

**Chicago Open 2020 2021:** “We probably needed the extra year to finish it anyways.”

**Editors:** Will Alston, Brad McLain, Eric Mukherjee, and Jonathen Settle, with assistance from Ike Jose

**Writers:** Noah Chen, Ryan Humphrey, Kirk Jing, Joseph Krol, Caroline Mao, Jack Mehr, Matt Jackson, and Itamar Naveh-Benjamin

**Logistics:** Jacob O'Rourke

## Packet by The Editors (6)

### TOSSUPS

1. **Recent research on this phenomenon identifies it as a sum of multiple processes, including changes in the Kuroshio—Oyashio system and the influence of tropical teleconnections via “atmospheric bridge.” A paper by Mantua et al. introduced this phenomenon as the leading empirical orthogonal function of S·S·T·As from twenty degrees to seventy degrees north latitude in a certain region. Studies of the catch history of Alaskan salmon by Steven R. Hare and Robert C. Francis provided the first concrete evidence of this phenomenon. It is simultaneously correlated with variability in the Aleutian low. This phenomenon, which occurs on a time scale of (\*) years or tens of years, has a negative value when there are cool sea surface temperature anomalies along the North American coast. For 10 points, name this phenomenon akin to a long-lived El Niño pattern of climate variability over a namesake oceanic region.**

ANSWER: **Pacific** (inter)**decadal oscillation** [or **PDO**; or **interdecadal Pacific oscillation** or **IPO**; or **North Pacific oscillation**; accept **Pacific decadal variability** or **PDV**]

<Other Science: Earth Science, Jonathen Settle>

2. **A philosopher from this country formulated a naturalistic argument against Islamic polygamy, pointing out that there are equal numbers of men and women in the world. According to French historian Anaïs Wion (“AHN-ice WEE-on”), that philosopher from this country was actually a fictional invention of the Jesuit missionary Giusto da Urbino. Though they were written down in Greek and Arabic, Claude Sumner argued that translations of the *Physiolog*, *The Life and Maxims of Skendes*, and *The Book of the Wise Philosophers* constitute this country’s earliest contributions to philosophy. This country was home to a (\*) 17th century philosopher who claimed to have learned more from living in a cave for two years than from scholars. That philosopher from here is often compared to Rene Descartes due to his skeptical method presented in the *Hatata*. For 10 points, name this home of the philosopher Zera Yacob, as well as works of wisdom literature written in Ge'ez.**

ANSWER: **Ethiopia** [or **Ityopya**; accept **Solomonic** kingdom, or **Aksumite** kingdom, or **D’mt**, or **Damat**]

<Philosophy, Brad McLain/Ike Jose>

3. **The Olympic weightlifter and historian Gwendolyn Leick argues that bridal songs produced by this culture focus on women competing for the love of polygynous kings. This culture’s language featured a “thin-tongued” dialect used by women, which is spoken by goddesses in its poetry. Many hairstyles are displayed by the numerous alabaster female figurines of worshippers made by this culture, such as those found by James Henry Breasted among the (\*) Tell Asmar hoard. A tomb built by this culture contains several ornate lyres, as well as dozens of handmaidens who were sacrificed and buried in a “Death Pit.” That tomb, which belonged to this culture’s Queen Puabi, was unearthed along with the “Ram in a Thicket” figures by Leonard Woolley. For 10 points, what people worshipped the goddesses Ninhursag and Innana at temples in Eridu and Ur?**

ANSWER: **Sumerian** civilization [or **Sumer** or **Sumerians**]

<Ancient History, Will Alston>

4. It's unclear whether this book's author was inspired by G. W. Langford or David Bates to write a poem which is interrupted by a chorus shouting "Wow! wow! Wow!" The original manuscript of this book contained a poem based on the minstrel song "Sally Come Up!" but that was replaced with a poem in which a snail exclaims "Too far, too far!" to explain why he "would not join the dance." This book's prefatory poem describes how its material came to the author from "Imperious Prima" during a trip with a "Cruel Three" up the (\*) River Thames, which happened "All in the golden afternoon." Martin Gardner's annotated edition of this book notes that its poems are mostly parodies of such authors as Isaac Watts and Mary Howitt, who respectively inspired its poem "Tis the Voice of the Lobster" and its "Lobster Quadrille," sung by the Mock-Turtle. For 10 points, name this novel which also features the Caterpillar, Mad Hatter, and Cheshire Cat.

ANSWER: Alice in Wonderland [or Alice's Adventures in Wonderland] (by Lewis Carroll)

<Poetry, Will Alston>

5. A 2006 study by Mobbs et al. attempted to use f-M-R-I to test one of this man's theories using emotional attributions. Norman Holland bemoaned how one of this man's achievements has "passed into mythology" since attempts to replicate it have failed. A short by this filmmaker centers on a conflict between two energy companies trying to turn peat into a power source and illustrates his theory of "artificial landscapes" or "creative geography" when two characters look at electric poles. This director of *Prairie the Engineer* and a film about (\*) "The Extraordinary Adventures of Mr. West" influenced his fellow Formalists by separately displaying images of a bowl of soup, a coffin, and a little girl, and a reaction by the actor Ivan Mozhukin. Those images constituted an experiment in which this man showed that a sequence of shots is more meaningful than a single shot. Cuts and montages have emotional power according to, for 10 points, Russian's namesake editing effect?

