Meeting 5 • 21 January 2014
Week 2 (cont'd): Ships & boats, roads & paths, legs & arms; start of Week 3: Lands, climates & people – then and now

Version: **1/21/14**

pictures of the week

(held over from Week 2): Humboldt's canoe (source: Botting, *Humboldt and the Cosmos*, p. 103 [0027])

Humboldt, Bonpland, and their scientific equipment (source: Botting, *Humboldt and the Cosmos*, p. 98-9 [0026])

thought-bite of the week:

"[I]n these countries nobody would dream of going out to look for alpine plants, or to study rock strata, or take barometers up to high altitudes. They are used to a dull domestic life; [apparently] they live not to enjoy life but to prolong it."

(Humboldt, "Personal Narrative", from *Jaguars and Electric Eels*, ed. & trans. Wilson, p. 12)

mini-text of the week (start):

"The farm we lodged at was a fine sugar-cane plantation.... The owner's house is situated on a hillock surrounded by huts for the negroes...."

Humboldt, "Personal Narrative", from *Jaguars and Electric Eels*, ed. & trans. Wilson, p. 22 (read more)

Materials for today

portraits of AvH; work sample: "Leaving Home"; apps related to navigation; 2013 projects

Topics for today (key to symbols)

(05') Thought-bite of the week: a) plants, rocks, altitudes, and facts, opinions, and values – We're getting to the meaning of "sustainable environmentalism", in the sense of using knowledge and reasoning to examine decisions about how to manage (or not manage) our surroundings. How much do we really know about the data – what it is, how much there is, how it was gathered? Data points vs data ranges: |----•----| What they knew then, what we know now (and how much of what we know now is based on incorrect knowledge). How errors of measurement magnify (example: astronomy)
(5') Mini-text of the week (maybe save for next meeting): 1) What sorts of people did Humboldt encounter in Venezuela? (=an informal quiz on the *Jaguars and Electric Eels* reading). 2) What do we know about prices in the past (food, housing, wages, etc.), and how

much can we compare them to the present (= yet another dimensions of "interpreting the past"). 3) The tricky topic of slavery.

(20') Review of last week's quantitative activity and expansion to applications related to travel, exploration, and sustainability (basic quantities worksheet, stage 2 • later: basic quantities worksheet stage 3 • basic quantities worksheet stage 4). Comment: Last week people filled in a fair amount of quantities, but indicated very little about how they actually determined those quantities (whether by showing calculations or by giving the sources of their information, for example "personal experience on a flight" or "remembered from middle school math").

The LONGITUDE problem - key to understanding accuracy of mapping and, therefore, recording geophysical data, including weather/climate and biology. The LATITUDE topic: not a problem, really, but a key element in Humboldt's development of modern concept of geographical distribution of life-forms.

Key factoid: how long is a degree/minute/second of longitude at what latitude? Why would travelers want to know that?

A look at some mobile apps (here: iPhone/iPad) about navigation and measurement.

Next meeting you'll apply your quantities to determine some real-world (sometimes life-or-death) quantities needed by people who had to get across and around the globe in earlier times, and also some quantities that we encounter in discussions of sustainability.

(10') more about Humboldt-named schools and their role in this course; featured schools: PDX (now closed - summer of 2012), Arizona, CA (Humboldt BAY HS), Illinois (AvH Chicago), NYC, Saskatchewan, Mexico City, Puebla, Berlin-Tegel, Hamburg, Rüsselsheim, Kazakhstan; reinterpreting the past better for ourselves by (re)interpreting it for others. Upcoming: choosing your Humboldt-named school as source of info about education and possible beneficiary of your project(s)

(10') presentation about educational standards and their parts in the course: 1) evaluating own education; 2) helping others to learn; preview of upcoming writing assignment and skills questionnaire. Documents: Oregon preK-12 standards for Visual & Performing Arts (0693), especially pp. 8-10, 12, 14, & (especially) 26. Discussion topic: which standards were addressed by writing about the Humboldt portrait?

(5') The Weitsch portait of AvH: relation to long tradition of portrait painting (and photography, including the pics you take of yourselves to express your identity/ies); the emergence of the scholar/ scientists as claimed co-equal of the ruler, churchman, soldier.

