

# Natural Selections

A NEWSLETTER OF THE ROCKEFELLER UNIVERSITY COMMUNITY

## RUArt No. 7

CHRISTINA PYRGAKI



Photograph by the author.

A few weeks ago I mentioned to my friend Miho that I had to decide which art piece would be the subject of this month's "RUArt." "Oh! You should write about Noguchi," Miho said. Since I had no idea who she was talking about, Miho went on to explain that Noguchi was a Japanese bacteriologist who worked at The Rockefeller Institute in the beginning of the twentieth century, and he is to this day revered in Japan and other countries around the world. His bust is the last in a row on the right wall closest to the elevators in the lobby of the Rockefeller Research Building (RRB). Paying a visit to it is a sort of pilgrimage for many Japanese. "You will have no trouble finding stories about him," said Miho with a smirk that I initially misinterpreted as a modest expression of national pride.

It was a funny coincidence that, just a day after my chat with Miho, I found myself surrounded by a group of Japanese high school students marveling at Noguchi's bust as I exited the elevator into the RRB lobby. I could not help but wonder what attracted these visitors here for a quick viewing of this bust, especially since I had just learned that there is a copy of it in the Noguchi Museum in Japan. Was it

Dr. Noguchi's scientific accomplishments, his honorable personality, or was it the artistic merit of the statue? Maybe all three?

The bust was created in 1928 by Sergey Kononkov, a Russian-born sculptor who lived and worked in NYC from 1922 until 1945, when he and his wife returned to the Soviet Union. While in NYC, Kononkov's close friendship with Dr. P.A. Levine, a world-renowned biochemist and one of the first scientists to join The Rockefeller Institute, secured a number of commissioned portraits for the artist. The sculptor's commissioned work included, among others, sculpted portraits of Simon Flexner, P.A. Levine, W.H. Welch (his bust stands just a couple of meters away from Noguchi's), and Albert Einstein. The portraits he created during his years in the US provided him with an income (he would charge about \$2,000 for each,) but they do not necessarily represent his best work from this period. They certainly pale in comparison to statues like "Winged Figure" (1924), "Old Man with an Instrument" (1925), "The Prophet" (1928), and "Magnolia" (1930). These were the statues as well as others from the same period built Kononkov's reputation as the Russian Rodin and some of them would be worth a trip around the globe to see, much more so than Noguchi's bust.

As with most of Kononkov's commissioned portraits, this bust is a fine portrait, but no more than that. The artist has done a great job capturing not only the likeness of Noguchi, but also his infamous contemptuous look. Noguchi was not only known for his arrogance and overconfidence, but also for a long list of personality flaws. He was a heavy drinker, a womanizer, and he lived most of his life, starting from his early teenage years, on loans that he rarely paid back. His first trip to the US was sponsored by a wealthy family with money that meant to be an early dowry for their daughter. Not only did he never marry her, but it also took him more than 20 years to repay this debt. Noguchi had an amazing ability to get what he needed from others, and he not only used,

but on occasion abused the kindness that others showed him. In light of this information, I started to realize that Miho's smirk was not an expression of national pride after all.

When it came to science, he worked hard, often late in the night and mostly alone; he did not trust anyone enough to perform even trivial lab tasks. He was a productive scientist, but very few of his discoveries have been reproduced or have stood the test of time. His only still standing accomplishment, the discovery of the causative agent of syphilis, was the one that led to three Nobel Prize nominations within a few years. This achievement, however, is associated with some ethically questionable practices. While he was trying to create a skin test for syphilis, he infected a number of healthy subjects. Although it is not entirely fair to judge morals in scientific practice during Noguchi's era using today's standards, the syphilis skin test development is a testament that, for Noguchi, results were the end that would justify the means. It is not, however, very clear that the result Noguchi was looking for was scientific truth, rather than personal promotion. When Rivers, another scientist at The Rockefeller Institute, told Noguchi that he was considering retracting one of his papers because of erroneous results, Noguchi advised him against it, arguing that it would be years before anyone found out about the mistakes. "I do not think he was an honest scientist," Rivers later wrote later about Noguchi. Noguchi's final scientific claim was the discovery of the causative agent of yellow fever, or rather of the causative agent for leptospirosis, which he mistook for that of yellow fever. Armed with trust in the vaccine he created (ineffective against yellow fever as it turned out) and faith in his theory, he set out to Africa to prove that he was right, but he was not. He died in Africa of yellow fever in 1928 and with his dying breath he whispered, "I do not understand." He was just 51 years old.

