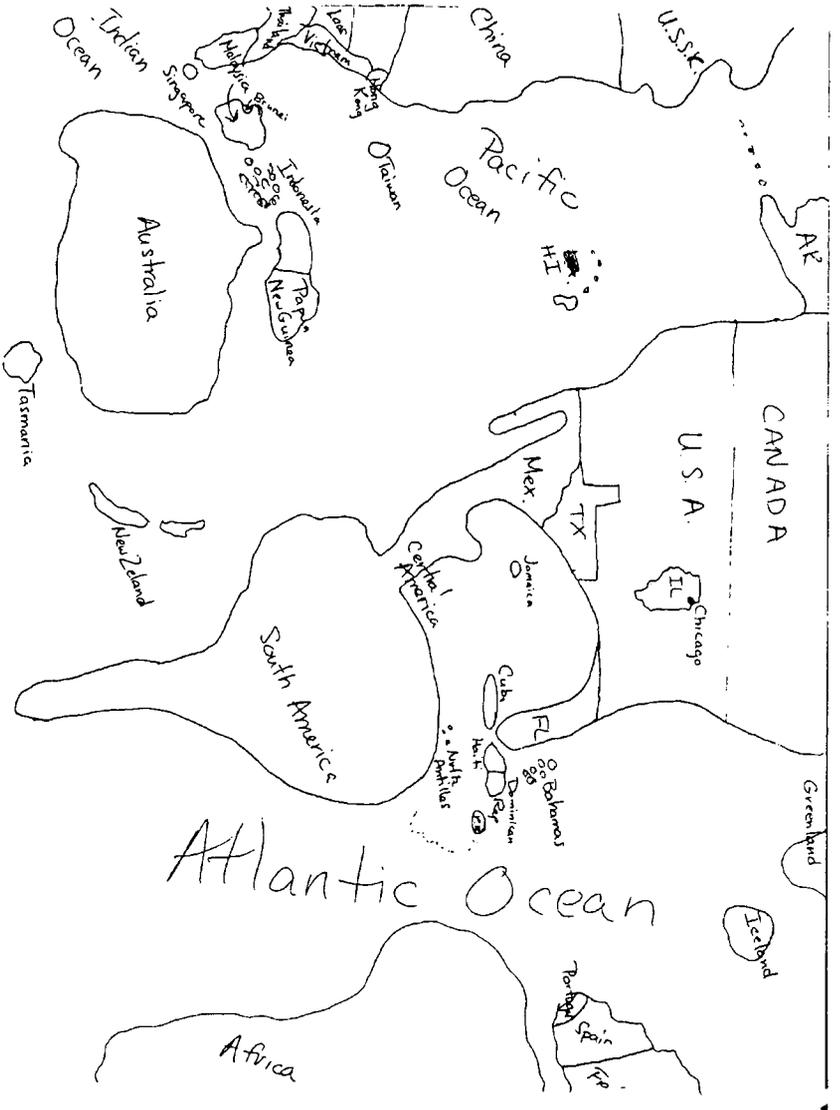
This paper does not focus on idiosyncratic differences, but rather on trying to discover whether there are general tendencies, which



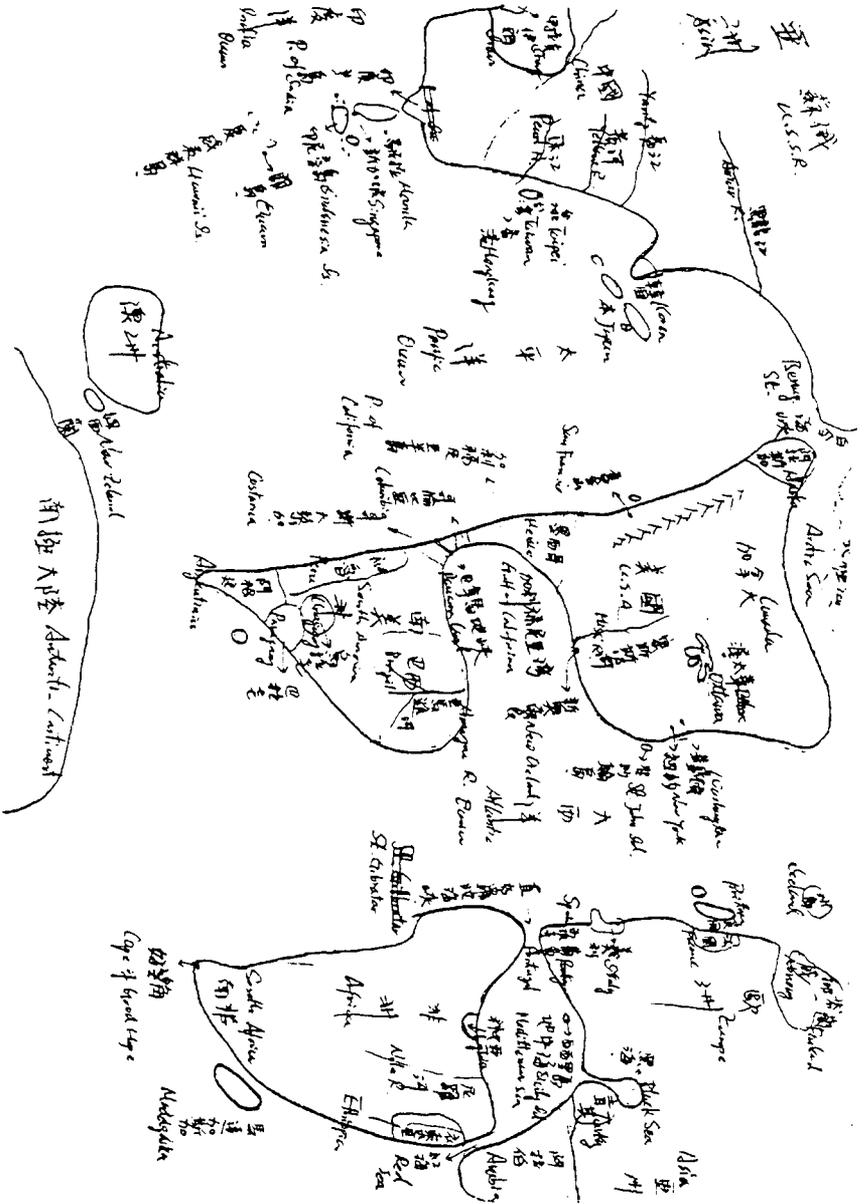
Map 7. World map drawn by a student in China.