(10') about writing skills and critical thinking: ways to structure "Leaving Home"; work sample (see handout from meeting #3); importance of a concept of *change* (in our individual lives, in development of human thought - was it always around? -, in study of origins of sustainable environmentalism)

(5') Previews & announcements:1) Note how I have annotated the outlines for previous meetings with comments (key to symbols) about what happened during them; 2) Portraits of ourselves as environmentalist-explorers. 3) Upcoming: choosing areas of specialization for individual reading, lesson-plan project, team project. 4) Keeping up with the reading – see "schedule" page; maps now available; pagination of printed vs. e-books. 5) a leftover from the Hawaiian trip - while you're thinking about such things as chocolate, macadamis nuts, and coffee, look at *Jaguars and Electric Eels* (p. 21) and these links (link 1 • link 2) to see how modern AvH was in his beverages, and read *Jaguars* p. 44 about his fashionable food interests. 6) Soon we'll load and crew a mockup Humboldt Canoe - still thinking about SINQing a real canoe (depending on local warming/ cooling)

E

Scoring Guide for PASS Standard E

Analyze and Critique Artistic Works

Analyze and critique works of art and performances from functional and structural/formal perspectives, using defensible criteria and communicating effectively through writing, speaking, and expressive media.

Criteria

E1: Communication of Responses to the Arts

Communicate artistic responses, interpretations, and evaluations.

E2: Examination of Audience Response

Examine how an artistic work affects an audience; relate audience responses to the artist's/performer's creative choices.

E3: Representation of Personal Aesthetics

Communicate conceptions of what is artistically valid or valued.

Descriptions of Proficient Performance

Descriptors define types of proficient performance; they are not a checklist.

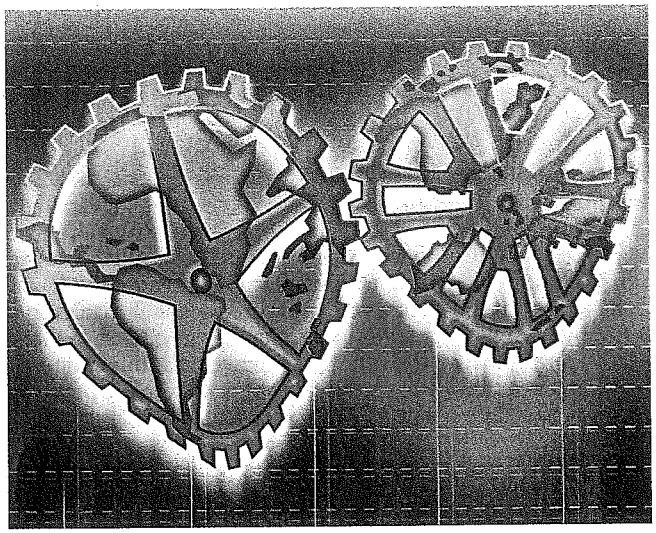
- analyzes and interprets a work(s) of art using an appropriate approach to criticism (specific to the particular art discipline)
- studies and comments on the formal, representational, and/or expressive qualities of a work(s) of art
- analyzes and interprets a work(s) of art within the historical, cultural, and artistic context in which it was created
- establishes a focus, organizing plan, and set of ideas for responding to, interpreting, or critiquing a work(s) of art
- refers to specific aspects of a selected work(s) in developing an interpretion, response, or evaluation
- uses, integrates, and cites researched information in developing an interpretion, response, or evaluation

- describes and explains personal responses to a work(s) of art, extending beyond initial observations and general opinions
- investigates and considers the responses of other audiences, and compares them to personal responses
- examines creative choices made within a work(s), and relates them to audience responses
- discusses specific aspects, examples, and details from a work(s) in analyzing its effects on an audience(s)
- develops supported inferences about relationships between a work(s) of art and its audience(s)

- communicates (through discussion, examples, and/or original work) a personal conception of what is artistically valid or valued
- uses personal aesthetics to distinguish and respond to works of art that are personally valued
- represents the ways in which the arts contribute to and enrich her/his life
- uses criteria and sound critical analysis to evaluate own work and the work of other artists/performers (both works in progress and final works)

Free exchange | The weather report

Economists are getting to grips with the impact of climate change



THE "polar vortex" that brought freezing weather to North America chipped roughly $3 billion off American output in a week. It was a reminder that extreme weather has economic consequences even in the richest countries and that climate change—which may usher in even wilder fluctuations—is likely to have a big economic impact. A recent burst of studies look at how large it may be, adding useful detail to the initial efforts, such as the Stern review of 2010. The results suggest that climate change may be having an effect already; that the weather influences economies through a surprisingly wide range of channels; but that calculating the long-run effects of climate change is harder than estimating the short-run impact of weather.

