Econ 210a: Introduction to Economic History (DeLong)

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<https://bcourses.berkeley.edu/courses/1553407>

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Course Syllabus: <https://bcourses.berkeley.edu/files/93686078/download?download_frd=1>

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Announcements:

- Pre-Class Briefing: Malthusian Economics (for 2026-01-28 Econ 210a class) <https://bcourses.berkeley.edu/courses/1553407/discussion_topics/7217759>
- Late Start Today <https://bcourses.berkeley.edu/courses/1553407/discussion_topics/7223348>
- Slides Files for 2026-01-28 We: <https://bcourses.berkeley.edu/courses/1553407/files?preview=93742278=> <https://bcourses.berkeley.edu/courses/1553407/files?preview=93742277>

February 11: Roots of What Agrarian-Age Growth There Was (DeLong) :: Econ 210a

February 11: Roots of Growth in "Technology": How Much Is Just "Two Heads Are Better than One"?

- **Kremer, Michael**. 1993. "Population Growth & Technological Change: One Million B.C. to 1990." *Quarterly Journal of Economics* <http://www.jstor.org/stable/2118405>.

February 11: Digging Deeper into Agrarian-Age Stagnation

- **Finley, Moses**. 1965. "Technical Innovation & Economic Progress in the Ancient World." *Economic History Review*: 29-45. <https://www-jstor-org.libproxy.berkeley.edu/stable/2591872>.
- **Temin, Peter**. 2001. "A Market Economy of the Early Roman Empire." *Journal of Roman Studies*. 91: 169–181. <https://www.jstor.org/stable/3184775>.

February 11: Resources vs. Division of Labor in History

- **Henderson, J. Vernon, Adam Storeygard, & David N. Weil**. 2018. "The Global Distribution of Economic Activity: Nature, History, & the Role of Trade". Quarterly Journal of Economics 133,1 (February): 357-406. https://www-jstor-org.libproxy.berkeley.edu/stable/26495164>.

Looking Back: Social Development

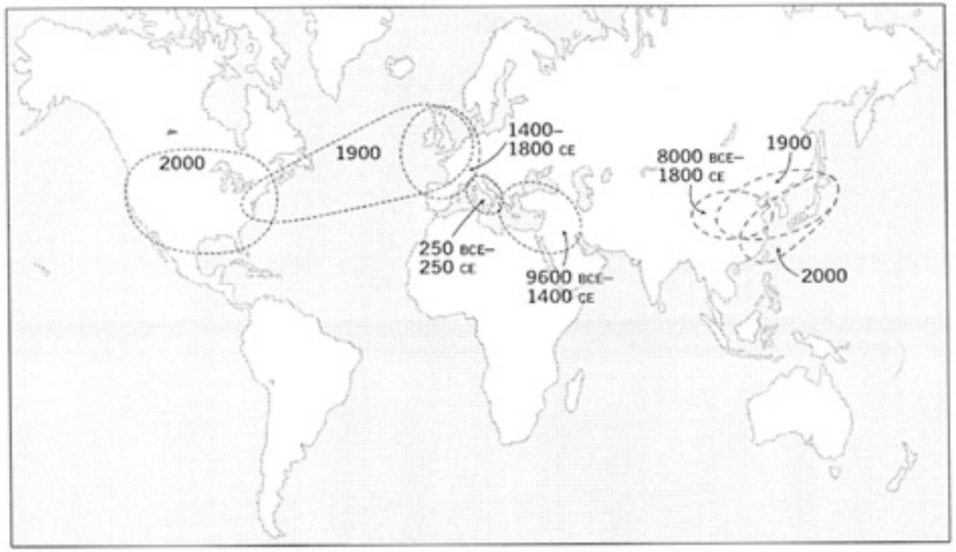
- **Morris, Ian**. 2010. *Social Development*. Palo Alto: Stanford. Pp. 39-74, 83-106, 109-28, 148-55, 164-71. Skim. <https://pzacad.pitzer.edu/~lyamane/ianmorris.pdf>

- Morris tries to put some quantitative guesstimates on the forward march of "technology" during the long Malthusian agrarian-age.