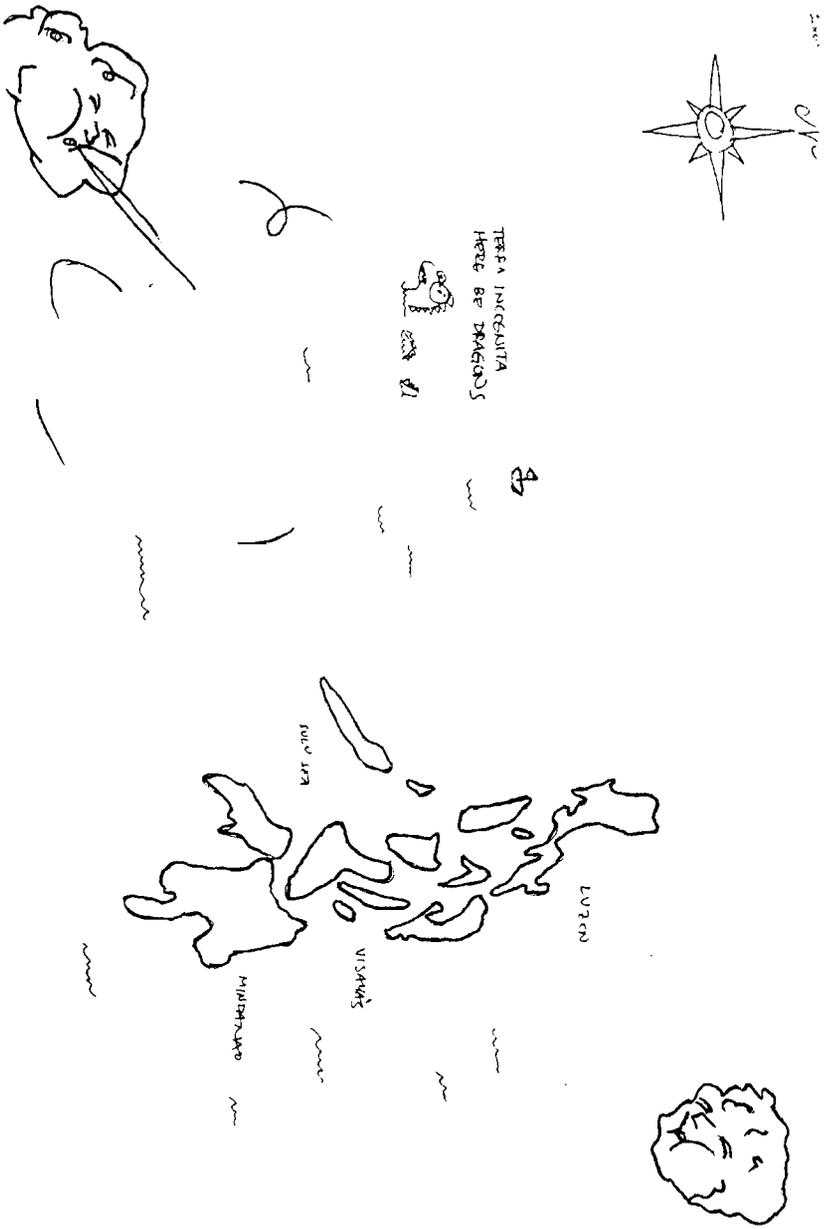
Map 9. World map drawn by a student in New Zealand.



Map 10. World map drawn by a student in Chicago, USA.



Map 11. World map drawn by a student in Taiwan.



Map 13. World map drawn by a student in the Philippines.

becomes apparent when all the maps from one place are grouped.

Figure 1 shows a generalized pattern for the entire world sample. Clearly the predominant factor explaining deviations from the norm of the conventional Eurocentric map of the world is longitude. Judging from the sketch maps collected, people in most countries are quite content to use the Eurocentric map and it serves reasonably well in indicating the location of each of the world's countries in relation to the rest of the world.

It is in the countries that appear on the edges of conventional Eurocentric maps of the world that dissatisfaction develops. Such feelings first occurred four centuries ago in China where dissatisfaction with the Eurocentric world map led to the development of the first Sinocentric version. It probably also became the standard image of the world in countries such as Korea and Japan, whose histories were closely entwined with China. Sinocentric maps are also seen as most appropriate for their own countries by students from Indonesia, Papua New Guinea, Australia, and New Zealand.

The Americentric map was most commonly drawn by students at the western extremities of North America. A Eurocentric map would place them on the periphery of the world, so they switch to an Americentric, or even a Sinocentric map, which better relates their location to the rest of the world.

