Jared Diamond and the Geography of Development

- Diamond isn't seeking to explain a narrow window of change like the Industrial Revolution.
- He sees differences in development evolving over long periods of time.
- The differences have their roots in the geography and ecology of where societies began.
- The (proximate) factors allowing one culture to become dominant over another are guns, germs and steel.
- All three of these factors actually have their roots in geographical differences.
Around 1200 BC, people from near New Guinea reach the Polynesian Islands and start to colonize every little island.

By 500 AD, most islands are colonized.

Why does this provide a natural experiment?

Everyone descended from the same group but the environments of the islands varied tremendously.

We can see what effect environment had on the evolution of societies.
The Polynesian Islands
The Maori

- The Maori lived in the northern part of New Zealand.
- Northern New Zealand was the warmer part of New Zealand.
- Largest land area in the Polynesian islands.
- Land and climate could support Polynesian agriculture.
- Population of the Maori exceeded 100,000.
New Zealand

New Zealand Mean Annual Temperature (°C), 1971 - 2000
The Moriori came from the Maori and were possibly Maori farmers.
They settled the Chatham Islands.
The Chathams had a cold climate.
Tropical crops could not grow.
The Moriori were hunter-gatherers, hunting seals, shellfish, nesting seabirds and fish.
Catching these animals could be done by hand or club.
The Chathams had a total population of around 2,000.
The Chatham Islands
The Chatham Islands

[Graph showing rainfall and temperature for each month from January to December.]

- Rainfall (mm)
- Temperature (°C)

January: 50 mm, 10°C
February: 50 mm, 10°C
March: 60 mm, 10°C
April: 60 mm, 10°C
May: 100 mm, 10°C
June: 180 mm, 10°C
July: 200 mm, 10°C
August: 150 mm, 10°C
September: 100 mm, 10°C
October: 60 mm, 10°C
November: 50 mm, 10°C
December: 50 mm, 10°C
So what happened between the Maori and Moriori?
The two societies lost contact for several hundred years.
Eventually, the Maori find out about the Moriori.
In 1835, the Maori show up and enslaved or killed just about all of the Moriori.
Diamond’s question is how did two societies that came from the same society just a few hundred years earlier become so different?
The answer lies in geography.
What can we learn from Polynesia?

- Polynesian islands differed in climate, geological type, marine resources, area, terrain fragmentation, and isolation.
- All of these environmental factors shaped Polynesian societies and economies.
- Different possibilities for food production led to differences in population size and density.
- These differences in population size and density led to differences in political structures, technology, and interaction with other societies.
- All of these differences led to very different paths of development for the different Polynesian societies.
Figure 1.1. The spread of humans around the world.
Generalizing from the Polynesian Natural Experiment

Ultimate Factors

East/West Axis

Many suitable wild species

Ease of species spreading

Many domesticated plant and animal species

Food surpluses, food storage

Large, dense, sedentary stratified societies

Technology

Horses

Guns, steel swords

Ocean-going ships

Political organization, writing

Epidemic diseases

Proximate Factors
Parts of Diamond’s Argument We Will Cover

- The importance of developing agriculture
- The importance of domesticated animals
- The diffusion of plants and animals
- The importance of germs
- The development of technology
- Social structure and geography
The Domestication of Plants

- Farming is critical to development in Diamond’s story.
- So who starts farming and how?
- Factors leading people to switch from hunting and gathering to farming:
  - decline in availability of wild foods
  - increase in range of domesticable wild plants
  - improvements in food technology
  - population pressure
- So places with more domesticable plants and animals, more population pressure and more exposure to agricultural practices and technologies of others will improve food production faster than others
Wheat and barley are domesticated in the fertile crescent around 8,000 BC. They were edible, gave high yields, could be easily and quickly grown and could be stored.
The Domestication of Plants

Fruit and nut trees are domesticated around 4,000 BC. They took a long time to yield food and therefore could only be grown by societies already committed to settled village life. An advantage was that they could be grown from cuttings.
A later stage of plant domestication involved fruit trees that required grafting rather than using seed or cuttings. Examples include apples, pears, plums and cherries.
At the same time as these difficult fruit trees other wild plants became domesticated after appearing as weeds. These crops include rye, oats, turnips, beets, leeks and lettuce.
Figure 5.1. Centers of origin of food production. A question mark indicates some uncertainty whether the rise of food production at that center was really uninfluenced by the spread of food production from other centers, or (in the case of New Guinea) what the earliest crops were.
Why doesn’t this match up with the most developed economies?