ANSWER: Lev Kuleshov [accept the Kuleshov Effect]

<OArts: Film, Will Alston / Ike Jose>

*Note to moderator: Read answerline carefully.*

6. *Description acceptable.* An example of these policies which applied for three days a month was created by Wang Mang and -- along with the *ching* system and new land taxes -- sparked the Red Eyebrows revolt. Another example of these policies designated households as *jaoji* was copied in Japan as part of the Taika reform. Unlike its predecessors, the Northern Song *did not* use this policy to provide the *Sanya*, or Three Offices, with sufficient resources. The Ming had a hereditary example of these policies called *weisuo* ("way-swuh"), which was partly modeled on a system used by the Northern Wei, Sui, and Tang dynasties called (\*) *fubing*. Under the Han, commoners from the ages of 23 through 56 were eligible to be subjected to this sort of policy for two years, during which they would be stationed in commanderies. Du Fu's "Song of the Wagons" describes peasants who were subjected to, for 10 points, what sort of policy which has [emphasize] *not* been used to staff the PLA since 1949?

ANSWER: conscription [or levying soldiers, or levy en masse, or assembling a militia, or drafting soldiers; accept answers which indicate assembling farmers or commoners to provide troops; accept answers indicating mandatory military service or raising an army by force; accept fubing system before "fubing"; prompt on raising an army or recruitment or mustering equivalents; reject "standing army"]

<World History, Will Alston>

7. The protagonist of this novel loses a gift of a thousand ducats (“DUCK-ats”) and diamond ring in a single night when a couple tricks him into renting out another man’s villa as lodgings. A doctor in this novel insists that drinking warm water and heavily bleeding patients are a panacea until all of his patients die during a plague. This novel’s main character is pursued by a woman who dresses like a man named Aurora, but gets her to instead marry his friend Lewis. At its end, the protagonist settles down in an estate at (\*) Lirias with his second wife Dorothea. This novel’s title character is educated by his 4-foot-tall uncle Perez and sent to study in Salamanca, but is waylaid by robbers and arrested for guiding his servant Scipio to a brothel. It names the literary magazine that serialized Emile Zola’s *Rougon-Macquart* cycle. For 10 points, name this novel about a man from Santillane (“sahn-tee-yan”), a picaresque classic by Alain-Rene Lesage (“uh-LEN-ruh-NAY luh-SAHZH”).

ANSWER: *The History of Gil Blas of Santillane* [or *L’histoire de Gil Blas de Santillane*]

<Long Fiction, Jack Mehr>

8. This artist used the composition of traditional Lamentation scenes to depict a crowd of workers mourning a man whose darkened face, at bottom right, contrasts with the flat, white surface of his coffin. In another work by this artist, a skeleton wearing tattered black robes covers its eyes as it looks up towards the word “Hunger.” Three children are covered by a cloak held by the stout arms of an elder in a painting titled for one of this artist’s favorite lines from Goethe, *Seed for the Planting Must Not be Ground*. A drummer with a skeletal face points up and to the right over his comrades’ heads in this artist’s *The* (\*) *Volunteers*, which is part of a series that includes *The Sacrifice*, *The Widow I*, and *The Widow II*. That series by this artist includes a print version of her sculpture *Grieving Parents*, which depicts her mourning for her son Peter’s demise in 1914. For 10 points, what German Expressionist created the lithograph series *Death* and the woodcut series *War*?

ANSWER: Käthe Kollwitz [or Käthe Schmidt] (The first clue is *In Memoriam Karl Liebknecht*.)

<Painting/Sculpture, Will Alston>

9. Cyclically loading a material can cause it to experience a phenomenon where one form of this quantity grows while another form of it decays called the Bauschinger effect. The 0.2% offset method approximates this quantity graphically. The modulus of resilience equals this quantity squared over twice Young’s modulus. The factor of safety for ductile materials is the ratio of this quantity to a “working” quantity. Distortion energy theory calculates this quantity as the square root of three times the second invariant of deviatoric stress. This quantity or its negative are where the graph of the (\*) von Mises criterion intersects the sigma-one and sigma-2 axes. In ductile materials, this quantity is smaller than tensile strength, but the relationship is the opposite in brittle materials. This quantity is the y-value of the point beyond which a material’s constitutive relation is non-linear. For 10 points, name this quantity, the stress beyond which materials experience plastic deformation.