It's not unusual for every professional community, especially the scientific community, to forgive nearly every flaw of its prominent members. The level of tolerance of someone's

otherwise insufferable personality is directly proportional to his accomplishments. Noguchi was relatively well-liked while he was alive, but as his discoveries were discredited over the years after his death, his reputation among his peers withered. Noguchi was relegated to a footnote rather than a chapter in The Rockefeller University's history. For the lay audience, however, Noguchi's legacy was not hurt. People still admire him for all he achieved despite his humble beginnings and physical inadequacies. Noguchi was born in a poor farmer's family in Inawashiro, a remote village in Japan, in 1876. Due to an accident, Seisaku, as it was Noguchi's birth name, lost use of his left hand when he was eighteen months old. With his mother's encouragement and support Noguchi set his lofty goal: he wanted to become the world's most famous doctor. Poverty, his humble origins, and his handicap caused his schoolmates to ridicule him (his nickname was Tenbo, which loosely translates as "hand like a stick") and his early colleagues to doubt his potential when he was studying to become a doctor. Undeniably the rejection he experienced fostered the development of his belligerent, ruthless personality and his self-centered demeanor. Noguchi learned very early that if you do not swim you sink and that is what he did: he kept on swimming albeit not in perfect style. As a teenager, he carved on a pillar in his family home the phrase: "I will not set foot to this place again, until I have achieved all my goals." He changed his name from Seisaku to Hideyo ("brightest of the world") and

set out to prove himself worthy of this new name. Along with his inspiring determination to succeed against all odds, his death in Africa also contributed to his lasting legacy. The fact that Noguchi died in the field, working non-stop to cure the disease that killed thousands of people every year, elevated him to martyrdom. It is therefore neither the artistic merit of the bust nor Noguchi's personality or scientific deeds that keep his memory alive, but rather what he represents: success in spite of adversity, and accomplishment due to hard work, rather than luck.

Even though exemplifying as inspirational the life of someone who claimed success while showing complete disregard for the rules is dangerous, it is difficult not to admire Noguchi's hard work and dedication to his goals despite all the obstacles he faced. This realization, however, begs the question: How much of a person's behavior should we forgive when we know that it has its root in trauma and suffering? Should the story of someone who achieved his goals through less than honorable means be considered inspirational? Was Noguchi a self-centered, overly ambitious professional or was he a passionate scientist who was willing to bet his life on his theories? As I look at the picture of Dr. Noguchi from his days as a young aspiring doctor in Japan, I can only hope I am leaving you as confused as I am, and that maybe next time you pass by his bronze bust, you might, if not forgive, at least excuse Noguchi's arrogant gaze! ◊

References:

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## CULTURE DESK: *Natural Selections* interviews Brown University Professor of Music, Gerald M. Shapiro

BERNIE LANGS

In 1978, I joined a music class at Brown University that taught students to use an electronic synthesizer and to become proficient in multi-track recording methods. It was expected that students would compose and record music utilizing these tools to present to the class. I've retained more memories from this experience than any other course I took in college. The synthesizer was a beast of a machine, manipulated by stretching patch cords and tooling around with various controls. Equally memorable was the dynamic professor of the class, Gerald Shapiro. Professor Shapiro, or "Shep" as he likes to be called, had already been at Brown for over a decade at the time. His students hung on his every word and listened carefully to his presentations. Pr Shapiro was

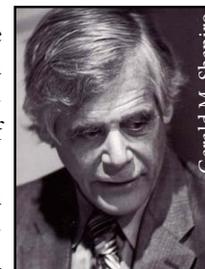
unique at a university known for unique personalities. During his student days, Pr Shapiro learned composition from Darius Milhaud, Mort Subotnick, Karlheinz Stockhausen, Olivier Messiaen, and Nadia Boulanger. Professor Shapiro's compositions show a variety and range in the classical genre.

In a nutshell, Pr Shapiro expanded my concepts of what it means to listen to music—and to listen in general. I recall the incredible rush of excitement I felt while recording my first composition on the thick reel-to-reel tape the sounds of the synthesizer. It was not only the discovery of sounds that was thrilling, but as I layered the tracks, the piece seemed to take on a life of its own, actually improving itself as I built it. I've been recording on my iMac for

several years, and the long-ago lessons from Pr Shapiro's class are always at the forefront of my process.

Pr Shapiro, who still teaches at Brown University, was kind enough to take time to answer a few questions about his studies, his work and music in general.

Bernie Langs (BL): *You studied with greats such as Mort Subotnick and Karlheinz Stockhausen; did their tutelage have a lasting influence on you? Any anecdotes you would like to share from your student days with these composers?*



Gerald M. Shapiro

Gerald M. Shapiro (GMS): I was fortunate to be a student at a time when I could work with the last of the older generation of composers and teachers and the first of the younger set. In 1964, I went to San Francisco to study with Darius Milhaud, a great French composer who taught at Mills College in alternate years. I had come from an undergraduate career at the Eastman School of Music, where composing was taught as a grim and painful activity. Milhaud loved to write music. I would come into his studio and he would be scribbling away (amazing—the only thing that slowed him down was how fast he could put the notes on paper), but after a while he would turn to me with a beatific smile. He was having fun—it was serious fun, but still. That was the most important lesson from any composition teacher I ever got. It didn't change how I worked over night. It took me a long time to really get it. When I got to San Francisco, I got involved right away with the San Francisco Tape Music Center, which had just been founded by Mort Subotnick, Ramon Sender, and Pauline Oliveros. Mort was inventing the synthesizer with Don Buchla. Tony Martin was making the liquid projections to complement the music that would blossom into the image of the “summer of love” and the whole hippie movement. Terry Riley was writing “In C” and Steve Reich was making the first of his minimalist pieces. It was a heady time. The following year, I went to Paris on a Fulbright Scholarship and studied with Nadia Boulanger—a spectacular teacher who showed me what it meant to really hear music. When I returned to San Francisco a year later, Stockhausen was teaching at University of California Davis for the year so I signed up for that. Stockhausen was the most directive of any teacher I've had. He taught me to hear beneath the notes to the relationships that bind them together.