- If food production is the key to building a dominant society, why aren’t African and South American countries the economic superpowers?
- It is because it’s not so much where domesticated crops started, but how specific crops could spread.
- Fertile Crescent crops were better nutritionally and geography favored the spread of Fertile Crescent crops.
The Spread of Domesticated Plants

Figure 10.1. Major axes of the continents.
Figure 10.2. The symbols show early radiocarbon-dated sites where remains of Fertile Crescent crops have been found. □ = the Fertile Crescent itself (sites before 7000 B.C.). Note that dates become progressively later as one gets farther from the Fertile Crescent. This map is based on Map 20 of Zohary and Hopf’s Domestication of Plants in the Old World but substitutes calibrated radiocarbon dates for their uncalibrated dates.
The Domestication of Animals

<table>
<thead>
<tr>
<th>Domesticated animal</th>
<th>Location of wild ancestor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>West and Central Asia</td>
</tr>
<tr>
<td>Goat</td>
<td>West Asia</td>
</tr>
<tr>
<td>Cow</td>
<td>Eurasia and North Africa</td>
</tr>
<tr>
<td>Pig</td>
<td>Eurasia and North Africa</td>
</tr>
<tr>
<td>Horse</td>
<td>Russia</td>
</tr>
</tbody>
</table>
## The Domestication of Animals

<table>
<thead>
<tr>
<th>Domesticated animal</th>
<th>Location of wild ancestor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabian camel</td>
<td>Arabia</td>
</tr>
<tr>
<td>Bactrian camel</td>
<td>Central Asia</td>
</tr>
<tr>
<td>Llama and alpaca</td>
<td>Andes</td>
</tr>
<tr>
<td>Donkey</td>
<td>North Africa (maybe Southwest Asia)</td>
</tr>
<tr>
<td>Reindeer</td>
<td>Eurasia</td>
</tr>
<tr>
<td>Water buffalo</td>
<td>Southeast Asia</td>
</tr>
<tr>
<td>Yak</td>
<td>Himalayas</td>
</tr>
<tr>
<td>Bali cattle</td>
<td>Southeast Asia</td>
</tr>
<tr>
<td>Mithan</td>
<td>India</td>
</tr>
</tbody>
</table>

### The Minor Nine

J. Parman (UC-Davis)
<table>
<thead>
<tr>
<th>Mammalian Candidates for Domestication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Candidates</td>
</tr>
<tr>
<td>Eurasia</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
</tr>
<tr>
<td>Domesticated species</td>
</tr>
<tr>
<td>Percentage of candidates domesticated</td>
</tr>
</tbody>
</table>

Candidate is defined as a species of terrestrial, herbivorous or omnivorous, wild mammal weighing over 100 pounds.
Why were domesticated animals a big advantage?

- Animals can be eaten for their meat
- Animals can provide milk products
- In the days before synthetic fertilizer, animals provide the fertilizer
- Animals provide land transportation (which remains important all the way up to the era of railroads)
- Animal power can be used for plowing
- Animals offer a big military advantage both through being assault vehicles and carriers of disease
### Diseases and Domesticated Animals

<table>
<thead>
<tr>
<th>Human disease</th>
<th>Animal with closely related pathogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>cattle</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>cattle</td>
</tr>
<tr>
<td>Smallpox</td>
<td>cattle</td>
</tr>
<tr>
<td>Flu</td>
<td>pigs and ducks</td>
</tr>
<tr>
<td>Pertussis</td>
<td>pigs and dogs</td>
</tr>
<tr>
<td>Falciparum malaria</td>
<td>birds</td>
</tr>
</tbody>
</table>
### Human Populations of the Continents

<table>
<thead>
<tr>
<th>Continent</th>
<th>1990 Population</th>
<th>Areas (square miles)</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurasia and North Africa</td>
<td>4,120,000,000</td>
<td>24,200,000</td>
<td>170</td>
</tr>
<tr>
<td>Eurasia</td>
<td>4,000,000,000</td>
<td>21,500,000</td>
<td>186</td>
</tr>
<tr>
<td>North Africa</td>
<td>120,000,000</td>
<td>2,700,000</td>
<td>44</td>
</tr>
<tr>
<td>North America and South America</td>
<td>736,000,000</td>
<td>16,400,000</td>
<td>45</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>535,000,000</td>
<td>9,100,000</td>
<td>59</td>
</tr>
<tr>
<td>Australia</td>
<td>18,000,000</td>
<td>3,000,000</td>
<td>6</td>
</tr>
</tbody>
</table>
Diamond sees intensified food production and societal complexity as promoting each other.

Complex, centralized societies are uniquely capable of:
- organizing public works
- long-distance trade
- organizing activities of specialized workers

Intensified food production leads to:
- seasonally pulsed inputs of labor
- food surpluses that allow for economic specialization and social stratification
- sedentary living and the ability to accumulate possessions and commit to projects with longer time horizons