ANSWER: yield strength [or yield stress; or just yield after “point”; accept yield point; accept proof stress]

<Physics, Jonathen Settle>

10. In one correspondence, this thinker stated that he would rather his country be “ignorant” if “science produces no better fruits than tyranny [and] murder.” In a book on this thinker’s “persuasion,” Lance Banning noted that this man’s conception of the State was drawn from Lord Bolingbroke’s *Reflections Concerning Innate Moral Principles*. Leo Marx’s book *The Machine in the Garden* theorizes that “frontier savagery” did not exist in this thinker’s ideal republic and discusses a “query” from one of his works contending that (\*) “Blacks are equal to Whites,” and that “slavery” is degrading for both “Black and White society.” This thinker’s *The Life and Morals of Jesus of Nazareth* was authored by using glue and a razor to cut and paste passages from the King James Bible. For 10 points, name this author of *Notes on the State of Virginia*, who paraphrased John Locke with his conception of the right to “life, liberty, and the pursuit of happiness.”

ANSWER: Thomas Jefferson

<Other Academic, Ike Jose>

11. The author's experience of telling stories about a character named for this event in classrooms is described in Vivian Pailey's book titled for [this practice] *and Me*. Synthia Saint James's painting of a crowd graces the poster of a 2012 documentary about this event narrated by Maya Angelou. In a *Jacobin* article titled for this event, Bruce Dixon notes that the organization led by the man who created it, Organization Us, also murdered John Huggins and "Bunchy" Carter in cooperation with (\*) COINTELPRO. This event, whose time was chosen to coincide with a traditional fruit harvest festival, is based around the "Seven Principles" or *nguo saba*, including "unity" and "collective work," or *umoja* and *ujamaa*. For 10 points, name this modern holiday created by Maulana Karenga, which spans December 26th to January 1st and celebrates African-American culture.

ANSWER: Kwanzaa

<American History, Will Alston>

12. In *The Mystery to a Solution*, John T. Irwin drew parallels between this story and a seminar its author delivered at Johns Hopkins in which he stated, "I am barren." This story's "desolating landscape" is called "seductive and even oddly comforting" in a poem whose opening line—"We fill pre-existing forms and when we fill them we change them and are changed"—serves as the epigraph to *The Pale King*. In a 1960 collection, this story is preceded by a passage in which God tells a leopard that its captivity will inspire Dante's poetry. This story's narrator is partial to "hourglasses, maps, eighteenth-century typography, the taste of coffee and the prose of (\*) Stevenson." It cites Spinoza to explain why rocks wish to be rocks and why tigers wish to be tigers. This final story in *Dreamtigers* famously concludes with the line: "I do not know which of us has written this page." For 10 points, in which story does an Argentine author reconcile between his "real" and "public" selves?

ANSWER: "Borges and I" or ["Borges v yo"]; accept "Borges and Myself"

<Short Fiction, Itamar Naveh-Benjamin>

13. The output of this technique can be analyzed using Waddington-OT to infer trajectories using optimal transport. Its output is analyzed using Aviv Regev's cloud-based Cumulus platform or Rahul Satija's Seurat package. Rosenberg's split-pool barcoding technique was first applied to this technique. This technique's output is normalized into F·P·K·M or T·P·M. It's not cytometry, but data from this technique is analyzed using Cell Ranger and visualized by plotting clusters using t-stochastic neighbor embedding; that version uses nanowells or droplets to isolate (\*) single cells. The quality of input into the bulk form of this technique is quantified by the R·I·N, which is calculated by comparing two peaks on an Agilent Bioanalyzer. Samples for this technique are often prepared by poly-A enrichment, then fed into devices from 10x or Illumina. For 10 points, name this technique that measures the levels of all uracil-containing molecules in a sample.

ANSWER: RNA sequencing [accept paired-end RNA sequencing or single-cell RNA-seq or scRNA-seq or DROP-seq; prompt on sequencing, high-throughput sequencing, next-generation sequencing, NGS, HTS]

<Biology, Noah Chen/Eric Mukherjee>

14. Marc-André Hamelin made one of the few recordings of a cycle of thirty piano pieces by this composer evoking the "moods and scenes" of such places as an "American Idyll" and "Nocturnal Tangier." In commemoration of the death of Franz Schubert, this musician composed forty-four variations on the first eight measures of the "Unfinished" symphony. Another set of piano pieces by this composer consists of "phonoramas" depicting a ruined *kraton* palace, *wayang* shadow-plays, and a *gamelan* performance. This composer of the aforementioned (\*) *Trikontameron*, *Passacaglia*, and *Java Suite* was nicknamed the "Buddha of the Piano." He included 22 transcriptions for the left hand alone among his extremely difficult arrangement of a countryman's already-challenging etudes. For 10 points, name this Polish-American pianist who wrote those 53 studies on the etudes of Frederic Chopin.

ANSWER: Leopold Godowsky

<Classical/Opera, Will Alston>

15. This practice titles a book whose first chapter analyzes how using the word *epydemie* (“eh-pih-duh-MEE”) represents its “linguistic” form in the works of Guillaume de Machaut (“mah-SHOW”). This practice is aided by rhetorical “unification devices” and serves to destroy an “original state of merger” according to a dialectic proposed by Kenneth Burke. In *Structure and History in Greek Mythology and Ritual*, Walter Burkert analyzes the “transformation” of this practice into the Roman *devotio* (“deh-WOH-tee-oh”) and a ritual from the Thargelia festival called *pharmakos* (“far-mah-KOS”). The book (\*) *Things Hidden Since the Foundation of the World* articulates its author’s thesis that the triumph of Christianity is in showing that this practice only appeases man, and not God. This practice is the main “mechanism” to end mimetic conflict according to *Violence and the Sacred* by René Girard. For 10 points, name this practice exemplified by the Biblical Azazel, in which a group victimizes a namesake individual.