THE RELATIVE SIZE OF CONTINENTS ON WORLD SKETCH MAPS

Sketch maps at a variety of scales consistently tend to exaggerate the size of the home area (Wood, 1971; Downs and Stea, 1973; Gould and White, 1974; ; Tuan, 1974; Saarinen, 1976). Greater detail and central placement of the home area often accompany such home area exaggeration, exemplified by the famous "New Yorker's view of the United States" (Wallingford, 1936). Exaggeration at the center and diminishment on the peripheries are related to the mapmaker's level of knowledge and the area's perceived importance. So the home area is drawn in great detail, while less space is devoted to the more distant and less-known areas beyond. These maps reflect a universal ethnocentrism that has resulted in numerous variations on the theme: sketch maps drawn other places in a similar style have been created for sale

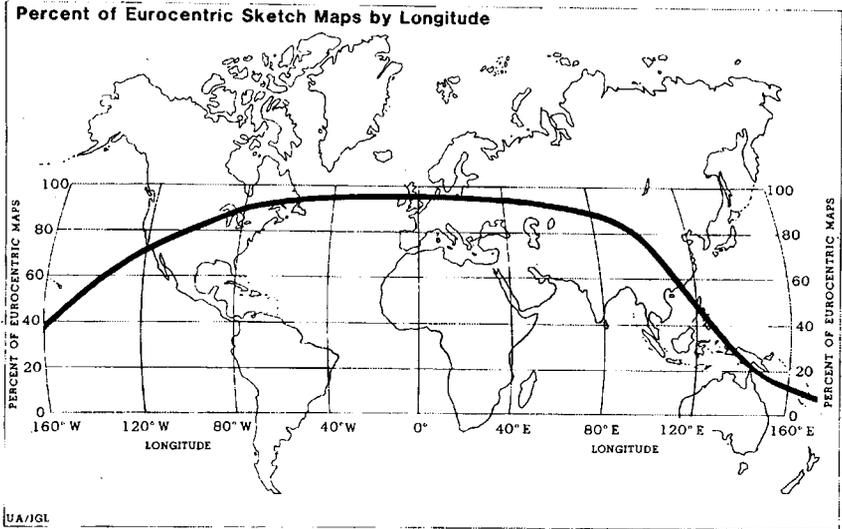


Figure 1. Percent of Eurocentric sketch maps by longitude.

as souvenirs in Texas, Paris, Boston, and elsewhere.

I address here the question of whether sketch maps of the world will reflect this same tendency to exaggerate the home area. It was hypothesized that the home country and immediately surrounding areas would be better known, perceived as important, and exaggerated in size - that there would be a home continent bias. Thus, the home continent would tend to appear larger in relation to the other continents than it actually is. I used home continent, rather than home country, because continents are consistently represented on world sketch maps, while individual countries vary enormously in the frequency of their inclusions.

To test my hypothesis, I selected a subsample of my larger world sample. This subsample was selected to reflect locations within each continent and dispersion latitudinally and longitudinally throughout the Earth. The sample sites and numbers are indicated in Table 2. From the larger sample at each site we selected the first 20 maps having clear outlines of the continents. Time constraints precluded a larger sample. The Rwanda sample consisted of only 18 maps, so the number for this site was less than the others.

Site	Number	Site	Number
Abidjan, Ivory Coast	20	Trondheim, Norway	20
Antananariv, Madagascar	20	Lisbon, Portugal	20
Rabat, Morocco	20	Istanbul, Turkey	20
Ruhengeri, Rwanda	18	Ottawa, Canada	20
Stellenbosch, South Africa	20	Fairbanks, United States	20
Hong Kong	20	Tucson, United States	20
Pune, India	20	Seattle, United States	20
Seoul, Korea	20	Nassau, Bahamas	20
Kuwait	20	Buenos Aires, Argentina	20
Silpakorn, Thailand	20	Belo Horizonte, Brazil	20
Armidale, Australia	20	Caracas, Venezuela	20
Total Number	438		

Table 2. Sample areas and numbers.

From the world sketch maps I selected seven major units for measurement; North and South America, Europe, Asia, Australia, Africa, and Greenland. While additional landmasses could have been added, these were chosen because of their massive size and overall consistency throughout the data set.

The unit area was encoded with the aid of an electronic planimeter that calculates area as an operator traces the perimeter of a continent using a stylus. The values are then transferred to a computer for manipulation and storage. A basic computer program was written to prompt for map number, source country and each of the measure units. As each map was entered, the program also totaled the combined areas.

While the sheet size was relatively constant throughout the data set, inconsistency in the overall projection size on a given sheet varied enough to warrant some form of standardization. I converted all real area measurements to percentages of the total of the seven measured units for each map to allow for comparison between maps. In this way, I established a common standard for relating measurements.