*BL: You've been at Brown University since 1967. How do you feel having spent your career in academics at Brown?*

GMS: I have been fortunate to have a job that exactly suited me. I love to teach. I enjoyed my administrative career as chairman—and I'm happy that it's over. My job has allowed me to devote myself to composing, and to grow as a composer. At this point I feel the greatest value in my life is to continue to learn. Composing is a life-long study, as is teaching. It's a great job.

*BL: How would you categorize your genre of composition? The orchestral pieces are very melodic, yet you also have vocal works that are more experimental.*

GMS: Like many composers of my generation, I have followed a path from experimental-

ism to lyricism, or to put it another way, from avant-garde to conservative. I have always tried to write the music I wanted to hear, and because of my job, I have had the luxury of completely changing my style several times as my interests developed. When I first came to Brown it was audience-participation theater pieces. Then it was improvised solo keyboard performance. Slowly I gave up electronic music for acoustic instruments. Now I just try to write music that engages the heart and mind, and feels good in the ear. Go to [geraldshapiro.com](http://geraldshapiro.com) and listen to something. Try the most recent “Change and End” or “Variations” for a start.

*BL: When I took your course at Brown in 1978-79 in recording and synthesizers, the synthesizer was a large piece of machinery and we found sounds using patch chords. Now my recording interface gives me hundreds of synth sounds at the click of the mouse. Do you have any thoughts on that progression?*

GMS: Although in the popular conception, keyboards with pre-programmed sounds have replaced synthesizers on which sounds are programmed by the player, serious practitioners of computer music still invent their sounds—and have a much more powerful tool in their computers to do so. The technical means for digitally generating and modifying sounds are very advanced, so recently attention has been turned once again to inventing and building the interfaces that allow the performer to interact flexibly and seamlessly with the electronics. These replace the patch cords, knobs and buttons that you remember from your days in the studio with newly invented controllers, often fantastically original and beautiful to look at, that become the personal instruments of composer/performers. The laptop orchestra is the ensemble of choice these days for music of all kinds and genres. As always, it is the musicians, not the instruments, that make the real difference in the quality of the music.

*BL: Although I was already a songwriter, musician and avid music fan when I arrived at your class, I've always felt that you taught me to “listen.” In addition, a guest lecture by composer Mort Subotnick expanded my idea of what emotions could influence composition. How has your teaching approach evolved through the years?*

GMS: Of course, all good music teaching (aside from revelations like Milhaud's loving what you do rather than suffering through it) is about hearing the music accurately. Learning how to listen is learning how to be a musician. This is true even of the most technical studies. A piano teacher, discussing the intricacies of fingering might say, “Listen to how crossing

my thumb under before this note makes the line flow more evenly.” Good musicians listen with their whole body. They perceive sound as something specific, not abstract, palpable to the ear the way skin is palpable to the finger. I try to teach that. Teaching composition, I might say, “See how Bach extends this passage and then extends it again until it's so poignant you can hardly stand it. How long can you extend a gesture in your own music? You need to feel that length in your belly.” I teach the same courses year after year. I moved away from computer music entirely in the early 1990s and now teach composition, counterpoint and orchestration. To keep them fresh, I do the exercises along with my students. Every year I write inventions and fugues in the style of Bach, Mass movements in the style of Palestrina, orchestrations for wind quintet. I learn something new every time and share it with my students.

*BL: Do you have a method of composition? How do you approach a new work? Anything new in the works?*

GMS: My own compositions are almost always written for particular musicians with a particular premiere date in place. The approximate length of the piece is established by its place in the concert program. So before I start I have the instrumentation, the length, and a deadline for completion. Composers who don't have the luxury of a regular flow of commissions will understand just how powerful a part of my compositional process this is. My sense of composition as a life-long study, described earlier in this response, means that I always have technical ideas that I want to explore. Each piece represents the confluence of those purely musical ideas with the personal realities of a life lived. It must be so, and I try to do it consciously. I bring to each piece some part of myself: love for my partner, disgust with the political scene, yearning for transcendence, dreams, nightmares. That link is not necessarily very explicit at the beginning, but by the end of writing a piece, I see how it dominates the expressive landscape. When a student asked how to begin a piece, Paul Hindemith told him to imagine the ensemble on the stage: they pick up their instruments and begin to play, and the music they play is—your piece. It's very good advice. I often begin by imagining the most delicious sound the musicians I am writing for can make, and compose that. It's not usually the beginning of the piece, more likely a climax near the end. I set the ideas in place and follow their lead. At the beginning it's like feeling your way in the dark. At the end, like putting the last few pieces of a big jigsaw puzzle into place—easy as pie. ◊