ANSWER: scapegoating [or scapegoat mechanism; prompt on sacrifice or animal sacrifice or human sacrifice or sacrifice to gods; prompt on victimization before “victimized”]

<Social Science: Other, Will Alston>

16. In *The Gutenberg Galaxy*, McLuhan remarks that this author “proclaimed the meaning of typography as supra-human,” because he was the first writer to “seize the vernacular as the mass medium.” One of this author’s first prose works begins by hoping that it will be a “scalpel” so that a “good doctor” can “cut off the limbs” of its readers. The speaker of another of this author’s works gives away his knees so that Prospero Santacroce (“sahn-tah-CROH-chay”) can better imitate his genuflections. A duke forces his gay stablemaster to marry a beautiful young bride, but it turns out the bride is a (\*) pageboy, in a play by this author inspired by his time at the court of Mantua. This author of *Il Marescalco* wrote a dialogue in which Nanna teaches her daughter Pippa how to be a courtesan. A pamphlet purporting to be the last will of Hanno, the pet elephant of Leo the X, was written by, for 10 points, what author of *The School of Whoredom*, a bawdy Italian satirist of the 16th century?

ANSWER: Pietro Aretino

<Misc. Lit, Ike Jose / Will Alston>

17. *Description acceptable*. This event was predicted in a pessimistic report by the firm Thornton Tomasetti, which claimed that using a “lean tower adjustment” would not prevent it. This event will likely permanently harm the income of the Angel Ramos Foundation Center, which is near where it occurred, and resulted in the fast-tracking of a decommissioning plan created by a consortium led by the University of Central Florida. A major ultimate cause of this event was that a 110-ton “Gregorian Dome” added in 1997 was not in the plans of the original engineers; this event was then captured (\*) 23 years later by drone footage shot near Tower 4. A structure used by Hulse and Taylor for their Nobel-winning discovery was rendered unusable by this December 2020 event, which was caused by snapping of several auxiliary cables, and irreparably harmed a thousand-foot-wide spherical reflector dish. For 10 points, what event destroyed a large telescope in Puerto Rico?

ANSWER: the collapse of the Arecibo Telescope [accept answers indicating the destruction of the Arecibo observatory; accept NAIC or National Astronomy and Ionosphere Center for “Arecibo”]

<Modern World, Ike Jose>

18. As a reward for inventing one of these objects, a brother of Plutus named Philomelus was memorialized as a constellation. In another story a man whose teachings were recorded in the *Disciplina* and who was the legendary inventor of haruspicy was found outside the town of Tarquinia by a worker using one of these objects. A place in Attica called Raria was celebrated as the first location where one of these objects was used in Greece as part of the (\*) Eleusinian Mysteries. While using one of these devices, an Etruscan worker stumbled upon the prophet Tages. As he traveled Greece in a serpent-drawn chariot, Triptolemus taught the use of these devices to humanity. Palamedes proved that the wily Odysseus was not insane by placing baby Telemachus in front of one of these devices. For 10 points, identify these devices, one of which was attached by Jason to some of Colchis's fire-breathing oxen using a yoke.

ANSWER: plows [accept yoke before "yoke"] (The Rarian Field was supposedly the first one ploughed in Greece.)  
<Legends, Will Alston>

19. This European region's native dishes include *kalitka* pastries and salted, marinated mushrooms, the latter of which were popularized when nearly half a million refugees from this region were resettled after a treaty signed by Rudolf Walden. Removing foreigners from this region was the goal of the Sword Scabbard Declaration. Reconquering this region was the goal of the Viena and Aunus expeditions, part of the broader Kinship Wars. Historically, industry in this region relied on a canal which terminated at (\*) Vyborg and is named for Lake Saimaa. This region comprised the [emphasize] *northernmost* territories ceded by the Treaty of Nystad. Gustav Mannerheim repeatedly sought to annex the eastern portion of this region, most of which was transferred to the Soviet Union via the 1940 Moscow Peace Treaty that concluded the Winter War. For 10 points, name this region which borders Lake Ladoga and the White Sea and is divided between Russia and Finland.

ANSWER: Karelia [accept East Karelia; prompt on Finland]  
<Euro History, Will Alston>

20. *Description acceptable.* In 2016, Samsung tried in vain to address this phenomenon with the galvanic stimulation feature of their experimental Entrim headphones. In a now-deleted 2012 blog post, Michael Abrash proposed both a 15 millisecond and a harder 7 millisecond bound on latency to eliminate this phenomenon. Approaches to combating this phenomenon include adjusting the interpupillary distance to match the inter-lens distance and using an omnidirectional treadmill. Though it negatively affects a user's sense of presence, decreasing (\*) field of view reduces the intensity of this phenomenon. High frame rate rendering and low-latency tracking have been claimed to alleviate this phenomenon by minimizing the mismatch between a user's visual perception and the response of the user's vestibular system. For 10 points, give this phenomenon that might be suppressed by taking a shitload of Dramamine or Gravol before putting on an Oculus Rift.