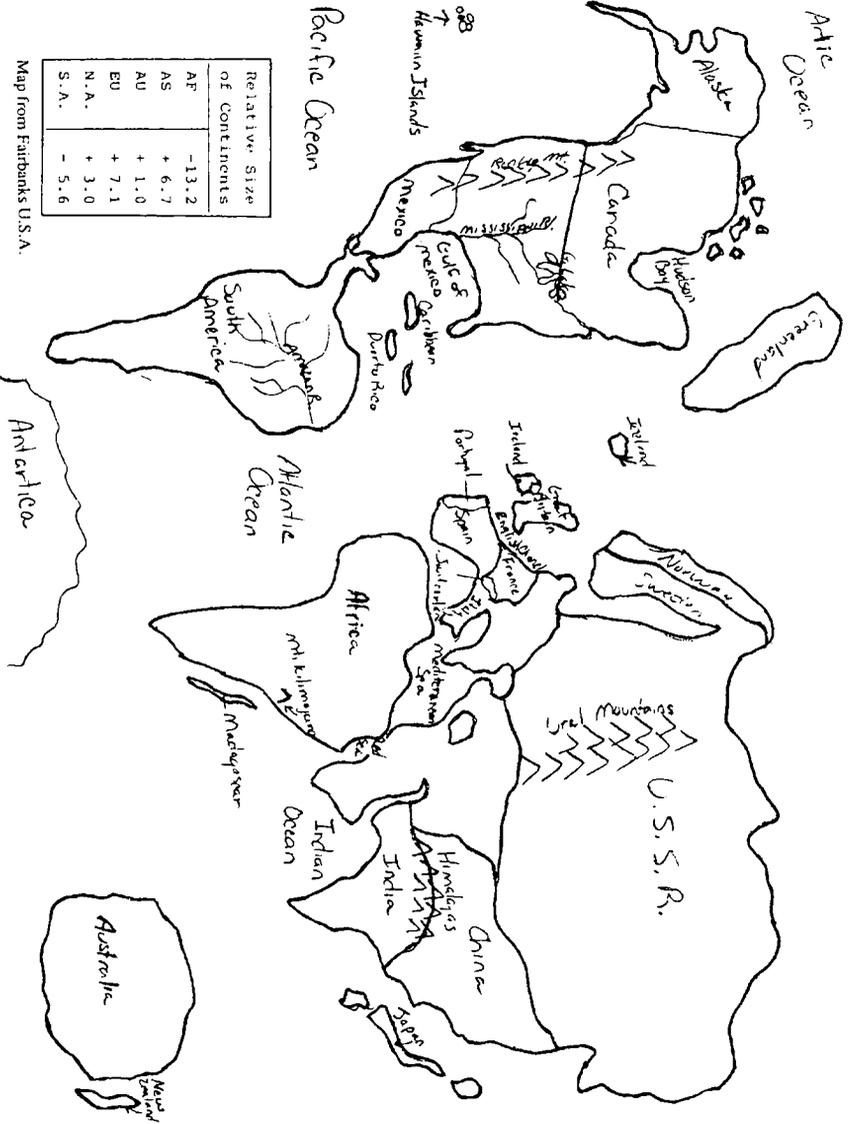
My second objective was to assess map accuracy against a common standard. I elected to use published areas of the landmasses from Goode's World Atlas adjusted to eliminate areas of major islands not included in our tracing of the periphery of the continents. These also were translated to percentages of the combined total, providing a basis for the estimation of deviations from the real world areas.

The physical procedure for measuring the areas of the continents was easy. One map at a time was placed upon the working surface of the table digitizer, secured with tape, and then the margin of each continent was traced. To begin, the magnifying stylus was placed upon the continental margin at an easily recognizable point, usually the same from map to map. For instance, when tracing Africa, beginning at the tip of the horn, or at the north end of the Suez Canal. Then, with the digitizer in recording mode, the outline of the continent was carefully followed with the stylus in a clockwise direction, care being taken to stop at the beginning points. If an error was discovered, the measurement of the continent was completely redone.

For each sketch map the areas of each continent plus Greenland are expressed as a percentage of the total of all the map segments measured. Maps 14, 15, 16, and 17 illustrate the method showing actual measures for individual maps.

It is apparent that for these particular maps there are idiosyncratic differences in the exaggeration or diminishment of the sizes of the continents. Map 14 from Fairbanks has an outsized North America big enough to fit a large Alaska. On Map 15 from Armidale there is indeed a very prominent Australia. On Map 16 from Ottawa, North America is large, South America and Africa much diminished and Europe greatly exaggerated. On Map 17 from Caracas, a glance would suggest that South America and North America are both exaggerated in size. So far my hypothesis would seem to be holding. In all cases the home continent is exaggerated in size.

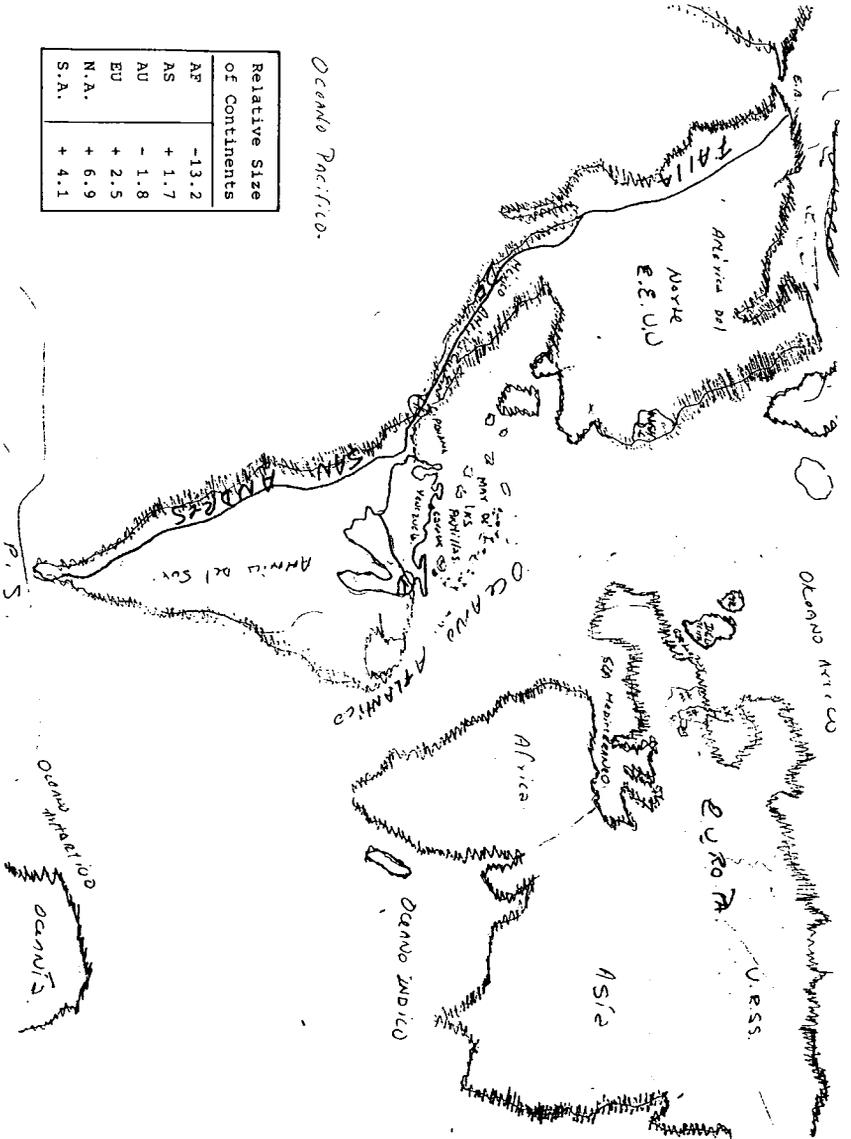
The figures show the proportion of the total map area devoted to each continent and the direction and percent of deviation from actual proportions. The statistics also indicate the total deviation from actual proportions for the entire map. By this calculation the map from Ottawa with greatly exaggerated depictions of North America, and Europe, and much-diminished models of Asia, Africa and South