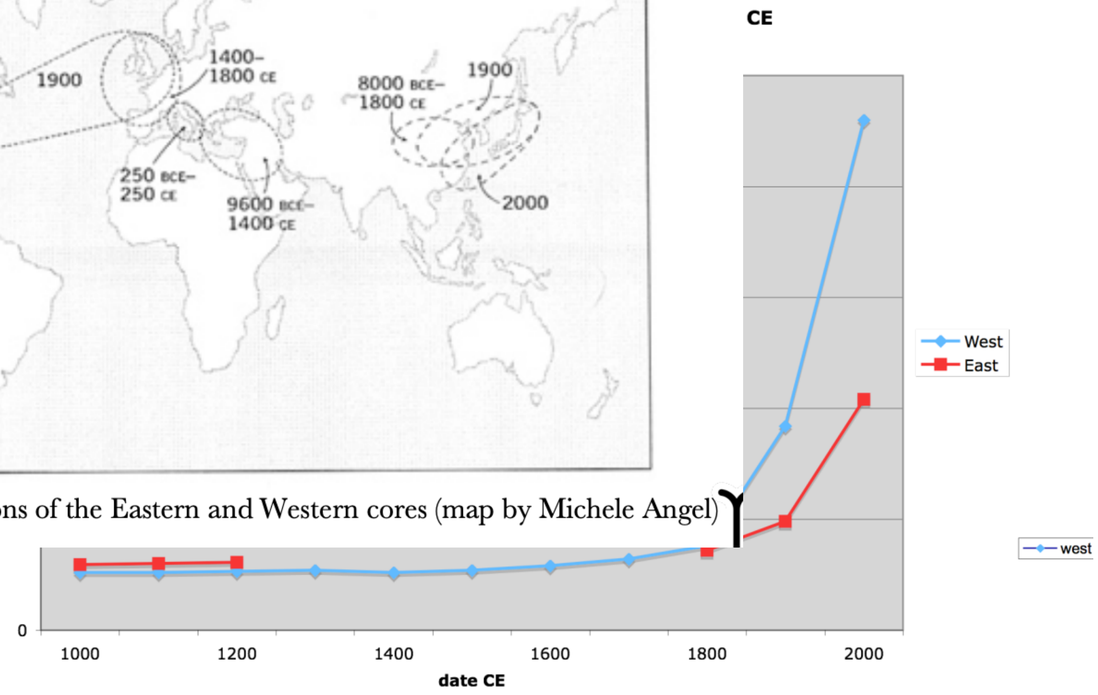
1. Morris operationalizes "social development" via four traits (energy capture, organization/city size, war-making capacity, information technology). In what concrete ways do his index values for 500 BCE, 1000 CE, and 1800 CE line up—or not—with Clark's wages and Steckel's biological measures?
2. All of these authors implicitly or explicitly confront the Malthusian mechanism. Where do you see genuine empirical tests of the Malthusian model in this reading set, and where is "Malthusian" functioning more as a rhetorical label than as a falsifiable hypothesis?
3. The Dickson Mounds example shows worsening health with the shift to maize farming. How can we reconcile that micro-regional deterioration with Morris's claim that energy capture and social development were rising over the same broad timeframe?
4. Clark and Morris both make heavy use of long-run quantitative series with substantial imputation and interpolation. Where, in each, do you think the big inferential leaps are, and what's at stake—substantively—if those particular leaps are wrong by, say, 20–30 percent?
5. Across these texts, whose implicit political economy of growth do you find most persuasive—Diamond's ecological and demographic constraints, Clark's cultural and institutional deep determinants, Morris's quasi-inevitable energy-technology trajectory, or Solow's modest model-building pragmatism—and why?

Morris, Ian. 2010. Social Development

- Morris tries to put some quantitative guesstimates on the forward march of "technology" during the long Malthusian agrarian-age.

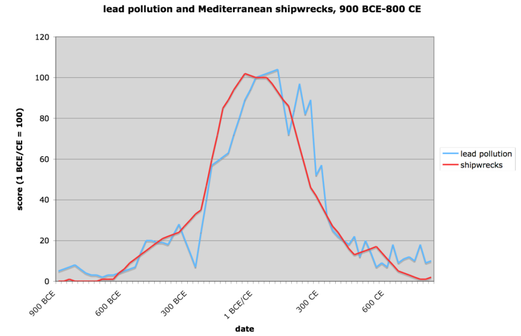


Map 2. The shifting locations of the Eastern and Western cores (map by Michele Angel)

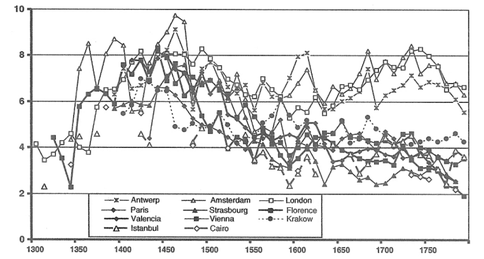


Graph 22 Song and modern energy capture in the East, 1000-1100 and 1800-2000 CE

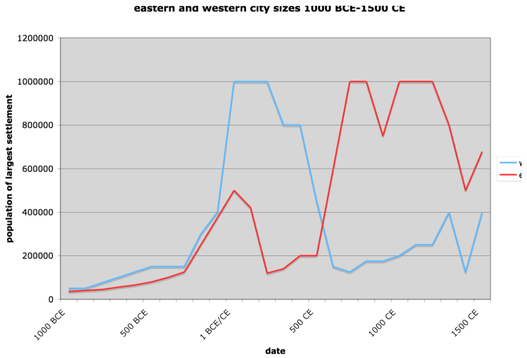
Graph 5. Western energy capture, 14,000 BCE-2000 CE, seen on a log-linear scale