ANSWER: VR sickness [or virtual reality sickness; accept descriptions of virtual reality or VR causing the user to experience discomfort; accept simulator sickness; accept cybersickness; accept Cinerama sickness; prompt on descriptions of sickness induced by gaming; prompt on motion sickness by asking "what is causing the motion sickness?"]

<Other Science: Applied/Data Science/Engineering, Ike Jose>

## BONUSES

1. David Attwell, a prominent biographer of this author, defended his form of “situational metafiction” as an approach to the “politics of writing.” For 10 points each:

[10e] Name this author whose *Last Essays*, collecting his literary criticism written from 2006-17, include descriptions of his purpose in writing the Jesus Trilogy. He also wrote *Elizabeth Costello*.

ANSWER: J. M. Coetzee [or John Maxwell Coetzee]

[10m] Among Coetzee’s *Last Essays* is a discussion of this novel, whose protagonist is imagined “strutting before the mirror” by David in the early pages of Coetzee’s novel *Disgrace*. This novel is analyzed as the first example of a “modern novel” in Mario Vargas Llosa’s essay “The Perpetual Orgy.”

ANSWER: Madame Bovary

[10h] Another of Coetzee’s essays discusses the “pencil system” that a Swiss-born author developed to produce these texts. These texts, translated into English by Susan Bernofsky, were written on the back of business cards and rejection letters, and include the novel *The Robber*.

ANSWER: microscripts [or Mikrogramme; prompt on answers referring to scripts or fragments of Robert Walser, noting “the specific name is required”]

<Misc. Lit, Will Alston>

2. In one of the more notorious Know-Nothing Riots, local nativist Vigilance Committees clashed with people of this ethnicity in the Dead Rabbits gang. For 10 points each:

[10e] Name this immigrant ethnic group, many of whose members were told they “need not apply” for jobs in classified advertisements beginning in the 1840s.

ANSWER: Irish people [or Irelanders or whatever]

[10m] This city’s pioneering prohibition law, passed by “Napoleon of Temperance” Neal Dow, was viewed by many Irish immigrants as an attack on their culture, resulting in this city’s 1855 Rum Riot.

ANSWER: Portland, Maine

[10h] This historian compared antebellum attitudes toward Irish with attitudes toward slaves in *How the Irish Became White*, one of this historian’s many works which call for the abolition of “whiteness.” This historian, who died in 2019, was the longtime editor of the magazine *Race Traitor*.

ANSWER: Noel Ignatiev

<American History, Will Alston>

3. One of the first of these catalysts, developed by Tao Zhang et al, consists of dispersed platinum anchored to iron oxide and was used to oxidize carbon monoxide. For 10 points each:

[10h] Name this type of catalyst which, unlike nanoparticle or nanocrystal catalysts, do not have metal-metal bonds between their catalytic centers. These catalysts’ have the highest possible specific activity per amount of metal.

ANSWER: single-atom catalysts [or SAC]

[10e] Because they are highly atom-economical, single-atom catalysts are one part of this paradigm, which in general seeks to minimize the creation of hazardous byproducts and reduce the use of non-renewable reagents.

ANSWER: green chemistry [or sustainable chemistry]

[10m] One tool used to characterize single-atom catalysts is this form of spectroscopy developed by Kai Seighahn. This technique often uses a hemispherical analyzer to measure the kinetic energy of ejected particles

ANSWER: XPS [or X-ray photoelectron spectroscopy or X-ray photoemission spectroscopy or ESCA or electron spectroscopy for chemical analysis; prompt on PES or photoelectron spectroscopy or photoemission spectroscopy]

<Chemistry, Eric Mukherjee>

4. For 10 points each, answer the following about Napoleon's failures in the world of art.

[10m] Napoleon planned to cut up this sculpture and transport it to Paris piece by piece but the Roman Church forbade his army to do so. This bas-relief sculpture depicts a ruler traversing the Danube to defeat Decebalus.

ANSWER: **Trajan's Column**

[10h] As a result of Napoleon's invasions, this woman's *The Last Supper* was rolled up, and only re-put on display in 2019. This artist of *Grieving Madonna* was a 16<sup>th</sup> century nun in the convent Santa Caterina da Siena.

ANSWER: Plautilla **Nelli**

[10e] Napoleon's loss at Borodino was commemorated with a green and gold one of these artworks. These artworks, which are named for the Russian jeweler who made them, often contained a little "surprise" when opened.

ANSWER: **Faberge egg** [prompt on eggs]

<Painting/Sculpture, Ike Jose>

5. In a paper analyzing long-term contracts, Stanley Fischer critiqued this idea's implication that the sacrifice ratio, or amount of output loss required to reign in inflation, should theoretically be zero. For 10 points each:

[10h] Name this idea put forth by Thomas Sargent and Neil Wallace, which states that central banks cannot simultaneously manage output and employment if their actions are anticipated by economic agents.