The link between more heat and more poverty is robust. Tropical countries are poorer. In a review of the literature, Melissa Dell of Harvard University, Benjamin Jones of Northwestern University and Benjamin Olken of the Massachusetts Institute of Technology find that, for each 1°C rise in the average temperature of a country, its GDP per head is 8.5% lower. Another study of poor countries alone showed that being 1°C warmer in any given year reduces income per head by 1.4%. These findings would not have surprised Montesquieu, who in 1748 argued that hot climates were inimical to the material conditions of the good life.

But it does not follow that if global temperatures were to rise by 1°C because of climate change, then world output would be 8.5% lower than it would otherwise have been. Perhaps the correlation between heat and poverty might exist because of some third factor (for example, the presence of malaria). If it were possible to change that factor (ie, eradicate the disease), temperature might cease to matter. Recently, tropical regions from southern China to Rwanda have been among the world's most economically successful.

However, a correlation also exists between heat and growth, suggesting a longer-run effect. Despite some successes, tropical countries grew by 0.9 percentage points a year more slowly than the global average in 1965-90. In a sample of 28 Caribbean countries national output fell by 2.5% for each 1°C of warming. Again, this does not prove that high temperatures were to blame. But the correlation is strong enough to make it worth investigating whether the weather itself might be dragging down countries' growth rates directly. The new literature suggests several ways in which it might do that.

First, natural disasters still wreak a lot of damage. One study reckons cyclones pushed down the world's annual GDP growth by 1.3 points in 1970-2008. (Poor countries suffer disproportionately because they are more vulnerable to such disasters.) So if global warming were associated with more extreme weather, it would lower growth.

Next, higher temperatures and worse droughts tend to reduce farm yields. This hurts poor and middle-income countries most because agriculture has a bigger share in their GDP. To take one case, a decline in rainfall of one standard deviation cuts Brazilian farm incomes by 4%. But the agricultural effect of changing weather varies a lot. There seems to be a threshold of 29°-32°C below which rising temperatures can be beneficial; above it they are sharply harmful. With some crops, rising night-time temperatures do more damage than rising noontime ones. Farmers also adapt to higher temperatures by planting new crops or by emigrating to cities. So the impact of rising temperatures on farming is heterogeneous and hard to measure.

It is often assumed that the economic effects of climate change will be confined mainly to poor countries. That may be wrong. A study of time-use surveys and temperatures in the United States found that when temperatures reach 100°F (38°C), the labour supply in farming, forestry, construction and utilities falls by an hour a day, compared with what happens at 76-80°F. These are outdoor activities, which may explain why workers fail to show up. But a study of call centres also showed that each 1°C rise between 22°C and 29°C cut labour productivity by 1.8%. And in car factories in America, a week of outside temperatures above 90°F reduced output by 8%. Perhaps the heat disrupts the supply chain—or perhaps air conditioners fail to work properly.

Lastly, the weather influences basic conditions of life and hence factors of production. In America each additional day above 32°C raises the annual age-adjusted mortality rate by 0.1% relative to a temperate day (10-15°C). In India the rate increases by almost 0.8%. Heatwaves cause early deaths (especially of mothers and infants) and, by affecting the harvest, damage nutrition. This in turn has long-lasting effects on the economy.

Uncertain, with a chance of sub-optimal equilibrium

Almost all these correlations derive from weather data from the past five or ten years. But drawing conclusions about climate change—which takes place over hundreds of years—is perilous. Even more than with farming, the impact of climate change will be "non-linear": changes may be modest up to a point, then turn dramatic. Meanwhile, people can adapt in important ways to changing conditions. This makes simple extrapolation nonsense.

But the new literature is a start. It shows how information in models of climate impact—recently described as "completely made up"—can be improved. It shows the multiple channels that economists of the climate must heed. It suggests that climate change is not something that will affect only poor countries, or hit rich ones only in the distant future. And—who knows—it may one day show how public policy, now so ineffective, might stem the emissions that are causing the mess in the first place. ■

Studies cited in this article can be found at www.economist.com/climate14

Economist.com/blogs/freeexchange