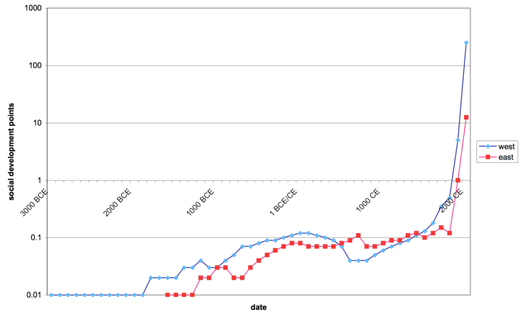
Graph 7. Economic growth and collapse in the 1st millennia BCE and CE, as documented by shipwrecks and lead pollution



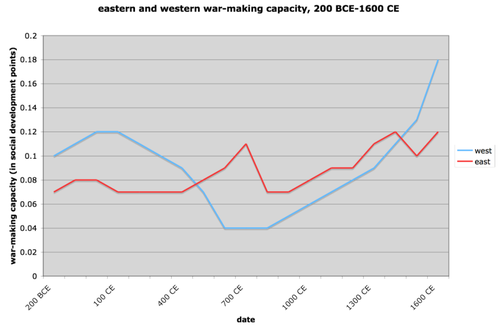
Graph 9. Real wages of unskilled workers, 1300-1800 CE (after Pamuk 2007: Figure 2)



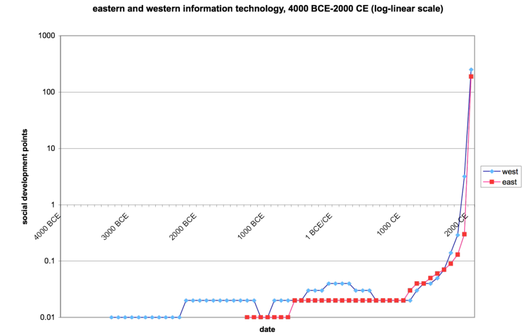
Graph 38. The size of the largest Eastern and Western settlements, 1000 BCE-1500 C



Graph 42. Eastern and Western war-making capacity, 3000 BCE-2000 CE, plotted on a log-linear scale



Graph 55. Eastern and Western war-making capacity, 200 BCE-1600 CE



Graph 57. Eastern and Western information technology, 4000 BCE-2000 CE, shown on a log-linear scale

eastern and western information technology, 4000 BCE-2000 CE (scores

February 11: Roots of Growth in "Technology": How Much Is Just "Two Heads Are Better than One"?

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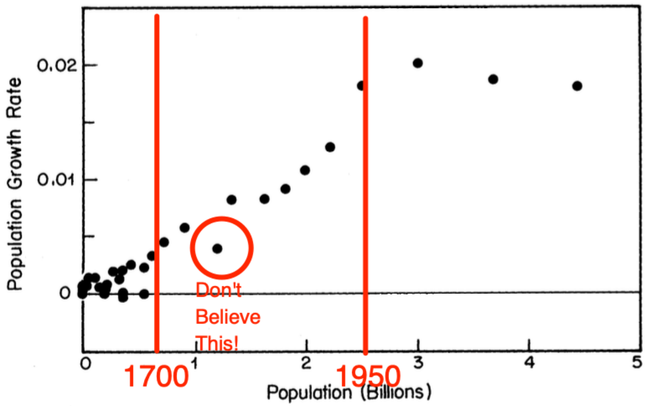