ANSWER: **policy-ineffectiveness** proposition [or **PEP**]

[10e] The policy-ineffectiveness proposition results from a theory of economics introduced by John Muth, which is named for assuming that individuals' expectations and forecasts have this property.

ANSWER: **rational** [or **rationality**; accept **rational** expectations theory]

[10m] This economist's "islands" model, which incorporates rational expectations and monetary neutrality, describes the effects of monetary policy on a simplified economy and reproduces the policy-ineffectiveness proposition.

ANSWER: Robert **Lucas** [accept **Lucas** islands model]

<Social Science: Economics, Will Alston>

6. Answer the following about multiferroics, for 10 points each.

[10m] *Two answers required.* The term 'multiferroics' most commonly refers to multiferroics that are both ferromagnetic and ferroelectric, and thus are characterized by these two quantities. The divergence of one of these quantities gives the bound charge, while the curl of the other gives the bound current density.

ANSWER: **polarization** [or **electric polarization**; or **polarization density**; or **P**] AND **magnetization** [or **magnetic polarization**; or **M**]

[10h] One interesting path to multiferroicity is when ferroelectricity arises in magnetic materials from this phase occurring in a site-centered *and* bond-centered fashion. This phase is characterized by localization of the namesake quantities into an insulating superlattice.

ANSWER: **charge ordering** [or **charge ordered**; accept **CO**]

[10e] Multiferroicity in BiFeO<sub>3</sub> is explained by the ordering of these things. These things are a set of valence electrons that are not involved in bonding.

ANSWER: **lone pairs** [or **unshared pairs**]

<Physics, Jonathon Settle>

7. For 10 points each, name these Greek philosophers who took on prominent political roles:

[10e] This philosopher's *Seventh Letter* recounts his time acting as advisor to Dion of Syracuse, as well as extensive passages elaborating on this man's theory of forms.

ANSWER: **Plato** [or **Platon** or **Aristocles**]

[10m] This Archaic-era tyrant of Corinth, who is credited with inventing the *diolkos* trackway that allowed ships to cross the Isthmus of Corinth, was himself a philosopher who wrote a lost 2,000-line didactic poem.

ANSWER: **Periander** of Corinth [or **Periandros**]

[10h] Many sources credit this philosopher with advising Rome's Decemviri ("deh-KEM-weer-ee") while drafting the Twelve Tables. According to Diogenes Laertius, Heraclitus claimed that "the Ephesians would do well to end their lives" for the crime of exiling this philosopher, whose home city was Ephesus.

ANSWER: **Hermodorus** of Ephesus

<Ancient History, Will Alston>

8. In 2015, this school's library uncovered the lost story "Temperature," which features the alcoholic writer Emmet Mosen, and was written by an author while he was a student here. For 10 points each:

[10m] Name this school. A novel by the same author ends with the Minnesota-born protagonist crying "I know myself...but that is all" as he wanders back towards this school.

ANSWER: **Princeton** University

[10e] F. Scott Fitzgerald's years at Princeton are reflected in this semi-autobiographical novel, his first, which depicts Amory Blaine's coming-of-age.

ANSWER: ***This Side of Paradise***

[10h] In the first chapter of *This Side of Paradise*, Amory decides on going to Princeton after he and Rahill formulate a definition of these people, contrasted with "Big Men." Their criteria for being one of these people includes a "clever sense of social values" and "Gets to college and is, in a worldly way, successful."

ANSWER: a **slicker** [accept Princeton **slicker**; reject other answers]

<Long Fiction, Will Alston>

9. Georges Bataille's essay "On Nietzsche" explores how these events cause the rupture or death of the subject, causing it to arrive at a state that is completely Other. For 10 points each:

[10h] Give the term for these psychologically extreme events which are the subject of an essay by Maurice Blanchot ("blon-SHOW"), who designated the Holocaust as an example of one in *Writing of the Disaster*.

ANSWER: **limit-experiences** [or **expérience limite**]

[10e] A similar notion from Jungian psychology is the "death" of this concept, which mediates between two other parts of the psyche in Freudian psychology. Timothy Leary described taking LSD as a "loss" of this concept.

ANSWER: **ego**

[10m] The philosopher Julia Kristeva used this other term to describe a loss of distinction between the self and the Other that results from experiences of horror and disgust.

ANSWER: **abjection** [accept the **abject**]

<Philosophy, Will Alston>

10. In an unfortunate irony, the last piece this composer played in his life was titled *Morte!* since he died a few days later after overdosing on quinine to treat a suspected malaria infection. For 10 points each:

[10m] Name this Creole pianist whose pieces *Bamboula* and *La Savane* draw on the traditional melodies of slave dances from his native Louisiana. His Symphony No. 1 evokes music “In the Tropics.”

ANSWER: Louis Moreau **Gottschalk**

[10e] Gottschalk wrote a piano piece named for this instrument which evokes African-American styles of playing it. The speaker of “O Susanna” claims to “come from Alabama” with one of these instruments “on my knee.”