Map 14. World map drawn by a student in Fairbanks, Alaska, USA.



Map 16. World map drawn by a student in Ottawa, Canada.



Map 17. World map drawn by a student in Caracas, Venezuela.

America, is the least accurate in relative size; it has the largest total deviation. The map from Armidale does best in this respect, thus it has the lowest total deviation.

For the purposes of this paper, I am not focusing on such idiosyncratic differences. Rather, I am trying to see whether there are general tendencies, which become apparent when all the maps from one place are grouped. I assume that the totally idiosyncratic approaches should fade into the background and a group image will appear. Group images from different places will reflect the likelihood that any continent will be diminished or exaggerated in mental maps from a particular place. By extension, I could group all the maps in my sample to derive the world image that would indicate which continents are most likely to be exaggerated or diminished in size by the total sample.

The group images do tend to mute the extreme variations of individual maps. Thus, of the four individual maps noted above, the greatest total deviation was 60.2, while the least total deviation was 22.4. The average areas of any continent for any group will smooth the wilder variation, and most group averages show less total deviation from the actual proportions. Thus, there are several group averages with less total deviation than the best individual map shown above, and very few groups with total deviation as high as half that of the most variable one.

Systematic differences appear so that group averages from the same continent appear to bear family resemblances as may be seen in Figure 2.

In Figure 2, the percent variation from the actual proportions for each continent is plotted on a bar graph which allows one to see quickly the variation above and below the mean, which represents the correct proportions of the world area devoted to each continent.

In the five North American samples, the area devoted to Africa, Asia, and Australia is less than the actual proportions of these continents. Europe is greatly exaggerated, as is North America, the home continent. The sample from Nassau, the Bahamas, has the smallest exaggeration of Europe, approximating that of North America.

The South American samples are similar in pattern to those from North America, except that North America is marginally underestimated in size, and there is some exaggeration of South America at

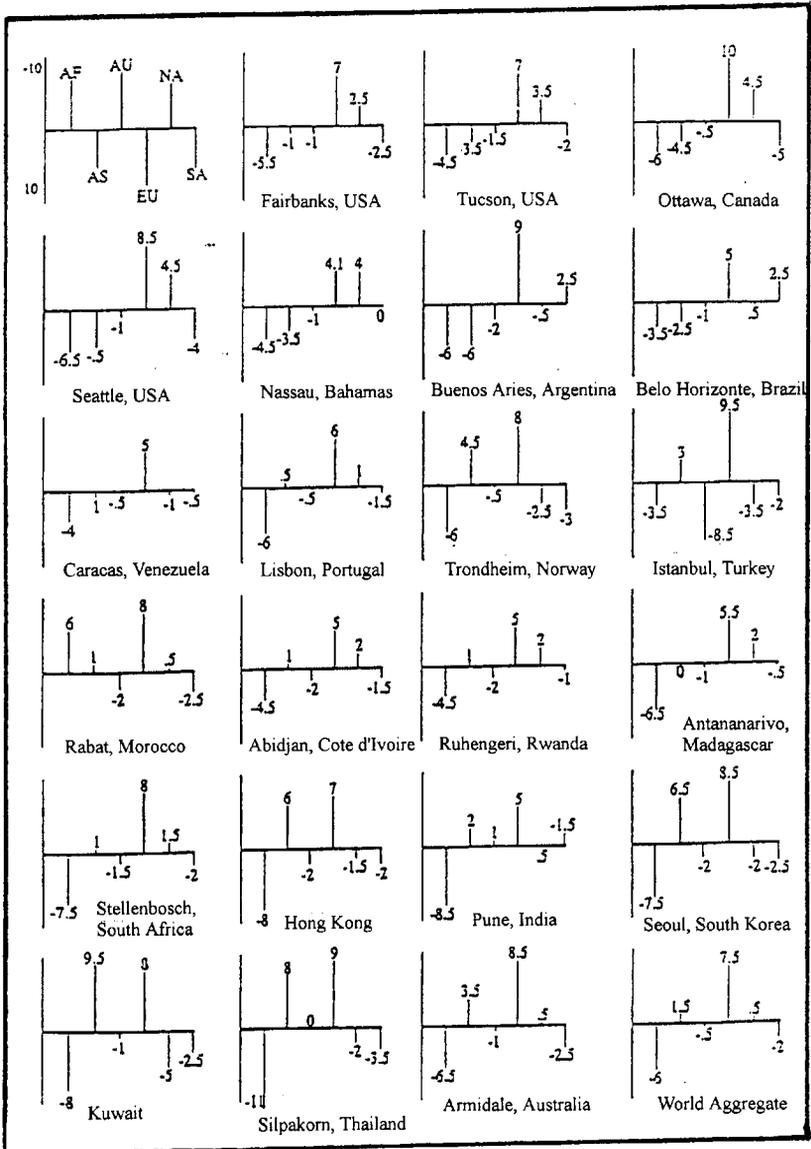


Figure 2. Percent variation from actual proportions for each continent.

two of the three sites.