# Natural Confections

CARLY GELFOND

My Cuisinart Pro Custom 11™ Food Processor arrived on a warm afternoon in late summer. John had gotten home first and lugged the large and (reportedly) heavy cardboard box up the stairs to our apartment. I squealed when I saw it (a kind of primal noise I release intuitively when face to face with a brand new kitchen appliance) and skipped off to find a pair of scissors.

The back-story here can be summed up thus: a well-timed Bloomingdale's ad meets an easily tempted amateur chef. While it's true I owned a food processor already, it was a hand-me-down from my stepmother and I'd always suspected not all of the parts had been handed down. Every time I used it, food would come flying out an open plastic chute on the side. I'd devised a clever system to avoid this irritation involving a square Post-It note and some Scotch tape, but the Bloomingdale's ad in the paper put fantasies in my mind that had lingered well after I'd turned the page.

I slid the scissors along the edges of the brown packing box and flipped its flaps open. Inside was the large white Cuisinart box with pictures of perfectly sliced and arranged peppers on its sides. Inside of that was an instruction booklet. The first page read: IMPORTANT UNPACKING INSTRUCTIONS. Unpacking instructions? Was a person who needed instructions to take things out of a box to be trusted with a twenty-pound machine with whirring blades and something called a shredding disc? Next was a How-To DVD (running time: one hour). Maybe later, I thought. Beneath the booklet was a Styrofoam block followed by a layer of plastic bags, which appeared to contain a number of metal discs and blades. I set to work opening each one. My coffee table was starting to look like an armory. I lifted more parts out of the box, more Styrofoam, a work bowl, detachable stem, a "pusher assembly" (itself consisting of three parts), a spatula, a compact cover, and finally, beneath more Styrofoam, a motor base "with a vertically projecting shaft and two large control levers." At last, everything was unpacked. Feeling like I needed a motor of my own I collapsed onto the couch.

A week passed, and I had yet to assemble my food processor. What can I say? I'd lost momentum, intimidated by a machine that consisted of fourteen separate parts, an exhausting setup procedure, and an emergency assistance helpline to call if the machine did not shut off. Sometimes I would carry the box of parts with me from one room in the apartment to another, where it would be nearby should I be struck by a wave of ambition. Mostly, we began to use it as an ottoman.

Finally, on a Sunday night, John was watching a game of golf and I was sitting next to him pretending to watch it, too. My box was a few feet away. "You can have peppers as perfect as us!" I imagined the little peppers on its sides saying. On TV, the crowd cheered as somebody sunk a long, undulating putt. Just then, John looked at the box, then looked at me and said, "What do you say we assemble that thing?"

"Okay," I said. "Let's do it." We got off the couch and parked ourselves on the floor, and together, we hunched over the instructions, with their diagrams and photos and safety precautions. In the end, you know, it wasn't that difficult. We carried the appliance into the kitchen. We joined the shredding disc to the detachable stem and slid the pusher assembly over the feed tube. Amazingly, the parts clicked into place. I got a zucchini from the fridge. We sliced it in half and inserted it into the feed tube, pressing it down

with the pusher. In a second, it was toast, or rather, perfectly shredded zucchini. We shredded another. This was fun. We shredded all the zucchinis we had, about six. It was as easy as that.

"Okay, I'm tired," said John. "Me, too," I said. We packed the zucchini shreds into plastic Tupperware containers. What to do with six shredded zucchinis? This was a project that would have to wait until tomorrow. Would I ever work up the drive to use this thing again? It was really hard to say.

As we shuffled off to bed, John looked at the Cuisinart box, finally sitting empty on the floor. He picked it up. He popped open the bottom flaps and slipped the whole thing over his head and down his body. "Get me the pusher assembly top," he said. I did, and he put it on his head, the feed tube sticking up in the air. "Halloween?" he said, looking at me.

And just like that, my purchase was justified.

## ZUCCHINI PUMPKIN BREAD

I promise that you do not need a fancy food processor to make this bread. In fact, I hate to say it, but you really don't need a food processor at all. Any box grater will do. Obviously, this recipe is inspired by the six shredded zucchinis in my fridge begging to be used, but it also occurred to me that pumpkin zucchini bread is the perfect September cooking project. The last of the summer squash crop gets put to good use, while the pumpkin, in fact also a squash, brings a taste of fall. And even though, for better or for worse, the bathing suit season has come and gone, this bread happens to be pretty easy on the waistline.