FIGURE I
Population Growth Versus Population

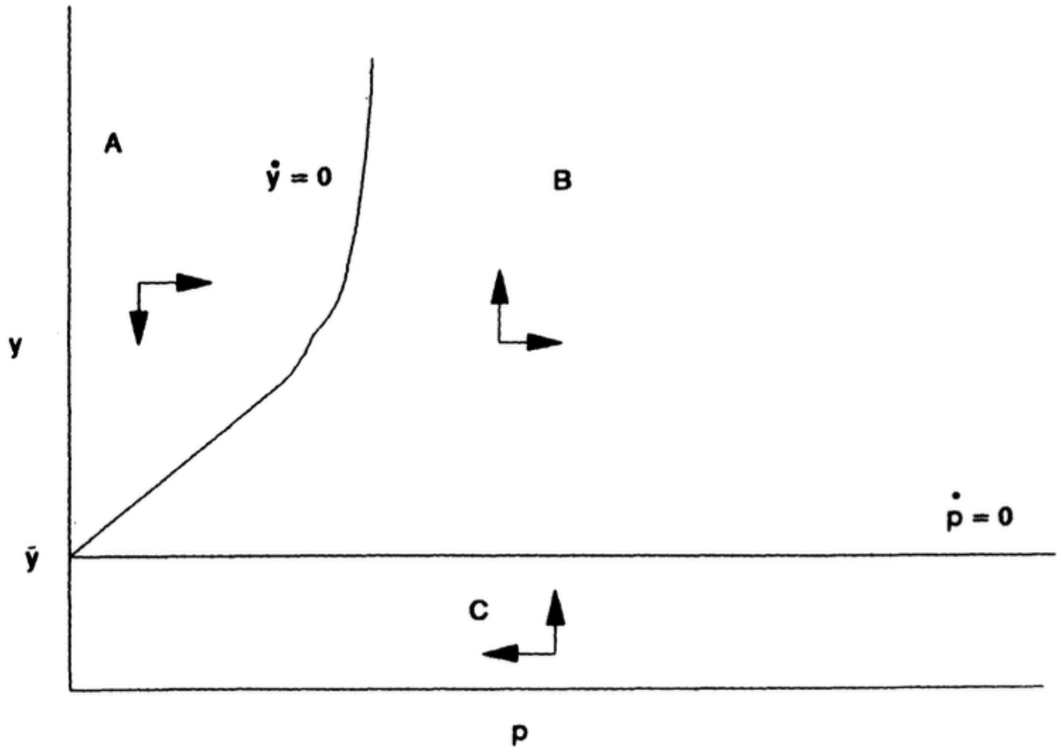

FIGURE IV

$$Y = Ap^{\alpha}T^{1-\alpha},$$

$$\bar{p} = \left(\frac{\bar{y}}{A}\right)^{1/(\alpha-1)}.$$

$$\dot{A}/A = pg,$$

$$\frac{\dot{p}}{p} = \frac{1}{1-\alpha}\frac{\dot{A}}{A}.$$

$$\frac{\dot{p}}{p} = \frac{g}{1-\alpha}p.$$

February 11: Digging Deeper into Agrarian-Age Stagnation

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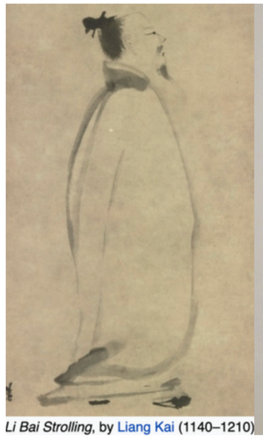
THEN: "Ancient" Ain't "Primitive" or "Unsophisticated"

Could we teach:

- Themistokles or Augustus much about politics?
- Homer much about writing epic?
- Li Bai much about writing poetry?
- Gaius Julius Caesar or Leonidas Agiades much about generalship?
- Sophokles much about drama?

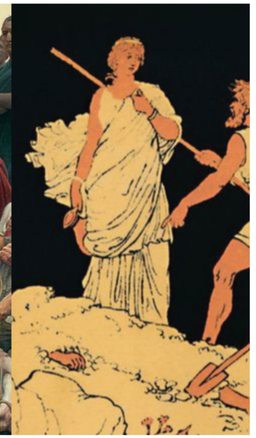
- Gorō Nyūdō Masamune much about making handmade swords?
- Phryne much about presentation-of-self-as-celebrity?
- Michelangelo Buonarroti much about painting ceilings?
- Praxiteles much about sculpture?
- Johann Sebastian Bach much about music?


Li Bai Strolling, by Liang Kai (1140–1210)


Aphrodite of Knidos (copy): Praxiteles, Phryne


Michelangelo: David


Tantō by Hyūga Masamune,



Notes: The Longest-Run Take at Human History II

Extremely rough numbers, guesstimates, and guesses:

- The commercial-imperial age kicks off in 1600 or so: $g_T = 0.24\%$/year
- And then starting in 1775 or so comes the coal-steam-iron-machinery-textiles complex: $g_T = 0.63\%$/year
- But it is in 1875 that we see the true watershed boundary crossed
  - Thereafter productivity and technology growth has averaged nearly 2% per year: a doubling time of only a little more than a generation.
  - And each doubling of human technological capacity brings with it a qualitatively new economic structure
  - Charlie from Trier and Freddy from Barmen, Karl Marx and Friedrich Engels—talked of ancient (year ca. -600, technology index T=0.16), mediæval (ca. 1300, T=0.30, modern bourgeois (1800, T=0.6), and full-employment automated luxury communism (which they expected by 1900 or so, at the latest)
  - Well, we got, perhaps, with four doublings after steampower: applied-science, mass-production, globalized value-chain, and now attention info-bio tech economies.
- **BUT: Trust these numbers? No! Necessities, conveniences, luxuries, status-commodities, inequality, negative bidders…**

	Population (millions)	Income per capita	"Technology" Level	Population Annual Growth Rate	Income Annual Growth Rate	"Technology" Annual Growth Rate
200	260.00	$1,100	0.216324	0.07%	0.00%	0.03%
800	200.00	$1,100	0.189729	-0.04%	0.00%	-0.02%
1500	450.00	$1,400	0.362210	0.02%	0.08%	0.09%
1775	800.00	$1,600	0.551939	0.36%	0.06%	0.24%
1875	1389.00	$2,200	1.000000	0.47%	0.40%	0.63%
1925	2000.00	$4,400	2.399904	0.77%	1.03%	1.42%
1950	2530.00	$5,800	3.558070	0.94%	1.11%	1.58%
2000	6170.00	$12,000	11.496087	1.66%	1.20%	2.03%
2025	8250.00	$18,000	19.940024	1.16%	1.62%	2.20%