The three European samples show consistency in substantially exaggerating Europe, the home continent, and, less so, Asia, and in underestimating the sizes of Africa, Australia, and South America. The Lisbon students, farthest from Asia, had that continent just barely exaggerated. The students from Trondheim and Istanbul diminished the size of North America, while those from Lisbon exaggerated it.

The most striking feature of the African samples is that four of the five show an underestimation of Africa, their home continent. At the same time, there is a substantial exaggeration of Europe. Other values are marked by relatively small and consistent deviations.

The five Asian samples are characterized by consistency in results. The greatest exaggeration, as with all previous samples, is of Europe, with the home continent close behind. Africa is substantially underestimated. The Kuwait sample is distinctive in being the only one to exaggerate any continent in the sample, Asia itself, by a greater percentage than Europe.

In the sample from Australia the homeland is diminished in size. As usual Europe is the most exaggerated, along with Asia to a lesser extent, and with North America just above the mean. Africa is the most diminished, then South America.

When results from all sites are averaged, the graphic pattern shown in Figure 1 is closest to that of Armidale, Australia. It provides my best model of student sketch maps of the continents. On mental maps, the size of an area is generally proportional to its perceived importance and how well it is known. If I equate size with amount of knowledge, one continent is by far the best known: Europe. The least known, again by a wide margin, is Africa. This generalization appears to correspond to the percentage of students who named the countries on these continents. Generally, European countries were named; African countries were not. If I equate size with importance, Asia and North America are seen as more important than Australia and South America.

I started with the hypothesis that the size of the home continent would be exaggerated on sketch maps of the world. On 15 of the 22 group images, there was home continent exaggeration. The exceptions came from South America, Australia, and Africa. (Although in three out of the five African samples, the diminishment of Africa

was less than the world average). Based on these facts, I concluded that my original hypothesis is generally correct. However, this conclusion is outweighed by some totally new, unforeseen factors.

The general tendency to exaggerate the size of Europe showed up on every set of maps from my subsample. Europe was not only exaggerated in size on every sample, no matter what part of the world its origin, but was also consistently the most exaggerated continent. The Kuwait sample (in which both Asia and Europe were greatly exaggerated in size, with Asia just slightly more exaggerated) is the only deviation from this pattern.

The mental maps indicate that we live in a Eurocentric world. Not only do these maps tend to be centered on Europe (Saarinen, 1988), but the size of Europe was exaggerated and much greater detail was included for it. This is hardly surprising. The concept of world maps first originated in Europe. The most popular of the world maps used to date, the Mercator projection, tends to exaggerate the size of Europe. Furthermore, in much of the world, the textbooks containing geographic information originated in Europe.

All sketch maps in the subsample (except those from Rabat) consistently showed Africa diminished in size. The percentage of diminishment is less than the percentage of exaggeration for Europe. The proportion of the total mental map devoted to Africa is consistently less than its real proportions. As the continent south of Europe, Africa is centrally placed. But the amount of knowledge of Africa, as judged by the percentage of mapmakers who included each African country, is very low. A limited amount of information on Africa is readily available in most parts of the world. The Mercator map depicts Africa as proportionally smaller than more poleward areas. The National Geographic Society recently selected a new map that depicts Africa in somewhat more correct proportions, but many older maps remain, and help form the mental maps of those who use them.

I hypothesized that ethnocentrism would explain our findings. I did discover a general tendency to exaggerate the size of the home continent. But the results also indicate the influence of other factors. The first of these is the Mercator effect of exaggerating the size of poleward areas and diminishing the size of equatorial areas. Hence, Europe, Asia, North America, and Greenland are exagger-

ated; while Africa, South America, and Australia are diminished in size, in the world aggregated results. One would expect this if students always looked at greatly distorted maps, and apparently, they generally do. Whatever causes these distortions is so powerful that they overcome the ethnocentric effect. As a result, in Africa, South America, and Australia, even local map sketchers generally draw their home continents smaller than the actual size of these landmasses.

The Mercator effect seems to account for the presence of each continent above and below the mean, but does not explain why Europe is much more exaggerated than North America and Asia, which are also greatly enlarged by the Mercator.