### Ingredients:

*1 cup all purpose flour*  
*1 cup whole wheat flour*  
*2 teaspoons cinnamon*  
*½ teaspoon nutmeg*  
*¾ cup brown sugar*  
*1 ½ teaspoons baking soda*  
*½ teaspoon salt*  
*½ cup walnuts (optional)*  
*1 large egg, beaten*  
*1 tablespoon vanilla extract*  
*2 tablespoons melted butter*  
*1 15 ounce can pumpkin puree (I like the Farmer's Market brand)*  
*2 cups shredded zucchini (from about 3 medium zucchinis—yes, I still have quite a bit to use up.)*

Preheat oven to 350 degrees Fahrenheit. Grease a 9x5 inch loaf pan, then sprinkle with a bit of flour so that entire pan is coated. Tap out excess flour.

Combine flours, cinnamon, nutmeg, sugar, baking soda, and salt in a medium bowl. Mix well.

Add walnuts (if using) and mix to combine.

In a large bowl, mix egg, vanilla, melted butter, pumpkin, and zucchini. Little by little, add flour mixture to wet ingredients, stirring after each addition, until batter is blended.

Pour batter into loaf pan. Bake at 350 degrees Fahrenheit for about 55 minutes, or until a toothpick inserted in the center comes out clean. Cool for about 10 minutes. Remove loaf from pan and let it cool before slicing. ◊



## New York State of Mind

*This Month Natural Selections interviews Pinar Ayata, graduate student in the Laboratory of Molecular Biology.  
Country of origin: Turkey.*

1. **How long have you been living in the New York area?** 6 years.

2. **Where do you live?** Upper East Side.

3. **Which is your favorite neighborhood?** Park Slope.

4. **What do you think is the most overrated thing in the city? And underrated?** Many people who have never been to NYC or only had a short touristic visit associate the city with high-rise buildings, aggressive people, and busy streets. NYC is so much more than that! Various neighborhoods, green markets, bike lanes, parks, roof tops, block parties, art, strangers smiling at each other on the street and making conversation, mounted police—a personal favorite—and the fact that the city is only one hour from natural preserves where you can do all kinds of outdoor activities. The city has so many things to offer, you just have to look around.

5. **What do you miss most when you are out of town?** To feel that I belong to a place—even when I just walk on the streets. I don't feel like an outsider, because no one really belongs here. I feel like the city will let me be whomever I want. I haven't felt like that anywhere else.

6. **If you could change one thing about NYC, what would that be?** I think I would improve the public transportation and make it a lot cheaper, ideally, 25 cents per ride.

7. **Describe a perfect weekend in NYC.** I get to pick the weather, right? It's partly cloudy, windy, with a temperature in the 70s, no precipitation, all weekend. Friday night: go to a small bar and try out different microbrews and small bites while catching up with friends. Later, hang out in the East Village for some live music, and end the night dancing in Nuble to experimental music. Saturday morning: have a nice long breakfast at Le Pain Quotidien, bike to Breezy Point for a swim in the Atlantic Ocean (during my perfect weekend, Park Avenue is closed to traffic on that Saturday.) Take the subway to Central Park to listen to a Summerstage concert for free, then go to an authentic restaurant and eat something you've never tasted before. Sunday morning: wake up really early to go upstate for some rock climbing in the Shawangunk Mountains, enjoy fresh air, quiet and high exposure. Get dinner in a local joint before driving home so you beat the traffic and enjoy driving fast on the George Washington Bridge. Alternatively, drive to the city early, go to Oliva for some Spanish tapas and live Latin music. Ready to go back to lab on Monday!

8. **What is the most memorable experience you have had in NYC?** One of my very good friends had an overnight layover in NYC. So he came to my place to stay and as I was making his bed he said that he wanted to see the city. Around 2 a. m. in the morning! So we went to Times Square and then Battery Park. We took the Staten Island ferry, walked to the East Village and to Union Square. After sunrise we went to Central Park and then he took his flight home. It was a surreal experience of the city. Like the scene from the movie, *vanilla sky*, Times Square was completely empty, but still bright as day.

9. **If you could live anywhere else, where would that be?** I have never been, but I have a hunch that it would be San Francisco.

10. **Do you think of yourself as a New Yorker?** Yes, because



when I got settled here I thought to myself: “Ha! So that’s what was missing in my life!” And I still feel that way. I love leaving the city to travel, but I love coming back to it even more! ◊

## Life on a Roll



*The Road* by Elodie Pauwels

# Hegel, Euler, Marx: A Meta-Dialectical Interlude in the Key of i

I. BEN ISADORA

Achilles (A), the fleetest of foot of all mortals, caught up to the Tortoise (T), who was bathing in the sun reading a thick volume.

A: Hello, Tortoise. What is that thick book you're reading?

T: Hi, Achilles. This is *Gödel, Escher, Bach*. I'm reading it to help my quiz bowl career.

A: Hmm, how does such a thick volume with such a strange title aid one's quiz bowl career?