Moses Finley: technical innovation & economic progress in the ancient world

- **Finley, Moses**. 1965. "Technical Innovation & Economic Progress in the Ancient World." *Economic History Review*: 29-45. <https://www-jstor-org.libproxy.berkeley.edu/stable/2591872>:
  - **Limited Technical Innovation** – Agrarian-age civilizations added to the world's technological knowledge about manipulating & transforming nature and coöperatively organizing humans *for necessities & conveniences production* at a remarkably slow pace given human civilizational creativity & accomplishment…
  - **Technology Often Unused** – Even when new inventions appeared, such as the water mill, their adoption was slow and limited, and often they did not appear: the flying shuttle & the wheelbarrow…
  - **Lack of Economic Rationalism** – Neither Greek nor Roman economies prioritized efficiency, cost reduction, or increased productivity… *is this true?*
  - **Science and Practice Were Separate** – Ancient scientific thought was focused on understanding nature rather than harnessing it for industrial or economic gain…
  - **Wealth Came from War & Politics, Not Industry** – Large fortunes were made through conquest, taxation, and land ownership…
  - **Social Attitudes Discouraged Technical Progress** – Manual labor and engineering were seen as low-status occupations, which discouraged investment in industrial advancements…
  - **Slave Labor Reduced Need for Machines** – The widespread use of slaves meant there was little motivation to develop labor-saving devices…
  - Poor Business Structures – There were no corporations, joint-stock companies, or financial institutions to support large-scale industrial investments.
  - **Capital Was Available but Not Used for Innovation** – Rulers and elites spent heavily on public works like aqueducts and roads but showed little interest in funding productivity-enhancing technology…
  - **Innovation Was Often Accidental or Military** – Most recorded technical advances came from military needs or chance discoveries rather than systematic research…

Peter Temin: A Market Economy in the Roman Empire

- **Temin, Peter**. 2001. "A Market Economy in the Early Roman Empire." *Journal of Roman Studies*. 91: 169–181. <https://www.jstor.org/stable/3184775>:
    - I argue here that the economy of the early Roman Empire was primarily a market economy…. The parts of this economy located far from each other were not tied together as tightly as markets often are today, but they still functioned as part of a comprehensive Mediterranean market…. More technically, I will argue that markets in the early Roman Empire typically were equilibrated by means of prices…
    - These are the ordinary prices of a market economy, showing that many of the goods and services used in the course of ordinary life were valued by price and paid for by money…. The abundant evidence of Roman coinage testifies to the common use of coins as a means of payment…. It seems obvious that they carried coin in anticipation of spending their money buying goods and services in market exchanges…
    - The similarity between the rate of interest on the Roman agricultural foundations and the rate for monetary loans suggests strongly that there was a capital market in ancient Rome."
    - As far as we can judge, the prices for wheat, wine and donkeys were basically formed by the operation of free-market forces, that is the fundamentals of supply and demand in a monetised economy…. The bulk of grain imports, not destined for the annona, must have been privately owned. The imports were too large to have been arranged by custom or reciprocity…. Roman merchants and shippers could purchase insurance; they would borrow with repayment conditional on a safe return…
    - *On the AD 33 crisis:* This well-documented financial crisis demonstrates clearly that prices were used to equilibrate both the financial and land markets…
    - Wherever information on production and consumption has survived, so has evidence of market exchanges. It would be strange indeed if farmers and craftsmen operating in this context did not take these prices into account when planning their activities…. It is not unfair to say that market exchange was the dominant mode of interaction in 'literate Rome', even though it may have been less apparent in the daily lives of more humble Romans."
    - Recent evidence indicates that Finley was wrong; ancient Rome had an economic system that was an enormous conglomeration of interdependent markets…
    - Urbanization as an index of per capita income,,, suggests that GDP per capita in Roman Italy was between that in 1700 in the Netherlands and Italy or Spain, the most advanced European economies a century before the Industrial Revolution…. Roman Italy gained greatly by being at the hub of an empire and a large trading network, as Spain and Holland did much later…. Large-scale production and movements of resources in the early Roman Empire were dominated by markets. This mode of organization promoted the exploitation of comparative advantage, helped by political stability, personal security, and widespread education…. It also promoted a modest rate of economic growth that resulted in the prosperity of the early Roman Empire, which was not to be equaled in the West for almost two millennia thereafter…
    - Roman slavery in some ways resembled the processes of apprenticeship and indenture in early modern Europe, which reveals the integration of Roman slavery into the overall labor market…. Slaves were interchangeable with free wage laborers in many situations, part of an integrated labor force in the early Roman Empire…
    - *On banks as canaries*: "Banks were the canaries in the Roman market economy, and they disappeared in the course of the third century. By the time of the Dark Ages in about the fifth century CE, there were still markets, but no longer a market economy…

Temin vs. Finley: What Can (Should?) We Rescue?