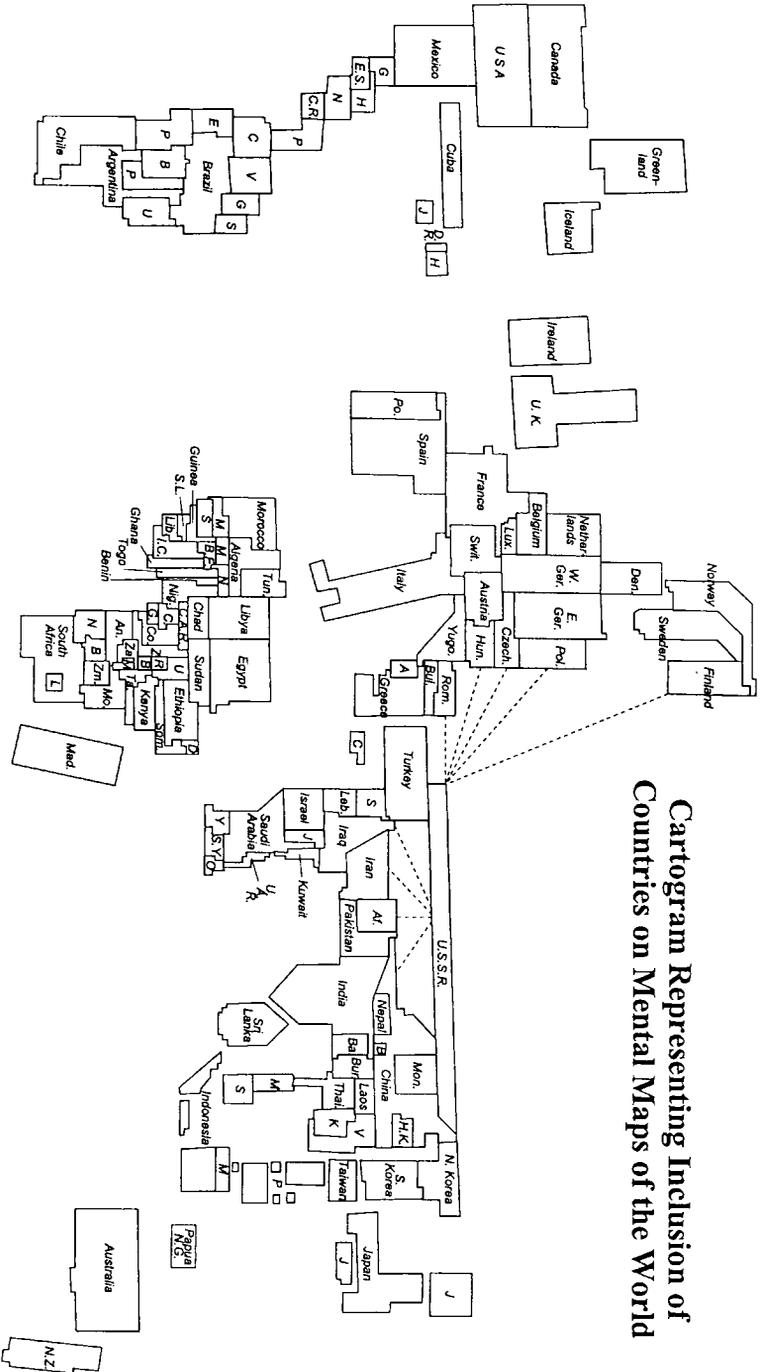
Snyder (1993) provides quotations from geographers, throughout this century, who have decried the use of the Mercator as a general world map. Although its use as a world map in atlases has declined, it is still popular as a wall map, in part, because it is familiar.

To visually represent the percentage of world map sketchers in the total world sample who included each nation, a world cartogram was created (Figure 3). Graph paper was used to construct the cartogram, for every one per cent who included a country 5 squares were used. Any country included by fewer than 2 ½ percent was omitted except in rare borderline cases; for example Burundi at 1.8 percent was included with similar neighbor Rwanda.

The size differential between the largest countries on the globe, and the smaller ones is reduced by the cartogram, for it includes no weighting for size. It simply represents the percent of people who included each country on their sketch maps. Thus, Canada, U.S.S.R., U.S.A., Brazil, China, Australia, and India do not dominate quite so much as on the real map, and Europe is enhanced in importance. Most other continents thus seem deflated.

Many islands are prominent on the cartogram. Because they are set apart from the continents providing a clear gestalt, they are remembered and included more frequently. Thus on our cartogram the islands such as Japan, Great Britain, Greenland, and Madagascar; Ireland, Iceland, Sri Lanka, and Cuba, are large and easily seen. Australia, an island continent, was the most frequently included country. New Zealand, nearby, is larger than normal. Below a certain size, small islands are forgotten or not represented.

In North America, Canada, the United States, and Mexico are all



Cartogram Representing Inclusion of Countries on Mental Maps of the World

Figure 3. World cartogram of frequency of inclusion of countries on world sketch maps (n=3568).

well-known but are smaller than usual. The continent becomes greatly elongated by the thin line of Central American countries. An enlarged Cuba dominates the Caribbean Sea and a modest Greenland looms in the upper left.

The twelve countries of South America are easy to memorize, and they show up larger than most countries in Sub-Saharan Africa, or South East Asia. Brazil, Argentina, and Chile dominate. The latter, well-known because of its unique shoestring shape, on the cartogram is no longer so slim.

The Eurocentric shared image of the world is obvious in the cartogram. The cumulative impact of many frequently included countries makes the total area for Europe larger than any other continent. U.K. and Ireland, as well as Spain and Portugal, are among the largest pairs of adjacent nations. Given all four in close proximity, along with large masses for France, Italy, and East and West Germany, the impact is great. Even the smallest of the most westerly European nations are frequently included. Judging from the cartogram Netherlands is larger than Ethiopia or Algeria, Belgium is bigger than many South American countries, and even tiny Luxembourg is equal in size to Zaire, Bangladesh and Somalia. Within Europe the drop-off in size from the western fringes to Central Europe is apparent. The Scandinavian Peninsula is less dominant than the Iberian Peninsula, West and East Germany are smaller than France and Spain and the Eastern European countries are the smallest.