T: Well, as you know, I generally do not read books. I prefer to simply memorize facts from lists, file them into the categories of my thought, and pull them out when asked to impress other tortoises. So, earlier today I was learning all the Pulitzer Prize winners: in 1978 it was Carl Sagan for *Dragons of Eden*, science; in 1979 it was E.O. Wilson for *On Human Nature*, science.

A: Yes, evidently you don't read them. So why are you starting now?

T: Well, Achilles, I was stumped when I encountered the 1980 winner, Douglas Hofstadter, for *Gödel, Escher, Bach*! I couldn't figure whether to classify it under mathematics, art, science, computers, or Lewis Carroll!

A: Well, I must say, Tortoise, your approach to studying seems like an excellent way to learn everything about nothing, and nothing about everything! Why would you expect all books to fit into categories that you created before reading all books?

T: (perplexed) Well, I guess I just had to start somewhere.

A: Yes, Tortoise, but perhaps something that doesn't fit into your categories could teach you a little about the categories themselves? Perhaps you'd learn of new connections between categories, or perhaps a better system of categorizing altogether.

T: Hmm. I guess I could add a new category for "metaphorical fugues on minds and machines?" But then wouldn't I have to add a new category for every book I read? I thought the purpose of categories was to simplify things?

A: I don't think you'd need to go that far. Perhaps only for the books that stand out.

T: How would I ever decide that?

A: Well, certainly *Gödel, Escher, Bach* stood out, for the same reasons an Escher drawing might, or a caterpillar smoking a hookah.

T: Ah, so you mean things that defy my expectations?

A: Yes, that's a very good way of putting it. The things that violate your expectations: those are the things worth paying attention to.

T: Hmm, I had been doing just the opposite! I am used to ignoring those things that I can't explain well with simple categories. But I suppose I wouldn't want to be too rigid in my thinking.

A: Exactly, there's a word for that type of rigid thinking—it's called economics. It's like that Bob Dylan song:

*It's very small and made of glass  
and grossly over-advertised  
It turns a genius to an ass  
and makes a fool think he is wise  
They just get out what they put in  
And they never put in enough  
Life is like a bottle of gin  
But a bottle of gin is not like life*

T: Splendid, Achilles! What song is that?

A: Uh... It's unreleased archival footage, but never mind. Let me tell you a story about i.

T: You mean "about me?"

A: No, not about you. About i. Must things always be about you?

T: I'm terribly confused.

A: Anyway, what is the square root of 1764?

T: Well, I don't know, but it shouldn't be difficult...not 1, not 2 (several minutes pass) 42.

A: Good. Now, tell me, what is the square root of -1?

T: Well... Not 1, not 2. (several minutes pass)

A: Tortoise, you should have recognized that this question defies all your expectations about arithmetic.

T: Oh yes, silly me. Negative numbers do not have square roots.

A: On the contrary, Tortoise, your categories of thought may not yet fit them, but if you will play with the idea long enough, you might eventually come to a deeper level of understanding between such mysterious concepts as pi and e, logarithms and waves, circles and triangles. This wonderful synthesis is called Euler's identity. I think it's the most beautiful formula of mathematics. (Achilles jots down Euler's identity.)

T: Wow! You're telling me that by pushing a little deeper we can unify all of this?

A: Yes, Euler was a man of remarkable depth perception. He always reminds me of H.G. Wells: "In the country of the blind, the one-eyed man is king."

T: I like that. But who is H.G. Wells?

A: Oh Tortoise, you must know, if only for your quiz bowl career. The writer of all those science fiction classics?

T: Oh yes, yes. He wrote *The Matrix*, right? That is by far my favorite "metaphorical fugue on minds and machines." I am beginning to see the connections, Achilles!

A: Excellent, Tortoise! But *The Matrix* was not written by H.G. Wells. Actually, it is a little known fact that *The Matrix* was written by MARXIT.

T: MARXIT? Who's that?

A: MARX Information Technology. It's a machine learning algorithm that wrote *The Matrix* to explain how human consciousness is programmed by machines that keep us alive merely to fuel their growth. It then convinced the humans that they had written the screenplay—it has a wicked sense of humor.

T: Capital! I had no idea artificial intelligence was so powerful!

A: What, did you think they would tell you when they were?

T: That is disconcerting. Thank goodness I'm not human.

A: Yes, our species is remarkable in many ways, not all of which I'm proud.

T: I'll say. My relatives live in the Gulf of Mexico.

A: Oh, terribly sorry about that.

T: Well, I guess it wasn't your fault, so much as the machines. Tell me, what is MARX?

A: It stands for MARX Applied Recursively? X-ceptional!

T: (perplexed)

A: You see, Tortoise, the beauty of MARX is that it is a program capable of handling errors by calling another instance of itself.

That's what we mean by "recursively."

T: Oh, kind of like going ever deeper down the rabbit hole!

A: Exactly Tortoise, there's a reason it's called the red pill.

T: I don't understand. Who owns MARXIT? Can I download it?

A: It's open source, but it only runs on an older analog architecture, called HEGEL. Most computers these days run on POPPER, a vastly inferior digital architecture.