- **Finley, Moses.** 1965. “Technical Innovation & Economic Progress in the Ancient World.” *Economic History Review*: 29-45. <https://www-jstor-org.libproxy.berkeley.edu/stable/2591872>.
- **Temin, Peter**. 2001. “A Market Economy in the Early Roman Empire.” *Journal of Roman Studies*. 91: 169–181. <https://www.jstor.org/stable/3184775>:
    - Temin insists there really was a market economy, not just “embedded” exchange. Finley’s famous line that “ancient society did not have an economic system which was an enormous conglomeration of interdependent markets” is explicitly reversed: Temin concludes the early Empire was “an enormous conglomeration of interdependent markets,” with prices doing the equilibrating work across a Mediterranean-wide system. Prices are not epiphenomenal; they move and allocate. Price variability is Temin’s primary diagnostic: if prices exist, vary, and clear markets, then reciprocity/redistribution cannot be the dominant form. He uses scattered but telling price evidence (grain, wages, interest, land) to argue that prices systematically allocated resources…
    - Capital markets are real, not anachronistic. Finley is skeptical that talk of “capital markets,” “profitability,” and “risk–return” is anything more than modern projection. Temin leans into precisely those concepts: he reads the alignment of loan rates and returns to land (alimenta foundations) as evidence of a functioning capital market…
    - Instrumental behavior is pervasive, not marginal. Finley’s Aristotelian story emphasizes disdain for “banausic” economic calculation and a divorce between “science” and production. Temin counters with episodes like Cato’s maritime diversification and the Dacian loan contract: actors diversify risk, write enforceable contracts, and price risk in ways that are fully intelligible as instrumental, not merely customary or status-driven…
    - Long-distance trade and shipping are organized through contracts, tenders, and finance, not ad hoc patronage. Finley’s narrative underplays the contractual and financial infrastructure of trade, highlighting instead elite status consumption and political rents…
    - Labor markets—including for slaves—function like labor markets. Finley treats slavery as structurally anti-market, blocking rationalization and technical change. Temin, especially in the 2006 piece, reads manumission, *peculium*, and the substitutability of slave and free labor as integrating slaves into a broader labor market…
    - Finley’s conceptual move is to align antiquity with “primitive” or “peasant” economies in which reciprocity and redistribution dominate. Temin systematically compares Rome to 17th–18th century England and Holland…
    - Finley’s 1965 essay is built around the puzzle of technological stagnation and uses that stagnation as an argument against any strong role for markets. Temin severs the link: one can have a quite well-functioning market economy with low long-run productivity growth and limited innovation…
    - Taken together, Temin’s critique is that Finley lets that ideological superstructure do too much work, to the point of denying the very thing the fragmentary quantitative and contractual evidence most clearly shows: a large, integrated, and price-mediated market economy operating underneath those scornful élite attitudes…

And Yet…

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Modes of Domination & Consumption, Not of Production

- On the larger issue David Hume saw the picture exactly, when he wrote:
  - "I do not remember a passage in any ancient author, where the growth of a city is ascribed to the establishment of a manufacture. The commerce, which is said to flourish, is chiefly the exchange of those commodities, for which different soils and climates were suited…".
- Servile and other forms of dependent labour were very profitable. Such changes as occurred in the Roman Empire in the position of the wealthy were political, not economic, and therefore they had no significant incentive to alter the productive arrangements.
- In the end, it was the military and political breakdown of the Empire which drove the western aristocracy back onto their estates and to the beginnings of a manorial system…

Might Finley Be Wrong? Davey Hume; & Seneca vs. Posidonius on Whether Technology Is Philosophy

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Lucius Annaeus Seneca Minor (64): *Moral Letters to Lucilius 90: On the Part Played by Philosophy in the Progress of Man*: 'That philosophy discovered the arts of which life makes use in its daily round I refuse to admit…. I, for my part, do not hold that philosophy devised these shrewdly-contrived dwellings of ours which rise story upon story, where city crowds against city, any more than that she invented the fish-preserves, which are enclosed for the purpose of saving men's gluttony from having to run the risk of storms….

Was it philosophy that taught the use of keys and bolts? Nay, what was that except giving a hint to avarice?… All this sort of thing was born when luxury was being born…

On another point also I differ from Posidonius, when he holds that mechanical tools were the invention of wise men…. Nay, the sort of men who discover such things are the sort of men who are busied with them…. The hammer [and] the tongs… were both invented by some man whose mind was nimble and keen, but not great or exalted; and the same holds true of any other discovery which can only be made by means of a bent body and of a mind whose gaze is upon the ground….