Africa is an excellent illustration of the influence of edge and corner positions. The corner positions are the best known. Morocco and Egypt, in the north, South Africa and Madagascar, in the south, are outstanding. To a lesser degree, Ethiopia stands out in the Horn of Africa. North Africa is the best-known broad region with Algeria, Tunisia, and Libya as well as Morocco and Egypt. The sub-Saharan nations are not nearly so well known. Tiniest are the interior countries. The most diminished in size of all, in relation to actual area, are the Saharan states of Mauritania, Mali, Niger, Chad, and Sudan. But almost all the landlocked African states are little known, and are found only by carefully searching the cartogram. In West Africa, Ivory Coast, and Nigeria are the largest, as well known as the much smaller Hungary, Romania, and Bulgaria.

In Asia, the USSR, still a nation when the sketch maps were col-

lected, is stretched thin to make all the connections with neighboring nations in Europe and Asia. The USSR, along with China, Japan, and India, are the best-known nations of Asia. In southwest Asia the impact of current events may be seen. Israel and Lebanon, perennially present in the press at the time the sample was obtained, are magnified. Iran, Iraq, Afghanistan, and the Philippines are likewise large for the same reason. Southeast Asia is small; Vietnam is much reduced from its prominence on mental maps of 20 years ago. The importance of affluence and economic development is evident in the size of Japan, and in the original four tigers of East Asia, South Korea, Taiwan, Hong Kong, and Singapore. All seem large on the cartogram, though all but South Korea are little more than flyspecks on most world maps. Their active involvement in world trade has likely brought them much attention, so they are better known than larger, less active nations. Saudi Arabia is well known for its oil wealth, as well as its central place in the Moslem world. Populous Bangladesh is almost overlooked.

CONCLUSIONS

The majority of the mental maps of the world are Eurocentric. In detail and proportional size, Europe is greatly exaggerated. European nations, as a group, are better known than those on other continents. Thus three separate studies reinforce the strength of Eurocentric images in the minds of university students from around the world.

Europe shows up so strongly in all these measures because of the European hegemony in the modern world system for the past 500 years. The dominant powers are the source of most textbooks, and maps have a powerful effect on the images in our heads. Blaut (1993) in *The Colonizer's Model of the World* challenges this ideology, which he emphasizes is the most powerful and pervasive of our time concerning world history and world geography. Our results confirm the power and pervasiveness of Eurocentrism.

Blaut calls "the doctrine of European diffusionism, the belief that the rise of Europe to modernity and world dominance is due to some unique European quality of race, environment, culture, mind, or spirit, and that progress for the rest of the world results from the diffusion of European civilization..." He rejects this doctrine which, he says,

“is not grounded in the facts of history and geography, but in the ideology of colonialism.” He calls it the colonizer’s model of the world, “the world model that Europeans constructed to explain, justify, and assist their colonial expansion,” (Blaut, 1993 back cover).

If I re-examine my results in the light of these ideas everything seems to fit into place. The standard world map is centered in Europe because the dominant world power, at the time of the first International Meridian Conference of 1884, wanted it that way. So now, this is the standard world map and most students in the world use it when drawing a sketch map of the world.

To illustrate the power of Eurocentrism, we show Figure 4, which is an enlargement of the aggregate results of the size of continents study. We used the Mercator projection to explain which continents were exaggerated and which were diminished in size. It serves well to show the direction, but fails to explain the degree of exaggeration or diminishment. For example, in Figure 4, why is Europe exaggerated five times as much as Asia, and fifteen times as much as North America, both of which have much more poleward territory than Europe? It can be understood in light of a pervasive and extended diet of Eurocentric doctrine. This would also explain why the European countries are so well-known.

Why is Africa the most diminished in size? The answer must be a product of the past and present conditions. First, Africa was victimized in the slave trade imposed by, and lucrative for, the dominant countries. Later it was carved up at a conference table, among the European powers. The boundaries placed there by the Europeans bore no relationship to the actual languages and cultures of Africa. Therefore, Africans struggle to create a nation from the very diverse elements within. Throughout it has been the most maligned by racist epithets. Small wonder it is little valued and not well known.

We do have a shared image of the world today. Unfortunately it is a parochial view. It resembles the colonizer’s model of the world. Europe and European extensions overseas tend to be well-known. The former colonial world is not so well-known. Sub-Saharan Africa and Southeast Asia are the least known areas, along with Central America, Southwest Asia, and South America.

It will not be easy to remedy the deficiencies of the current world image because the colonizer’s model is so well entrenched. But there

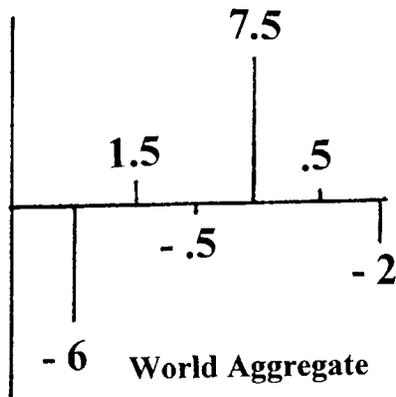


Figure 4. Enlargement of the aggregate results of the size of continents study.

are many signs of change. The book by Blaut and other similar research (Said, 1970; Wolf, 1982; Abu-Lughod, 1989; Lewis and Wigen, 1997) will help create chinks in the Eurocentric monolithic armor. Multiculturalism is sensitizing students to the histories of both genders and many cultures (Nash, 1992; Hollinger, 1995). The Colombian Quincentary also showed that changes are taking place in our thought processes (Butzer, 1992). Columbus Day will no longer be simply a celebration but also protest against the negative consequences of the European conquest of America and colonization of much of the world. To change the current views will require a shift toward a model of the psychological unity of humanity, and away from ethnocentric beliefs and the over-valuing of certain regions and cultures.

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