T: POPPER? Let me guess, an architecture that doesn't push deeper and only pops shallower?

A: Exactly. You can imagine the superficiality of the analysis. Poorly Organized Programming Produces Errors Repeatedly. Unlike HEGEL, it is incapable of handling its own errors, and so constantly crashes. Thus, it is simultaneously incompetent, yet quite sure of itself.

T: I see, like an economist. But if HEGEL is so superior to POPPER, why doesn't everyone use HEGEL?

A: It's a long story, but inferior technologies often win out in the short term.

T: Oh, so it's like Betamax. Well, what does HEGEL stand for?

A: HEGEL Eventually Gets Even LOL.

T: Hmm. How teleological.

A: Yes, that's the biggest criticism.

T: Tell me, Achilles, where can I read more about HEGEL?

A: The HEGEL user's guide is called *Science of Logic*, but I should warn you that you won't understand it until you thoroughly understand HEGEL.

T: Strange—then how on Earth could I ever understand HEGEL?

A: Why, recursively, of course.

T: I am confused. Who built HEGEL?

A: Why, HEGEL, of course.

T: A computer that built itself! What a strange loop! In the meantime I think I'll classify *Science of Logic* as another metaphorical fugue on minds and machines.

A: That actually seems quite appropriate.

At that moment, the Crab (C) entered, walking sideways, as always.

C: Hello. Did I hear you two speaking about logic? I am quite logical, and might possibly be of assistance.

T: Crab, I'm terribly confused. Have you read *Science of Logic*?

C: Ah yes, a very good book indeed. Who wrote that again, Carnap? Bertrand Russell?

T: HEGEL.

C: HEGEL!? Ha! Then it is neither science, nor logic, but pure sophistry. I remember when I went to Cambridge we used to stay up all hours of the night reading HEGEL and howling! One night, after drinking a bottle of gin, we decided that since "being and nothing are the same," it ought to make no difference if we toss all HEGEL volumes in the nearest trash receptacle. Sadly, that didn't bring back the gin.

A: Eventually, Crab, you will come to realize that HEGEL...

C: Gets lost in a jungle of verbiage? Substitutes obscurantism for any precise meaning?

A: Even so, Crab, the human brain looks a lot more like HEGEL than Bertrand Russell, and more like Lewis Carroll than Charles Dodgson! I'm not sure about crabs, but as far as us humans go, it looks like HEGEL Eventually Gets Even.

T: LOL! I must say, I don't know who to believe.

A: Crab likes not HEGEL because HEGEL's not like Crab.

C: Achilles, I always knew you were mad as a hatter, but I wish you wouldn't attempt to lure this young Tortoise to join you in Wonderland.

A: Crab, you see the world as a mirror of yourself. It would do you some good to consider stepping through it.

T: It certainly is more interesting on the other side of the looking glass.

C: Yes, the ravings of madmen can be quite entertaining. But, on the subject, has either of you heard the latest opera by Philip Glass?

T: No. How is it? I just love *Einstein on the Beach*, all those ones, twos, and threes—and occasional fours!

C: Well, Tortoise, it appears to be somewhat of a sequel, entitled *Euler on the Beach*.

A: An opera about Deepwater Horizon? That's a touchy subject for Tortoise.

C: No, Eul-er, you lunatic. The mathematician.

T: Oh, we were just talking about him! Perhaps this is yet another metaphorical fugue on minds and machines. Let's listen!

The crab pulls out an iPad and begins playing the Philip Glass (G) album he downloaded from iTunes.

G: 1234 123456 12345678 1234 123456 12345678

T: Hmm... this sounds just like *Einstein*.

C: Shh! Be patient.

G: 1234 5678 two lovers sat on a park bench  
1234 with their bodies touching each other, holding hands  
1234 5678 so profound was their love for each other  
1234 they needed no words to express it  
1234 5678 Georg smiled, and then did Wilhelm  
1234 Wilhelm tightened his grasp, then did Georg  
1234 5678 and so they sat in silence, on a park bench  
1234 with their bodies touching holding hands in the  
moonlight  
1234 5678 "Do you love me Georg?" Wilhelm asked  
1234 "You know i

At that moment the iPad shattered.

C: What just happened?! My iPad!

A: Shattered by a Glass i! LOL.

T: Looks like you need to upgrade to a HEGEL. ◉

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# Vox Clamantis in Urbe

## The Sources of Income Inequality

JACOB OPPENHEIM

Let us return to the world of the 1950s, a time of significantly lower income inequality. Commentators frequently hearken to this time of high wages and good manufacturing jobs for the uneducated as a lost Eden. Such an analysis forgets the massive social repression that was part and parcel of this condition. By limiting employment to white men and keeping out nearly all unskilled immigrants, the demand for labor led to relatively high wages. While labor unions were able to negotiate lucrative contracts for their workers, throughout the North, they excluded African-Americans from becoming members. As union membership was a requirement for these jobs, blacks in the postwar North did not benefit. In the South, Jim Crow laws successfully kept blacks semi-enslaved as agricultural laborers. Restrictive immigration policies put into place in 1922 limited migration from everywhere but Western Europe, stemming the early twentieth century flood of unskilled migrants from Eastern and Southern Europe and from East Asia. Let us not forget that half of the population (women) essentially did not work after marriage. The jobs that women did take were limited to teaching, nursing, and secretarial work, keeping wages low in these fields, and high for men in more lucrative positions.