ANSWER: **banjos**

[10h] Improvisations on Gottschalk’s pieces were staples in the repertoire of this blind virtuoso pianist, who was born a slave in Georgia. Despite his prodigious talent, many African-American newspapers of the era did not celebrate him since his best-known piece, “The Battle of Manassas,” honored a Confederate victory.

ANSWER: Thomas “**Blind Tom**” **Wiggins** [accept either underlined portion; reject “Tom”]

<Classical/Opera, Will Alston>

11. This word titles a farce by Georges Feydeau in which Pinglet’s attempted tryst with his neighbor’s wife Marcelle fails because Pinglet gets too drunk, then gets arrested after an angry guest calls the police. For 10 points each:

[10h] Give this adjective. It names a pioneering theatre led by André Antoine which was founded to stage an adaptation of *Thérèse Raquin*, but later became a venue for many controversial plays.

ANSWER: **libre** (“lee-bruh”) [or **free**; accept *Hotel de libre exchange* or *Free Exchange Hotel* or Théâtre **Libre**]

[10e] Antoine’s work at the Théâtre Libre (“tay-AH-truh lee-bruh”) led him to be considered the modern “inventor” of this concept in the theater. This three-word French term refers to the arrangement of actors and scenery on a stage, or in a film.

ANSWER: **mise-en-scène**

[10m] Among the controversial plays staged at the Théâtre Libre was this play, which is set in a “manor house in a country district” during the 1880s on Midsummer Eve. This play climaxes after a character is told to bring his employer coffee and the riding boots he has carried since the play’s beginning.

ANSWER: **Miss Julie** [or **Fröken Julie**]

<Drama, Will Alston>

12. The progress of this process is measured by tracking the dilation, effacement, and station. For 10 points each:

[10e] Name this process whose “active stage” is considered to begin when the patient’s cervix dilates more than 5 centimeters. Tocolytics are used to suppress this process if it occurs prematurely.

ANSWER: **labor** [prompt on **childbirth**]

[10m] These false labor contractions occur in the second or third trimester. Unlike real contractions, they are oddly-spaced and unpredictable.

ANSWER: **Braxton-Hicks** contractions

[10h] In this condition, the cervical opening is covered either partially or completely by the placenta. The complete form of this condition necessitates a C-section.

ANSWER: placenta **previa**

<Biology, Noah Chen/Eric Mukherjee>

13. For 10 points each, name these sources which document the extreme weather events of 535 to 536 C.E., the most significant global cooling in the past 2,000 years:

[10e] This historian's *Secret History* describes the weather events as a "dread portent" for a war against the Vandals in 536. This hater of Justinian is cited by David Keys, who suggests the events indirectly caused Justinian's plague.

ANSWER: **Procopius** of Caesarea

[10m] This historian writes that the Sun had a "bluish color" in the 530s, suggesting that the events were caused by a volcanic eruption. He worked as an administrator for Theodoric the Great and founded the Vivarium monastery.

ANSWER: **Cassiodorus** [or Flavius Magnus Aurelius **Cassiodorus** Senator]

[10h] This set of annals documents the frigid weather of the 530s as well as many other severe climate events over centuries of Irish history. These annals were compiled by monks on a namesake island in the Lakes of Killarney.

ANSWER: *Annals of **Innisfallen***

<Euro History, Will Alston>

14. At one cemetery shrine in this city, worshippers leave offerings of hearing aids, prosthetic limbs, and other medical devices to the patron saint of healing, St. Roch ("rock"). For 10 points each:

[10h] Name this city, where pilgrims visiting the Saint Louis ("Saint Louie") Cemetery formerly would draw white Xs on a tombstone and spin in circles to make wishes, a practice memorialized in Joe Samples song "X Marks the Spot."

ANSWER: **New Orleans** [or **NOLA**]

[10e] That New Orleans tomb is dedicated to Marie Laveau ("la-voh"), a prominent "Queen" of this religion, whose contemporary worshippers use veve diagrams to attract deities such as Papa Legba and Baron Samedi.

ANSWER: **Voodoo** [or **Vodun**]

[10m] The alleged nephew of Laveau, Luke Turner, initiated this scholar into Hoodoo with a ceremony that involved drinking blood and being wrapped in a snakeskin. This scholar also wrote about Caribbean Voodoo in books such as *Tell My Horse*.

ANSWER: Zora Neale **Hurston**

<Misc Belief, Brad McLain>

15. For 10 points each, name these performance artists who incorporated guns into their work.

[10e] In her terrifying 1974 artwork *Rhythm 0*, this artist laid 72 items on a table including a pistol with one bullet, and invited the public to use it on her in any way they wished. Her other works include "The Artist is Present".

ANSWER: Marina **Abramovic**

[10m] In *Shoot*, this artist was shot in the shoulder with a .22 caliber rifle. He resigned his professorship from UCLA after a scandal in which a Master's student played Russian Roulette for his live final project.

ANSWER: Chris **Burden**

[10h] In one of his "Re-Enactments" this artist illegally bought a gun, pranced through the streets of Mexico City, was arrested, bribed the officers, and then convinced the corrupt po-po into reenacting the piece. This Belgian-born artist had a bunch of volunteers move a giant ice cube through Mexico City in *The Paradox of Praxis One*.