Which man, pray, do you deem the wiser—the one who invents a process for spraying saffron perfumes to a tremendous height from hidden pipes, who fills or empties canals by a sudden rush of waters, who so cleverly constructs a dining-room with a ceiling of movable panels that it presents one pattern after another, the roof changing as often as the courses,—or the one who proves to others, as well as to himself, that nature has laid upon us no stern and difficult law when she tells us that we can live without the marble-cutter and the engineer, that we can clothe ourselves without traffic in silk fabrics, that we can have everything that is indispensable to our use, provided only that we are content with what the earth has placed on its surface? If mankind were willing to listen to this sage, they would know that the cook is as superfluous to them as the soldier….

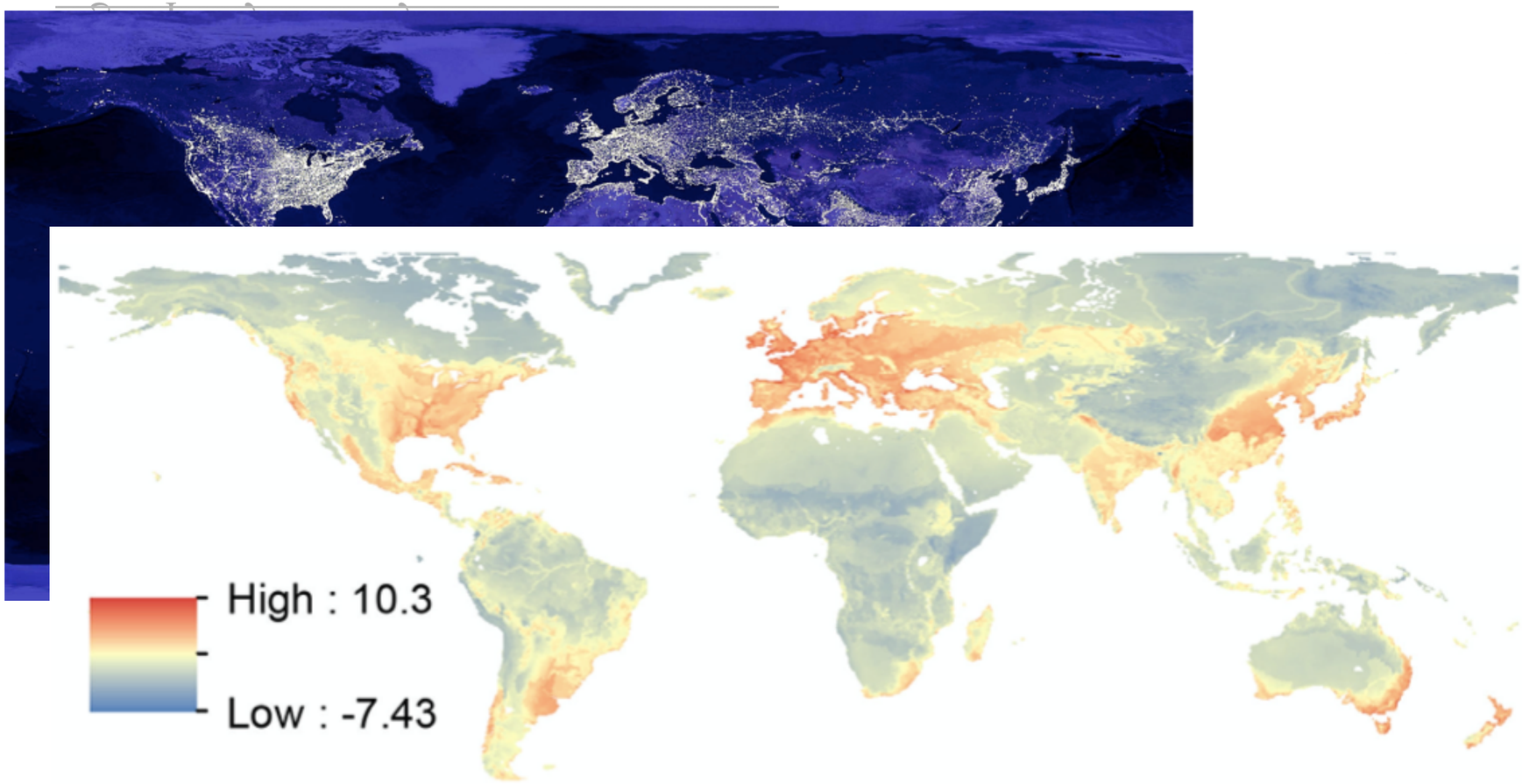
Posidonius then passes on to the farmer…. This trade also, he declares, is the creation of the wise,—just as if cultivators of the soil were not even at the present day discovering countless new methods of increasing the soil's fertility!… He even degrades the wise man by sending him to the mill…. Posidonius came very near declaring that even the cobbler's trade was the discovery of the wise man….

Not so; these early inventions were thought out by no other class of men than those who have them in charge to-day. We know that certain devices have come to light only within our own memory… windows which admit the clear light through transparent tiles,.. baths with pipes let into their walls for the purpose of diffusing the heat… marble… rounded and polished masses of stone…. Or our signs for whole words, which enable us to take down a speech, however rapidly uttered, matching speed of tongue by speed of hand?