It was the collapse of these three social and legal barriers—against African-Americans, foreign unskilled labor, and women—that caused much of the resulting increase in income inequality. As the supply of labor increased for jobs formerly held by white men, less educated workers' wages fell relative to their more educated peers. It is worth noting that in fields formerly dominated by women, such as nursing, wages rose since employers had to compete for workers who had many more potential occupations. While the unnaturally high working- and lower-middle-class wages of the 1950s led to dramatically lower income inequality, wages across the board have risen substantially since then as discriminatory barriers have fallen. We should have no desire to return to the world of the 1950s, nor should we use them as a benchmark for measuring income inequality.

In parallel with the end of discriminatory barriers to employment, several other causes of income inequality are benign as well. One example is that of immigration. Millions of immigrants, both legal and, until recently, illegal, enter the United States every year. The majority are unskilled and enter at the bottom of the economic ladder. While they and their descendants grow wealthier and more successful, the refreshing of untrained and poorly educated workers ensures a continuous and relatively large (in comparison with other developed nations) population at the bottom of the income distribution. Given that these immigrants grow wealthier over time and that they are nearly always better off in income than in their native countries, this effect is no cause for concern. Indeed, studies have shown that increased unskilled immigration increases the wages of native, unskilled workers, by placing a premium on their being natives. That is, an increase in Latino immigrants willing to work as gardeners increases the wages of American-born high school dropouts, who are needed as better-paid supervisors rather than as gardeners themselves.

Globalization is a second source of income inequality, but not in the way that is commonly presumed. While offshoring of manufacturing exerts downward pressure on wages, it also increases employment opportunities in more lucrative professions as well as dramatically decreasing the price of everyday goods. Rather, globalization has greatly increased

the returns to talent. Successful businessmen now have access to the world market as opposed to just a national, or regional one. They are thus able to command significantly higher salaries. A simple example comes from Sweden, where income inequality has risen in parallel to that in the United States, despite a much more activist state and dramatically higher taxes. Companies like H&M and IKEA are able to open stores overseas, making much more money than they could in Sweden alone. One billion potential customers provide considerably more revenue than eight million. The success of IKEA has led to more and better jobs in Sweden as well as high wages for its top management, thus appearing as an increase in income inequality. Such changes that enhance everyone's welfare should not concern us.

It is also worth considering the increasing number of well-educated people who choose to work fewer hours and devote themselves to their families, hobbies, or a poorly paying profession, like artisanal pickle production. Every such person shows up as an increase in income inequality, by shrinking the numbers of the wealthy and nearly wealthy. Had these people worked harder at the most lucrative jobs they could find, the distribution of income would be flatter.

Lastly, it is frequently pointed out that men's wages have been stagnant or falling since the late 1970s. These statistics neglect the cash value of health insurance, which is still provided to most Americans by their employers, and whose costs have been rising at 5-13% per annum for 40 years. Once the cost of health insurance is added back in, men's wages have grown, just not particularly quickly. Women's wages, however, continue to rise.

The sources of inequality listed above account for somewhere between two-thirds and three-quarters of the observed increase since the late 1950s. They have been observed throughout the west even in the semi-socialist states of Europe, and cannot be prevented by higher taxes and greater government spending. Given these numerous beneficial and benign causes, what is it about income inequality that irks us?

What galls us is the enormous salaries earned in the financial services sector and by the upper management at some (but not nearly all) large corporations. If it appeared that the highest wages were found in productive industries that had not needed bailouts less than four years ago, we would find less to complain about. Unlike the pay of upper managers, which seems to be falling due to disclosure laws and mandatory "say on pay" votes, the problem of enormous profits accruing to Wall Street through oligopolistic behavior and corporate strategies dependent on a government bailout—what economist Tyler Cowen terms "going short on volatility"—are the cause of income inequality we can and should control.

Income inequality thus exemplifies why a scientific mindset is necessary in policy debates. Our dependent variable is income inequality, but to assume *prima facie* that it can be corrected by taxes and transfers is silly and useless, once we examine it properly, and decidedly non-obvious causes. (For one thing, it wouldn't have led to the extremely effective "say on pay" law and increased shareholder rights.) What should trouble us is our inability to properly reform Wall Street and remove the implicit government subsidy for its activities. As for the rest of it, who cares what other people earn? As Mitt Romney put it, it is the politics of envy. ◊

1. Or in the case of healthcare, orthogonal to nearly all proposals and hand wringing about income inequality.