ANSWER: Francis **Alÿs**

<OArts: Visual, Ike Jose>

16. During this sacrament, a priest anoints the worshipper with a spiced olive oil that, according to legend, contains some of the oil used by the Apostles to perform it. For 10 points each:

[10m] Name this sacrament, which is the initiation ritual of Orthodox and Eastern Catholic Churches.

ANSWER: **chrismation** [or **cresima**; prompt on **confirmation**; prompt on **chriein**]

[10e] During chrismation, the priest applies the oil while making this gesture. The three components of this gesture correspond to the Father, the Son, and the Holy Spirit.

ANSWER: sign of the **cross** [or **signum crucis**]

[10h] Chrismation can be applied without Baptism if a Bishop invokes the extreme form of this concept. This concept, which is referred to with a Greek-derived word, describes the “handling” or “management” of Church affairs and can be used to grant priests discretionary powers.

ANSWER: **economy** [or **oikonomia**; or **economia**]

<Theology/Practice, Brad McLain>

17. This poem’s speaker suggests that God “could tell why / The little buried mole continues blind” because he “doubt[s] not God is good, well-meaning, kind.” For 10 points each:

[10m] Name this sonnet from its author’s first poetry collection, titled *Color*. It closes by commenting on the “curious thing,” which is “To make a poet black, and bid him sing!”

ANSWER: “**Yet Do I Marvel**”

[10e] “Yet Do I Marvel” likens the condition of a black poet to this man’s fate to “struggle up a never-ending stair.” This man titles an Albert Camus essay whose chapter “An Absurd Reasoning” considers the philosophy of suicide.

ANSWER: **Sisyphus** [accept *The Myth of Sisyphus* or *Le Mythe de Sisyphé*]

[10h] In this other Countee Cullen poem the speaker “saw the whole of Baltimore” from “May to December” but can only remember the time a “whit[e]” called him the n-word.

ANSWER: “**Incident**”

<Poetry, Will Alston>

18. This country’s so-called economic miracle of the 1970s came to an end with the payments crisis of 1982-83, due in part to massive borrowing by the government of the National Renewal Alliance. For 10 points each:

[10m] Name this country. Each year from 1986 to 1990, this country came up with a new scheme to deal with hyperinflation, but all of them - including one named for president Fernando Collor - failed miserably.

ANSWER: **Brazil** [or Federative Republic of **Brazil** or República Federativa do **Brasil**]

[10h] Brazil was able to dig itself out of hyperinflation thanks to this program instituted in 1994 by president Itamar Franco, which created an Emergency Social Fund to boost tax collection and replaced the devalued *crusero*.

ANSWER: **Real Plan** [or **Plano Real**; prompt on **creating the real**]

[10e] Brazil’s economic recovery was helped by this company finishing the world’s largest offshore platform in 1994, though the platform sank in an explosion seven years later. This is the state-owned oil company of Brazil.

ANSWER: **Petrobras**

<World History, Will Alston>

19. Flower and PySyft are frameworks for building systems with this deep learning technique. For 10 points each:  
[10h] Name this privacy-preserving technique first introduced to train the Google Keyboard app. This technique involves many decentralized devices training a central, shared model without sharing data between devices.

ANSWER: **federated** learning

[10e] One challenge in federated learning systems is that the data does not have this property and is not identically distributed. For two variables with this property, their joint PDF is the product of their respective PDFs.

ANSWER: **independent** [or **independence**]

[10m] The server averages parameter updates sent by clients after performing this algorithm to update federated learning models. Unlike a similar batch algorithm, this optimization algorithm performs an update using a single training example or a random subset of training examples.

ANSWER: **stochastic gradient descent** [or **SGD**; accept **mini-batch gradient descent**; prompt on **gradient descent**]

<Other Science: Applied/Data Science/Engineering, Jonathen Settle>

20. An innovative network for aerial water distribution was installed in this place by the nonprofit Shining Hope For Communities, which was awarded the 2018 Conrad Hilton Prize. For 10 points each:

[10m] Name this poverty-stricken area of a larger city whose struggles are depicted in Fernando Meirelles's film *The Constant Gardener*, which adapts a novel by John le Carré. Its name derives from a Nubian word for "jungle."

ANSWER: **Kibera** slum [prompt on **Kenya**; DO NOT REVEAL THIS OTHERWISE but prompt on **Nairobi**]

[10e] Kibera, which is often described as "the world's largest slum," is found in this world capital which is serviced by Jomo Kenyatta Airport.

ANSWER: **Nairobi**

[10h] Many of Nairobi's homeless, especially children, suffer brain damage and exhibit "zombie" like behavior due to sniffing glue and consuming this liquid substance. The Kenyan spirit *changa 'a* is sometimes mixed with this liquid, which was trafficked by Ugandan drug lord "General" Mukiibi before his 2018 arrest.

ANSWER: jet **fuel** [or aviation **fuel** or **kerosene**]

<Geography, Will Alston>