All this sort of thing has been devised by the lowest grade of slaves…

February 11: Resources vs. Division of Labor in History

- **Henderson, J. Vernon, Adam Storeygard, & David N. Weil**. 2018. "The Global Distribution of Economic Activity: Nature, History, & the Role of Trade". Quarterly Journal of Economics 133,1 (February): 357-406. https://www-jstor-org.libproxy.berkeley.edu/stable/26495164>.



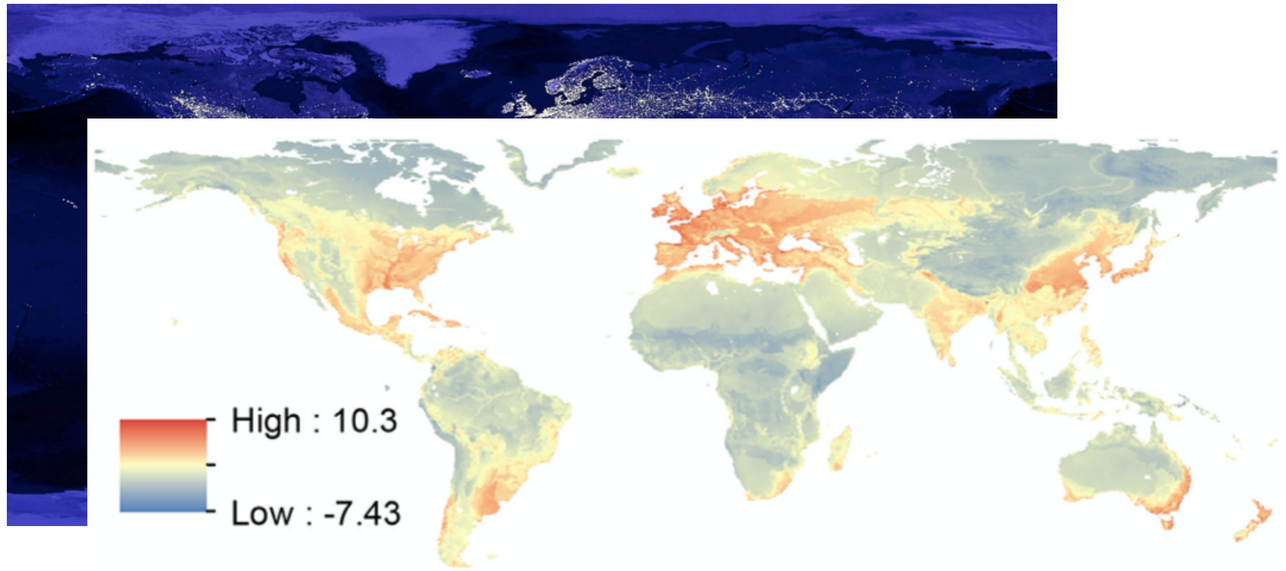
Top is artificial illumination at night:

- This reveals the global geographical distribution of human economic activity
- Bottom is what is predicted from a regression of lights on geographical variables:
  - Base (ruggedness & malaria)
  - Soil & climate (suitability for agriculture)
  - Trade (ease of communication and transport by water)
- "Geography" accounts for half of the global land variation in lights from space *today*
  - It has been a long time—500 years?—since humanity was tied in its location to where the most productive farms were
  - It has been a shorter but still substantial time—200 years—since humanity was bound in its location by the essential need for cheap water transport
- Yet those factors are the "deep roots" of relative economic development, even though there is no geographical necessity today
- And humanity's geographical distribution of economic activity exhibits "path dependence": the places where people settled and produced for reasons of trade and agriculture 500 and more years ago are still the places where people settle and produce…

Henderson, J. Vernon, Adam Storeygard, & David N. Weil. 2018. "The Global Distribution of Economic Activity: Nature, History, & the Role of Trade"

It gets a lot very right:

- But it is far from a perfect fit
- Regions that are surprisingly prosperous?
  - Johannesburg & surroundings
  - India
  - The Persian Gulf
  - Northwest Europe/eastern USA
  - Coastal Brazil
  - Malaya and Java
- Regions that are not as prosperous as expected?
  - The lower Mississippi basin
  - The Boomerang Coast & New Zealand



- **Geography Matters Still!** – Despite all the technological advances, natural geographic characteristics remain surprisingly key…
- **Agricultural Suitability** – In early-developing countries, agricultural productivity had a much stronger influence on economic activity distribution…
- **Trade Suitability** – In late-developing countries, access to trade networks (coasts, navigable rivers, and natural harbors) is now a stronger driver…
- **Urbanization Persistent** – Cities strongly persist even after their original economic advantages disappear…
- **Light Data** – Satellite nightlights data provides a reliable way to measure economic activity…
- **Coasts & Navigable Rivers Remain Important** – Especially in developing nations…
- **Globalization Especially Strengthens the Coast** – Even today!…